CH2M HILL
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Sacramento, CA 95833
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CH2MHILL

November 13, 2006

Mr. Lorne Prescott
Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Re: Supplement IV in Response to Data Requests and Workshop Queries in Support of the Application for Certification for the Walnut Creek Energy Park (05-AFC-02)

Dear Mr. Prescott:

Attached are one original and 12 copies of Walnut Creek Energy, LLC's Supplement IV in Response to Data Requests 1 through 104 and April 25 Workshop Queries in Support of the Application for Certification for the Walnut Creek Energy Park (05-AFC-02).

If you have any questions about this matter, please contact me at (916) 286-0278 or Jenifer Morris at (714) 841-7522.

Sincerely,

Douglas M. Davy, Ph.D.
AFC Project Manager

Attachment

cc: T. McCabe
L. Kostrzewa
J. Morris
S. Galati
V. Yamada

Contents

Introduction

The following is Walnut Creek Energy, LLC (WCE's) fourth supplemental filing in response to Data Requests for the Walnut Creek Energy Park (WCEP) (05-AFC-02) and other information requests from staff and other parties. Additional staff questions have arisen subsequent to the Staff's filing of formal Data Requests, and these are called workshop queries, for convenience. Some workshop queries resulted from the April 25, 2006, Data Request Response Workshop. Others have arisen through subsequent discussions with Staff. Responses or information submittals such as this one are numbered consistently with the Data Request numbers (for example, DR-15 is a response to Staff Data Request number 15), or are given a unique and sequential number with the WSQ prefix (for "workshop query").

Transmission System Engineering

Generation Tie-Line Route

WSQ-8 *Has Southern California Edison clarified their role in developing a finalized routing for the generation tie line between the WCEP and the Walnut Substation? If so, please provide this information.*

Response: During further discussions with Southern California Edison (SCE) in connection with SCE's interconnection study process, SCE has identified two generation tie-line options instead of the project design option as described in the Application for Certification. These options are shown in Attachment TSE-1, Figure WSQ-11.

Both of these options involve a connection to the northwest corner of the Walnut Substation, rather than the southeast corner. Option 1 runs due west from the WCEP within the existing SCE transmission corridor for about 700 feet, then turns south to cross the Union Pacific Railroad and connect with the northwest corner of the Walnut Substation. The length of this tie-line would be approximately 1,170 feet.

Option 2 would run first south from the WCEP, across the railroad, then turn west to run just north of the northern boundary of the substation to the northwest corner of the substation, turning south to connect. The length of this tie-line would be approximately 1,220 feet.

Each of these options would involve crossing over or under a number of different 66 kV transmission lines. These crossings could also be made by placing the lines underground. Figure WSQ-11 indicates the locations of transmission towers necessary to make these crossings. The towers would not be needed if the line were placed underground.

It is our understanding currently that WCE would be responsible for the generation tie connection as far as the Walnut Substation fenceline and that SCE would construct and own the tie-line within the substation. The final choice of generation tie route will be made by SCE.

In terms of environmental effects, both options are nearly identical to the existing project design. The only significant difference is that these options would require more towers than the existing line, because of the need to cross the existing 66 kV lines. The additional towers would have a negligible effect, from a visual resources point of view, because the substation area is already congested with towers and transmission lines, and the new towers would not block any scenic or protected viewsheds.

Portions of both options are within the area surveyed for biological and cultural resources, and portions of these routes (on the western end) were not previously surveyed. Significant resources are not likely to be located in these areas.

Attachment TSE-1

SCE Interconnection Option

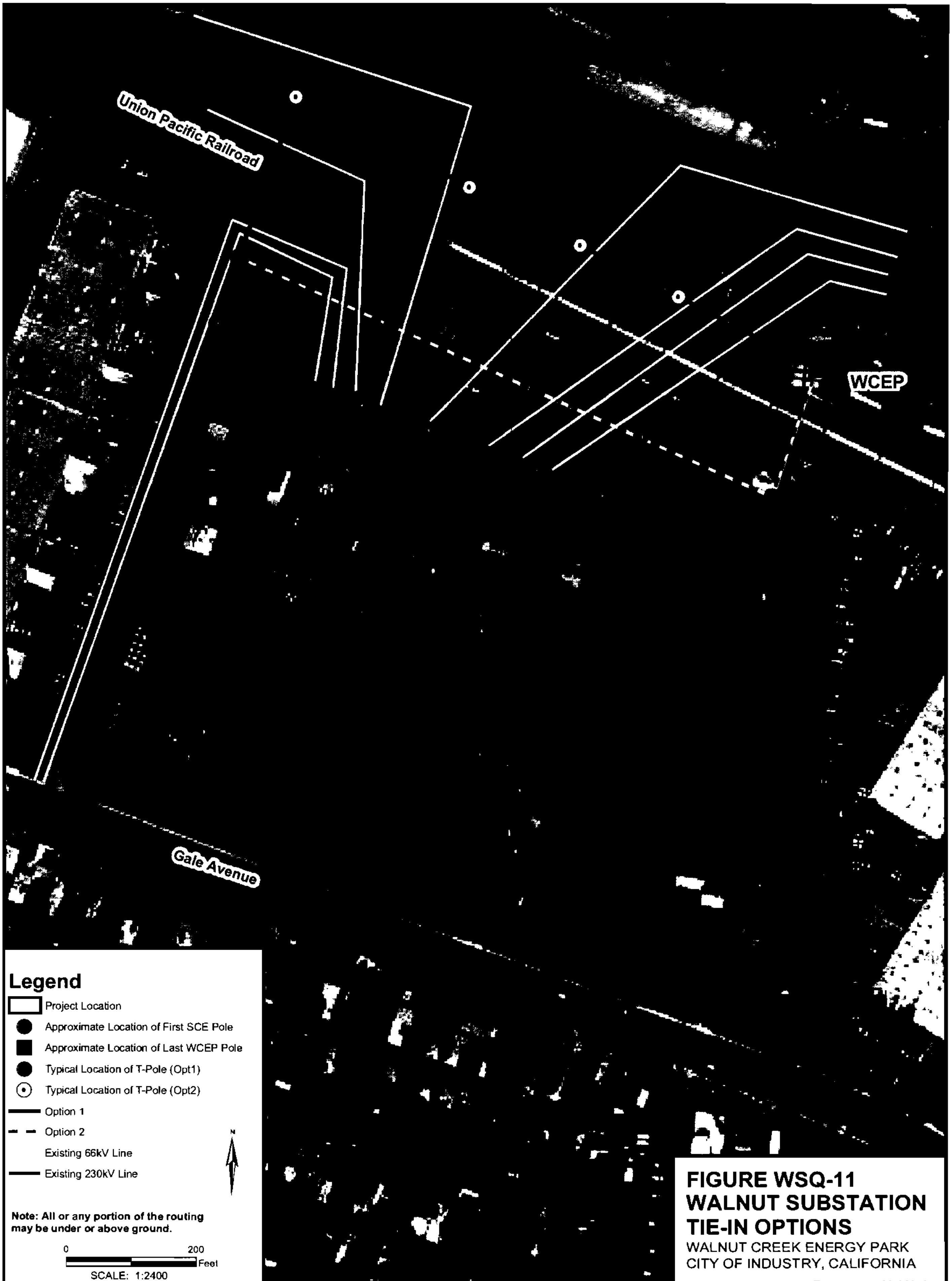

FIGURE WSQ-11
WALNUT SUBSTATION TIE-IN OPTIONS
WALNUT CREEK ENERGY PARK
CITY OF INDUSTRY, CALIFORNIA

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Visible Plume Modeling

Visible Plume Modeling

Visible Plume Modeling Results

DR77. *If the applicant performed a visible plume modeling analysis in support of the AFC Visual Resources conclusion, please provide:*

a. the modeling results;
b. any meteorological data used in the analysis;
c. a full discussion of all assumptions;
d. the name and version of the model used; and
e. all model input and output files.

Response: The visual plume modeling analysis is included as Attachment VP-1.

Attachment VP-1

Visible Plume Analysis

Cooling Tower Plume Modeling Analysis for the Edison Mission Energy Walnut Creek Energy Park

Prepared by:

Atmospheric Dynamics, Inc.
2925 Puesta del Sol Rd.
Santa Barbara, CA 93105

November 9, 2006

Cooling Tower Plume Modeling Analysis
Edison Mission Energy – Walnut Creek Energy Park

Introduction

This report was prepared to summarize an analysis of the potential for the formation of visible water vapor plumes from cooling towers at the proposed Walnut Creek Project (WCEP). This study was conducted to support the visual resources assessment, which will involve a separate analysis of the visual resources impacts of cooling tower plumes, if they are present.

Edison Mission Energy (EME) is proposing to use a five (5) cell wet mechanical-draft cooling tower to reject heat to the atmosphere. The air leaving the cooling towers is usually saturated with moisture and warmer than the ambient air, causing a wet exhaust plume to be created. The saturated exhaust plume may be or may not be visible, depending on the specific meteorological conditions. The potential for visible plume formation is also based on cooling tower operational factors that can occur in conjunction with existing meteorological conditions. Visible plume formation from the five (5) natural gas-fired turbines is not expected to occur since the turbine exhaust is hot and contains very little moisture.

Potential issues associated with cooling tower plumes include the presence of visible plumes and the occurrence of ground level fogging and/or icing episodes that involve the ground contact of visible plumes. In order to evaluate the effects on the local and regional environment, a modeling analysis was conducted to simulate the cooling tower plumes from the proposed project using five (5) years of meteorological data.

The modeling analysis presented below is conservative because it does not take into account the likely conditions in which the power plant would actually operate. Specifically, WCEP is a peaking power plant that is expected to operate primarily during peak power demand periods. Peak power demands generally occur during mid-day hours, particularly during hot summer or fall months, when the climatic conditions that result in visible plume formation are not present. However, since the computer modeling technique does not easily segregate the specific hours during which the peak power demand would occur, the results of the vapor plume modeling analysis assumed continuous operation of the power plant during all daylight/non-rain hours. The results presented below considerably over-predict the project's creation of visible plumes and do not represent the true operational profile of this project.

Modeling Techniques

The Seasonal/Annual Cooling Tower Impact Program (SACTI, Version 11-01-90) was used to assess potential for the WCEP cooling tower to form visible vapor plumes. SACTI was developed by Argonne National Laboratory[1] for the Electric Power Research Institute (EPRI) to address the following potential adverse impacts of cooling towers:

- plume visibility
- deposition of cooling tower drift
- ground-level fogging and icing
- shadowing by the plume & reduction of solar energy

SACTI contains algorithms for both natural- and mechanical-draft cooling towers arranged singly or in clusters. Plume merging and associated enhanced plume rise are treated by the routines contained in the model. While the SACTI model does not have any official regulatory endorsement, this model has been applied for a large number of projects where cooling tower impact assessments were required. The characteristics of the tower and the preparation of the meteorological data set are discussed below.

The characteristics of the proposed cooling tower are listed in Table 1. These input parameters were obtained from EME's engineering consultant based on preliminary seasonal design data for the facility.

A five (5) year meteorological data set was constructed using hourly surface observations from the Ontario International Airport meteorological station, which is located near the proposed project location, for the years 2001 through 2005. As discussed below, night-time hours were removed from the meteorological data set, as were day-time hours for which weather or other phenomena would impair visibility. Figure 1 displays a wind rose constructed from all hours of the five (5) year data. The average wind speed is 3.5 m/s and high winds greater than 6 m/s occur 11 percent for the five year data set. Wind speeds either missing or less than the threshold of the anemometer at Ontario occur for 33 percent of the time period. A lack of precision for light winds is not expected to unduly influence the outcome of the modeling for ground-level fogging, however, because such fogging effects require plume touchdown and would typically be associated with high wind conditions.

Given the length of time of the data used in the SACTI analysis, the data used are considered representative of the climatic conditions of the project area where plume formation can occur. Even with this representative data set, short-term variability in conditions can affect the prediction of cooling tower plume impacts. Therefore, the results of the analysis are considered an indicator of likely occurrence and not an absolute predictor of events.

Modeling Results

Cooling Tower

The SACTI model was applied to simulate plumes from the proposed cooling towers using the

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[1] Argonne National Laboratory, 1984. Users Manual: Cooling-Tower -Plume Prediction Code. Prepared for Electric Power Research Institute, 3412 Hillview Avenue, Palo Alto, CA 9404, EPRI CS-3403-CCM, April, 1984.

five (5) year meteorological data set and tower design characteristics described below. Default options were assumed for the input variables controlling the model's operation. The five (5) year data set was input into SACTI to produce a five (5) year average frequency distribution for condensed plume length, condensed plume height, plume shadowing, and ground-level fogging. Although the model provides information on plume shadowing and drift deposition, the focus of our analysis and the discussion that follows is on visible plume dimensions and ground based fogging.

Table 1. Cooling Tower Input Parameters

Parameter	Value
Type	linear mechanical draft 1 tower, 5 cells
Heat Dissipation Rate (MW)	190
Circulation Rate (gpm)	32,500
Total Tower Air Flow (kg/s)	1262 – 1300
Max Drift Rate (%)	0.0005
Salt Concentration (gm/gm)	2.03E-3
Orientation	One banks of 5 in-line cells aligned east to west
Height (m)	12.2
Equivalent Total Cell Diameter (m)	20.4
Exit Velocity & Temperature	variable, calculated by the model assuming saturation conditions

Conditions favoring a long condensed plume occur more frequently in the fall and winter seasons, as atmospheric conditions, such as lower air temperature and higher relative humidity, are more favorable during these periods for plume formation. Also, plume formation tends to occur more frequently during night-time hours and during adverse weather conditions. Since EME has committed to a lighting plan that minimizes illumination, cooling tower plumes would not be visible at night. Unless illuminated by on-site sources, the cooling tower plumes would not be visible. The SACTI meteorological data set was therefore modified by removing all nocturnal hours, which accounted for 50 percent of all the hours in the five (5) year data set. In addition, daytime observations with fog, precipitation, visibility less than 3 miles, or ceiling heights less than 500 feet were excluded from the meteorological data set as, under these conditions, a visible plume from the cooling tower would be obscured by these local weather phenomena. For the Ontario meteorological data set, these adverse weather conditions account for 8.8 percent of the total valid (daylight hours) observations. Table 2 summarizes these statistics.

Table 2	Total hours	Day hours	Night Hours Removed from Analysis	Limited Visibility Hours Removed from Analysis	Total Hours Modeled With SACTI
Year					
2001	3275	1522	1753	156	1366
2002	8578	4295	4283	315	3680
2003	8607	4332	4275	259	4073
2004	8630	4320	4310	501	3819
2005	8659	4361	4293	423	3938

Thus, the five (5) year meteorological data set was modified by removing both night-time hours and hours with weather obscuring phenomena. In total, these conditions accounted for 54 percent of all the hours (day, night, and obscuring weather) in the data set. The SACTI was then applied to the remaining data to assess the potential for the formation of cooling tower plumes under daytime conditions when a condensed plume would most likely also be a visible plume. Of particular interest was the analysis of visible plume formation during the months when formation of larger and more visible plumes is most likely, namely the fall and winter seasons. The occurrence of low temperatures coupled with high(er) relative humidity occurs with a greater frequency during these seasons. Plume formation is favored during these types of low temperature/high humidity conditions because, under these conditions, the ability of the atmosphere to absorb water vapor is greatly reduced, as the air mass is at or near saturation.

The results of the cooling tower analysis are summarized in Attachments 1-5 for the tower for the annual and seasonal seasons. The attachments present the frequency distributions of one of the primary model output variables, namely plume length and height, which are depicted by downwind sector and radial distance from the center of the cooling tower array.

Cooling Tower Plume Formation

The SACTI results are summarized below an a annual basis, and for each of the four seasons. The annual summary values indicate that the majority of visible plumes will be less than 300 meters (984 feet) in length. Modeling results indicate that, based on total hours, plume formation will occur 20 percent of the time during valid visible hours at locations up to 2000 meters from the site. Larger downwind visible plume lengths are possible and are predicted during the spring and winter seasons, but the downwind visible plume length will be less than 400 meters (1300 feet) for 62 percent of all the hours where a visible plume will form. SACTI also predicts that the visible plume height will average 175 meters, and have a median radius of 40 meters (131 feet) on an annual basis. For the winter season, the average plume length (when visible) will be longer, at 325 meters (1066 feet). For winter, SACTI predicts an average visible plume height of 175 meters with a median radius of 45 meters, similar to the annual averages.

The level of visibility of the modeled plumes was also assessed, based upon the opacity of the predicted visible plumes. SACTI does not directly calculate plume opacity, but it does calculate the total hours of cooling tower plume shadowing. Assuming that a plume with sufficient opacity will cause a shadow, the modeling shows that plumes with enough opacity to cause shadowing would be longer than 60 meters less than 20 percent of the time on an annual basis. Thus, a majority of the plumes that do form will not be opaque enough to cause shadowing at distances beyond 60 meters and most plumes that do form at distances greater than 60 meters could have less opacity such that ground shadowing would occur on a less frequent basis.

TABLE 3 Seasonal Plume Characteristics from SACTI

	Annual	*Winter*	*Spring*	*Summer*	*Fall*
Plume Characteristics (meters)					
Median Length	300	325	400	250	250
Median Height	175	175	200	150	150
Median Radius	40	45	45	35	40
Limit of Shadowing [a]	60	100	25	150	50

a- 80% of visible plumes

Ground level fogging

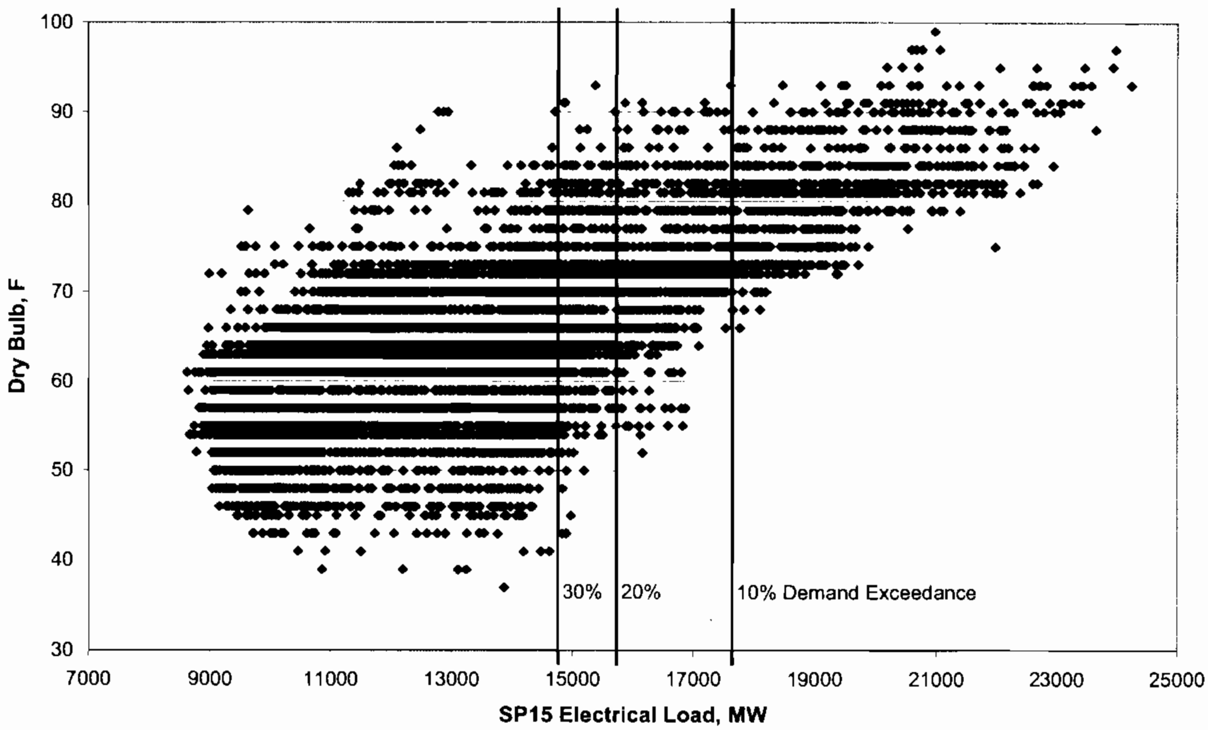
The potential for ground-level fogging on nearby areas was also assessed with SACTI. Potential fogging conditions can occur when atmospheric conditions allow the cooling tower plume to generate a cloud that contacts the ground. This can occur under periods of high humidity or high wind speed and favorable temperatures and stabilities with the fog being nucleated or generated by the cooling tower plume. Should fog be generated across a highway or other thoroughfare, it may become a potential hazard, and mitigation measures such as signs and traffic assistance may be needed. In order for fogging to affect roadway operations, the cooling tower plume must touchdown on the road surface and be condensed. This requires high winds (low plume rise), the right wind direction, low dew-point depression, and low temperatures.

SACTI was run with all hours of the five (5) year data base, including nighttime and low-visibility hours. There were no hours of predicted fogging from the cooling tower, considering all wind directions and all hours. Thus, the potential for fogging is nearly zero.

Project Operation

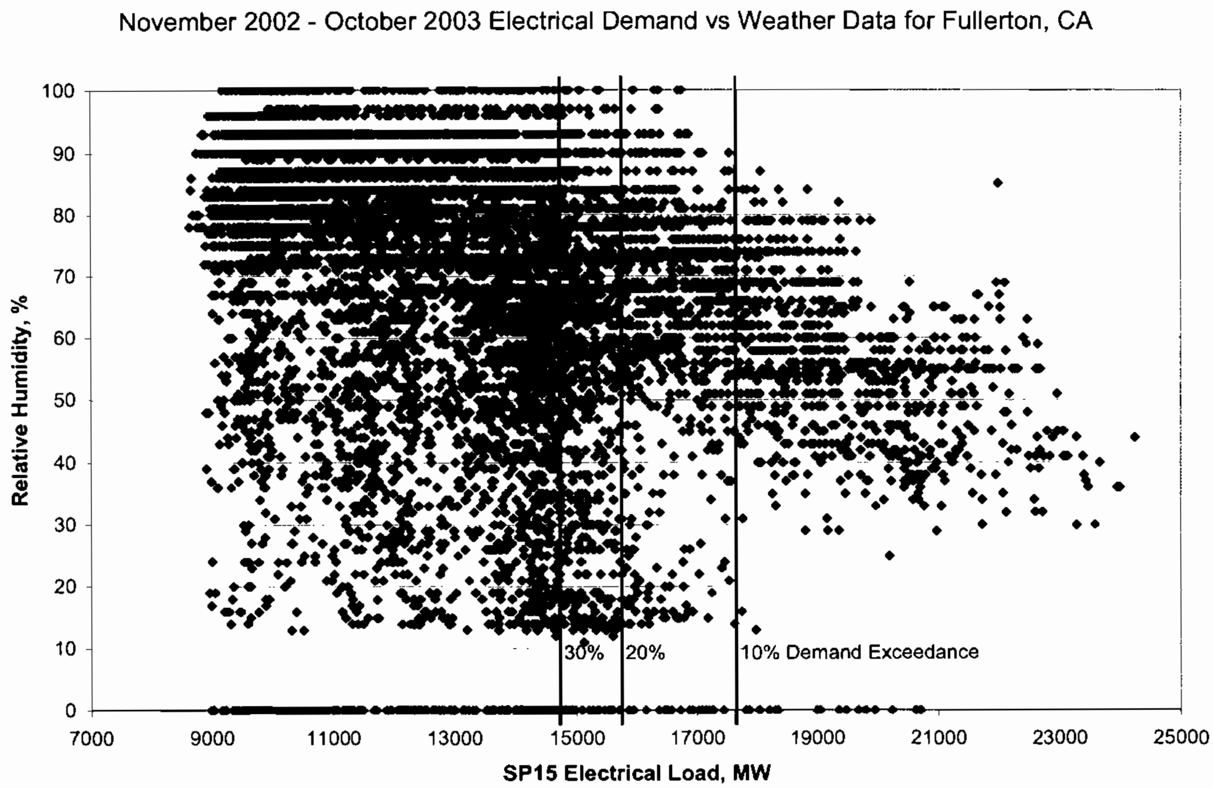
The SACTI model was modified to produce an output listing of the meteorological conditions that produced a visible plume. The SACTI cooling tower plume modeling output shows that a visible plume generally only occurs when relative humidity exceeds 85 percent. In order to evaluate the likelihood of this atmospheric condition coinciding with plant operation, hourly electric load data from the California ISO for the SP15 zone (effectively SCE's and SDG&E's service area) for the period of November 2002 through October 2003 was obtained, and hourly weather data for Fullerton, CA for the same period was obtained. As one would expect, regional electrical loads are highest when dry bulb temperatures are highest due to air-conditioner use on hot summer days, as illustrated in the chart below.

November 2002 - October 2003 Electrical Demand vs Weather Data for Fullerton, CA

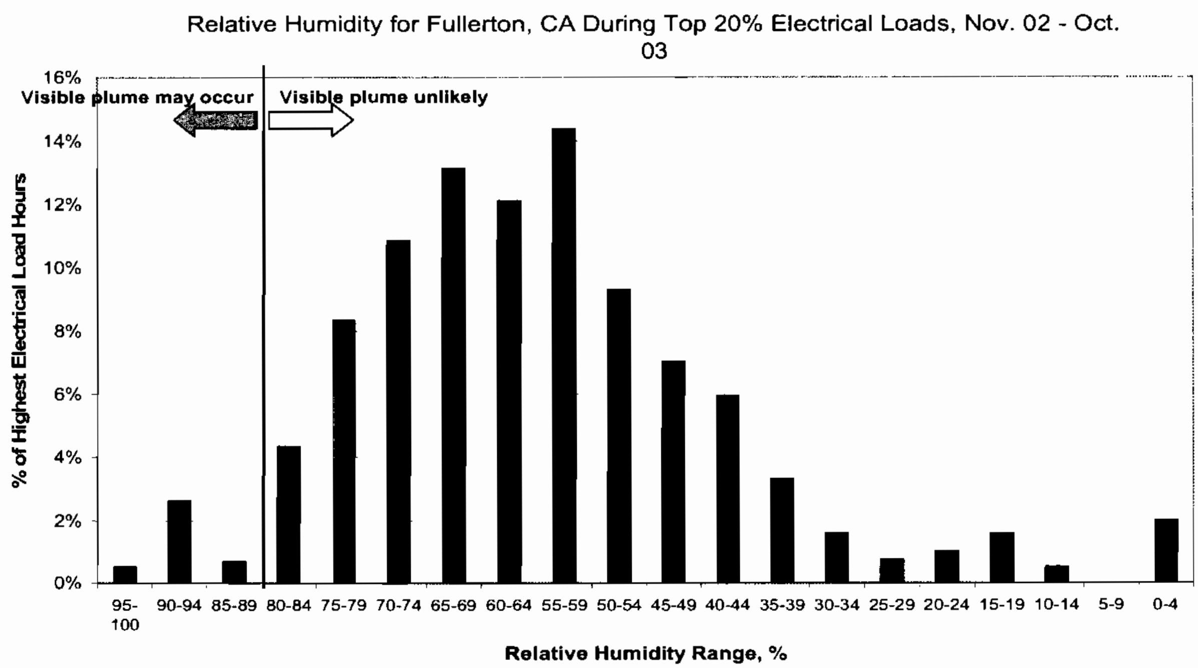


The vertical red lines indicate the SP15 electrical loads that are exceeded 10 percent, 20 percent and 30 percent of the time (i.e., 10 percent, 20 percent and 30 percent of the data points are to the right of the respective lines). Although a peaking powerplant may occasionally be called on to run to alleviate a power grid emergency or unexpected outage of a baseload powerplant, almost all operation of peaking powerplants will be during the highest electrical loads.

On hot summer days, as dry bulb temperatures (and corresponding electrical loads) increase to afternoon peaks, relative humidity naturally decreases due to the increased moisture-holding ability of the warmer air. It would be expected, then, that high electrical loads would correlate negatively with high relative humidity. The chart below is a plot of the same electrical loads as those in the preceding chart, but versus the relative humidity prevailing at the time of those loads, and illustrates the expected negative correlation.



The chart below is a frequency distribution of the relative humidity during the hours corresponding to the highest 20 percent of electrical loads. Relative humidity only exceeds the 85 percent level at which visible plume may occur during one percent of the hours in which the highest 20 percent of electrical loads occurred during the one year period for which data was obtained. Expressed as a percent of the entire year, one percent of 20 percent of the year is an incidence of less than 0.2 percent.

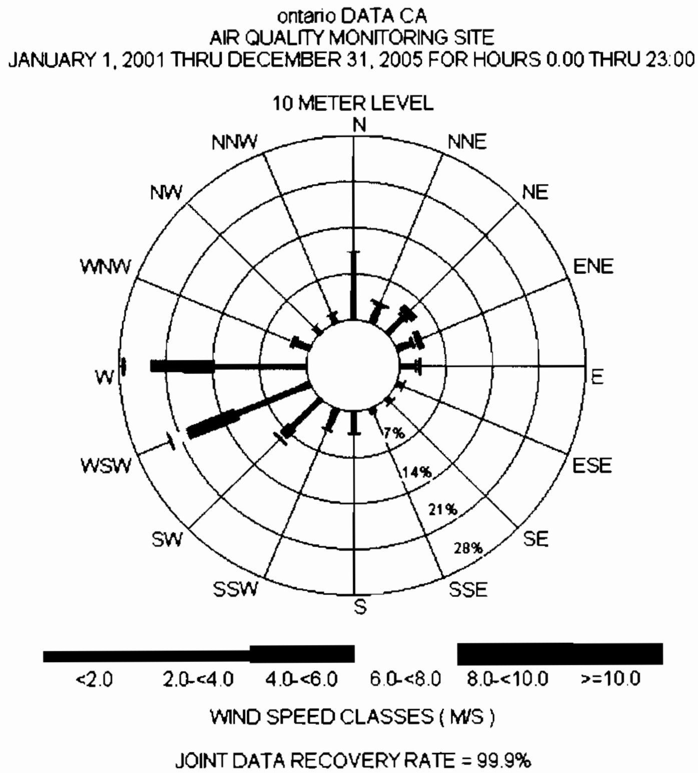


Summary

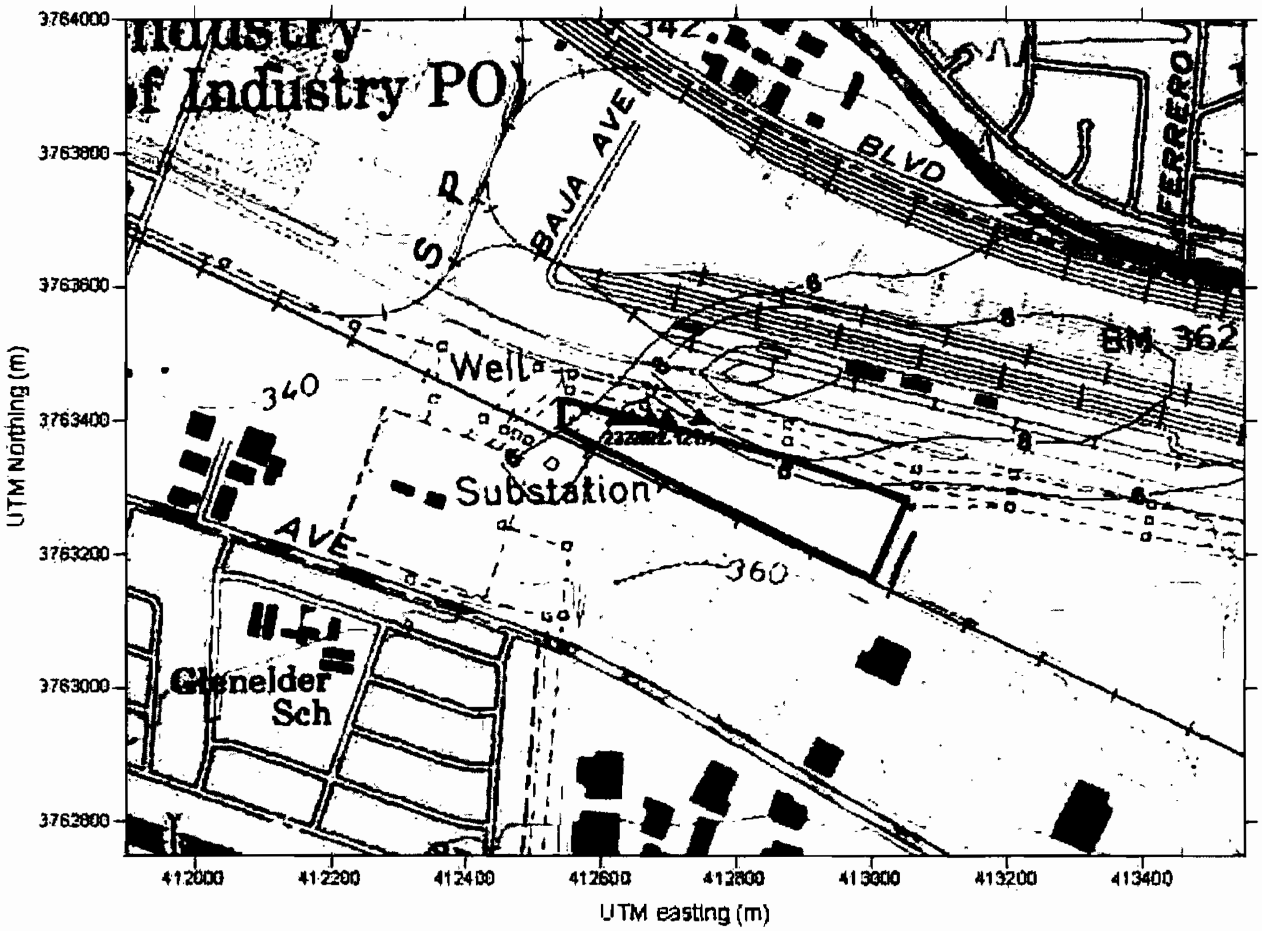
A cooling tower modeling analysis was conducted using SACTI and five (5) years of Ontario Airport meteorological data. Since there is no realistic method to run the model during the hours of typical peaker plant operation, all daylight/non-rain hours were included in the analysis, which thereby assumes that the project would be in operation at all times. With this highly unlikely profile, modeling results indicate that plume formation could result 20 percent of the time during valid, visible hours—justly barely meeting the CEC's previously established significance criteria for base-loaded power projects. However, this result would require that the WCEP peaker operate during 100% of the daylight hours—historically unprecedented for peaking power project. As described in the AFC, the WCEP is expected to have an annual capacity factor of 30 percent. Even if the project operated during 50% of the daylight hours, this would reduce the predicted plume formation to 10 percent of the time during valid, visible hours, well below the CEC's 20 percent criteria for potential significance. Moreover, the previous section, Project Operation, provides a detailed analysis based on real operational experience and predicted the vastly reduced incidence of 0.8 percent of the year for operation during the highest 20% of electrical loads when the relative humidity exceed 85%.

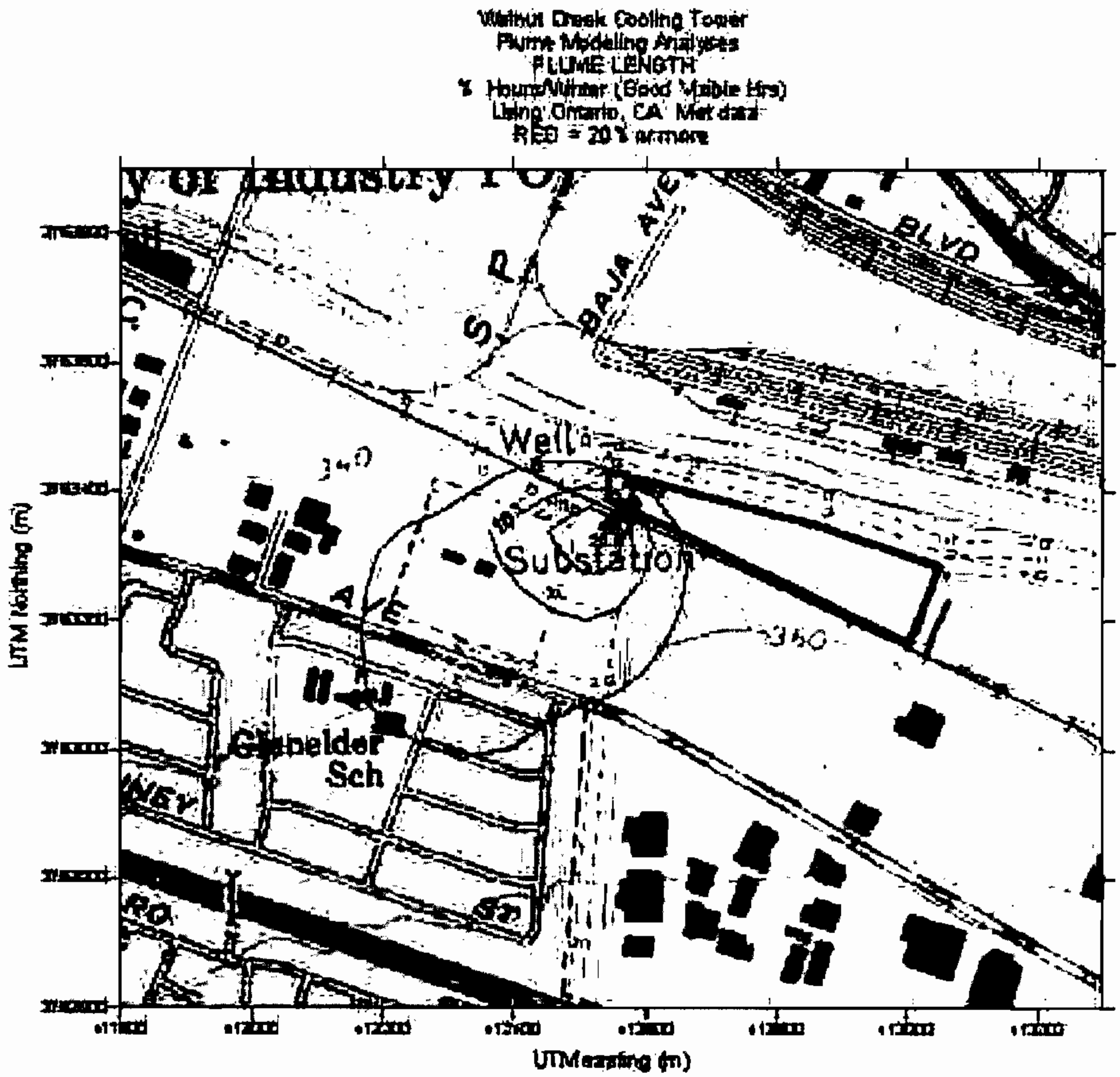
Model simulations also indicate that when plumes are visible, they are more likely not to have enough opacity to cause a ground-based shadow. Thus, the plume may not have enough opacity to be considered a significant visual plume. No plume fogging is predicted to occur in the general vicinity of the project site.

Figure 1
Annual Wind Rose (2001-2005)
Ontario, CA Airport

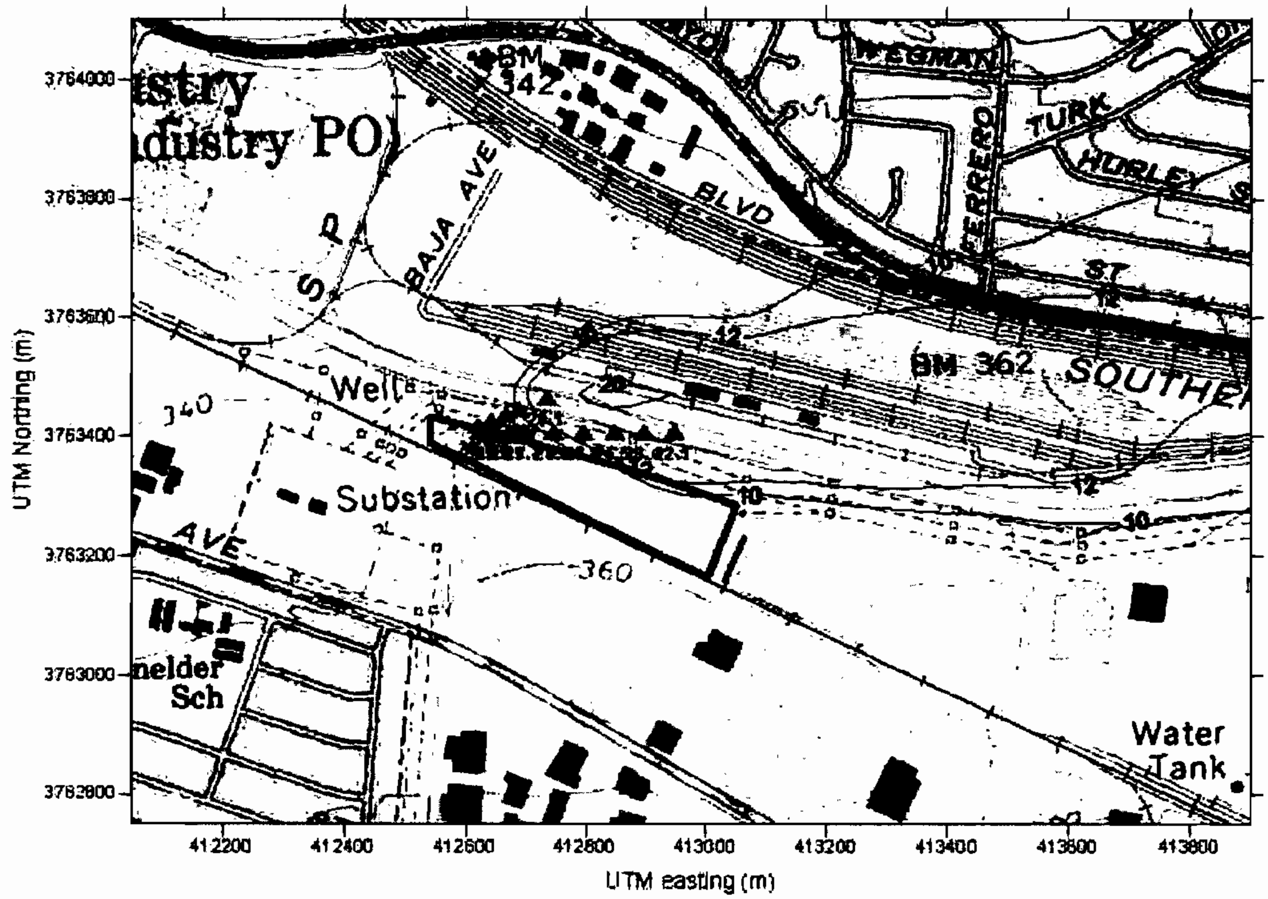


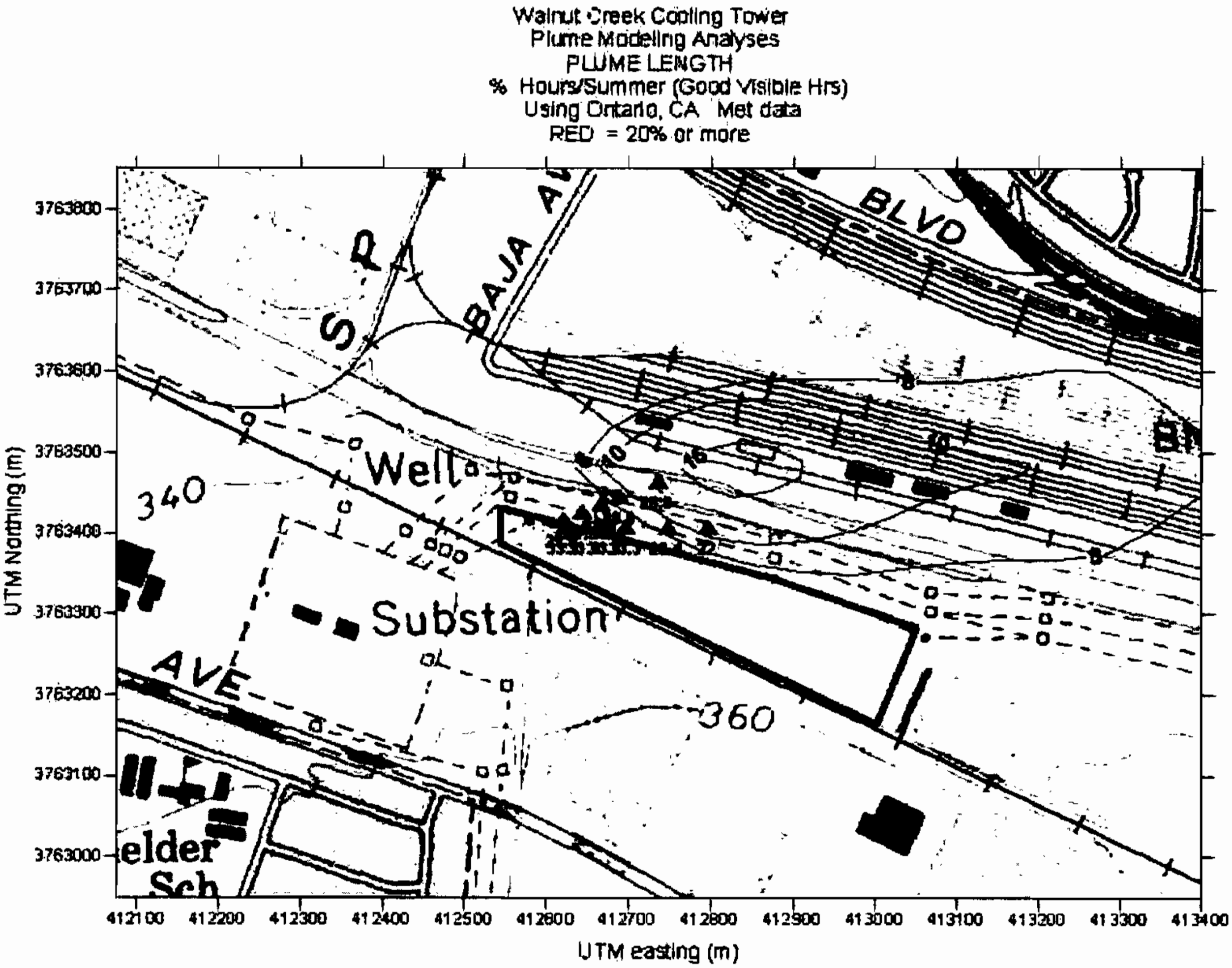
Walnut Creek Cooling Tower
Plume Modeling Analyses
PLUME LENGTH
% Hours/Annual (Good Visible Hrs)
Using Ontario, CA Met data
RED = 20% or more



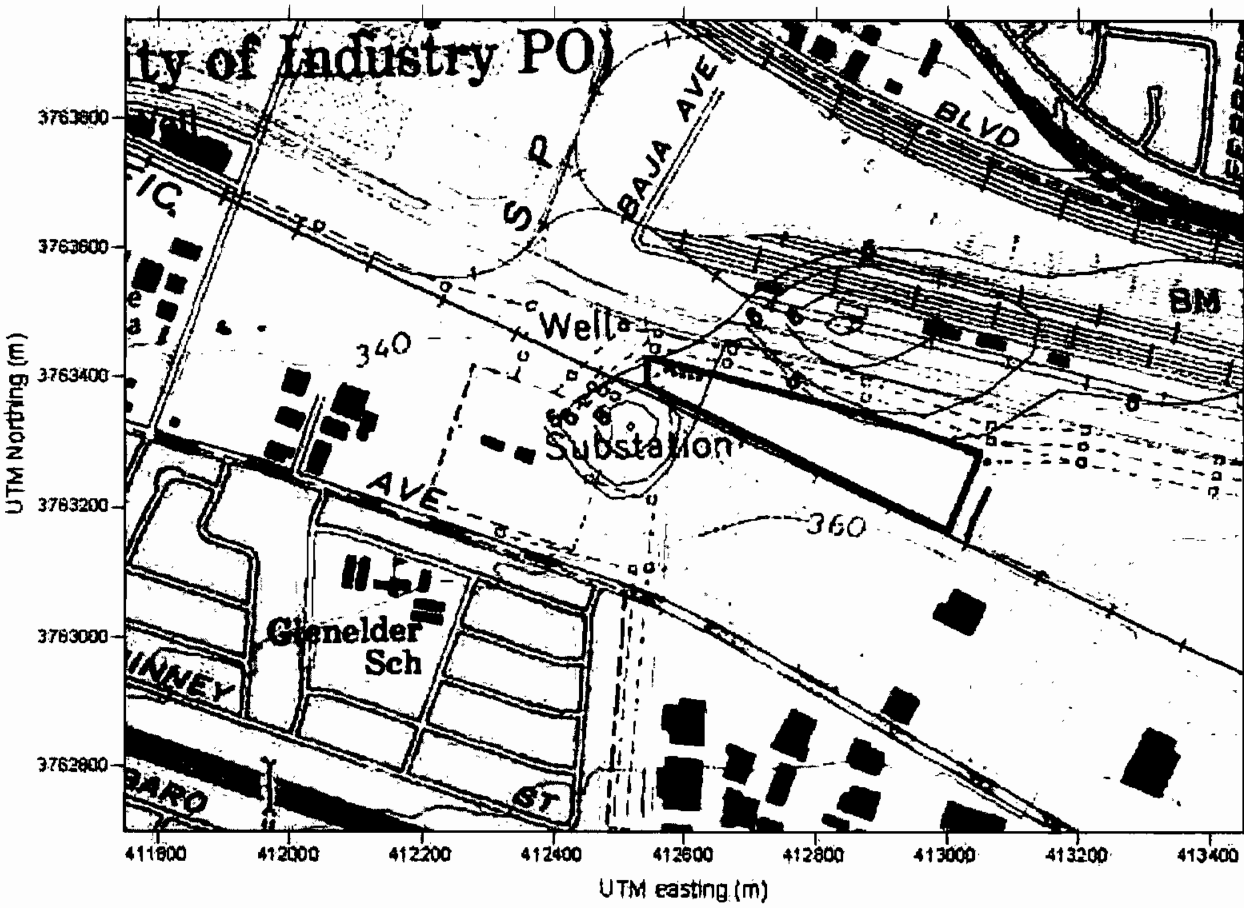

Plume Modeling Analyses
PLUME LENGTH
Using Ontario, CA Met data
BLVD
BAJA AVE
Well
Substation
AVE
Sch
UTM Northing (m)
UTM easting (m)

Walnut Creek Cooling Tower
Plume Modeling Analyses
PLUME LENGTH
% Hours/Spring (Good Visible Hrs)
Using Ontario, CA Met data
RED = 20% or more




Walnut Creek Cooling Tower
Plume Modeling Analyses
PLUME LENGTH
% Hours/Summer (Good Visible Hrs)
Using Ontario, CA Met data
RED = 20% or more
UTM Northing (m)
3763800
3763700
3763600
3763500
3763400
3763300
3763200
3763100
3763000
412100
412200
412300
412400
412500
412600
412700
412800
412900
413000
413100
413200
413300
413400
UTM easting (m)
BLVD
BAJA
Well
340
Substation
AVE
360
elder
Sch

Walnut Creek Cooling Tower
Plume Modeling Analyses
PLUME LENGTH
% Hours/Fall (Good Visible Hrs)
Using Ontario, CA Met data
RED = 20% or more



Visual Resources

Landscape and Irrigation Plan

DR91. Please provide a landscape and irrigation plan that contains all the components required by the City.

Response: The landscape and irrigation plans are included as Attachment VIS-1.

Attachment VIS-1

Landscape and Irrigation Plans

LANDSCAPE CONSTRUCTION

1. SCOPE

The work of this section includes all labor, materials and equipment required to complete work indicated on the drawings. The work shall be performed in accordance with the best standards of practice relating to the various trades and under the continuous supervision of a competent foreman, capable of interpreting the drawings and these specifications. The work included in this section is as follows: Finish Grading for Planting; Soil Preparation; Fertilization; Planting, including lawn; Maintenance; Inspection and Certifications; Guarantees; Clean-up; Staking, Guying and Espaliering; Miscellaneous Allowances.

2. APPROVALS

A. All sprinkler work shall be inspected and approved prior to the start of any planting.

B. Prior to excavation for planting or placing of stakes, locate all utilities, electric cables, conduits, sprinkler lines, heads, valves and valve control wires, and all utility lines so that proper precautions may be taken not to damage such improvements. In the event of a conflict between such lines and plant locations, promptly notify Landscape Architect (L.A.) who shall arrange for relocation for one or the other. Failure to follow this procedure places upon Contractor the responsibility for, at his own expense, making any and all repairs for damages resulting from work hereunder.

3. QUANTITIES AND TYPES

Plant materials shall be furnished in the quantities and/or spacing as shown or noted for each location, and shall be of the species, kinds, sizes, etc., as symbolized and/or described in the "Plant Material Legend", as indicated on the drawings. The L.A. has prepared this list only as a convenience to Contractor and assumes no responsibility for its accuracy. The Landscape Contractor is to verify all sizes and quantities.

4. VERIFICATION OF DIMENSIONS AND QUANTITIES

Dimensions are approximate. Before proceeding with any work, Contractor shall verify all dimensions and quantities and shall immediately inform L.A. and Owner of any discrepancies between the drawings and/or specifications and actual conditions. No work shall be done in any area where there is such a discrepancy until approval for same has been given by L.A. and Owner.

5. INSPECTION

A. All inspections shall be made by L.A. and Owner. Contractor shall request inspection at least two (2) days in advance of the time inspection is required.

B. Inspection will be required for the following parts of the work:

(1) During finish grading and soil preparation
(2) Plants, after delivery to site and prior to planting.
(3) When vines, shrubs and trees are spotted for planting, but planting holes are not excavated.
(4) Specimen trees at source, before delivery.
(5) Lawn areas prior to planting.
(6) Planting areas prior to planting.
(7) All landscape construction items, prior to the start of the calendar day maintenance period ("Final inspection").
(8) At completion of calendar day maintenance period ("Final Maintenance Inspection").
(9) Inspection reports shall be made for each inspection by the L.A. and one copy shall be submitted to Owner and Contractor.

6. CERTIFICATION

Prior to job acceptance written certifications shall be submitted to the L.A. for the following:

A. Quantity and Quality of Commercial Fertilizer and Organic Fertilizer.

B. Quantity and Quality of all Soil Ammendments called for by Plans and Specifications.

7. MATERIALS

Plant materials indicated on the drawings and herein specified shall conform to the following:

A. Nomenclature – Plant names indicated on the drawings conform to "Standard Plant Names" established by the American Joint Committee on Horticulture. Except for names covered therein, the established custom of the nursery is followed.

B. Condition– Plants shall be symmetrical, typical for variety and species, sound, healthy, vigorous, free from plant disease, insect pests, or their eggs, and shall have healthy, normal root systems, well filling their containers, but not to the point of being root bound. Plants shall not be pruned prior to delivery, except as authorized by L.A. or his representative. In no case shall trees be topped before delivery.

C. Dimensions– The height and spread of all plant material shall be measured with branches in their normal position, and shall be as indicated on the drawings. The caliper of all trees shall be measured 4'-0" above the surface of the ground. Where caliper or other dimensions of any plant materials are omitted from the "Plant Legend", it shall be understood that these plant materials shall be normal stock for type listed.

D. Inspection – All plant materials must have been previously inspected at the nursery by the County Horticultural Department, and shall be subject to the inspection and approval of the L.A. before planting

E. Plant List– Is indicated on drawings.

F. Sizes of Plants – Shall be as stated on the Plan. Container stock (1– gallon, 5– gallon and 15–gallon), shall have been grown in containers for at least one (1) year, but not over two years.

G. Substitutions– Substitutions for the indicated plant materials will be permitted provided the substitute materials are approved in advance by the L.A. and the substitutions are made at no additional cost to Owner. Except for authorized variations, all substitute plant materials shall conform to the requirements of these specifications. If the accepted substitute materials are of a less value than those indicated or specified, the Contract price will be adjusted in accordance with the provisions of the Contract.

H. Plants Not Approved – Plants not approved are to be removed from site immediately and replaced with suitable plants. The L.A. and/or Owner reserves the right to reject entire lots of plants represented by defective samples.

8. FERTILIZERS AND SOIL CONDITIONERS

Samples of all soil amendments, sod and paints shall be submitted for inspection and stored on the site until furnishing of materials is completed. Delivery may begin upon approval of samples or as directed by L.A. and the Owner

A. Organic fertilizer shall be processed sewage sludge with a minimum content of 1% Nitrogen and 2% Phosphoric Acid similar to "Nitrohumus". Method of processing shall not destroy normal bacterial content. Note sewage sludge should not have a normal bacterial count (Note this is part of Grow Power's Specifications)

B. Nitrogen stabilized sawdust shall be bulk, with the following nitrogen content based on dry weight:

0.5% for Redwood Sawdust
0.7% for Fir Sawdust
1.0% for Bark or Pine Bark or Mixture

Salinity – the saturation extract conductivity shall not exceed 3.5 millimhos /cm at 25

C. Commercial fertilizer shall be delivered in sacks with manufacturer's label showing weight and analysis attached to each sack.

9 STAKING MATERIALS

A. Tree-staking shall be as per plan.

B. Ties for holding trees shall be as per plan. Note no wire ties to be used on street trees

10. GRADING AND SOIL PREPARATION

A. Contractor is to finish grade to within 1/10th of a foot or 1" below paving where paving exists.

B. Moisture Content – The soils shall not be worked when the moisture content is so great that excessive compaction will occur; and not when it is so dry that dust will form in the air or that clods will not break readily. Water shall be applied if necessary to provide ideal moisture content for tilling and for planting.

C. Preliminary Grading – Preliminary Grading shall be done in such a manner as to anticipate the finish grading. Excess soils shall be removed or redistributed before application of fertilizer and mulch. Where soil is to be replaced by plants and mulch, allowance shall be made so that when finish grading has begun, there shall be no deficiency in the specified depth of mulched planting beds.

D. Weeding – Before and during preliminary and finish grading, all weeds and grasses shall be dug out by the roots and disposed of off site (except those weeds and grasses not of the perennial type, less than 2-1/2" high and not bearing seeds, which may be turned under). Oats more than 2-1/2" high and not bearing seeds may be turned under. Perennial weeds and grasses to be removed include, but are not limited to, the following: Nut Grass, Puncture Vine, Dallas Grass, Mustard Plant, St. Augustine, Alfalfa, Johnson Grass, Wire Weed, Morning Glory.

E. All Planting areas shall be scarified to a depth of 12 inches below grade with the spacing of the ripper teeth no greater than 12 inches on center prior to placing conditioners and fertilizers. All rock and debris more than 2" in diameter shall be removed from the site.

F. Trenches– If irrigation system is installed after grading and fertilizing is completed, the upper portion of the backfill shall be retilled and fertilized to the depth specified for the area required, to conform to the specifications.

11. SOIL CONDITIONERS (To be revised per soils report) NOTE: CONTRACTOR TO PROVIDE REPORT PRIOR TO PLANTING

A. Turf, Ground Cover & Shrub Area: The areas to be landscaped should be cross-ripped or otherwise tilled to a depth of 9-12 inches. For turf and ground cover planting, the following amendment should be uniform by broadcast and thoroughly incorporated to a depth of 6 inches by means of rototiller or equal: AMT PER 1,000 SQUARE FEET 6 cu. yds. nitrogen stabilized organic amendment derived from redwood sawdust, fir sawdust or cedar sawdust 12 lbs. 16-20-0 ammonium phosphate (to be incorporated to the 6" depth following leaching). Following amending and prior to planting, including trees and shrubs, leaching irrigations should be made in a manner that will pass the minimum of 12 inches of water through the surface soil zone. When the leaching program has been completed, additional samples should be collected for soil fertility analyses only

B. Slopes.

300 lbs./acre 16-20-0 ammonium phosphate
300 lbs./acre urea formaldehyde
Mulch Silva Fiber Plus, 2,000 lb./acre
Binding agent (per Contractor's accepted procedure)

While the urea formaldehyde is a slow-release nitrogen fertilizer, it will probably be necessary to make dry supplemental fertilizer applications, particularly during the establishment period. If this is the case, the 16-20-0 should be uniformly broadcast over dry slope areas at the rate of 6 pounds per 1,000 square feet and followed with a normal irrigation of each fertilizing period,

C. Planting Pits – Tree & Shrub, All areas inlcuding slopes: Planting pits shall be excavated twice the diameter and twice the depth of the rootball. Backfill shall then be added as specified.

(1) A chemically suitable sandy textured import soil meeting the following specifications should be used for backfill to the depth of the rootball. For trees, shrubs and vines (other than azaleas, ferns and palms).

Silt plus clay content of the import soil shall not exceed 30 % by weight with a minimum 95% passing the 2.0 millimeter sieve. The sodium absorption ratio (SAR) shall not exceed 6 and the electrical conductivity (ECe) shall not exceed 3.0 millimhos per centimeter at 25 degrees centigrade. The boron content shall be no greater than 1 ppm as measured on the saturation extract. In order to insure conformance, samples of the import soil should be submitted to the laboratory for analysis prior to and following backfilling. The backfill mix for use around the rootball should be prepared as follows:

6 parts by volume sandy-textured import soil
4 parts by volume nitrogen stabilized wood residual
1 lb. 16-20-0 per cu. yd. of mix
2 lbs. iron sulfate per cu. yd. of mix

The above materials should be thoroughly blended prior to use for backfill purposes. Also, the iron sulfate should not contact cement surfaces since severe staining could occur. Apply planting tablets as per manufacturer's recommendations. If the 16-20 is incorporated preplant as recommended, the post plant maintenance can consist primarily of a nitrogen-only fertilizer program. Beginning approximately 30 days after planting, ammonium sulfate should be applied at the rate of 5 lbs./1,000 s.f. or ammonium nitrate at the rate at 3 lbs./1,000 s.f. on a monthly basis. However, in order to ensure continuing adequate soil phosphorus and potassium nutrition, Best Fertilizer Company's 16-6-8 or equal should be substituted for the nitrogen materials twice a year at the rate of 8 pounds per 1,000 square feet. Also, when plants have become well established, the frequency of fertilizer applications can be decreased.

D. The prepared soil shall be uniformly blended in an area adjacent to the planting work and shall be accurately proportioned using a suitable measuring container. Unused excavated soil shall be removed from site. Protect the mix from water until it has been placed in backfill around plants.

12. FINISH GRADING

When preliminary grading, including weeding and fertilizing, has been completed and the soil has dried sufficiently to be readily worked, all lawn and planting areas shall be graded to the elevations indicated on the drawings. Grades not otherwise indicated shall be uniform levels or slopes between points where elevations are given. Minor adjustments of finish grades shall be made at the direction of the L.A., if required.

Finish grade shall be a smooth, even and uniform plane without abrupt change of surface. Soil areas adjacent to buildings to allow a natural run-off of water, and surface drainage shall be directed as indicated on the drawings by remodeling surfaces to facilitate the natural "run-off" of water. Low spots and pockets shall be one inch below grade of adjacent pavement of any kind. Grading shall be done when soil is of optimum moisture content for working.

13. METHOD OF PLANTING AND WORK PROCEDURE

A. No planting shall be done until all operations in conjunction with the installation of the irrigation system have been completed, final grades have been established, the planting areas have been properly graded and prepared as specified, and the work approved by the L.A.

B. The relative position of all trees and plants is subject to approval by L.A. and Owner, and they shall, if necessary, be relocated as directed as part of the Contract.

C. All plants shall be removed from their container and set so that, when settled, they bear the same relation to the required grade that they bore to the natural grade before being transplanted. Each plant shall be planted in the center of the pit and backfilled unless otherwise specified, with the prepared soil. No soil in muddy condition shall be used for backfilling. No filling will be permitted around trunks or stems. All broken or frayed roots shall be properly cut off.

D. L.A. and/or Owner shall supervise the placing and planting of all plants.

E. In the event that underground construction work or obstructions are encountered in the planting operation, alternate locations for plant material will be selected by L.A. and Owner; operation will be done at no extra cost to Owner.

14. PLANTING OF TREES

A. Position plants in plant locations indicated on drawings and secure approval before excavating pits, making necessary adjustments as indicated

B. All pits for trees shall be dug square with bottoms level, the length of sides equal to 2 1/2 times the diameter of the tree ball. Compacted soils at sides and bottoms shall be loosened by scarifying or other approved method. Pits shall be backfilled with "prepared soil" to the required grade, and the balance of the pit filled with "prepared soil" thoroughly settled by water application.

C. Set plants in center of pit, in a vertical position, so that crown of ball will be level with finish grade after allowing for watering and settling and shall bear the same relationship to the finish grade that it did to the soil surface in the container.

D. Prepare depressed water basin as wide as plant balls at each plant. Water thoroughly, backfilling any voids with additional prepared planting mix.

15. PLANTING VINES, SHRUBS AND GROUNDCOVERS

A. Vines and shrubs shall be planted in pits at least 18" greater in diameter than their ball of earth and at least 12" below the bottom of the ball. Compacted soil at bottom of pit shall be loosened and the pit filled with "prepared soil" to the bottom of the ball. When the plant has been properly set, the pit shall be filled to the required grade with "prepared soil" and thoroughly settled by taping and watering. All vines shall be removed from stakes, untied, and securely fastened in an approved manner to the wall, fence or other surface next to which they are planted.

B. Prepare a depressed water basin as wide as plant balls of each plant. Water thoroughly, backfilling any voids with additional prepared planting mix.

C. Ground Covers

(1) Pits for flat sized plants to be at least 6"x6"x6". Ground cover areas shall be moistened prior to planting. No flat plants shall be planted in dry soil.

(2) Set plants in center of pits so that crown ofplant will be level with finished grade after settling of soil, then backfill and water.

(3) Flatted plants shall be well-rooted with runners at least 4" but not more than 6" in length.

16. TREES AND VINES OCCURING IN LAWN

Trees and vines occurring in lawn shall be planted before final preparation of those areas.

17 CARE OF PLANTS BEFORE AND DURING PLANTING

Plants shall not be allowed to dry out before or while being planted. Keep exposed roots moist by means of wet sawdust, peat moss or burlap at all times during planting operations. Do not expose roots to the air except while being placed in the ground. Wilted plants, whether in place or not, will not be accepted and shall be replaced at the Contractor's expense.

18. WATERING BASINS

A. Construct a firmly compacted mound of soil around each tree and plant to form a watering basin at the edge of and following the shape of the planting pit area. Mounds for trees and for vines from 5-gallon or larger containers, shall be at least 4" high. Mounds for all other trees, vines or plants not otherwise specified shall be at least 2" high. Excavated earth, if capable of retaining water, may be used. Any settlement within the basins retaining water shall be refilled to the required grade with prepared soil, and additional nitrogen stabilized sawdust worked into the surface as required to restore the mulched condition.

B. At the end of the day maintenance period all watering basins in lawn areas shall be leveled to finish grade and the area shall be sodded with the specific sod.

19. SODDED LAWN

A. Cultivate all lawn areas to a depth of 8". Rocks and debris larger than 1" in diameter which are brought to the surface by cultivation shall be removed from the site. If cultivation does not break lumps, a spike tooth harrow shall be pulled behind a mechanical seeder or tractor.

B. Areas to be planted in lawn shall be finished smooth to present a neat and uniform grade prior to installation of sod. The lawn bed shall be inspected by the L.A. to determine suitability for planting prior to sodding. Contractor shall obtain such approval before sodding

C All sodded areas shall be thoroughly watered. Lawns are to be kept continuously moist by watering as often as required.

D. Any lawn areas that do not show a prompt catch of grass shall be re-sodded at ten day intervals until an acceptable stand of grass is assured.

20. WATERING

A. Immediately after planting, water shall be applied to each tree by means of a hose. The water shall be applied in a moderate stream in the planting holes until the material about the roots is completely saturated from the bottom of the hole to the top of the ground.

B. Plants which cannot be watered efficiently with the existing water system shall be watered by means of a hose.

C. Apply water in sufficient quantities, and as often as seasonal conditions require, to keep the ground wet at all times, well below the root system of grade and planting. Care is to be taken in watering slopes so as not to cause erosion damage.

D. Following the planting of ground cover plants furnished in flats, each plant shall be immediately and thoroughly watered by means of a hose with a slow running stream of water

21. TREE STAKING

A. Stake all non-guyed trees at time of planting by placing stake in the prepared hole and driving it 18" into solid ground. Plant the tree as close to the stake as possible without crowding the roots. Fasten the tree to the upper end of stake in at least three places using "cinch ties". (See Drawings)

B. Trees 36" box size or larger, shall be immediately guyed after planting with not less than three guys per tree, or as directed by the L.A.

(1) Protect bark of tree by covering wire with green 1/2" diameter rubber hose
(2) Guys to be anchored by 2"x2"x2' redwood driven flush with finish grade or 1"x2' galvanized pipe in rocky areas.
(3) Guy wires shall be #12 ga. galvanized wired. Mark guys with 3'-0" long 1/2" dia. white PVC pipe.
(4) Guy lines are to be tightened to firm tension.

22 ESPALIERING OF VINES

All trellises and stakes are to be removed from plants and the plants shall be fastened and trained against fences or walls as directed by the L.A.

23. CERTIFICATES

In addition to any other certificates specified, Contractor shall furnish a certificate with each delivery of bulk material, stating the source, quantity and type of material and that the material conforms to the specification requirements. For bulk delivered organic fertilizer, the certificate shall also state the volume, net weight, percent of Nitrogen and percent of Phosphoric acid. For each fertilizer and soil conditioner, in containers, a similar certificate or invoice shall be furnished stating total quantities by weight and volume for each material. These certificates shall be submitted to the L.A. and Owner prior to the strart of the maintenance period.

24. PROTECTION

Contractor shall carefully and continuously protect all areas included in the Contract, including plant materials, fences, supports, etc., until final acceptance of the work by the L.A. and Owner

25. MAINTENANCE

A. Contractor shall maintain a sufficient number of men and adequate equipment to perform the work here in specified. Plant maintenance work shall consist of applying water, weeding, caring for plants, including groundcovers, shrubs and trees, edging, aerating and mowing of lawns, fertilizing and control of pests and diseases.

B. Damage to any planted area shall be repaired immediately. Depressions caused by vehicles or foot traffic shall be filled with topsoil, leveled and replanted. Exterminate gophers and moles, and repair damage.

C. The entire project shall be maintained for a period of 90 days commencing from the time all items of work have been completed to the satisfaction of L.A. and Owner.

D. The project shall be cared for in a neat, clean condition at all times to the satisfaction of Owner and L.A.

26. LAWN MAINTENANCE

A. Watering – Water every day once per day for two weeks and thereafter gradually reduce frequency of watering to three times per week. Contractor shall continue to maintain the lawn until final acceptance by the L.A. and Owner

B. Fertilizing – Apply 16-6-8 at the rate of 5 pounds per 1,000 square feet three weeks after installation and water immediately thereafter.

C Diseases and Pest Control – Two weeks after installation of lawn, apply a granular mercurial fungicide at 1.8% mercurous chloride as per manufacturer's recommendation.

D. Mowing – The lawn shall be mowed at a height of 1-1/2" with a rotary mower, equipped with rollers, before it reaches 2" in height. Collect grass clipping during mowing operations and remove from the site.

27. GROUNDCOVER AND SHRUB AREA MAINTENANCE

A. Watering – New plantings shall be watered once per day for two (2) weeks after installation. Reduce watering to every other day for the next two (2) weeks. Water thereafter three (3) times per week until final acceptance.

B. Fertilization – Fertilize three (3) weeks after planting with 5 pounds 16-6-8 per 1,000 square feet; fertilize thereafter every thirty (30) days.

C. Disease and Pest Control – For control of slugs and snails, apply pelletized tricalcium arsenate 5% by weight and metaldehyde 5% by weight as per manufacturer's recommendations two (2) weeks after installation.

D. Pruning – All shrubs and trees shall be pinch pruned as necessary to encourage new growth and to eliminate rank sucker growth. Old flowers, and dead foliage and limbs shall be removed. No major pruning shall be done without the approval of the L.A.

E. Weeding – All planting areas including lawn, groundcover and shrub areas shall be kept weed-free at all times. Weed shall be dug out by the roots and disposed of off site. Upon completion of the day maintenance period, the Contractor shall fertilize per #26 – Lawn Maintenance and #27 Groundcovers and Shrub Area maintenance of these specifications.

28. GUARANTEE AND REPLACEMENTS

A. All shrubs and groundcover shall be guaranteed by Contractor as to growth and health for a period of ninety (90) days after completion of the specified maintenance period, and/or final acceptance by the L.A. All trees up to 20" box size shall be guaranteed by Contractor to live and grow in an acceptable upright position for a period of six (6) months after completion of the specified maintenance period, and/or final acceptance upright position for a period of one (1) year after completion of the specified maintenance period, and/or final acceptance by the L.A.

B. All plants that show signs of failing growth at any time during the life of the Contract, including the maintenance period, or those plants injured or damaged as to render them unsuitable for the purpose intended, shall be guaranteed as specified for the original guaranteed materials.

29 CLEAN-UP

Upon completion of the work in this section, Contractor shall remove all rubbish, trash and debris resulting from the operations; remove disused equipment and implements of service; leave entire area involved in a neat and acceptable condition such as to meet the approval of the Landscape Architect (L.A.)

HYDROSEED

1. GENERAL

A. Equipment must have minimum capacity of 1,500 gallons and a positive displacement pump with the ability to agitate and properly mix the specified materials. Pump must be capable of creating 100 pounds psi pressure with sufficient volume to distribute above slurry evenly over 12,000 sq. ft. within a 15-minute period.

B. Vendor furnished label. Vendor agrees to furnish not less than two (2) employees during all hydromulching applications.

C. The vendor shall fully guarantee his work and services and shall be fully insured and be prepared to furnish satisfactory evidence of such insurance upon demand.

2. SLOPE & PLANTING AREA PREPARATION

A. Scarification – Prior to installation of the irrigation system, the surface of all slopes shall be cleaned and grubbed to prepare the slope surface for seeding.

B. Mulch – Shall be Silva Fiber Plus (at 2,000 pounds per acre), a green colored, fibrous mulch, containing no growth or germination inhibiting factors. Silva Fiber Plus is manufactured in such a manner that after addition of seed, fertilizer, water and additives in a special 1500-gallon slurry tank, the fibers and above-materials will become uniformly mixed to form a homogeneous slurry; and using the green color to facilitate proper distribution, the slurry shall be hydraulically sprayed onto the ground forming a blotter-like ground cover which after application will allow the absorption and retention of moisture. Suppliers shall be prepared to certify that laboratory and field testing of their product has been accomplished, and that it meets all of the foregoing requirements, based on testing. Weight specifications of this material from suppliers, and for all application, shall refer only to air dry weight of the fiber material. Absolute air dry weight based on the normal standards of the Technical Association of the Pulp Industry for Silva Fiber Plus is considered equivalent to 10% moisture. Each package of Silva Fiber Plus shall be marked by the manufacturer to show the air dry weight content.

C. Seed Mixes

Turf Seed Mix: SEE PLANTING LEGEND FOR SPECIFICATIONS

D. Weed Abatement Program – Upon completion of the irrigation system and after all existing weeds have been removed from the planting areas, the following weed prevention shall be used:

Apply fertilizer mixture by spray per acre as follows:

300 lbs. 12-12-12 commercial fertilizer
300 lbs. urea formaldehyde
1000 lbs. agricultural gypsum

Apply pre-emergent herbicide as recommended by a licensed pest control advisor to be compatible with the seeded plant varieties.

Apply mixtures per the following time schedule:

Fertilize/water		21 days
Wait		2 days
Spray the pre-emergent per Pest Control Advisor recommendations		7-10 days
Fertilize/water		14 days
Spray Weed Mixture		7 days
Fertilize/water		14 days
Spray Weed Mixture		7 days
Grub/Clean all areas to prepare for seeding		2 days
Plant		25 days maximum
	TOTAL	100 days maximum

3. PLANTING

A. Trees and Shrubs – Trees and shrubs can be planted after weed germination and during the contact kill of weeds, as specified

B. Hydroseeding

(1) When all seeds have been eliminated to the satisfaction of the landscape architect and the owner's authorized representative, the hydroseeding operation may begin.
(2) The materials for seeded areas shall be machine mixed before application.
(3) The mixture of stolons or seed and additives are to be applied by a Hydro-Mulching machine. The nozzle height shall be between 6' and 10' above the ground level. Discharged pressure at the nozzle shall be 100 psi.
(4) Spraying shall be done in a sweeping motion allowing the slurry to fall evenly and eventually build up a consistent matting
(5) Soil moisture: Area to be planted shall be irrigated to obtain 12 inches of penetration. This should be done 4 to 7 days prior to planting.

C. Mixture

(1) Commercial fertilizer shall be applied at the following rates 500 lbs./Acre... 16-20-0 (Best Fertilizer Company Crop maker or equal)
(2) Fiber material (conwed 2000) at the rate of 2,000 lbs./Acre.
(3) Water with mixture of 3,000 gallons/Acre.
(4) Stabilizing binder – 120 lbs/Acre for slopes, 80 lbs/acre for flat areas

D. Watering – Immediately after planting, the slopes and other planting areas shall be watered with a fine spray, care being taken to avoid erosion, and the planted area kept moist until the seed has germinated (or the plants have become established).

E. Clean-up – After completion of the work, all rubbish and surplus material shall be removed from the site, and it shall be left neat and clean.

4. PLANT ESTABLISHMENT

A. Irrigation – The irrigation system will be operated to provide an optimum amount of surface moisture for germination of the seeded varieties avoiding all run-off and deep saturation of water.

B. Fertilization – The area shall be hydro-fertilized every 30 days after planting with the following combination of materials: 250 lbs./Acre... 16-6-8 (Best Fertilizer Company Crop Maker or equal)

C. Pre-Emergent Herbicide – Sixty (60) days after planting, apply a broad spectrum pre-emergent herbicide as recommended by an experienced licensed pest control advisor

5. MAINTENANCE

A. Maintenance of the project shall be for a period of 90 days.

B. Maintenance shall include all watering, fertilization, mowing, weeding, cultivating, spraying and pruning necessary to keep the plant materials in a healthy growing condition and to keep the planted areas neat and attractive throughout the maintenance period.

C Protect all planted areas against damage, including erosion and trespassing, by providing and maintaining proper safeguards.

D During the maintenance period, all planted areas shall be kept well watered and weed-free at all times.

E. From the time any planting is done, until the end of the maintenance period, the Contractor shall maintain a sufficient number of men and adequate equipment to perform the work herein specified.

F. The Contractor will be relieved from maintenance work when the final plant establishment and maintenance work has been completed to the satisfaction of the Owner

G. Damage to planting areas shall be replaced immediately at the Contractor's expense.

H. Depressions caused by vehicles, bicycles, or foot traffic, shall be filled and leveled. Replant damaged areas.

I. Exterminate gophers and moles, ground squirrels, and repair damage as above.

J. All paved areas will be washed and maintained in a neat and clean condition at all times, as directed by the Owner.

K. Pinch-prune all shrubs and trees to encourage new growth and to eliminate rank sucker growth. Remove all old flowers and dead foliage and limbs. Do no major pruning without the approval of the Owner. Remove damaged branches on trees back to point of growth. Treat cuts over 2" in diameter with an approved tree wound dressing.

L. During the maintenance period, should the appearance of any plant indicate weakness and probability of dying, immediately replace that plant with a new and healthy plant of the same type and size without additional cost to the Owner.

M. At the end of the maintenance period, all plant material shall be in a healthy growing condition.

N. Contractor shall continue the maintenance period past the specified date at no additional cost to the Owner until all deficiencies have been corrected.

REVISIONS

ENVIRONS, INC.
LANDSCAPE ARCHITECTURE
225 W. FOOTHILL BLVD SUITE F • CLAREMONT, CA 91711

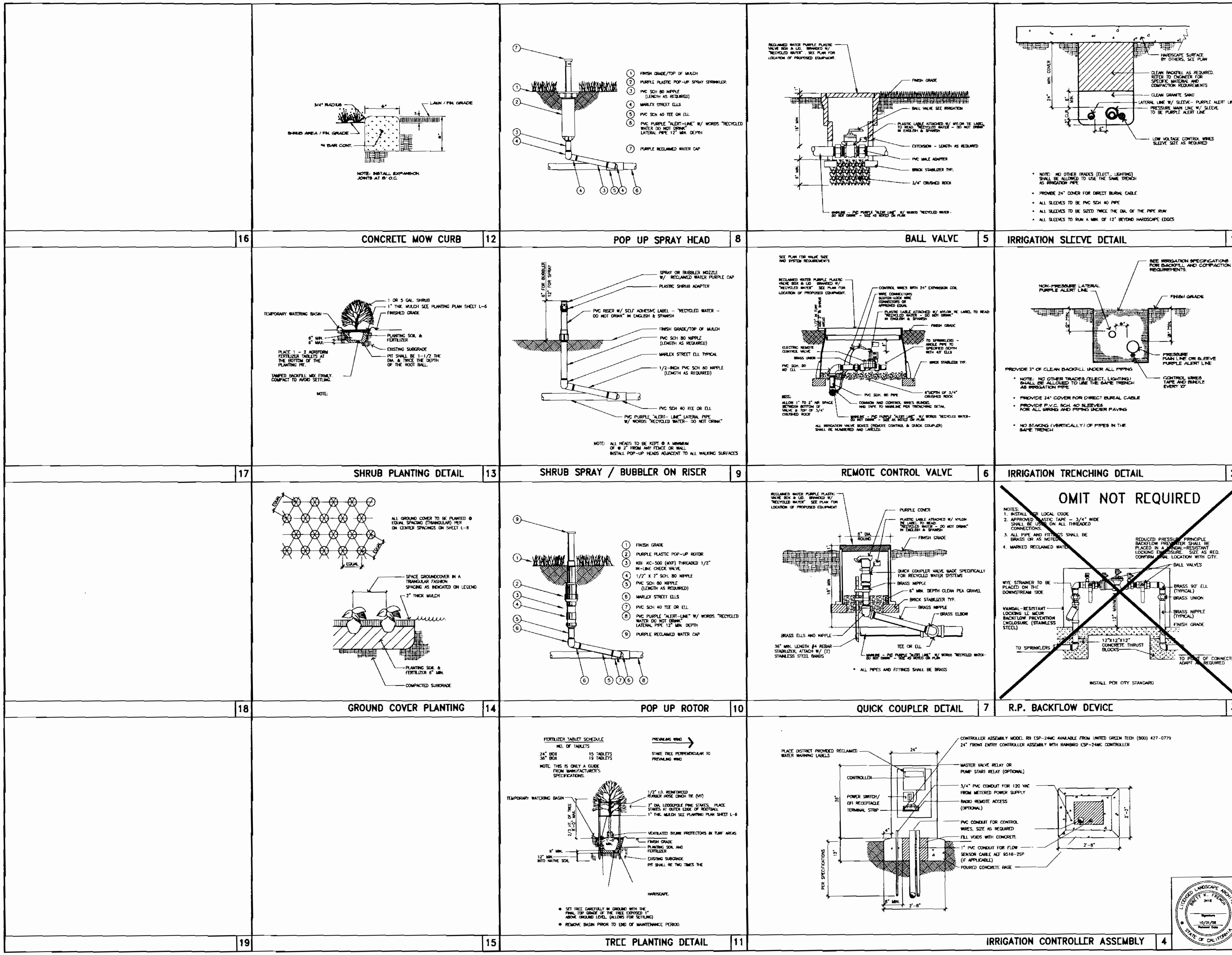
CH2MHILL
Lockwood Greene
Atlanta, Georgia

SHEET TITLE: SPECIFICATIONS

PROJECT NAME
EDISON
MISSION ENERGY
WALNUT CREEK ENGERGY PARK • CITY OF INDUSTRY, CA

LICENSED LANDSCAPE ARCHITECT
BRETT K. FRENCH
5416
10/31/06
STATE OF CALIFORNIA

DRAWN BY BRK
DATE 7/21/06
JOB NO. CH2M0001
SHEET NO. L-5
OF 6 SHTS.



REVISIONS

ENVIRONS, INC.
LANDSCAPE ARCHITECTURE

CH2MHILL
Lockwood Greene
Atlanta, Georgia

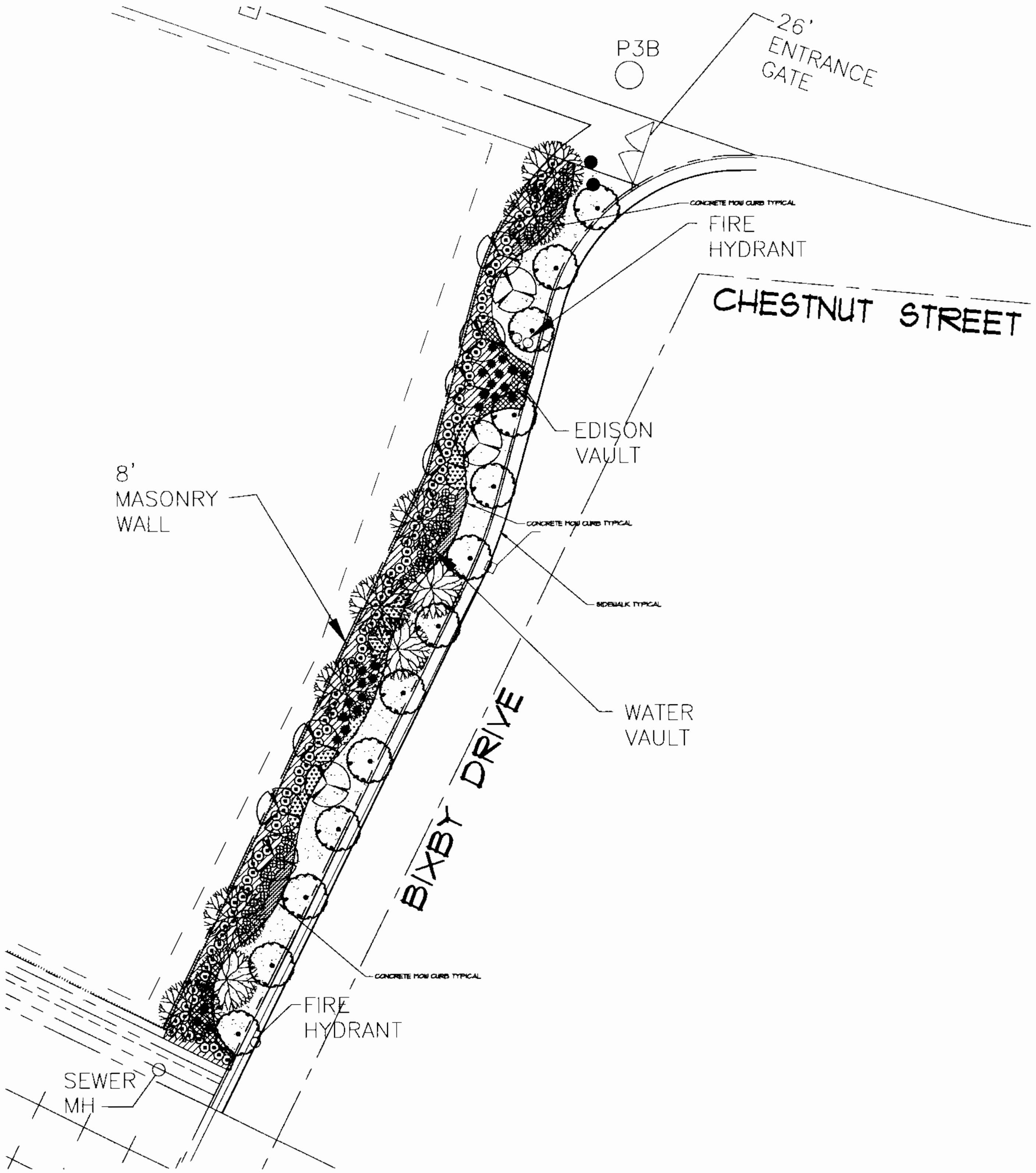
SHEET TITLE: CONSTRUCTION DETAILS

PROJECT NAME:
EDISON
MISSION ENERGY
WALNUT CREEK ENGERGY PARK • CITY OF INDUSTRY, CA

DRAWN BY	DATE
BRK	1/21/06

JOB NO. CH2M0001

SHEET NO. L-4
OF 6 SHTS.



PLANT LEGEND

TREES

SYMBOL	BOTANICAL	COMMON	SIZE	QTY
	EUCALYPTUS CITRIODORA (VERTICAL EVERGREEN TREE)	LEMON SCENTED GUM	24" BOX	13
	PINUS ELDARICA (VERTICAL EVERGREEN BUFFER TREE)	ELDARICA PINE	24" BOX	10
	PLATANUS ACERIFOLIA (DECIDUOUS VERTICAL TREE)	LONDON PLANE SYCAMORE	15 GAL	10

SHRUBS

SYMBOL	BOTANICAL	COMMON	SIZE	QTY
	PHORMIUM TENAX ' ATROPURPUREA'	NEW ZEALAND FLAX	5 GAL	26
	PHOTINIA FRASERI	PHOTINIA	5 GAL	10
	WESTRINGIA FRUTICOSA	N.C.N.	5 GAL	55

GROUND COVER

SYMBOL	BOTANICAL	COMMON	SIZE	SPACING
	HEMEROCALLIS HYBRID	DAYLILY	1 GAL	TRIANGULAR SPACE 18" O.C.
	LANTANA MONTEVEDENSIS	TRAILING LANTANA MIX PURPLE AND WHITE	1 GAL	TRIANGULAR SPACE 18" O.C.
	NANDINA DOMESTICA 'HARBOR DWARF'	DWARF NANDINA	1 GAL	TRIANGULAR SPACE 18" O.C.
	TULBAGHIA VIOLACEA VARIEGATA	VARIEGATED SOCIETY GARLIC	1 GAL	TRIANGULAR SPACE 18" O.C.
	ROSMARINUS OFFICINALLIS PROSTRATUS	ROSEMARY	FLATS	TRIANGULAR SPACE 12" O.C.
	MARATHON GRASS	MARATHON HYDROSEED 12 LBS / 1000 SF.		

NOTE: GROUND COVER SHALL BE PLANTED UNDER & AROUND ALL SHRUBS:
1. IF PLANTED BY FLATS - MAXIMUM SPACING IS 12" O.C.
2. IF PLANTED BY 1 GALLON CONTAINERS - MAXIMUM SPACING IS 18" O.C.

NOTE:

1. ALL TREES WITHIN 8' OF HARDSCAPE SHALL BE IN A SHAWTOWN ROOT BARRIER 24" HIGH - INSTALL PER MFG. RECOMMENDATIONS AS A LINEAR BARRIER - DO NOT WRAP AROUND TREE

MULCH NOTE:

CONTRACTOR TO INSTALL 1" LAYER OF SHREDDED CITRUS MULCH IN ALL PLANTERS
MULCH AVAILABLE FROM EARTHWORKS (951) 782-0260

WATER USAGE CALCULATIONS

MAWA (THE MAXIMUM APPLIED WATER ALLOWANCE)=(E.T.O.)(PLANT FACTOR)(SQ.FT.)(CONVERSION FACTOR TO GALLONS)

MAWA = 54.5 x .8 x 12,378 S.F. x .62 = 334,602 GAL./YR.

ESTIMATED WATER USAGE

EWU (THE ESTIMATED WATER USAGE)=(E.T.O.)(PLANT FACTOR)(SQ.FT.)(CONVERSION FACTOR TO GALLONS) / (IRRIGATION EFFICIENCY)

EWU = 54.5 x .9 (TURF) x 5,980 S.F. x .62 / .75 = 242,477 GAL./YR.

EWU = 54.5 x .3 (SHRUB PLANTING) x 6385 S.F. x .62 / .75 = 86,300 GAL./YR.

TOTAL 328,777 GAL./YR.

NORTH
SCALE 1" = 20'-0"

LICENSED LANDSCAPE ARCHITECT
BRETT K. FRENCH
3446
Signature
10/31/08
Renewal Date
STATE OF CALIFORNIA

REVISIONS

ENVIRONS, INC.
LANDSCAPE ARCHITECTURE
226 W. FOOTHILL BLVD. SUITE P • CLAREMONT, CA 91711

CH2MHILL
Lockwood Greene
Atlanta, Georgia

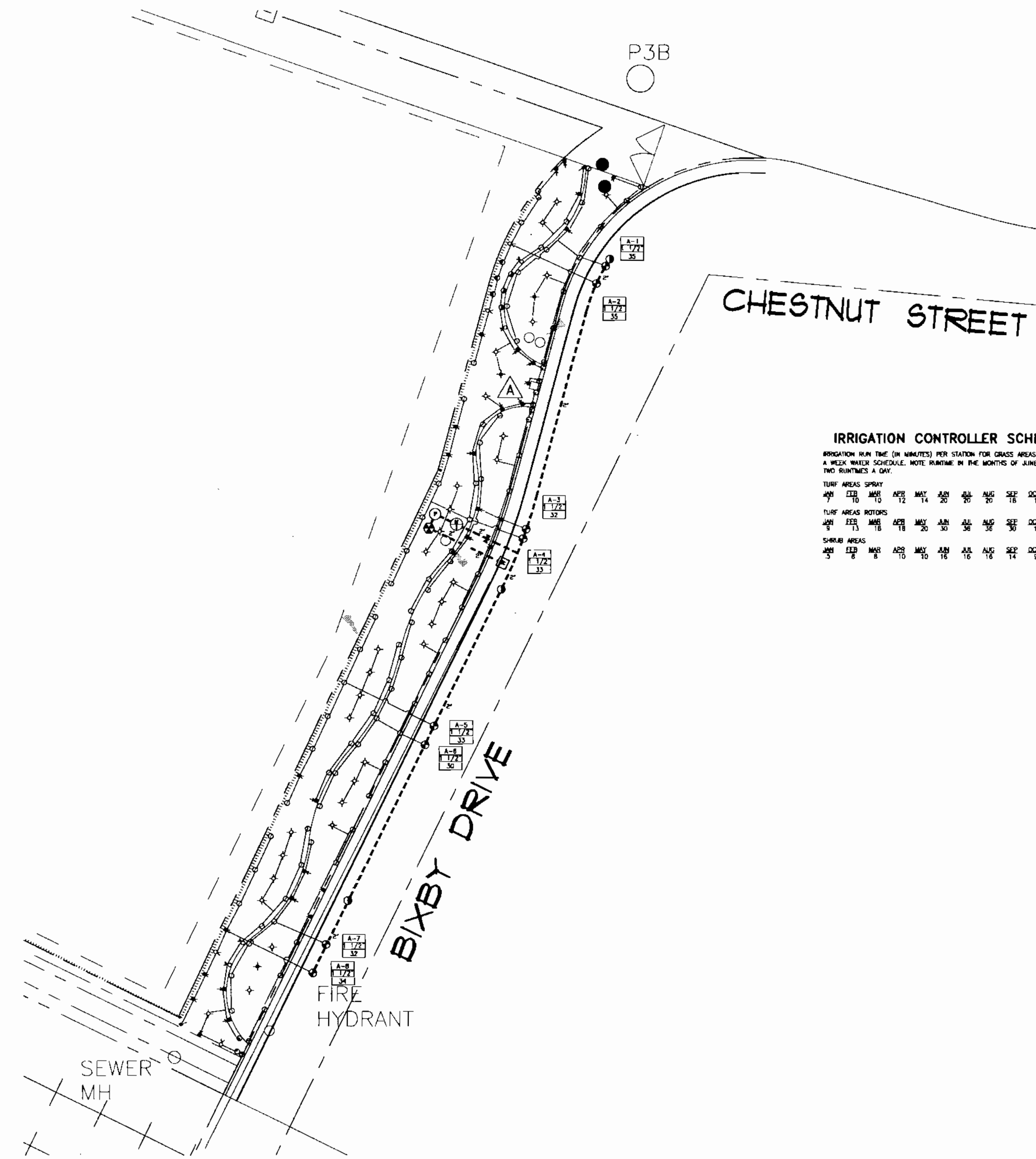
SHEET TITLE: PLANTING PLAN

PROJECT NAME:
EDISON
MISSION ENERGY
WALNUT CREEK ENGERGY PARK • CITY OF INDUSTRY, CA

DRAWN BY	DATE
BRK	7/21/06

JOB NO. CH2M0001

SHEET NO. L-3 OF 6 SHTS.



IRRIGATION CONTROLLER SCHEDULE

IRRIGATION RUN TIME (IN MINUTES) PER STATION FOR GRASS AREAS. BASED ON 6 DAYS A WEEK WATER SCHEDULE. NOTE RUNTIME IN THE MONTHS OF JUNE - AUGUST MAY BE ACHIEVED TWO RUNTIMES A DAY.

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TURF AREAS SPRAY	7	10	10	12	14	20	20	20	18	12	10	7
TURF AREAS ROTORS	9	13	18	18	20	30	38	36	30	18	14	9
SHRUB AREAS	5	8	8	10	10	16	16	16	14	9	8	5

IRRIGATION LEGEND

SYMBOL	MFG.	MODEL NO. AND DESCRIPTION	RAD	G.P.M.	P.S.I.
	RAINBIRD	1800 SERIES -10'-H W/ 4 PCS - 6" POP UP SPRAY W/ RECLAIMED WATER CAP	8'	.40	30
	RAINBIRD	1800 SERIES -10'-H W/ .2 PCS - 6" POP UP SPRAY W/ RECLAIMED WATER CAP	6'	20	30
	RAINBIRD	1800 SERIES -8'-MPR-Q-6" POP UP SPRAY W/ RECLAIMED WATER CAP	8'	26	30
	RAINBIRD	1800 SERIES -8'-H-MPR-6" POP UP SPRAY W/ RECLAIMED WATER CAP	8'	.52	30
	RAINBIRD	1800 SERIES -8'-VAN-6" POP UP SPRAY W/ RECLAIMED WATER CAP	8'	.52	30
	RAINBIRD	1800 SERIES -8'-F-MPR-6" POP UP SPRAY W/ RECLAIMED WATER CAP	8'	1.57	30
	RAINBIRD	1800 SERIES -10'-Q-6" POP UP SPRAY W/ RECLAIMED WATER CAP	10'	.39	30
	RAINBIRD	1800 SERIES -10'-H-6" POP UP SPRAY W/ RECLAIMED WATER CAP	10'	.79	30
	RAINBIRD	1800 SERIES -10'-VAN-6" POP UP SPRAY W/ RECLAIMED WATER CAP	10'	.79	30
	RAINBIRD	1800 SERIES -10'-F-6" POP UP SPRAY W/ RECLAIMED WATER CAP	10'	1.57	30
	RAINBIRD	1800 SERIES -12'-Q-6" POP UP SPRAY W/ RECLAIMED WATER CAP	12'	.65	30
	RAINBIRD	1800 SERIES -12'-H-6" POP UP SPRAY W/ RECLAIMED WATER CAP	12'	1.3	30
	RAINBIRD	1800 SERIES -12'-VAN-6" POP UP SPRAY W/ RECLAIMED WATER CAP	12'	1.3	30
	RAINBIRD	1800 SERIES -12'-F-6" POP UP SPRAY W/ RECLAIMED WATER CAP	12'	2.6	30
	RAINBIRD	1800 SEREIS -15'-Q-6" POP UP SPRAY W/ RECLAIMED WATER CAP	15'	.93	30
	RAINBIRD	1800 SERIES -15'-H-6" POP UP SPRAY W/ RECLAIMED WATER CAP	15'	1.65	30
	RAINBIRD	1800 SERIES -15'-VAN-6" POP UP SPRAY W/ RECLAIMED WATER CAP	15'	1.23	30
	RAINBIRD	1800 SERIES -15'-EST W/ .4 PCS SCREEN -6" POP UP SPRAY W/ RECLAIMED WATER CAP	4X12	.4	30
	RAINBIRD	1800 SERIES -15'-SST W/ .9 PCS SCREEN -6" POP UP SPRAY W/ RECLAIMED WATER CAP	4X30	.9	30
	RAINBIRD	1800 SERIES-18"-VAN-6" POP UP SPRAY W/ RECLAIMED WATER CAP	18'	1.33 2.66 5.32	30
	HUNTER	PGJ-06- W/ NOZZLE 1.0 - 6" POP-UP ROTOR W/ RECLAIMED WATER CAP	18'	1.0	50
	HUNTER	PGJ-06- W/ NOZZLE 1.5 - 6" POP-UP ROTOR W/ RECLAIMED WATER CAP	20'	1.5	50
	HUNTER	PGJ-06- W/ NOZZLE 2.0 - 6" POP-UP ROTOR W/ RECLAIMED WATER CAP	23'	2.0	50
	HUNTER	PGJ-06- W/ NOZZLE 2.5 - 6" POP-UP ROTOR W/ RECLAIMED WATER CAP	27'	2.5	50
	HUNTER	PGJ-06- W/ NOZZLE 3.0 - 6" POP-UP ROTOR W/ RECLAIMED WATER CAP	30'	3.0	50

SYMBOL	MFG.	MODEL NO. AND DESCRIPTION
	NIBCO	T-113 GATE VALVE LINE SIZE IN RECLAIMED WATER VALVE BOX
	WILKINS	PRESSURE REGULATOR LINE SIZE
	RAINBIRD	PESB SERIES ELECTRIC REMOTE CONTROL VALVE IN RECLAIMED WATER BROOKS OR APPROVED EQUAL VALVE BOX SIZE AS NOTED ON PLAN
	RAINBIRD	2" PESB SERIES ELECTRIC REMOTE CONTROL MASTER VALVE IN RECLAIMED WATER BROOKS OR
A	RAINBIRD	ESP-MC-8 PLUS 8 STATION AUTOMATIC CONTROLLER MOUNTED IN A RAINBIRD EXP-MC-SS ENCLOSURE POWER PROVIDED BY OTHERS. CONTRACTOR TO INSTALL RAINBIRD WRS WIRELESS RAIN SENSOR ADJACENT TO CONTROLLER
W		1 1/2" x 1" RECLAIMED WATER METER FOR LANDSCAPE ONLY BY OTHERS STATIC PRESSURE = 90-105 P.S.I. INFORMATION PROVIDED BY TED CARRERA OF ROWLAND WATER DISTRICT (562) 697-1726 MAXIMUM DEMAND = 40 GPM
	HAYWARD	BASKET STRAINER
	RAINBIRD	MODEL #33DRC QUICK COUPLER IN RECLAIMED WATER ROUND VALVE BOX W/ QUICK COUPLER KEY
		LATERS SCH 40 RECLAIMED WATER PIPE (PURPLE) SIZE AS NOTED ON PLAN
		MAINLINE SCH 40 RECLAIMED WATER PIPE (PURPLE) SIZE AS NOTED ON PLAN
		SLEEVE NOTE: ALL PIPE THAT CROSS UNDER PAVEMENT, AND STRUCTURES TO BE IN SLEEVES PER DETAIL ON SHEET L-4

NOTE CONTRACTOR MAY SUBSTITUTE HUNTER SRS BODIES FOR RAINBIRD 1800 SERIES BODIES
NOTE ALL HEADS IN TURF AREA TO BE 6" POP UP AND SHRUB AREAS 6" POP UP
12" RISERS MAY BE USED ADJACENT TO WALLS BUT NOT ADJACENT TO VEHICULAR AND PEDESTRIAN TRAFFIC I.E. WALKS, CURBS DRIVES.

LATERAL PIPE SIZE KEY

PIPE SIZE	UVR PVC
1/2"	0 - 4
3/4"	5 - 8
1"	9 - 10
1-1/4"	11 - 20
1-1/2"	21 - 30
2"	31 - 50
2-1/2"	51 - 70
3"	71 - 100

NOTES:

1. ALL IRRIGATION HEADS ADJACENT TO PAVING, CURBS AND WALKWAYS MUST BE POP-UP HEADS.
2. ALL BACKFLOW PREVENTER AND UTILITY BOXES TO BE SCREENED WITH LANDSCAPING.

RECYCLED WATER NOTES

- ALL VALVE BOXES SHALL BE PURPLE PLASTIC WITH THE WORDS "RECYCLED WATER" CAST INTO THE PLASTIC LID.
- ALL CONTROL VALVES MUST HAVE A PLASTIC LABEL ATTACHED WITH A NYLON TIE WRAP WITH THE WORDS "RECYCLED WATER - DO NOT DRINK" IN ENGLISH AND SPANISH.
- ALL ABOVE-GROUND RISERS SHALL BE LABELED WITH A SELF-ADHESIVE LABEL WITH THE SAME WARNING AS THE LABEL FOR CONTROL VALVES.
- ALL FLUSH, POP-UP SPRINKLER HEADS MUST BE MADE OF PURPLE PLASTIC IF AVAILABLE.
- ALL BELOW GRADE PIPING MUST BE PURPLE "ALERT LINE" PIPE WITH THE WORDS "RECYCLED WATER - DO NOT DRINK". THIS APPLIES TO BOTH PERMANENT AND INTERMITTENT PRESSURE PIPE. THIS REQUIREMENT DOES NOT APPLY TO FITTINGS AND RISERS.
- NO HOSE BIBS ARE ALLOWED ON RECYCLED WATER SYSTEMS.
- QUICK COUPLERS ARE ALLOWED, BUT MUST BE MADE FOR RECYCLED WATER SYSTEMS. QUICK COUPLERS MUST ALSO BE PLACED IN PURPLE PLASTIC VALVE BOXES.
- NO ON-SITE BACKFLOW PREVENTION ASSEMBLY SHALL BE ALLOWED ON ANY RECYCLED WATER SYSTEM SERVING LANDSCAPE, TURF, OR CROP IRRIGATION.

REQUIRED CLEARANCE BETWEEN POTABLE WATER LINE AND RECYCLED WATER LINE IS 10 FEET HORIZONTALLY AND 1 FOOT VERTICALLY (WITH POTABLE WATER LINE CROSSING PERPENDICULARLY OVER RECYCLED WATER LINE). IF A RECYCLED WATER LINE CROSSES OVER A POTABLE WATER LINE, THE RECYCLED WATER LINE SHALL BE INSTALLED INSIDE A SLEEVE WITH THE SLEEVE CENTERED OVER THE POTABLE WATER LINE AND EXTENDED AT LEAST 10 FEET ON BOTH SIDES.

NOTIFY JOE YERSKY AT WALNUT VALLEY WATER DISTRICT AT (909) 595-1266 FOR HIS OBSERVATIONS AND INSPECTIONS: 1) INSPECT PIPE PRIOR TO BACKFILL; 2) INITIAL PRESSURE TEST; AND 3) ABOVE GROUND INSPECTION-2 DAY NOTIFICATION.

L.A. COUNTY MUST ALSO DUAL PRESSURE OR DYE TEST THE SYSTEM BEFORE ALLOWING PERMANENT CONNECTION.

NOTIFY TED CARRERA @ ROWLAND WATER DISTRICT (562) 697-1726, AND DAN BACANI @ L.A. COUNTY @ (626) 430-5290, FOR FINAL INSPECTIONS - 2 DAY NOTIFICATIONS

NORTH
SCALE 1" = 20'-0"

LICENSED LANDSCAPE ARCHITECT • STATE OF CALIFORNIA

REVISIONS

ENVIRONS, INC.
LANDSCAPE ARCHITECTURE
224 W. FOOTHILL BLVD. SUITE F • CLAREMONT, CA 91711

CH2MHILL
Lockwood Greene
Atlanta, Georgia

SHEET TITLE: IRRIGATION PLAN

PROJECT NAME: EDISON MISSION ENERGY
WALNUT CREEK ENGERGY PARK • CITY OF INDUSTRY, CA

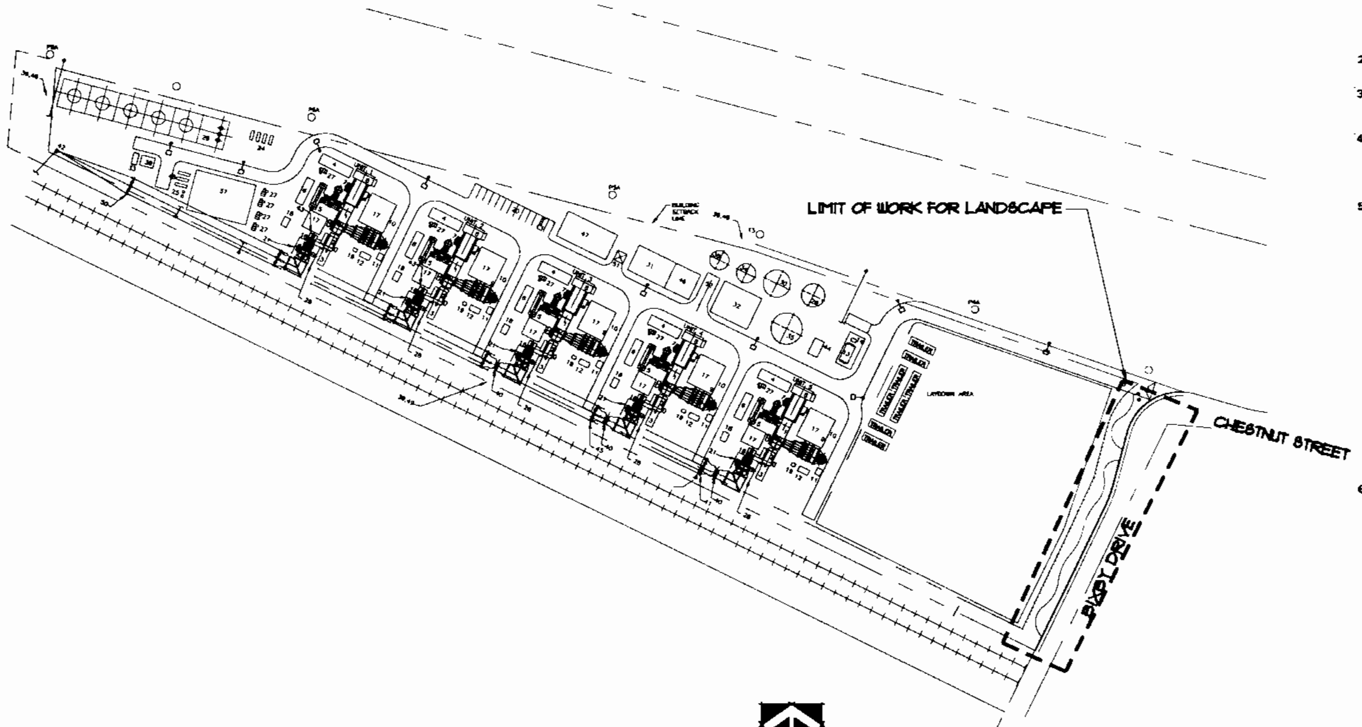
DRAWN BY	DATE
BRK	7/21/06

JOB NO. CH2M0001

SHEET NO. L-2 OF 6 SHTS.

EDISON

MISSION ENGERGY
WALNUT CREEK ENERGY PARK
LANDSCAPE PLANS
CITY OF INDUSTRY, CALIFORNIA



KEY MAP

NOT TO SCALE

NORTH

SCALE 1" = 100'-0"

LEGEND:

1 COMBUSTION TURBINE
2 COMBUSTION TURBINE GENERATOR
3 COMBUSTION TURBINE GENERATOR ROTOR REMOVAL
4 COMBUSTION TURBINE POWER CONTROL MODULE (PCM)
5 COMBUSTION TURBINE INTER-COOLER
6 COMBUSTION TURBINE COOLING PUMP SKID
7 COMBUSTION TURBINE MECHANICAL AUXILIARY SKID
8 COMBUSTION TURBINE INLET AIR FILTER HOUSE
9 COMBUSTION TURBINE CO/SCR MODULE
10 STACK
11 CEMS ENCLOSURE
12 AMMONIA DILUTION AIR SKID
13 AMMONIA STORAGE TANK
14 AMMONIA FORWARDING PUMP SKID
15 ENTRANCE ROAD
16 ISOPHASE BUS
17 CRANE PARKING FOR TURBINE MAINT.
18 GAS FILTER/SEPARATOR SKID
19 PURGE A/B FANS
20 PARKING (13 SPACES)
21 GENERATOR STEP-UP TRANSFORMER
22 RECLAIM WATERLINE
23 30" GAS LINE (EXISTING)
24 CLOSED COOLING COOLING WATER HT. EXCH.
25 FUEL GAS SCRUBBER (QTY 2)
26 RECYCLED CHLORINATION TANK
27 AUXILIARY TRANSFORMER
28 FIRE WALL
29 COOLING TOWER AND CIRCULATING WATER PUMPS
30 RECYCLED WATER STORAGE TANK
31 WAREHOUSE BUILDING 40'x60'
32 WATER TREATMENT/MECHANICAL COVERED AREA 50'x60'(MCC-05 LOCATED IN THIS AREA)
33 SULFURIC ACID STORAGE TANK
34 TREATED WATER STORAGE TANK
35 FIRE WATER TANK (FUTURE)
36 DEMINERALIZED WATER STORAGE TANK
37 GAS COMPRESSOR/AIR COMP./ELECT. BUILDING 60'x90' (CONTAINS 4.16KV & 480V SWGR & BOP MCC'S)
38 COOLING TOWER CHEMICAL FEED (15'x20' BUILDING)
39 SECURITY FENCE (8' HIGH CHAIN LINE W/RAZOR RIBBON)
40 HIGH SIDE BREAKER (QTY 3)
41 DEAD END STRUCTURE (WITH DISCONNECT SWITCH)
42 TRANSMISSION POLE (INTERFACE POINT)
43 LOW SIDE BREAKER (QTY 2)
44 DIESEL FIRE PUMP SKID (FUTURE)
45 H FRAME WITH DISCONNECT SWITCH (QTY 4)
46 MAINTENANCE/SHOP BUILDING 40'x40'
47 CONTROL/ADMIN/SWITCHGEAR BUILDING 40'x80' (CONTAINS 13.8 KV SWITCHGEAR)
48 FUEL GAS FILTER/SEPARATOR (QTY 3)
49 PROPERTY LINE
50 INTERMEDIATE TRANSMISSION STRUCTURE
51 15'X15' TRASH ENCLOSURE/DUMPSTER PAD W\RECYCLE BIN
52 TRUCK LOADING & UNLOADING AREA

COUNTY OF LOS ANGELES - DEPARTMENT OF HEALTH SERVICES
ENVIRONMENTAL HEALTH-HEALTH FACILITIES
CROSS-CONNECTION & WATER POLLUTION CONTROL PROGRAM
2525 Corporate Place, Monterey Park, CA 91754 (213) 881-4140

A GUIDE TO SAFE RECLAIMED WASTEWATER USE, PIPELINE CONSTRUCTION AND INSTALLATION

INTRODUCTION: As a result of increasing availability of reclaimed wastewater and the consequent need or desire for the transmission and use thereof, this Department has found it necessary to develop the following guidelines for reclaimed wastewater pipeline construction, installation and safe reclaimed wastewater use for the protection of domestic water supplies and public health.

Reclaimed wastewater shall meet requirements specified in "Wastewater Reclamation Criteria": Title 22, Division 4, Chapter 3, Section 60301 through 60355 of the California Code of Regulations and regulations and guidelines of the regulatory agencies.

2. Reclaimed wastewater use shall be compatible with State Department of Health Services and Regional Water Quality Control Board requirements.

3. Plans and specifications for reclaimed wastewater distribution, use and operational practices shall be submitted for review and approval to the County of Los Angeles Department of Health Services prior to implementation.

4. Prior to commencing construction the Contractor shall contact the Los Angeles County Department of Health Services to arrange for inspection of all on-site reclaimed and potable water work. No excavation or open trench may be backfilled without first securing Health Department approval. If any piping, reclaimed or potable, is installed prior to plan check approval and/or inspection, all or any portion of the system may be required to be exposed and corrected as necessary.

5 SEPARATION - In order to minimize construction accidents resulting in pipeline breaks, infiltration of wastewater from leaking wastewater lines into domestic water lines, or accidental cross-connections between reclaimed wastewater and potable water systems, maximum attainable separation of reclaimed wastewater lines and potable water lines shall be practiced.

a. Parallel construction: there shall be at least a ten foot (10') separation, all distances measured from pipeline outside diameter.

b. Cross-Over construction: As perpendicular as possible; one foot (1') separation, with potable above reclaimed; full pipe length centered over crossing.

c. Alternate Cross-Over construction (distance not maintained): Either the potable or reclaimed water lines may be sleeved with the same class piping for one full pipe length (minimum ten feet) centered over the cross-over.

d. The reclaimed wastewater system shall be constructed in conformance with potable water system construction standards and in accordance with all other governing codes, rules and regulations.

e. Unused or abandoned potable water lines are to be severed as close to water mains as practical, capped and a ten-foot section of abandoned line removed and cemented under Health Department supervision.

Existing On-site piping - To the extent feasible, maximum separation of reclaimed wastewater and potable water lines shall be practiced upon system addition or modification.

6. IDENTIFICATION: - All reclaimed wastewater lines (pressure/non-pressure), valve boxes, hydrants and appurtenances shall be identified to clearly distinguish between reclaimed wastewater and potable water systems.

a. RECLAIMED WASTEWATER - All buried reclaimed wastewater lines (pressure/non-pressure) shall be identified by continuous lettering on three inch (3") minimum width purple tape with one inch black or white contrasting lettering bearing the continuous wording "Caution Reclaimed Water" permanently affixed at ten foot intervals atop all horizontal piping, laterals and mains. Identification tape shall extend to all valve boxes and/or vaults, exposed piping, hydrants and quick couplers.

The use of purple colored pipe with continuous wording "Caution Reclaimed Water" printed on opposite sides of the pipe is an acceptable alternative to warning tape.

RECLAIMED WATER GUIDELINES - Page 2

b. POTABLE WATER - All potable water lines shall be installed in accordance with the Uniform Plumbing Code and all other governing codes, rules and regulations. Buried potable water lines shall be identified by continuous lettering on three inch (3") minimum width blue tape with one inch white lettering bearing the continuous wording "Potable Water" permanently affixed at ten foot intervals atop all horizontal piping, laterals and mains. Identification tape shall extend to all valve boxes and/or vaults, exposed piping and hydrants.

Identification tape is not necessary for extruded colored PVC with continuous wording "Potable Water" printed in contrasting lettering on opposite sides of the pipe.

c. Exposed piping, valve boxes, vaults, control valves, quick coupling valves, outlets and related appurtenances shall be color coded and labeled or tagged to differentiate reclaimed wastewater from potable water, ie.,

i. "Caution Reclaimed Water Do Not Drink" in black or white contrasting lettering on a purple background.

ii. "Potable Water" in white lettering on a blue background.

Tags shall be identified with the appropriate wording on both sides. Tags identifying reclaimed water shall have the appropriate wording on one side and symbol on the opposite side.

7. Aquifers shall be protected against contamination by reclaimed wastewater via deteriorated or inadequately protected waterwell casings by correcting these physical deficiencies. Reclaimed wastewater shall not be sprayed on well pump installations and appurtenances.

8. An on-site water supervisor having the responsibility for the protection of the potable water system from cross-connections, shall be appointed as provided for under Title 17, Section 7586, California Code of Regulations. The water supervisor shall be responsible for installation, operation, and maintenance of the reclaimed wastewater and potable water systems, prevention of potential hazards, implementing these guidelines and coordination with the cross-connection control program of the water purveyor and this Department. Authorizations for piping changes or additions to either the potable or reclaimed wastewater systems shall be subject to review and approval by the water supervisor. The name and position of this individual shall be reported to the water purveyor and the County of Los Angeles Department of Health Services.

9. As-built plans shall be prepared and updated as necessary by the user showing the location of reclaimed wastewater and potable water system piping.

10. In areas of public access to reclaimed wastewater systems, hose bibbs shall not be permitted in order to prevent the unauthorized use of reclaimed wastewater. Quick-couplers are permissible in lieu of hose bibb outlets and shall only be connected to reclaimed wastewater lines.

In areas not accessible to the public, hose bibbs may be permitted provided they are properly identified with permanently affixed tags, labels, or plates with the wording "Reclaimed Water - Do Not Drink" in English and symbol.

11 Exposure of drinking fountains and picnic tables to direct reclaimed wastewater spray shall be minimized by a combination of selective location of such equipment and by appropriate irrigation system design.

a. Reclaimed wastewater spraying shall be done in hours of least public exposure.

b. Areas where reclaimed wastewater is released, used or impounded shall be posted (e.g., RECLAIMED WATER - DO NOT DRINK), to inform the public that reclaimed water is being used.

c. Irrigation practice shall be controlled to prevent surface runoff of reclaimed wastewater from lands owned or controlled by the user.

12. BACKFLOW PROTECTION

a. There shall be no interconnection between the Potable Water System and the Reclaimed Water System within the user's premises.

RECLAIMED WATER GUIDELINES - Page 3

b. A dye or pressure test must be utilized to confirm the physical separation of the reclaimed and potable water systems. Said testing shall be performed in conjunction with the Water Purveyor and this Department and conducted before the introduction of reclaimed wastewater.

c. Contact the local water purveyor regarding required backflow protection at the potable water service connection(s) to reclaimed water use sites.

d. In order to maintain the water quality in a reclaimed wastewater distribution system a backflow prevention device(s) may be required at the reclaimed wastewater meter or at specific on-site locations where said use could degrade the quality of the reclaimed wastewater supply.

RECYCLED WATER NOTES

- ALL VALVE BOXES SHALL BE PURPLE PLASTIC WITH THE WORDS "RECYCLED WATER" CAST INTO THE PLASTIC LID.
- ALL CONTROL VALVES MUST HAVE A PLASTIC LABEL ATTACHED WITH A NYLON TIE WRAP WITH THE WORDS "RECYCLED WATER - DO NOT DRINK" IN ENGLISH AND SPANISH.
- ALL ABOVE-GROUND RISERS SHALL BE LABELED WITH A SELF-ADHESIVE LABEL WITH THE SAME WARNING AS THE LABEL FOR CONTROL VALVES.
- ALL FLUSH, POP-UP SPRINKLER HEADS MUST BE MADE OF PURPLE PLASTIC IF AVAILABLE.
- ALL BELOW GRADE PIPING MUST BE PURPLE "ALERT LINE" PIPE WITH THE WORDS "RECYCLED WATER - DO NOT DRINK". THIS APPLIES TO BOTH PERMANENT AND INTERMITTENT PRESSURE PIPE. THIS REQUIREMENT DOES NOT APPLY TO FITTINGS AND RISERS.
- NO HOSE BIBS ARE ALLOWED ON RECYCLED WATER SYSTEMS.
- QUICK COUPLERS ARE ALLOWED, BUT MUST BE MADE FOR RECYCLED WATER SYSTEMS. QUICK COUPLERS MUST ALSO BE PLACED IN PURPLE PLASTIC VALVE BOXES.
- NO ON-SITE BACKFLOW PREVENTION ASSEMBLY SHALL BE ALLOWED ON ANY RECYCLED WATER SYSTEM SERVING LANDSCAPE, TURF, OR CROP IRRIGATION.

REQUIRED CLEARANCE BETWEEN POTABLE WATER LINE AND RECYCLED WATER LINE IS 10 FEET HORIZONTALLY AND 1 FOOT VERTICALLY (WITH POTABLE WATER LINE CROSSING PERPENDICULARLY OVER RECYCLED WATER LINE). IF A RECYCLED WATER LINE CROSSES OVER A POTABLE WATER LINE, THE RECYCLED WATER LINE SHALL BE INSTALLED INSIDE A SLEEVE WITH THE SLEEVE CENTERED OVER THE POTABLE WATER LINE AND EXTENDED AT LEAST 10 FEET ON BOTH SIDES.

NOTIFY JOE YERSKY AT WALNUT VALLEY WATER DISTRICT AT (909) 595-1268 FOR HIS OBSERVATIONS AND INSPECTIONS: 1) INSPECT PIPE PRIOR TO BACKFILL; 2) INITIAL PRESSURE TEST; AND 3) ABOVE GROUND INSPECTION-2 DAY NOTIFICATION.

L.A. COUNTY MUST ALSO DUAL PRESSURE OR DYE TEST THE SYSTEM BEFORE ALLOWING PERMANENT CONNECTION.

NOTIFY TED CARRERA @ ROWLAND WATER DISTRICT (562) 697-1726 AND DAN BACANI @ L.A. COUNTY @ (626) 430-5290, FOR FINAL INSPECTIONS - 2 DAY NOTIFICATIONS.

GENERAL NOTES

HARDSCAPE

1. CONTRACTOR TO REVIEW CONSTRUCTION PLANS AND GRADING PLANS THOROUGHLY PRIOR TO BEGINNING WORK.
2. CONTRACTOR TO CONTACT LANDSCAPE ARCHITECT AND CITY INSPECTOR PRIOR TO START OF CONSTRUCTION FOR PRE-JOB MEETING. ALLOW 48 HOURS LEAD TIME.
3. CONTRACTOR TO CONTACT LANDSCAPE ARCHITECT AND CITY INSPECTOR TO REVIEW HARDSCAPE FORMING PRIOR TO POURING. ALLOW 48 HOURS LEAD TIME.
4. CONTRACTOR SHALL NOT MAKE FIELD CHANGES TO PLANS UNLESS AUTHORIZED BY LANDSCAPE ARCHITECT AND CITY INSPECTOR. UNAUTHORIZED CHANGES SHALL BE CORRECTED TO CONFORM TO THE PLANS AT NO ADDITIONAL COST TO THE OWNER
5. CONTRACTOR SHALL VERIFY LOCATION OF UNDERGROUND UTILITIES AND SERVICES PRIOR TO ANY DIGGING. CONTRACTOR ASSUMES FULL RESPONSIBILITY FOR ALL DAMAGE CAUSED BY FAILURE TO DO SO.
6. CONTRACTOR TO PULL ALL NECESSARY BUILDING PERMITS NEEDED TO COMPLETE JOB.

IRRIGATION

1. FINAL LOCATION OF CONTROLLER TO BE DETERMINED IN THE FIELD WITH APPROVAL OF CITY AND LANDSCAPE ARCHITECT.
2. REFER TO GENERAL IRRIGATION NOTES ON IRRIGATION PLAN.

PLANTING

1. ALL BOX TREES ARE TO BE SELECTED BY THE LANDSCAPE ARCHITECT.
2. REMOVE STAKES FROM ALL ESPALIERS AND VINES AND ATTACH TO WALLS, POSTS, ETC.

SHEET INDEX

REVISIONS

ENVIRONS, INC.
LANDSCAPE ARCHITECTURE

CH2MHILL
Lockwood Greene
Atlanta, Georgia

SHEET TITLE: COVER SHEET

PROJECT NAME: EDISON MISSION ENERGY
WALNUT CREEK ENERGY PARK • CITY OF INDUSTRY, CA

DRAWN BY: BFK DATE: 7/21/06

JOB NO. CH2M0001

SHEET NO. L-1 of 6 SHTS.

IRRIGATION

1. SCOPE

Furnish all materials, tools, equipment and labor required to install a complete operable irrigation system as indicated on the drawings, as specified and as necessary to complete the contract, including, but not limited to, these major items:

A. Irrigation system and related appurtenances.

B. Connections to water and electrical utilities.

C. Excavation and backfill of pipe trenches.

D. Record drawings and guarantees.

E. Permits and licenses.

F. Testing of completed systems

G. Clean-up

2. QUALITY ASSURANCE

A. Qualifications of Installers – Provide at least one person who shall be present at all times during execution of this portion of the work and who shall be thoroughly familiar with the type of materials being installed and the material manufacturers' recommended methods of installation and who shall direct all work performed under this section.

B. Codes and Standards – In addition to complying with all pertinent codes and regulation, comply with the latest rules of the National Electrical Code and the Electrical Safety Orders of the State of California, Division of Industrial Safety Orders of the State of California, Division of Industrial Safety, for all electrical work and materials.

3. SUBMITTALS

A. Materials List – Within thirty-five (35) calendar days after award of contract, and before any irrigation system materials are delivered to the job site, submit to the Owner a complete list of all irrigation system materials proposed to be furnished and installed.

(1) Show manufacturer's name and catalog number for each item; furnish the manufacturer's recommendations as to method of installation.

(2) Upon approval by the Owner, the manufacturer's recommendations shall become the basis for acceptance or rejection of actual methods of installation used in the work.

(3) Do not permit any irrigation system component to be brought onto the job site until it has been approved by the Owner or his representative.

(4) Approval of any item or alternate item indicates only that it apparently meets the requirements of the drawings on the basis of the information submitted, and does not relieve Contractor of any responsibility.

B. As-Built Drawings

(1) During the course of installation, carefully show in red line on a print of the irrigation system drawings all changes made to the irrigation system during installation.

(2) Dimension from easily identifiable permanent features (buildings, monuments, sidewalks, pavement, etc.) points of connection (water and electrical), wire routing, sprinkler main routing, valve locations and other related equipment as directed by Owner.

(3) Upon completion of the irrigation system installation, carefully transfer the as-built data to reproducibles as specified in the General Conditions and submit one legible copy as described under "As-Builts" below, to the Owner.

C. Submittal of "As-Builts" – Upon completion of the irrigation system installation, and as a condition of its acceptance, deliver to the Owner the As-Built drawings referred to above. The delivery of the As-Built Drawings shall not relieve the Contractor of the responsibility of furnishing required information that may have been omitted.

4. Product Handling

A. <u>Protection</u> – Use all means necessary to protect irrigation system materials before, during, and after installation and to protect the installed work and materials of all other trades.

B. <u>Replacements</u> – In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner and at no additional cost to the Owner.

(1) Exercise care in handling, loading, unloading and storing plastic pipe and fittings under cover until ready to install; transport plastic pipe only on a vehicle with a bed long enough to allow the pipe to lay flat to avoid undue bending and concentrated external load.

(2) Repair all dented or damaged pipe by cutting out the dented or damaged section and rejoining with a coupling.

C. <u>Connection to Utilities</u>

(1) Source of water and power supply: Verify and be familiar with the location, size and detail of stubouts provided as the source of water and electrical supply to the irrigation system, as shown on the plans. Source of supply and point of connection shall be existing stub-outs at approximate locations as shown on plans (unless other wise noted).

(2) Existing utilities and conditions: Prior to cutting into the soil, locate all cables, conduits, sewer septic tanks, and other utilities as are commonly encountered underground and take proper precautions not to damage or disturb such improvements. If a conflict exists between such obstacles and the proposed work, promptly notify the Owner who will arrange for relocations. Proceed in the same manner if rock layer or any other conditions encountered underground make changes advisable.

a. Where investigation of subsurface conditions has been made by a qualified body in areas in which local materials may be obtained, the Contractor may request the use of such information but will be directly responsible for its verification and accuracy.

D. <u>Inspection</u>

(1) At all times permit the Owner or his authorized agents to visit and observe the work or any part thereof. Maintain proper facilities and provide safe access for such observations to all parts of the work. Where the specifications require work to be tested, it shall not be covered up until tested or approved by the Owner and governing agencies. The Contractor shall be solely responsible for notifying the Owner and required agency (48 hours notice minimum required), where and when such work is in readiness for testing. Should any such work be covered without such test or approval, it shall, if be ordered, be uncovered at the Contractor's expense.

(2) Observations Required

a. Prestart Meeting
b. Layout of control equipment and heads.
c. Main line pressure test (3 hours @ 150 P.S.I.) and trench depth check.
d. Lateral trench depth check.
e. Coverage test and prefinal observation.
f. Final observation.

E. <u>Standard of Installation</u> – Material and workmanship shall be in accordance with local codes and ordinances of legally constituted authorities, except that where provisions of these specifications exceed such requirements, these specifications shall govern.

F. <u>Preservation and Cleaning</u> – Cleanup all work as it progresses. At frequent intervals, and at all times when directed by the Owner, remove and dispose of accumulations of rubbish and debris of all kinds. At the time of completion, the entire site shall be cleared of tools, equipment, rubbish, etc., all of which shall be left in proper, clean condition ready for acceptance.

G. <u>Completion</u> – The work shall be accepted in writing when the entire scope of work has been completed satisfactorily to the Owner. In judging the work, no allowance for deviation from the original plans and specifications will be made unless previously approved by the Owner.

(1) When any item appears on the plan and not in the specifications, or in the specifications and not on the plan, it shall be considered in both.

(2) The Owner or his authorized representative shall have the final authority on all items of the project.

H. <u>Equipment to be Furnished</u> – Irrigation equipment, operating keys and spare parts shall be furnished to the Owner as shown on the plans.

I. <u>Service by the Contractor</u> – The Contractor shall service the system at the Owner's request during the guarantee period and shall be paid for work performed which is not covered by the guarantee. If requested by the Owner, the Contractor shall furnish the Owner with a schedule of services fees.

J. <u>Final Acceptance</u> – Within 10 days of the Contractor's notification that the installation is complete, the Owner and required agencies will observe the installation and, if final acceptance is not given, will prepare a "punch list" which, upon completion by the Contractor, and approved by the Owner, will signify final acceptance by the Owner.

K. <u>Irrigation Guarantee</u>

(1) The entire irrigation system shall be unconditionally guaranteed by the Contractor as to material and workmanship, including settling of backfilled areas below grade for a period of one year following the date of final acceptance of the work.

(2) If, within one year from the date of completion, settlement occurs and adjustments in pipe, valves, and irrigation heads, sod or paving to the proper level of the permanent grades, the Contractor as part of the work under this Contract, shall make all adjustments without extra cost to the Owner, including complete restoration of all damaged planting, paving or other improvements.

(3) Should any operational difficulties in connection with the irrigation system develop within the specified guarantee period, which in the opinion of the Owner may be due to inferior material or workmanship, said difficulties shall be immediately repaired at no additional cost to the Owner, including any and all other damage caused by such defects.

L. <u>Permits and Licenses</u> – Unless otherwise stated, secure the required licenses and permits including payments of charges and fees, give required notices to public authorities, and verify permits secured or arrangements made by others affecting the work of this section

5. MATERIALS

Materials listed in this section encompass the general items encountered. If products listed below are not used for the project being installed, they are to be omitted.

6. PIPE

A. PVC

(1) PVC Pressure Rated Pipe – Type 1220 (PVC Class 200 and 315 and PVC Schedule 40-1120.

a. Type I Grade II pressure rated pipe.
b. Materials shall meet requirements set forth in the ASTM current standards.
c. Outside diameter of pipe shall be the same size as iron pipe.
d. Pipe shall be marked at intervals not to exceed 5 feet with the following information:
Manufacturer's name, nominal pipe size, PVC type and grade (i.e. PVC 1220), S.D.R. rating class, NSF approval and commercial standard designation CS 256-63.
e. PVC pipe shall comply with standards set forth in CS 256-63.
f. PVC Type I shall not be threaded.
g. PVC fittings shall be Schedule 40 or 80, PVC Type II.
h. Solvent shall be #715 Gray NSF approved as manufactured by Industrial Polychemical Service, Gardena, California, or approved equal.
i. Caution shall be utilized in handling Type I pipe due to the possibility of cracking or splitting when dropped or handled carelessly.
j. Where called for on drawings, pipe shall be bell end, conforming to ASTMD-2672. Install concrete thrust blocks as recommended in Johns-Manville installation guide No. TR-624, where conditions dictate.

(2) PVC High Impact Pipe – Type 2110 (PVC Schedule 40 and 80).

a. Type II Grade I High impact Pipe.
b. Outside diameter of pipe shall be the same size as iron pipe.
c. Pipe shall be marked at intervals not to exceed 5 feet with the following information:
Manufacturer's name, nominal pipe size, PVC type and grade (i.e. PVC 2110), schedule, NSF approval and commercial standard designation CS 207-60.
d. PVC pipe shall comply with standards set forth in CS 207-60.
e. PVC schedule 40 shall not be threaded.
f. Fittings shall be PVC Schedule 40 or 80, Type II, NSF approved, as required.
g. All threaded PVC pipe shall be Schedule 80, Type 2110.
h. Solvent shall be #175 or #710 Gray, NSF approved as manufactured by Industrial Polychemical Service, Gardena, California, or approved equal.

(3) UVR – PVC – "Brownline" pipe.
Where called for – on grade pipe shall be UVR– PVC pipe anchored at 10' intervals with re-bar. All UVR – PVC pipe shall be installed per manufacturer's recommendations.

(4) When connection is plastic to metal, male adapters shall be used. The male adapter shall be hand tightened, plus one turn with a strap wrench. Joint compound shall be nonhardening sealing compound compatible to plastics. Compound must not lubricate the joint.

B. <u>Brass Pipe</u>

(1) Where indicated on the drawings, brass pipe shall be red brass screwed pipe conforming to Federal Specification #WW-P-351.

(2) Fittings shall be red brass conforming to federal specification WW-P-460

C. <u>Galvanized Pipe</u>

(1) Where indicated on the drawings, galvanized steel pipe shall be ASA Schedule 40, mild steel screwed pipe.

(2) Fittings shall be medium galvanized screwed beaded malleable iron. Galvanized couplings maybe merchant coupling.

(3) All galvanized pipe and fittings installed below grade shall be painted with two (2) coats of Koppers #50 Bitumastic and wrapped with 20 mil tape.

(4) All nondomestic galvanized pipe installed on grade shall be stenciled or identified with green tape at all connections and continuously along its length.

D. <u>Copper Pipe and Fittings</u> – Where indicated on the drawings, copper pipe shall be type "K" sweat soldered pipe.

7. <u>Risers</u>

All sprinkler heads shall have risers as shown in the detail drawings.

8. <u>Valves</u>

A. <u>Gate Valves</u>

(1) Gate valves 3" and smaller shall be 125 lb. SWP bronze gate valve with screw-in bonnet, nonrising stem and solid wedge disc.

(2) Gate valves 3" and smaller shall have threaded ends and shall be equipped with a bronze hand wheel or operating nuts.

(3) Gate valves 3" and smaller shall be similar to those manufactured by Kennedy or approved equal.

(4) All gate valves shall be installed per detailed drawings.

B. Quick Coupling Valves – Quick coupling valves shall be of manufacturer shown on the drawings or approved equal. Each quick coupler shall have a molded vinyl locking cover. Upon completion of the contract and prior to final acceptance, supply the Owner with quick coupler keys and hose ells of the quantity called for on the plans. The quick coupler keys and hose ells shall be of the same manufacturer as the coupling valve. All Quick coupling valves shall be installed per detailed drawings.

C. <u>Remote Control Valves</u>

(1) The electric remote control valves shall be of the type and manufacturer shown on the drawings, or approved equal, and installed per detailed drawings and manufacturer's recommendations.

(2) Valves shall be installed minimum 6" from all fixed objects and 12" apart.

D. <u>Pressure Regulating Valves</u> – Pressure regulating valves shall be of the type and manufacturer shown on the drawings, or approved equal, and installed per detailed drawings and manufacturer's recommendations.

E. <u>Check Valves</u> – Anti-drain valves shall be of heavy duty virgin PVC or brass construction with F.I.P. thread inlet and outlet. Internal parts shall be stainless steel and neoprene. Anti-drain valves shall be field adjustable against drain out from 5 to 40 feet of head. The anti-drain valve, where indicated on the plans, shall have an excess flow feature which will automatically stop the flow of water when it exceeds the GPM preset by the manufacturer. The anti-drain and excess flow valve shall be similar to the Valcon ADV-XS, Rain Bird SM-1 or approved equal. Sprinkler heads having check valves in heads will not require additional check valves.

9. VALVE BOXES

All valves, including pressure regulating valves, remote control valves and gate valves shall be installed in suitable valve boxes as shown in details. All shall be marked "PRV", "RCV", or "GV" respectively with station numbers for control valves stenciled in white on the valve cover. (RCV boxes shall have locking covers.)

10. CONTROLS

A. <u>Automatic Controller</u> – Automatic controllers shall be of the type and manufacturer shown on the drawings or approved equal and installed per manufacturer's recommendations and detailed drawings.

B. <u>Low Voltage Control Wire</u> – All wiring to be used for connecting the automatic controller to the electric solenoid actuated remote control valve shall be Type UF-600V, 7-strand or solid copper, PVC insulation, single conductor, UL approved underground feeder cable. Each pilot or "hot" wire shall be black with the common wire being white. Field splices between the controller and electric valves are not permitted. Control wire shall be of the gauge indicated on the detailed drawings

C. <u>Communication Cable</u> – Communication cable from the central computer to the field control units shall be Toro P-716-D A1 cable.

D. <u>110 Volt Wire to Controller</u> – 110 volt wire shall be per local code as to type and quality. Install in conduit 24" below grade.

~~11. BACKFLOW PREVENTION UNITS~~

~~Backflow prevention units shall be [illegible] type as indicated on the drawings. Backflow prevention units shall be installed in accordance [illegible] and the requirements set forth by local codes and [illegible] health department.~~

12. IRRIGATION HEADS

A. Sprinkler heads shall be of the types and sizes with the diameter (or radius) of throw, pressure, discharge and other designations necessary to determine the types and sizes as indicated on the plans. They shall be constructed of bronze, brass, stainless steel and/or high impact plastic.

B. All heads of a particular type of function in the system shall be of the same manufacturer and shall be marked with the manufacturer's name and identification in such a position that they can be identified without being removed from the system.

13. OTHER MATERIALS

All other materials not specifically described but required for a complete and proper irrigation system installation, shall be new, first quality of their respective kinds, and subject to the approval of the Owner.

14. EXECUTION

A. <u>Inspection</u>

(1) Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

(2) Verify that the irrigation system will be installed in strict accordance with all pertinent codes and regulations, the original design, the reference standard and the manufacturer's recommendations.

(3) Verify all field conditions including property lines, rights of way, tract boundaries, easements and any other legal or physical element as required for the successful completion of the project.

B. <u>Discrepancies</u>

(1) In the event of discrepancy, immediately notify the Contractor or his authorized representative.

(2) Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

15. FIELD MEASUREMENTS

Make all necessary measurements in the field to ensure precise fit of items in accordance with the original design.

16. TRENCHING AND BACKFILLING

A. <u>Trenching</u>

(1) Excavation shall be open vertical construction sufficiently wide to provide free working space around the work installed and to provide ample space for backfilling and compacting.

(2) Trenches for pipe shall be cut to required grade lines, and trench bottom shall be compacted to provide an accurate grade and uniform bearing for the full length of the pipe run.

(3) When two pipes are to be placed in the same trench, maintain a six-inch space between pipes as a minimum. No pipe shall be installed directly over another

B. <u>Backfilling</u>

(1) Backfill material shall be approved soil. Unsuitable material, including clods and rocks over 2 1/2" in size, shall be removed from the premises and disposed of legally at no cost to the Owner

(2) All Backfilling shall be done carefully and shall be properly compacted.

(3) Depth of trenches shall be sufficient to provide a minimum cover above the top of the pipe as follows:

a. 14" over non-pressure rotor pop-up lines (minimum).
b. 12" over non-pressure lateral lines (minimum).
c. 18" over 24 volt conduit and non-potable irrigation main line 3" and smaller (minimum).
d. 24" cover over pipe serving potable water to a backflow preventer and 120V conduit (minimum).
e. 30" cover over pipe crossing under paving (minimum).
f. Surplus earth remaining after backfilling shall be disposed of on the premises as directed by the Owner

17. INSTALLATION OF PIPE

A. <u>General</u>

(1) The irrigation piping layout is schematic. Contractor can make minor adjustments to the system as required to avoid physical elements or conform to other site conditions. In all cases there should be no conflicts between the irrigation system, planting, and structural elements. The Contractor is responsible for maintaining coverage as indicated, prior approval of any such adjustment from the Owner and for recording of any such change.

(2) Prior to installation, pressure, meter size, size of service to meter, at each point of connection. Make final connections allowing for possible minor deviations from locations shown on plans due to site conditions. Any deviation from design criteria shall be brought to the attention of the Owner. Continuation of work shall be at Contractor's risk and expense.

(3) Verify the static pressure, meter size, size of service to meter, at each point of connection. Make final connections allowing for possible minor deviations from locations shown on plans due to site conditions. Any deviation from design criteria shall be brought to the attention of the Owner. Continuations of work shall be at Contractor's risk and expense.

B. <u>Under Existing Pavement</u>

(1) Pipe required under existing pavement shall be installed by jacking, boring or hydraulic driving except that no hydraulic driving will be permitted under asphaltic concrete pavement

(2) Where cutting or breaking of existing pavement is necessary, secure permission from the Owner before cutting or breaking the pavement and then make all necessary repairs and replacements to the approval of the Owner and at no additional cost to the Owner.

C. <u>Inspection of Pipe and Fittings</u> – Carefully inspect all pipe and fittings before installation, removing all dirt, scale, and burrs and reaming as required; install all pipe with all markings up for visual inspection and verification.

D. <u>PVC Pipe</u>

(1) PVC pipe shall be installed in a manner which will provide for expansion and contraction as recommended by the pipe manufacturer. Routing is diagrammatic and shall be installed in such a manner as to conform with the details per the drawings.

(2) In joining, use Christys Red Hot solvent and make all joints in strict accordance with the manufacturer's recommended methods; give solvent welds at least 15 minutes set up time before moving or handling and 24 hours curing time before filling with water

18. INSTALLATION OF EQUIPMENT

A. <u>Automatic Controller Location and Installation</u>

(1) Automatic controller(s) shall be installed at the location(s) shown on the drawings.

(2) The controller location is essentially diagrammatic and shall be specifically located by the Owner or his representative.

(3) All local and applicable codes shall take precedence in the furnishing and/or connecting of 110V electrical service to the controller.

(4) Adequate coverage (18" minimum) of the 24V service wire leading from the controller shall be installed from the bottom of the controller to trenches.

(5) Controllers shall be installed within vandal-resistant enclosures as called for on the drawings.

B. <u>Control Wires</u>

(1) All electrical equipment and wiring shall comply with local and State Codes and be installed by those skilled and in the trade. Unless the governing code specifies otherwise, low voltage control wire may be installed by the irrigation Contractor.

(2) Connecting and splicing of wire at the valves shall be made using prefilled Dri Splice Connectors with crimp sleeves by Spears.

C. <u>Communication Cable</u>

(1) Communication cable shall be installed from the field control unit to the area called for on the plans.

(2) Install cable in PVC conduit and stub in valve box as indicated on the plans. Ends of cable shall be sealed with an approved water tight connectors as specified. (See Section 18-B-2 above.)

(3) Field splices are not permitted, except where tying in to cable which has been stubbed out by others. Splices shall be made using a Paige Splice Kit No. P71620-1 and in accordance with the manufacturer's recommendations.

(4) Install all communication cable in approved PVC electrical conduit.

D. <u>Electrical Work</u> – All electrical work shall be installed per code requirements.

E. Loose Key Hose Bib – shall be set approximately 12" from walks, curbs, header boards, or paved areas where applicable per detail drawings.

F. Valves

(1) All valves shall be installed as shown in the details and in accordance with manufacturer's recommendations.

(2) All automatic valves shall be sized as shown on plans. Gate Valves shall be line size.

(3) Install each control valve in a separate valve box with a minimum of 12" between valves and 6" from any walk or structure.

G. <u>Valve Boxes</u>

(1) Valve boxes installed near walks, curbs, header boards and paving shall abut those items and the top surfaces shall be flush with items listed above.

(2) All valve boxes shall be installed as shown in the details in accordance with manufacturer's recommendations.

19. TESTING AND INSPECTION

A. <u>General</u>

(1) Furnish all necessary testing equipment and personnel.

(2) Correct all leaks and retest until acceptance by the Owner

B. <u>Covering up Uninspected Work</u> – Do not allow or cause any of the work of this section to be covered up or enclosed until it has been inspected, tested and approved by the Owner and authorized agencies. (See Section 4-D-2)

C. <u>Flushing</u> – Before backfilling the main line, and with all control valves in place but before lateral pipes are connected, completely flush and test the main line and repair all leaks; flush out each section of lateral pipe before irrigation heads are attached.

D. <u>Testing</u>

(1) Make all necessary provisions for thoroughly bleeding the line of air and debris.

(2) Before testing, fill the line with water for a period of at least 24 hours.

(3) Prior to installation of control valves, test all live water lines for leaks at a pressure of 150 PSI for a period of three hours, with all couplings exposed and with all pipe sections center loaded.

(4) Adjust remote control valves so that the most remote sprinkler heads operate at the pressure recommended by the head manufacturer. Adjust remote control valves so a uniform distribution of water is applied by the sprinkler heads to the planting area for each individual valve system.

E. <u>Final Inspection</u>

(1) Thoroughly clean, adjust and balance all systems.

(2) Demonstrate the entire system to the Owner, his authorized agent and/or governing agencies to show that all remote control valves are properly balanced, all heads are properly adjusted for radius and arc of coverage, and that the installed system is workable, clean and efficient.

20. OPERATIONAL AND MATERIALS MANUALS

A. <u>Operational and Product Manuals</u> – Prepare and deliver to the Owner, prior to approved final inspection, all required and necessary descriptive material in complete detail and sufficient quantity, operation and product manual. The manual shall describe the material installed and shall be in sufficient detail to permit operating personnel to understand, operate and maintain all equipment. Spare parts lists and related manufacturer information shall be included for each equipment item installed.

B. Each complete, bound manual shall include the following information

(1) Index sheet stating Contractor's address and telephone number.

(2) Duration of guarantee period.

(3) List of equipment with names and addresses of local manufacturer representatives.

(4) Complete operating and maintenance instructions on all major equipment.

C. In addition to the above manuals, provide the maintenance personnel with instructions for major equipment and show written evidence to the Owner, at the conclusion of the project, that this service has been rendered.

D. <u>INSPECTION</u>

(1) At all times permit the Owner or his authorized agents to visit and observe the work or any part thereof. Maintain proper facilities and provide safe access for such observations to all parts of the work. Where the specifications require work to be tested, it shall not be covered up until tested or approved by the Owner and governing agencies. The Contractor shall be solely responsible for notifying the Owner and required agency (48 hours notice minimum required), where and when such work is in readiness for testing. Should any such work be covered without such test or approval, it shall, if so ordered, be uncovered at the Contractor's expense.

(2) Observation Required

a. Prestart meeting
b. Layout of control equipment and heads
c. Main line pressure test and trench depth check.
d. Lateral trench depth check
e. Coverage test and prefinal observation
f. Final observation

E. <u>Standard of Installation</u> – Material and workmanship shall be in accordance with local codes and ordinances of legally constituted authorities, except that where provisions of these specifications exceed such requirements, these specifications shall govern.

F. <u>Preservation and Cleaning</u> – Cleanup all work as it progresses. At frequent intervals, and at all times when directed by the Owner, remove and dispose of accumulations of rubbish and debris of all kinds. At the time of completion, the entire site shall be cleared of tools, equipment, rubbish, etc., all of which shall be left in proper, clean condition ready for acceptance.

G. <u>Completion</u> – The work shall be accepted in writing when the entire scope of work has been completed satisfactorily to the Owner. In judging the work, no allowance for deviation from the original plans and specifications will be made unless previously approved by the Owner

H. <u>Equipment</u> – Irrigation equipment, operating keys and spare parts shall be furnished to the Owner as shown on the plans.

I. <u>Service by the Contractor</u> – The Contractor shall service the system at the Owner's request during the guarantee period and shall be paid for work performed which is not covered by the guarantee. If requested by the Owner, the Contractor shall furnish the Owner with a schedule of services and fees.

J. <u>Final acceptance</u> – Within 10 days of the Contractor's notification that the installation is complete, the Owner and required agencies will observe the installation and, if final acceptance is not given, will prepare a "punch list" which, upon completion by the Contractor, and approved by the Owner, will signify final acceptance by the Owner.

REVISIONS

ENVIRONS, INC.
LANDSCAPE ARCHITECTURE
220 W. FOOTHILL BLVD SUITE F • CLAREMONT, CA 91711

CH2MHILL
Lockwood Greene
Atlanta, Georgia

SHEET TITLE: SPECIFICATIONS

PROJECT NAME:
EDISON
MISSION ENERGY
WALNUT CREEK ENERGY PARK • CITY OF INDUSTRY, CA

LICENSED LANDSCAPE ARCHITECT • STATE OF CALIFORNIA

DRAWN BY	DATE
BRK	7/2/06
JOB NO.	
CH2M0001	
SHEET NO.	
L-6	
OF 6 SHTS.	

BEFORE THE ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION
OF THE STATE OF CALIFORNIA

APPLICATION FOR CERTIFICATION
FOR THE WALNUT CREEK ENERGY PARK
(WCEP)

DOCKET NO. 05-AFC-2

(Revised 2/23/06)

PROOF OF SERVICE LIST

DOCKET UNIT

Send the original signed document plus the required 12 copies to the address below:

CALIFORNIA ENERGY COMMISSION
DOCKET UNIT, MS-4
*Attn: Docket No. 05-AFC-2
1516 Ninth Street
Sacramento, CA 95814-5512
docket@energy.state.ca.us

* * * *

In addition to the documents sent to the Commission Docket Unit, also send individual copies of any documents to:

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Revisions to POS List, i.e. updates, additions and/or deletions

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INTERESTED AGENCIES

No agencies to date.

DECLARATION OF SERVICE

I, Jeannette Harris, declare that on November 13, 2006, I deposited copies of the attached Supplement IV in Response to Data Requests and Workshop Queries in Support of the Application for Certification for the Walnut Creek Energy Park (05-AFC-02) in the United States mail at Sacramento, CA with first class postage thereon fully prepaid and addressed to those identified on the Proof of Service list above.
Transmission via electronic mail was consistent with the requirements of California Code of Regulations, title 20, sections 1209, 1209.5, and 1210.
I declare under penalty of perjury that the foregoing is true and correct.

Jeannette Harris
[signature]