CH2MHILL TRANSMITTAL

To: California Energy Commission
1516 Nitnth Street
Sacarmento, CA 95814

From: CH2M HILL
2485 Natomas Park Dr. #600
Sacramento, CA 95833

Attn: Dr. James Reede

Date: October 24, 2007

Re: CECP Data Adequacy Supplement A, 07-AFC-6

We Are Sending You:		**Method of shipment:**	
X Attached		Under separate cover via	
Shop Drawings	X	Documents	Tracings
Prints		Specifications	Catalogs
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Quantity	Description
75	CECP Data Adequacy Supplement A (Hard Copy)
100	CECP Data Adequacy Supplement A (Electronic Copy on CD-ROM)
5	Attachment WR-1A, Waste Discharge Requirements
5	Confidential Attachment CR-1A, Cultrual Resource Assessment Technical Memo

If the material received is not as listed, please notify us at once.

Remarks:

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CH2M HILL
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Santa Ana, CA
92707
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October 23, 2007

Dr. James Reede
California Energy Commission
Systems Assessment and
Facility Siting Division
1516 9th Street, MS 15
Sacramento, CA 95814-5512

Subject: Carlsbad Energy Center LLC – Carlsbad Energy Center Project AFC (07-AFC-6): Data Adequacy Supplement A

Dear Dr. Reede:

On behalf of Carlsbad Energy Center LLC (Applicant), please find enclosed Data Adequacy Supplement A to the Carlsbad Energy Center Project (CECP) Application for Certification (AFC) (07-AFC-6). As discussed, CEC staff has reviewed the supplemental information and data provided by the Applicant to respond to staff's Data Adequacy Recommendations, dated October 9, 2007. It is our understanding that CEC staff has found the supplemental information and data submitted by Applicant to be sufficient for staff to recommend to the Commission that the CECP AFC is data adequate at this time.

The enclosed Data Adequacy Supplement A to the CECP AFC includes information and data to respond to CEC staff's data adequacy recommendations for the following ten topics:

- Air Quality
- Biological Resources
- Cultural Resources
- Land Use
- Socioeconomics
- Traffic and Transportation
- Transmission System Design
- Transmission System Engineering
- Public Health
- Water Resources

Based on the October 9, 2007 CEC staff's Data Adequacy Recommendations, the CECP AFC filed/docketed on September 14, 2007, was found data adequate by staff for all other topics.

In accordance with the filing/docketing of the CECP AFC on September 14, 2007, we are submitting 75 hard copies and 50 CDs of Data Adequacy Supplement A on this date – October 22, 2007. In addition, per your request, we are submitting an additional 50 CDs of the Data Adequacy Supplement A, bringing the total number of CDs submitted to 100. Based on the filing/docketing of the enclosed Data Adequacy Supplement A, it is our understanding that staff is recommending to the Commission at the Business Meeting on October 31, 2007, that the CECP AFC is data adequate.

Carlsbad Energy Center LLC appreciates the continued opportunity to work with CEC staff on this important project.

Sincerely,

CH2M HILL

Robert C. Mason
Project Director

Enclosures: Data Adequacy Supplement A (07-AFC-6)

cc: Tim Hemig, Carlsbad Energy Center LLC
John McKinsey, Stovel Rives, LLP

In Response to Data Adequacy Review

of the

Application for Certification

for the

CARLSBAD ENERGY CENTER PROJECT
DATA ADEQUACY SUPPLEMENT A (07-AFC-6)

Submitted to the

California Energy Commission

Submitted by:

Carlsbad Energy Center LLC

October 23, 2007

CH2MHILL
2485 Natomas Park Drive
Suite 600
Sacramento, CA 95833

Contents

Section Page

Introduction

The Carlsbad Energy Center LLC (Applicant) submitted an Application for Certification (07-AFC-6) for the Carlsbad Energy Center Project (CECP) to the California Energy Commission (CEC) for a nominal 558-megawatt (MW) combined-cycle natural gas-fired power plant on September 14, 2007. This Data Adequacy Supplement A provides the Applicant's responses based on the technical disciplines identified by the CEC and are in response to those items identified in the Data Adequacy Recommendation provided by the CEC Staff on October 9, 2007.

The format for this supplement follows the order of the AFC sections and provides additional information and responses to CEC information requests on Transmission System Engineering, Air Quality, Biological Resources, Cultural Resources, Land Use, Socioeconomics, Soils, Traffic and Transportation, Visual Resources, Waste Management, and Water Resources. Only sections for which CEC Staff posed requests or questions related to data adequacy are addressed in this supplement. If the response calls for additional appended material, it is included at the end of each subsection.

Each subsection contains data adequacy questions or information requests, with numbers and summary titles and, in brackets, the citation from Appendix B, Title 22, California Code of Regulations (*Regulations Pertaining to the Rules of Practice and Procedure and Power Plant Site Certification*) indicating a particular information requirement for the AFC. Each item follows with the CEC Staff comment on data adequacy for this item, under the heading "Information required for the AFC to conform with regulations" followed by the Applicant's response to the information requested.

3.0 Transmission System Engineering

1. Electrical One-line Diagrams of the Switchyards [Appendix B(b)(2)(C)]

A detailed description of the design, construction, and operation of any electric transmission facilities, such as power lines, substations, switchyards, or other transmission equipment, which will be constructed or modified to transmit electrical power from the proposed power plant to the load centers to be served by the facility. Such description shall include the width of rights of way and the physical and electrical characteristics of electrical transmission facilities such as towers, conductors, and insulators.

Information required for the AFC to conform to the regulations:

a. Provide a complete electrical one-line diagram (or resubmit Figure 3.1-1) of the proposed Carlsbad Energy Center Project (CECP) 138 kV & 230 kV switchyards or the post-project Encina switchyards showing all equipment for all new generators' interconnection with the switchyard including any bus duct connectors or cables, 13.8 kV switchgear & breakers on the low side, generator step-up transformers, short overhead line and/or cables from the transformers to the switchyards with their configurations, buses, breakers, disconnect switches on the 138 kV & 230 kV sides and their respective ratings, along with the existing/proposed transmission outlets from the switchyards.

Response— As a result of preparing these new figures, the Applicant has also revised the first eight pages of the Transmission System Engineering Section of the AFC. Changes from the original text are shown in underline/~~strikeout~~ mode. The requested figures are provided as Figures TSE1a-1 through TSE1a-4.

b. Also provide a one-line diagram showing the existing Encina generator units and pre-project existing 138 kV & 230 kV Encina Switchyards with their configurations, buses, breakers with the existing transmission outlets.

Response— The requested figures are provided as Figures TSE1b-1 through TSE1b-7 and are described in the revised text that is attached.

c. Provide a physical layout drawing of the CECP switchyards or the post-project Encina Switchyards showing all major equipment and transmission outlets.

Response— The requested figures are provided as Figures TSE1c-1 through TSE1c-11 and are described in the revised text that is attached.

2. California ISO Schedule [Appendix B(i)(3)]

A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.

Information required for the AFC to conform to the regulations:

Provide the expected date(s) when the preliminary and final interconnection approvals from the California ISO would be obtained, or, when the final Large Generator Interconnection Agreement would be executed with the California ISO.

Response— The 230 kV interconnection request is scheduled to have its System Facilities Study done on December 9, 2007. Once the study and its negotiations are complete, the Large Generator Interconnection Agreement (LGIA) can be executed. So, it should be available before the end of the calendar year.

The 138 kV Draft System Impact Study (SIS) was received the week of October 8th. The review meeting is scheduled for October 24th. The Final SIS will be provided upon request. After the October 24th meeting the CAISO has 10 days to send the Applicant the System Facilities Study Agreement, which Applicant then has 30 days to sign (i.e., no later than December 3, 2007). A copy of the System Facilities Study Agreement will be provided upon request. Once the study is agreed to, the LGIA for that interconnection can be executed. Therefore, it should also be available before the end of the calendar year and will be provided upon request.

INSTRUCTIONS:

1). Replace pages 3-1 through 3-8 of the AFC with the attached pages.

2) The following figures have been replaced with the new figures and can be discarded:

- Figure 3.1-1, One-line Diagram
- Figure 3.1-2, Transmission Line Routes
- Figure 3.2-2, 230kV Line Cross-Section Deadend Pole
- Figure 3.3-3, 138/230kV Line Cross-Section Double Circuit Configuration
- Figure 3.3-4, 138/230kV Line Cross-Section Double Deadend Configuration Line Divergence Point
- Figure 3.3-5, 138/230kV Line Cross-Section Single Circuit To 138-Kv Substation

SECTION 3.0

Transmission System Engineering

3.1 Introduction

Carlsbad Energy Center LLC proposes to develop the new Carlsbad Energy Center Project (CECP) on the existing Encina Power Station site. CECP will have two trains of generation, designated as Units 6 & 7. Each train includes one natural-gas-fired combustion turbine generator (CTG) and one steam turbine generator (STG). Each generator will have a generator step-up (GSU) transformer with the high voltage primary winding connected to a high voltage circuit breaker.

For Unit 6, the GSU transformer connected to CTG will step up the generation voltage from 16.5 kilovolts (kV) to 230 kV and the GSU transformer connected to STG will step up the generation voltage from 13.8 kV to 230 kV. 230-kV SF6 circuit breakers will be connected to the high side of the GSU transformers which will be then tied together and connect to a new 230-kV transmission line. This 230-kV transmission line, approximately 2,775 feet long, will interconnect Unit 6 to the existing San Diego Gas & Electric (SDG&E) 230-kV Encina switchyard.

For Unit 7, the GSU transformer connected to CTG will step up the generation voltage from 16.5 kV to 138 kV and the GSU transformer connected to STG will step up the generation voltage from 13.8 kV to 138 kV. 138-kV SF6 circuit breakers will be connected to the high-side of the GSU transformers which will be then tied together and connect to a new 138-kV transmission line. This 138-kV transmission line, approximately 1,250 feet long, will interconnect Unit 7 to the existing SDG&E 138-kV Encina switchyard.

The 230-kV and the 138-kV existing SDG&E Encina switchyards, the proposed Units 6 & 7 power plants, and the proposed interconnecting 138-kV and 230-kV transmission lines are all located within the existing Encina Power Station site. The transmission line interconnection to the California Independent System Operator (CAISO) grid is via the existing 230-kV and 138-kV transmission lines from the existing SDG&E Encina switchyards. The single-line representations of the proposed electrical interconnection ~~is~~ are depicted in ~~Figure 3.1-1.~~ Figures TSE1a-1, TSE1a-2, TSE1a-3 and TSE1a-4. Figures TSE1b-1 and TSE1b-2 show the pre-project one lines of the existing SDG&E 230-kV and 138-kV Encina switchyards.

This section describes the interconnecting transmission lines and examines its impact on the existing electrical transmission grid. Additional discussions include potential electrical line nuisances (electrical, magnetic, audible noise, corona effects, and safety of the interconnection).

The CECP site was selected for this project, in part, because of the existing Encina Power Station site is already connected to SDG&E system via the existing 138-kV and 230-kV SDG&E Encina switchyards. Existing generation units 1, 2, and 3, currently connected to the existing 138-kV SDG&E Encina switchyard, will be retired. Figures TSE1b-3 and TSE1b-4

show the pre-project one lines for Encina generating units 1, 2 and 3. ~~and one~~ One of the vacated bus positions (Bay 1) in the existing SDG&E 138-kV Encina switchyard will be used to connect the new 138-kV transmission lines from Unit 7. The 230-kV transmission line from Unit 6 will terminate to a new cable termination pole using 230-kV cable terminators. The cable termination pole will be located outside of the existing SDG&E 230-kV Encina switchyard near the northwest corner of the switchyard. From the cable termination pole, SDG&E will connect and routes 230-kV insulated cables through underground duct-banks and terminate the cables to a position in the ring bus of the 230-kV SDG&E Encina switchyard.

~~Figure 3.1-2~~ Figure TSE1c-1 identifies the proposed CECP site layout and the proposed 138-kV and 230-kV transmission line routing within the existing Encina Power Station site.

Figure TSE1c-11 shows the pre-project general arrangement layout of SDG&E 230-kV and 138-kV Encina switchyards. Figure TSE1c-8 shows the proposed post-project general arrangement layout of SDG&E 230-kV and 138-kV Encina switchyards.

Figures TSE1b-5, TSE1b-6 and TSE1b-7 show the one lines of the existing Encina generating units 4, 5 and EGT-1.

3.2 Transmission Line Description, Design, and Operation

This section discusses the existing transmission facilities in the vicinity of the CECP, the interconnection to SDG&E system and the two Generator "Interconnection System Impact Studies" (ISIS) by SDG&E and CAISO. There are two separate ISIS processes, one for interconnection on the 230-kV system and one on the 138-kV system.

3.2.1 Existing Transmission Facilities

The CECP site is located just east of Carlsbad Boulevard in the City of Carlsbad and west of Interstate 5 (I-5) (~~Figure 3.2-1~~ Figure TSE1c-1). The CECP is located within the site of the existing Encina Power Station that includes five operational generation units (Figure TSE1c-11).

The existing 138-kV SDG&E switchyard (Figures TSE1b-2 and TSE1c-11) is connected to the following:

- Existing generation Units 1, 2, and 3 (each 107 megawatts [MW], 104 MW and 110 MW respectively)
- Existing generation Unit 4 (306 MW)
- Existing simple cycle combustion turbine generator #EGT-1 (17 MW)
- Station auxiliary transformers and to the startup transformer
- Four existing 138-kV SDG&E transmission lines (TL 13801, TL 13804, TL 13806, and TL 13807). These transmission lines cross over I-5 heading in an east/southeast direction within SDG&E established transmission corridors that are then connected to SDG&E grid.

The existing 230-kV SDG&E Encina switchyard (Figures TSE1b-1 and TSE1c-11) is connected to the following:

- Existing generation Unit 5 (345 MW)
- Three existing 230-kV transmission lines (TL 23003, TL 23011, and TL 23012). These transmission lines connect to the grid after crossing over I-5 heading in an east/southeast direction within the existing SDG&E transmission corridors.

3.2.2 Proposed Transmission Interconnection

The CECP is located within the existing Encina Power Station site and the new generation will interconnect to the SDG&E system via the existing 138-kV and 230-kV SDG&E Encina switchyards.

3.2.2.1 Proposed Transmission Interconnection at 230 kV

The CECP (Figure TSE1c-1) will run approximately 2,775 feet of overhead transmission line (Figures TSE1c-2, -3, -5 and -7) from two 230-kV SF6 circuit breakers and disconnect switches of Unit 6 to a cable termination pole (Figure TSE1c-9), to be located outside the SDG&E existing 230-kV switchyard.

The Interconnection Facilities that are needed to interconnect the CECP to the SDG&E system at 230 kV are as follows:

- SDG&E will connect the 230-kV overhead line to the cable termination poles (Figure TSE1c-9) with 230-kV insulated cables and route them through underground duct-banks and terminate the cables to an open position in the ring bus (Figure TSE1c-10) in the 230-kV existing SDG&E Encina switchyard.

3.2.2.2 Proposed Transmission Interconnection at 138 kV

The CECP (Figure TSE1c-1) will run approximately 1,250 feet of overhead transmission line (Figures TSE1c-2, -3, -5 and -7) from the two 138-kV SF6 circuit breakers and disconnect switches of Unit 7 to Bay 1 dead-end structure in the 138-kV existing SDG&E Encina switchyard (Figure TSE1c-8). CECP will retire the existing Encina Units 1, 2, and 3.

The Interconnection Facilities that are needed to interconnect the CECP to SDG&E system at 138 kV are as follow:

- In the existing 138-kV SDG&E Encina switchyard, SDG&E will disconnect the existing incoming 138-kV lines from the existing Encina Power Station Units 1, 2, and 3 GSU transformers and perform bus rearrangements necessary to accommodate the CECP 138-kV transmission line.
- From the last CECP 138-kV transmission line dead-end pole, SDG&E will connect the CECP 138-kV transmission line to the vacated position in Bay 1 (Figure TSE1c-8), at the north end of the 138-kV Encina switchyard. This transmission line from Unit 7 will carry less power than the removed generation from the retired Encina Power Station Units 1, 2, and 3. Therefore, new generation will not impact the ratings of the existing 138-kV Encina switchyard or the existing 138-kV transmission lines from the Encina switchyard that connect to the grid.

3.2.3 Transmission Interconnection System Impact Studies

SDG&E/CAISO issued Generator ISIS, dated June 5, 2007. This ISIS considered a net increase of 288 MW of new generation interconnecting to 230-kV SDG&E existing Encina switchyard. SDG&E/CAISO held several meetings with Carlsbad Energy Center LLC afterwards to review the ISIS. Carlsbad Energy Center LLC requested SDG&E/CAISO update the ISIS based the current CECP needs as described in Section 3 of this report. SDG&E/CAISO plans to issue an updated ISIS with updated estimated cost of the impact associated with the CECP. The current ISIS study agreements/workplans with SDG&E and CAISO are included in Appendix 3A. Proof of payment for the revised ISIS is also included in Appendix 3A.

The CECP will have a maximum net output of 280 MW from Unit 6 for interconnection to SDG&E 230-kV Encina switchyard. This reduction in generation capacity of 8 MW compared to the 288 MW capacity used in the June 5, 2007 ISIS analysis, will result in a reduced impact on the 230-kV system.

The CECP will have a maximum net output of 280 MW from Unit 7 for interconnection to SDG&E 138-kV Encina switchyard. This 280 MW Unit 7 generation addition will replace the generation capacity from the retired Encina Power Station Unit 1, 2, and 3 with 330 MW with a net generation reduction of 50 MW. This reduction will not impact the capacities of outgoing transmission lines from SDG&E Encina 138-kV switchyard and therefore, it is expected to have negligible impact on SDG&E system. An ISIS agreement with SDG&E to conduct a system impact analysis for the 138-kV connection was executed on June 1, 2007. As noted above, the signed ISIS agreements and proof of payments are provided in Appendix 3A.

CECP will retire Encina Power Station Units 1, 2, and 3 prior to placing CECP Units 6 and 7 in commercial service. Unit 1 will be retired prior to bringing Unit 6 on line. The retirement of Encina Power Station Units 2 and 3 will precede operation of CECP Unit 7.

3.3 Transmission System Safety and Nuisances

This section discusses safety and nuisance issues associated with the electrical interconnection of the CECP into the existing electrical grid.

3.3.1 Electrical Clearances

High-voltage overhead transmission lines consist of bare conductors, support structures, polymer or porcelain insulators, and connecting hardware. Transmission lines are designed and constructed so that they provide sufficient clearances to protect the public and the utility workers. Minimum clearances are established by National Electric Safety Code, California Public Utility Commission (CPUC) General Order 95 (GO-95), Electric utilities, state regulators, and local ordinances. Typically, clearances are specified for:

- Distance between the energized conductors themselves
- Distance between the energized conductors and the supporting structure

- Distance between the energized conductors and other power or communication lines on the same supporting structure.
- Distance from the energized conductors to the ground and features such as roadways, railroads, driveways, parking lots, navigable waterways, airports, etc.
- Distance from the energized conductors to buildings and signs
- Distance from the energized conductors to other parallel power or communications lines

The CECP transmission interconnection will be designed to meet all federal, state, and local code clearance requirements. Since the design must take into consideration many different situations, the generalized dimensions provided in the figures of this section should be regarded as conceptual. The location of the McClellan Palomar Airport nearby requires that the height of the transmission line poles be limited and CPUC GO-95 requires that the minimum clearance for 230-kV transmission line be 30 feet above thoroughfare.

The final design will comply with CPUC GO-95, SDG&E and SCE guidelines for the electric and magnetic field (EMF) reduction.

3.3.2 Electrical Effects

The electrical effects of high-voltage transmission lines fall into two broad categories: corona effects and field effects. Corona is the ionization of the air that occurs at the surface of the energized conductor and suspension hardware due to very high electric field strength at the surface of the metal during certain conditions. Corona may result in radio and television reception interference, audible noise, light, and production of ozone. Corona is a function of the voltage of the line, the diameter of the conductor (or bundle of conductors), and the condition of the conductor and hardware. Field effects are the voltages and currents that may be induced in nearby conducting objects. Transmission line's 60-hertz (Hz) electric and magnetic fields cause these effects.

3.3.2.1 Electric and Magnetic Fields

Operating power lines, like the energized components of electrical motors, home wiring, lighting, and electrical appliances, produce electric and magnetic fields, commonly referred to as EMF. The EMF produced by the alternating current electrical power system in the United States has a frequency of 60 Hz.

The 60-Hz power line fields are considered to be extremely low frequency. Electric and magnetic fields of power transmission lines at 60-Hz frequency have very low energy that does not cause heating or ionization. The 60-Hz fields do not radiate, unlike radio-frequency fields.

Electric fields around transmission lines are produced by electrical charges on the energized conductor. Electric field strength is directly proportional to the line's voltage; that is, increased voltage produces a stronger electric field. The electric field is inversely proportional to the distance from the conductors, so that the electric field strength declines as the distance from the conductor increases. The strength of the electric field is measured in units of kilovolts per meter (kV/m). The electric field around a transmission line remains

practically constant and is not affected by the common daily and seasonal fluctuations in usage of electricity by customers.

Magnetic fields around transmission lines are produced by the level of current flow, measured in units of amperes, through the conductors. The magnetic field strength is also directly proportional to the current; that is, increased amperes produce a stronger magnetic field. The magnetic field is inversely proportional to the distance from the conductors. Thus, like the electric field, the magnetic field strength declines as the distance from the conductor increases. Magnetic fields are expressed in units of milligauss. The flow of current fluctuates daily and seasonally as the electricity usage and so does the magnetic field around transmission lines.

Considerable research has been conducted over the last 30 years on the possible biological effects and human health effects from EMF. This research has produced various studies that offer no uniform conclusions about whether long-term exposure to EMF is harmful or not. In the absence of conclusive or evocative evidence, some states, California in particular, have chosen not to specify maximum acceptable levels of EMF. Instead, these states mandate a program of prudent avoidance whereby EMF exposure to the public is minimized by encouraging electric utilities to use low-cost techniques to reduce the levels of EMF.

3.3.2.2 Audible Noise

Audible noise on transmission lines and structures is due to the effects of corona. Corona is a function of transmission line voltage, conductor diameter and condition of the conductor, and the suspension hardware. The electric field gradient is the rate at which the electric field changes and is directly related to the line voltage. The electric field gradient is greatest at the surface of the conductor. Large-diameter conductors have lower electric field gradients at the conductor surface and, hence, lower corona than smaller conductors, everything else being equal. Irregularities (such as nicks and scrapes on the conductor surface) or sharp edges on suspension hardware concentrate the electric field at these locations and, thus, increase corona at these spots. Similarly, contamination on the conductor surface, such as dust or insects, can cause irregularities that are a source for corona. Raindrops, snow, fog, and condensation are also sources of irregularities. Corona typically becomes a design concern for transmission lines at 345 kV voltage and above.

3.3.2.3 EMF Assumptions

It is important that any discussion of EMF include the assumptions used to analyze the effect of EMF, and consider that the EMF in the vicinity of the power lines vary with regard to line design, line loading, distance from the line, and other factors. The electric field depends upon the line voltage, which remains nearly constant for a transmission line during normal operation. A worst-case voltage of 242 kV (230 kV + 5 percent) will be used in the calculations for the 230-kV lines and a worst-case voltage of 145 kV (138 kV + 5 percent) will be used in the calculations for the 138-kV lines.

The magnetic field is proportional to line loading (amperes), which varies as power plant generation is changed by the system operators to meet increases or decreases in electrical demand. Line loading values used for the EMF calculations are based on the nominal output rating of the connected generators.

The CECP will produce a maximum of 280 MW from Unit 6 for interconnection to SDG&E 230-kV Encina switchyard. This reduction in generation capacity of 8 MW compared to the 288 MW capacity used in the June 5, 2007 ISIS analysis, will result in a reduced impact on the 230-kV system. The transmission line connecting Unit 6 generation to the SDG&E 230-kV Encina switchyard will be routed entirely inside the Encina Power Station. The site is not accessible to the public and, therefore, the public will not be exposed to any EMF level from this transmission line. At the Unit 6 area, the line is closest to the site property line (about 260 feet from the east property line). At the 230-kV switchyard area the line is about 800 feet from the nearest residence. There are three existing SDG&E 230-kV transmission lines connected to SDG&E 230-kV switchyard. Power flows in all directions on these transmission lines which depend on imports, internal generation, transmission lines that may be out of service and the system demand load. No change on the existing transmission lines conductor size is expected. The existing line EMF is based upon the capacity rating of the transmission lines and therefore, the EMF levels for these lines will not change.

The CECP will produce a maximum of 280 MW from Unit 7 for interconnection to SDG&E 138-kV Encina switchyard. The transmission line connecting Unit 7 generation to the SDG&E 138-kV Encina switchyard will be routed entirely inside the Encina Power Station. The site is not accessible to the public and as such, EMF exposure from this transmission line by the public will not be an issue. At the Unit 7 area, the line is closest to the site property line (about 260 feet from the east property line). At the 138-kV switchyard area the line is about 1,300 feet from the nearest residence. This 280 MW Unit 7 generation addition will replace the generation capacity from retiring Encina Unit 1, 2, and 3 with 330 MW with a net generation reduction of 50 MW. This reduction will not impact the capacities of the outgoing 138-kV transmission lines from SDG&E Encina Power Station 138-kV switchyard and therefore the EMF levels for these lines will not change.

The following figures illustrate the plan view of the interconnection between Units 6 and 7 and SDG&E 230-kV and 138-kV switchyards. Other figures show the cross sections of the transmission line poles at different locations, the take-off structures and cable riser poles.

- ~~Figure 3.1-2~~ Figure TSE1c-1 illustrates the plan view of the interconnection alignments.
- ~~Figure 3.3-1~~ Figure TSE1c-2 shows a cross section of the 138-kV and 230-kV dead-end poles used at several locations as shown on figure TSE!c-1. ~~before the transmission line drops down to another dead-end pole next to Unit 6.~~
- ~~Figure 3.3-2~~ Figure TSE1c-3 shows a cross section of the 230-kV tangent pole with phase configuration change from the previous pole.
- ~~Figure 3.3-3~~ Figure TSE1c-4 shows a cross section of the double-circuit 138/230-kV dead-end angle pole. ~~before the lines cross the existing railroad track at approximately perpendicular to the track. A minimum of 34 feet of clearance above the railroad track will be maintained~~.
- ~~Figure 3.3-4~~ Figure TSE1c-5 shows a cross section of the double-circuit 138/230-kV dead-end pole used to carry both 138-kV and 230-kV lines. ~~before the 138-kV transmission line is routed to a separate pole before entering the 138-kV SDG&E Encina switchyard.~~

- ~~Figure 3.3-5~~ Figure TSE1c-6 shows a cross section of the 138-kV dead-end pole before the 138-kV transmission line is routed to the 138-kV SDG&E Encina switchyard.
- Figure TSE1c-7 shows circuit breakers and sections of the 138 and 230-kV take-off structures at the GSU transformers of Units 6 and 7.
- Figure TSE1c-9 shows sections of the 230kV cable pole just north-west of the SDG&E existing 230kV switchyard.

3.3.2.3.1 Transmission Line EMF Reduction

While the State of California does not set a statutory limit for electric and magnetic field levels, the CPUC, which regulates electric transmission lines, mandates EMF reduction as a practicable design criterion for new and upgraded electrical facilities. As a result of this mandate, the regulated electric utilities have developed their own design guidelines to reduce EMF at each new facility. The California Energy Commission (CEC), which regulates transmission lines to the point of connection, requires independent power producers to follow the existing guidelines that are in use by local electric utilities or transmission-system owners.

In keeping with the goal of EMF reduction, the interconnection of the CECP will be designed and constructed using the principles outlined in the SDG&E and SCE publications, "EMF Design Guidelines for Electrical Facilities." These guidelines explicitly incorporate the directives of the CPUC by developing design procedures compliant with Decision 93-11-013 and General Orders 95, 128, and 131-D. That is, when the transmission line structures, conductors, and rights-of-way are designed and routed according to the SCE & SDG&E guidelines, the transmission line would be consistent with the CPUC mandate.

The primary techniques (per SCE & SDG&E guidelines) for reducing EMF anywhere along the line are to:

- Increase the pole height for overhead design
- Use compact pole-head configuration
- Minimize the current on the line
- Optimize the configuration of the phases (A, B, C)

The CEC normally requires actual measurements of pre-interconnection background EMF for comparison with measurements of post-interconnection EMF levels. Because of the unique circumstances that ensure there will be no EMF changes caused by CECP, the Applicant does not believe that such measurements are necessary.

3.3.2.3.2 Conclusion on EMF and Audible Noise

After having evaluated the electrical effects of the high-voltage transmission lines, it is the Applicant's conclusion that:

- Electrical effects calculations do not have to be submitted with this AFC to the CEC for the approximately 0.6 mile long, 230-kV and 138-kV CECP interconnect transmission lines since these transmission lines are to be constructed on the property wholly-owned by Cabrillo Power I LLC with no public receptors.
- Electrical effects calculations do not have to be submitted with this AFC for the existing 230-kV and 138-kV switchyards transmission line outlets since there is no change to the

existing lines' electric field, audible noise, voltage, and line configuration. Power flows in the transmission system are in all directions and depends on imports, internal generation, transmission lines that may be out of service and system load demand. No change on the existing transmission lines conductor size is expected. The existing line EMF is based on the capacity rating of the transmission lines and therefore, the EMF levels for these lines will not change.

3.3.2.4 Induced Current and Voltages

A conducting object such as a vehicle or person in an electric field will have induced voltages and currents. The strength of the induced current will depend upon the field strengths, the size and shape of the conducting object, and the object-to-ground resistance. When a conducting object is isolated from the ground and a grounded person touches the object, a perceptible current or shock may occur as the current flows through the person to ground. To prevent such situations and to mitigate hazardous and nuisance shocks, all metallic objects below and near the transmission lines will be grounded, at several locations, if necessary for fences and pipes that run parallel to the transmission lines, and adequate clearances will be maintained above roads, railroad lines, and parking facilities to minimize induced currents in vehicle and people to safe levels.

The CECP interconnection transmission lines will run parallel to and cross over an existing railroad. CECP will coordinate with the railroad to minimize any interference with the railroad cars and signal & communications circuits. The proposed routing of the 230-kV and 138-kV lines will be constructed in conformance with GO-52, GO-95, and Title 8 California

TO EXISTING 230kV SUBSTATION
(CONTINUED TO FIGURE TSE1a-2)

230kV T-LINE

1200A

ISO METER

1200A

230kV
COLLECTOR BUS
NEAR GSU TRANSFORMER

6A
2000A
40KA

6B
2000A
40KA

180kV

GENERATOR
STEP UP TRANSFORMER #6A
48/64/80 MVA (HOLD)
ONAN/ONAF/ONAF, 65°C
13.8kV-230kV

180kV

GENERATOR
STEP UP TRANSFORMER #6B
168/224/280 MVA (HOLD)
ONAN/ONAF/ONAF, 65°C
16.5kV-230kV

GCB #6

ISO-PHASE BUS
16.5kV, 3ϕ, 9.5kA, 125kV BIL

BAR BUS 10BAA
15kV, 3ϕ, 1300A, 110kV BIL
NON-VENTILATED

BAR BUS
15kV, 3ϕ, 4KA, 110kV BIL
NON-VENTILATED

11CJT01
SFC

11CJT01
SEE

GENERATOR #6A
MFR SIEMENS
13.8kV, 3ϕ, 60Hz
3600 RPM, 0.85PF
76.8 MVA

EXCITATION
CONTROL

GENERATOR #6B
MFR SIEMENS
16.5kV, 3ϕ, 60Hz
3600 RPM, 0.9PF
244 MVA
AEROPAC II OAC

480VAC, 3ϕ
(10BFG)

UNIT AUXILIARES
TRANSFORMER
11BBT01
18/24 MVA-H (HOLD)
9/12 MVA-X (HOLD)
9/12 MVA-Y (HOLD)
ONAN/ONAF, 65°C,
13.8kV-4, 16kV

11MBJ01
START-UP
FREQ. CONV.
TRANSFORMER
6 MVA
4.16kV-2.5kV

11MKC01
STATIC EXCITATION
TRANSFORMER
800kVA
4.16kV-480V

NON-SEGREGATED
PHASE BUS DUCT
3ϕ, 5kV, 3kA, 95KV BIL
NON-VENTILATED

NON-SEGREGATED
PHASE BUS DUCT
3ϕ, 5kV, 3kA, 95KV BIL
NON-VENTILATED

MEDIUM VOLTAGE SWITCHGEAR PCC

CONT'D
(B)
TO UNIT 7 UAT
(MV SWGR)

NC 3000A

NC 3000A

2000A

1200A

NO 3000A

TRANSITION
SECTION

4160V CONTROLLER, 2000A, 50KAIC, 3ϕ, 3W, 60Hz

700A

700A

TO UNIT 7
MV SWGR

CONT'D
(A)

4160V SWGR/MVC 11BB3, 3000A, 40KAIC, 3ϕ, 3W, 60Hz

1200A

1200A

1200A

1200A

11BFT01
1000kVA
ONAN, 65°C
4.16kV-480V, 3ϕ

11BHT01
1000kVA
ONAN/ONAF, 65°C
4.16kV-480V, 3ϕ

11BFT01
1000kVA
ONAN, 65°C
4.16kV-480V,3ϕ

11BFT02
1500kVA
ONAN/ONAF, 65°C
4.16kV-480V, 3ϕ

CABLE CONNNECTION

CABLE CONNNECTION

CABLE CONNNECTION

CABLE CONNNECTION

3200
HP
BPF

HP
GAS COMPRESSOR

1200A

480VAC, 1000A 42KAIC, 3ϕ, 3W MCC
11BFE EP MCC

BATTERY
CHARGER
100A

UNIT
BATTERY
125VDC

125VDC, 600A, 22KAIC MCC

ELECTRICAL PACKAGE, 11UBA01

1200A

10BHA, 480VAC 1200A, 42KAIC, 3ϕ, 3W
PB BOP MCC

10UBA91 BOP PCC

10BFG 480VAC, 1200A, 42KAIC 3ϕ, 3W

ST MCC

30kVA
1ϕ, 60Hz
480-120V/240V

120/240V AC
PANELBOARD
1 PHASE
2 WIRE

TYPICAL LOADS

480VAC
PANELBOARD
3ϕ, 3W

10BTA12
BATTERY
CHARGER
100A

10BTA11
BATTERY
CHARGER
100A

10BTA10
125VDC
BATTERY
800AH

10BUB 125VDC DISTRIBUTION PANEL (BOP PCC)

STG GSU UAT DCS
PROTECTION

BYPASS XFMR
OOBRT01
10kVA, 1ϕ
100V-120V

INVERTER

STATIC
TRANSFORMER
SWITCH SS

MANUAL
BYPASS
SWITCH MBS

UPS OOBRU01 (BOP PCC)

10UBA21 ST PCC

OOBRA00 120VAC UPS PANEL (CONTROL BLDG)

2000A

10BFH, 480VAC 2000A, 42KAIC, 3ϕ, 3W
FIN FAN CONDENSER MCC

10UBA81 FIN FAN
CONDENSER PCC

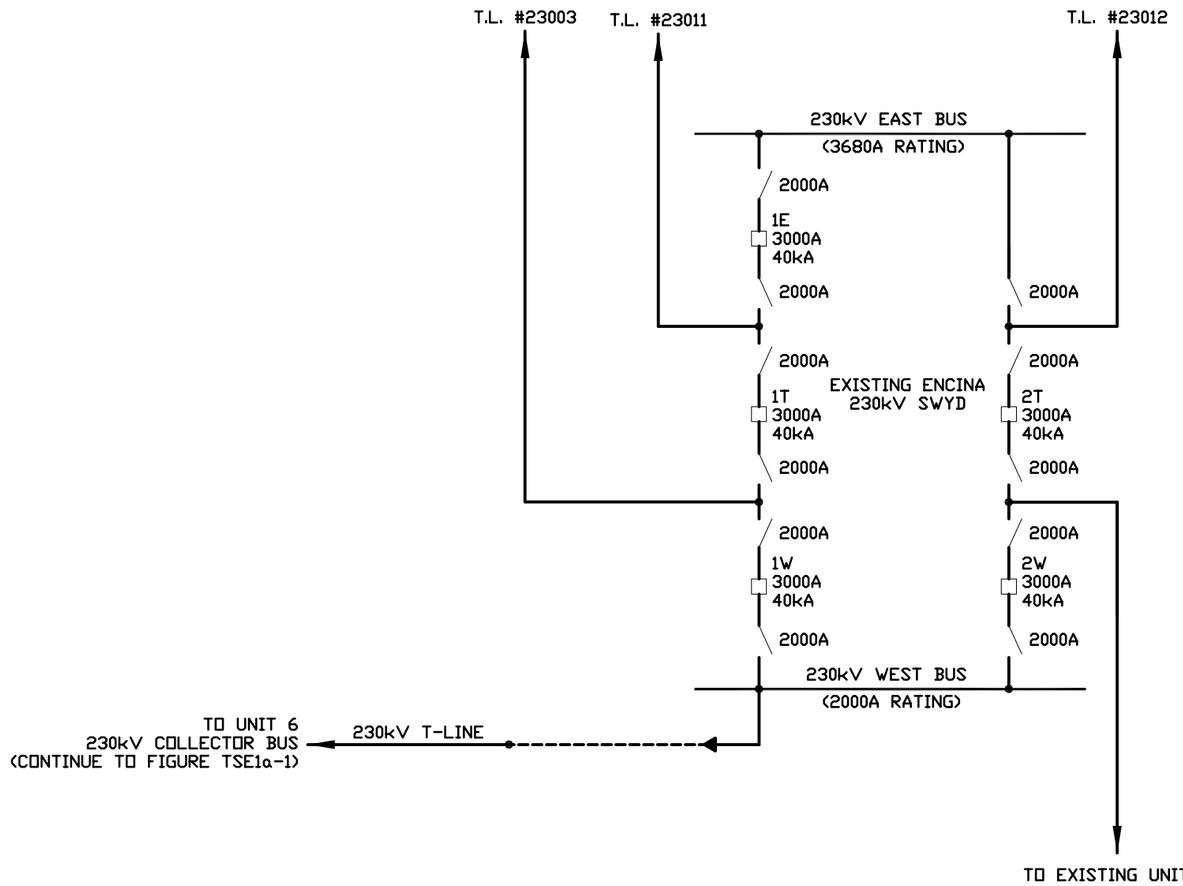
NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

LEGEND

BOP	–	BALANCE OF PLANT
GCB	–	GENERATOR CIRCUIT BREAKER
GSU	–	GENERATOR STEP-UP TRANSFORMER
GT	–	GAS TURBINE
IPB	–	ISOLATED PHASE BUS
MCC	–	MOTOR CONTROL CENTER
PCC	–	POWER CONTROL CENTER
SEE	–	STATIC EXCITATION EQUIPMENT
ST	–	STEAM TURBINE
SWGR	–	SWITCH GEAR
UAT	–	UNIT AUXILIARIES TRANSFORMER
PB	–	POWER BLOCK

FIGURE TSE1a-1
ONE-LINE DIAGRAM
ENCINA POWER STATION
UNIT 6



NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

REV	DESCRIPTION / ISSUE	DATE	APPROVED
A	ISSUED FOR CEC SUBMITTAL	10/07	

NRG Energy, Inc

Shaw Stone & Webster, Inc.

DESIGNED BY: RV	CARLSBAD ENERGY CENTER PROJECT CARLSBAD, CA
DRAWN BY: GTO	ONE-LINE DIAGRAM PROPOSED INTERCONNECTION TO SDG&E ENCINA 230kV SWITCHYARD
CHECKED BY: MA	

APPROVED BY:	DATE:	SCALE:	DRAWING NO.	REV. NO.
FDK	10/16/07	NTS	FIGURE TSE1a-2	A

OFFICE Centennial, CO

DRAWING NUMBER FIGURE TSE1a-2

FIGURE TSE1A-2
10/18/07

TO EXISTING 138kV SUBSTATION
(CONTINUED TO FIGURE TSE1a-4)

138kV T-LINE

2000A

ISO METER

2000A

138kV
COLLECTOR BUS
NEAR GSU TRANSFORMER

7A
2000A
40kA

7B
2000A
40kA

180kV

GENERATOR
STEP UP TRANSFORMER #7A
48/64/80 MVA (HOLD)
ONAN/ONAF/ONAF, 65°C
13.8kV-138kV

180kV

GENERATOR
STEP UP TRANSFORMER #7B
168/224/280 MVA (HOLD)
ONAN/ONAF/ONAF, 65°C
16.5kV-138kV

GCB #7

ISO-PHASE BUS
16.5kV, 3ϕ, 9.5kA, 125kV BIL

BAR BUS
15kV, 3ϕ, 1300A, 110kV BIL
NON-VENTILATED

BAR BUS
15kV, 3ϕ, 4KA, 110KV BIL
NON-VENTILATED

21CJT01
SFC

21CJT01
SEE

GENERATOR #7A
MFR SIEMENS
13.8kV, 3ϕ, 60Hz
3600 RPM, 0.85PF
76.8 MVA

EXCITATION
CONTROL

GENERATOR #7B
MFR SIEMENS
16.5kV, 3ϕ, 60Hz
3600 RPM, 0.9PF
244 MVA
AEROPAC II OAC

480VAC, 3ϕ
(20BFG)

UNIT AUXILIARES
TRANSFORMER
21BBT01
18/24 MVA-H (HOLD)
9/12 MVA-X (HOLD)
9/12 MVA-Y (HOLD)
ONAN/ONAF, 65°C,
13.8kV-4, 16kV

21MBJ01
START-UP
FREQ. CONV.
TRANSFORMER
6 MVA
4.16kV-2.5kV

21MKC01
STATIC EXCITATION
TRANSFORMER
800kVA
4.16kV-480V

NON-SEGREGATED
PHASE BUS DUCT
3ϕ, 5kV, 3kA, 95KV BIL
NON-VENTILATED

NON-SEGREGATED
PHASE BUS DUCT
3ϕ, 5kV, 3kA, 95KV BIL
NON-VENTILATED

MEDIUM VOLTAGE SWITCHGEAR PCC

CONT'D
A
TO UNIT 6 UAT
(MV SWGR)

NC

NC 3000A

2000A

1200A

NO 3000A

TRANSITION
SECTION

4160V CONTROLLER, 2000A, 50KAIC, 3ϕ, 3W, 60Hz

700A

700A

CONT'D
B
TO UNIT 6
MV SWGR

4160V SWGR/MVC 21BB3, 3000A, 40KAIC, 3ϕ, 3W, 60Hz

1200A

1200A

1200A

1200A

21BFT01
1000kVA
ONAN, 65°C
4.16kV-480V, 3ϕ

21BHT01
1000kVA
ONAN/ONAF, 65°C
4.16kV-480V, 3ϕ

21BFT01
1000kVA
ONAN, 65°C
4.16kV-480V,3ϕ

21BFT02
1500kVA
ONAN/ONAF, 65°C
4.16kV-480V, 3ϕ

CABLE CONNNECTION

CABLE CONNNECTION

CABLE CONNNECTION

CABLE CONNNECTION

3200
HP
BPF

HP
GAS COMPRESSOR

1200A

480VAC, 1000A 42KAIC, 3ϕ, 3W MCC
21BFE EP MCC

BATTERY
CHARGER
100A

UNIT
BATTERY
125VDC

125VDC, 600A, 22KAIC MCC

ELECTRICAL PACKAGE, 21UBA01

1200A

20BHA, 480VAC 1200A, 42KAIC, 3ϕ, 3W
PB BOP MCC

20UBA91 BOP PCC

1200A

20BFG 480VAC, 1200A, 42KAIC 3ϕ, 3W

ST MCC

30kVA
1ϕ, 60Hz
480-120V/240V

120/240V AC
PANELBOARD
1 PHASE
2 WIRE

480VAC
PANELBOARD
3ϕ, 3W

TYPICAL LOADS

10BTA12
BATTERY
CHARGER
100A

20BTA11
BATTERY
CHARGER
100A

20BTA10
125VDC
BATTERY
800AH

20BUB 125VDC DISTRIBUTION PANEL (BOP PCC)

STG GSU UAT DCS
PROTECTION

BYPASS XFMR
00BRT02
10kVA, 1ϕ
100V-120V

INVERTER

STATIC
TRANSFORMER
SWITCH
SS

MANUAL
BYPASS
SWITCH
MBS

UPS 00BRU02 (BOP PCC)

20UBA21 ST PCC

00BRA00 120VAC UPS PANEL (CONTROL BLDG)

2000A

20BFH, 480VAC 2000A, 42KAIC, 3ϕ, 3W
FIN FAN CONDENSER MCC

20UBA81 FIN FAN
CONDENSER PCC

NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

LEGEND

BOP	–	BALANCE OF PLANT
GCB	–	GENERATOR CIRCUIT BREAKER
GSU	–	GENERATOR STEP-UP TRANSFORMER
GT	–	GAS TURBINE
IPB	–	ISOLATED PHASE BUS
MCC	–	MOTOR CONTROL CENTER
PCC	–	POWER CONTROL CENTER
SEE	–	STATIC EXCITATION EQUIPMENT
ST	–	STEAM TURBINE
SWGR	–	SWITCH GEAR
UAT	–	UNIT AUXILIARIES TRANSFORMER
PB	–	POWER BLOCK

FIGURE TSE1a-3
ONE-LINE DIAGRAM
ENCINA POWER STATIO
UNIT 7

OFFICE Centennial, CO

DRAWING NUMBER FIGURE TSE1a-4

TO UNIT 7
138KV COLLECTOR BUS
(CONTINUED TO FIGURE TSE1a-3)

138kV T-LINE

138kV BUS, 2000A

BAY 1	BAY 2	BAY 3	BAY 4	BAY 5	BAY 6	BAY 7	BAY 8	BAY 9	BAY 10	BAY 11	BAY 12	BAY 13	BAY 14
138kV T.L. #13801					FUTURE		138kV T.L. #13806		138kV T.L. #13804		FUTURE		138kV T.L. #13807
2000A	1200A	1200A	1200A		1200A		1200A	1200A	1200A	1200A		1200A	1200A
1E	102E	3E	4E	5E	206E	7E	8E	309E	10E	411E	12E	13E	14E
2000A	2000A	1600A	1600A		2000A		1600A	2000A	1600A	1600A		1600A	2000A
40KA	40KA	42KA	42KA		40KA		42KA	40KA	42KA	41KA		41KA	40KA
2000A	1200A	1200A	1200A		1200A		1200A	1200A	1200A	1200A		1200A	1200A
EXISTING ENCINA 138kV SWYD													
2000A	1200A		1200A		1200A		1200A	1200A	1200A	1200A		1200A	1200A
1W	102W	3W	4W	5W	206W	7W	8W	309W	10W	411W	12W	13W	14W
2000A	2000A		2000A		2000A		1600A	2000A	1600A	1600A		1600A	2000A
40KA	40KA		40KA		40KA		42KA	40KA	42KA	41KA		41KA	40KA
2000A	1200A		1200A		1200A		1200A	1200A	1200A	1200A		1200A	1200A

138kV BUS 2000A

TO EXISTING SAT & EGT-1

UNIT 2 GSU TRANSFORMER (TO BE RETIRED)

UNIT 3 GSU TRANSFORMER (TO BE RETIRED)

UNIT 4 GSU TRANSFORMER

SU TRANSFORMER 4-5B

CONTINUED TO EXISTING UNIT 4

NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

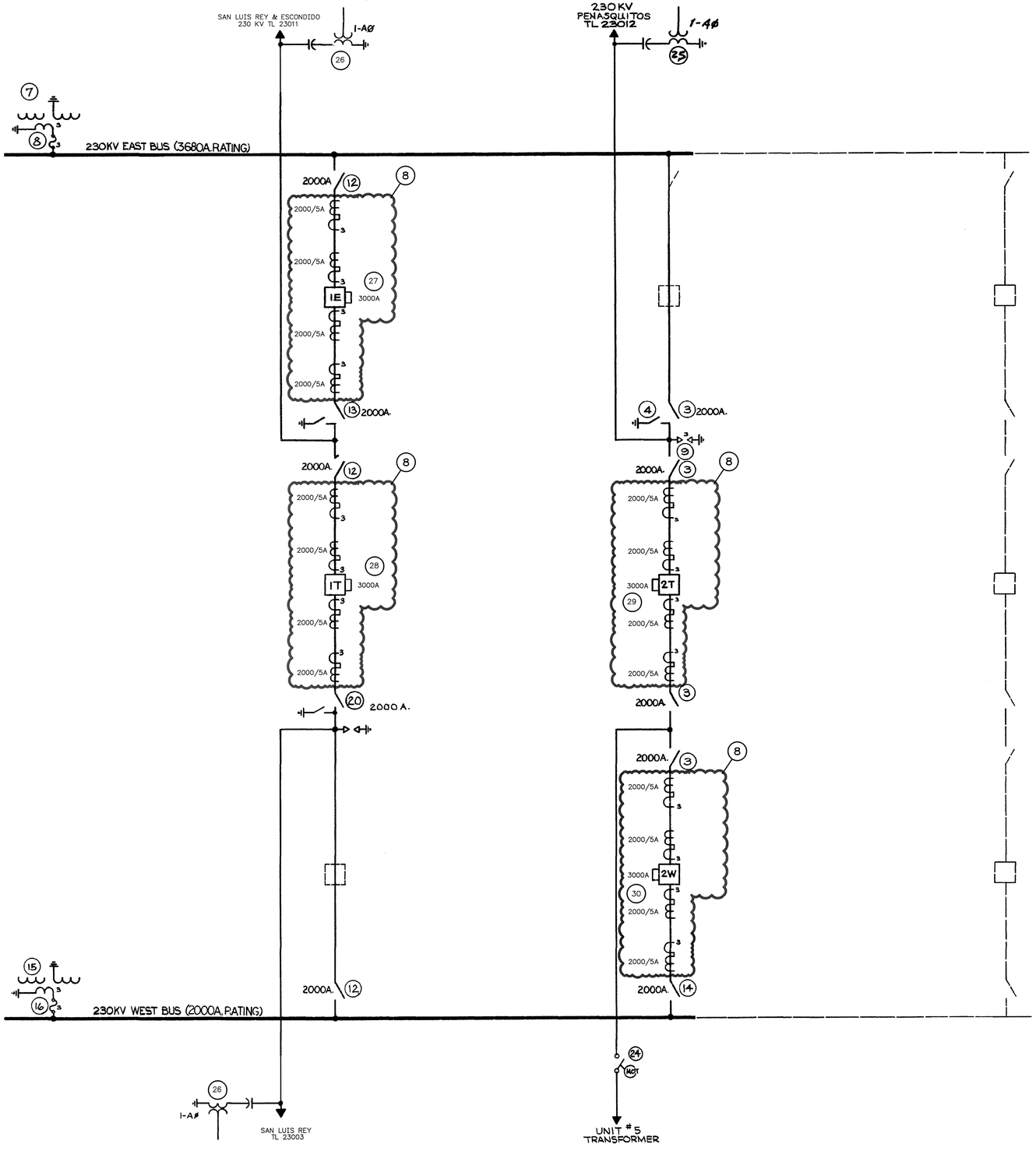
REV	DESCRIPTION / ISSUE	DATE	APPROVED
A	ISSUED FOR CEC SUBMITTAL	10/07	

NRG Energy, Inc

Shaw Stone & Webster, Inc.

DESIGNED BY: RV	CARLSBAD ENERGY CENTER PROJECT CARLSBAD, CA			
DRAWN BY: GTO	ONE-LINE DIAGRAM PROPOSED INTERCONNECTION TO SDG&E ENCINA 138kV SWITCHYARD			
CHECKED BY: MA				
APPROVED BY: FDK	DATE: 10/16/07	SCALE: NTS	DRAWING NO. FIGURE TSE1a-4	REV. NO. A

FIGURE TSE1A-4
10/18/07



REFERENCES:

(NO) NUMBER IN CIRCLE INDICATES EQUIPMENT LISTED ON THIS DRAWING

230 KV S/L, METERING & RELAYING DIAGRAM — EA230-E-120.

FIGURE TSE1b-1
ONE-LINE DIAGRAM
SDG&E ENCINA 230kV SWITCHYARD
(PRE-PROJECT)

REVISIONS

NO.	WORK DONE	DATE	BY:	APP'D:
8	REPLACED 230kV CB'S 1E, 1T, 2W, & 2T W.O. 5985141	10/24/06	pc/CKB	RWN
4	REMOVED ITEMS #5 & #6 AND REV'SD TL23012 DEST. FROM "OT" TO "PQ" W.O. 5926624	3/25/91	RWN	FJ
5	ADD COUP. CAPAC. TO TL23012 FOR SYNC. W.O. 5930330	3/7/94	DDW/RGG	CAK
6	SCANNED DWG. INTO TITLEBLOCK WITH BARCODE (WAS DWG. 13-EA-E100). W.O. 2556400	2/1/01	MN/ADR	
7	REV'D DEST. TL 23011 TO SAN LUIS REY & ESCONDIDO, REV'D TL 23010 TO TL 23003 FROM ENCINA TO SAN LUIS REY, REMOVED ITEM #17 & #22 & CHANGED OUT CCVT'S W.O. 5980293	6/15/01	NW	MDK
3	ADD UN. #5 230KV MOD ITEM #24 W.O. 5924960	4/25/85	RGP/WF	RDA

SAN DIEGO GAS & ELECTRIC COMPANY
SAN DIEGO, CALIFORNIA

ENCINA SUBSTATION
CIRCUIT DIAGRAM & EQUIPMENT LIST 230KV SUBSTATION

DRAWN BY: DA	DATE: 8/21/74	SCALE: NONE	W.O. 5980293 REV. 8
CHECKED BY: JJT	DATE: 9/10/74		EA230-E-100
APPROVED BY: RTB	DATE: 9/12/74		
CAD NO.: EA230E100	PLOT SCALE: 1 = 1		

Apr 06, 2007 – 13:14:21

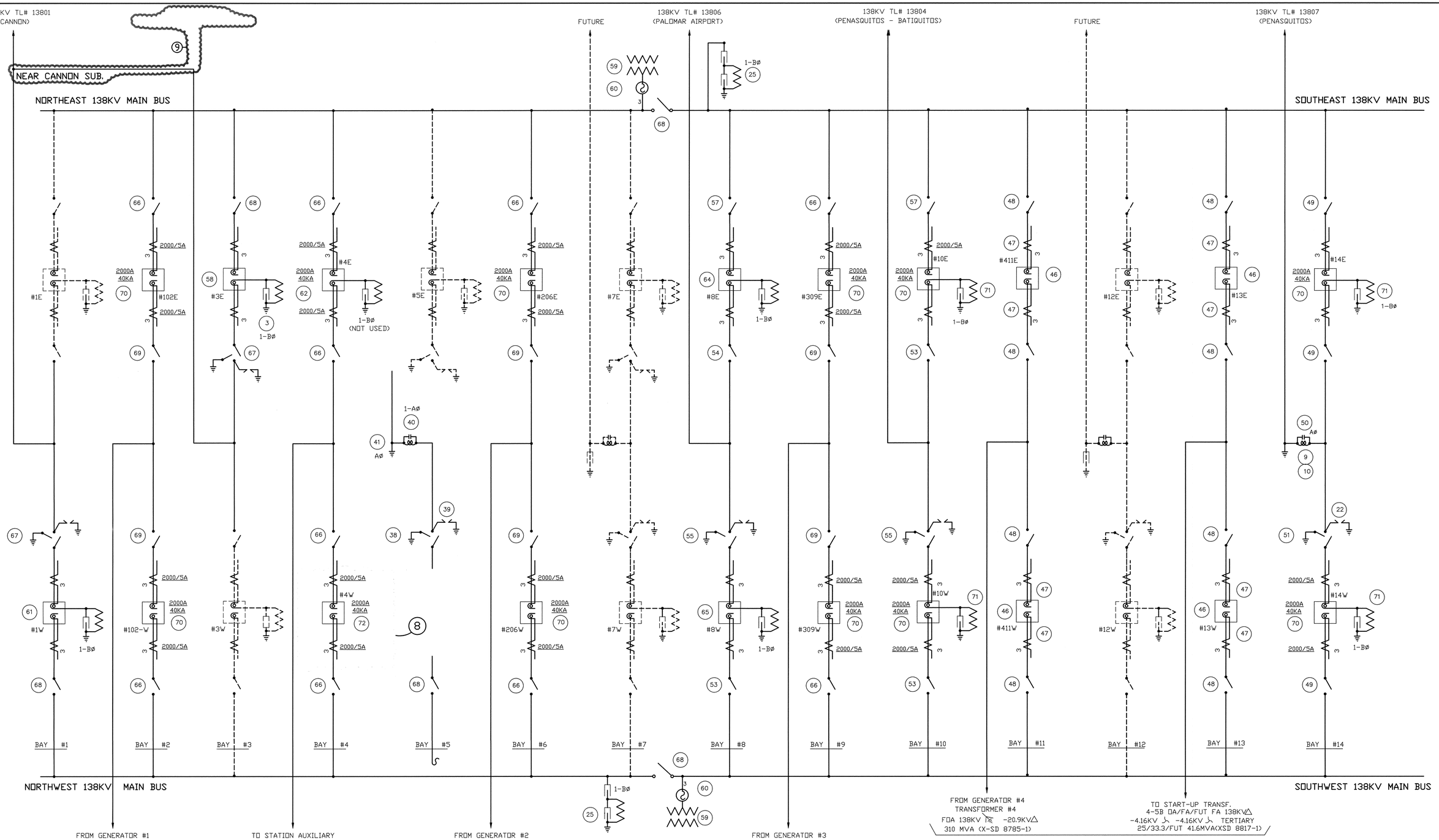


FIGURE TSE1b-2
ONE-LINE DIAGRAM
SDG&E ENCINA 138kV SWITCHYARD
(PRE-PROJECT)

REVISIONS

NO.	WORK DONE	DATE:	BY:	APP'D:
6	CONVERTED TO CADD; REDRAWN FROM DWG. E-30, REV.#5; REMOVED BILL OF MAT'L. & ADD/REVISE EXIST. BM: EA-E-2000 TO INCLUDE EXISTING ITEMS W.O. 5933800	8/14/97	PC/RGG	
7	REVISED PER FIELD MARKED PRINT W.O. 5980028	11/29/98	TC/DMS	MDK
8	REPLACED CB #4W W.O.5980200	6/6/99	GM/DDW	MDK
9	REM'D TL13802 & ADD C.B.#3E TO TL13801 W.O.5980293	5/9/01	GM/DDW	

SAN DIEGO GAS & ELECTRIC COMPANY
SAN DIEGO, CALIFORNIA

ENCINA SUBSTATION

138KV SWITCHYARD ONE LINE DIAGRAM

DRAWN BY: RGG	DATE: 8/14/97	SCALE: NONE	W.O.: 5980293	REV.: 9	EA138-E-30
CHECKED BY:	DATE:				
APPROVED BY:	DATE:				
CAD NO.: EAE30	PLOT SCALE: 1 = 1				

May 14, 2001 - 14:41:34

LIST OF EQUIPMENT

REF No	DESCRIPTION	TYPE AND RATING	SAN DIEGO ORDER No	MFRS DWG REF No	PROJECT No
1A	STEAM TURBINE DRIVEN GENERATOR	G E CO 90,000KW .85PF 14.4KV 3600 RPM 3φ 60~ HYDROGEN COOLED	5316	X-44060-[illegible]	1311-7122
1B	DIRECT CONNECTED GEARED EXCITER	G E CO 290KW 375V 1131 RPM	5316	X 44060-31	1311 7122
1C	GENERATOR BUSHING CURRENT TRANSFORMER	G E CO 6000/5A RELAY & METERING TYPE 2 C/T PER BUSHING	5316	X 44060-[illegible]	1311-7122
2					
3	GENERATOR FIELD DISCHARGE RESISTOR	G E CO (MTD IN EXCITATION CUBICLE)	5316	X 44060-[illegible]	1311 7122
4	STATIC VOLTAGE REGULATOR	G E CO TYPE DS3820SVRB	20025	X-20025	1311 7122
5	MAIN EXCITER BREAKER	G E CO TYPE ALF-2 3φ MOTOR OPERATED 750V D C 1000 AMPS	5316	X 44060-[illegible]	1311-7122
6	RESERVE EXCITER BREAKER CUBICLE	SEE NOTE No 1	5316	X-44060 [illegible]	1311-7122
7	GENERATOR ROTOR TEMPERATURE RECORDER SHUNT	G.E. CO 1000 AMPERE 100 MILLIVOLT	5316	X 44060-[illegible]	1311-7122
8	GENERATOR FIELD AMMETER SHUNT	G E CO 1000 AMPERE 100 MILLIVOLT	5316	X 44060-[illegible]	1311-7122
9	ISOLATED PHASE MAIN GENERATOR BUS RUN	G E CO 3500 A 15KV INSULATION 15H 110KV B.I.L.	5427	X 45415-12	1311-7122
10	GENERATOR NEUTRAL GROUNDING TRANSFORMER PYRANOL-FILLED	G E CO TYPE HS 15KVA 14 400/13 800-120/240V (CONN 240V) CAT #26H830	5427	X 45415-12	1311-7122
11	GENERATOR NEUTRAL TRANSFORMER SEC LOADING RESISTOR	G E CO 0.48 OHM 300 AMP CONTINUOUS CA 914781	5427	X-45415-12	1311-7122
12	STATIC VOLTAGE REGULATOR POTENTIAL TRANSFORMER	G.E CO TYPE JEG-5 14,400/120V 400VA MODEL 9JEG38MEI1	5427	X-45415-12	1311-7122
13	INSTRUMENT AND RELAY POTENTIAL TRANSFORMER	G.E CO TYPE JEG-5 14,400/120V 400VA MODEL 9JEG38MEI1	5427	X 45415-12	1311-7122
14	CURRENT LIMITING POTENTIAL TRANSFORMER FUSES	G E CO TYPE EJ-1 0.5E AMP L 6293011G19	5427	X 45415-12	1311-7122
15	SURGE PROTECTION ARRESTER	G E CO MODEL 9LA1HC53 15KV MAX STATION THYRITE	5427	X-45415-12	1311-7122
16	SURGE PROTECTION CAPACITOR	G E CO CAT 18F451 13 8KV 0 25 MFD	5427	X-45415-12	1311 7122
17					
18					
19	STATION AUXILIARY TRANSFORMER OA-FA-T TRANS No 1 2B	G E CO 5000/6250 KVA -138KV WYE 2 4KV WYE DELTA TERTIARY (8) 2½% FC TAPS BELOW 138KV	5444	X-45715-1	1311 7122
20	HIGH VOLTAGE AND NEUTRAL BUSHING CURRENT TRANSFORMER	MULTI-RATIO RELAY TYPE 1200/5A	5444	X 45715-4	1311-7122
21	STA AUX TRANS OA-FA-T 9375 KVA RATING TRANS No 1G	G.E CO 7500KVA 13 8KV DELTA-2 4 KV WYE NO TAPS WITH FORCED AIR FANS	5443 8999	X45741 [illegible]	1311 7122 13 [illegible]
22	HIGH VOLTAGE NEUTRAL BUSHING CURRENT TRANSFORMER	MULTI-RATIO RELAY TYPE 1200/5A	5443	X-45747-[illegible]	1311-7122
23	LOW VOLTAGE BUSHING CURRENT TRANSFORMER	MULTI-RATIO RELAY TYPE 2000/5A	5444	X-45715-4	1311-7122
24	LIGHTNING ARRESTER	G E CO STATION TYPE THYRITE CAT # 9LA1G659 121KV LINE TO GROUND	5491	X 44875-1	1311-7122
25	2 4KV STATION AUXILIARY SWITCHGEAR	WESTINGHOUSE INDOOR 5KV METALCLAD	5469	X-45535-4	1311 7122
26	CURRENT LIMITING RESISTOR	G.E.CO P-6124256 G 3 .45 OHMS	5427	X 45415-12	1311-7122
27	ISOLATED PHASE BUS SECTION	G E CO 1200A 15KV INSULATION 15H 110KV B.I.L.	5427	X 45415 12	1311-7122
28					
29	2 4 KV METALCLAD BUS DUCT	WE CO 2500A 5KV INSULATION	5469	X-45535-[illegible]	1311 7122
30	2.4 KV METALCLAD BUS DUCT	WE CO 2000A 5KV INSULATION	5469	X-45535 [illegible]	1311-7122
31A	STEAM TURBINE DRIVEN GENERATOR	G E CO 90,000KW 14.4 KV 0.85PF 3600RPM 3φ 60~ HYDROGEN COOLED	5655	X 44632-[illegible]	1311 7139
31B	DIRECT CONNECTED GEARED EXCITER	G E CO 300KW 375 V. 1131 RPM AIR COOLED	5655	X 44632-39	1311-7139
31C	GENERATOR BUSHING CURRENT TRANSFORMER		5655	X 44632 39	1311-7139
32					
33	GENERATOR FIELD DISCHARGE RESISTOR	G E CO TYPE IC2930 MTD GRIDS IN EXCITATION CUBICLE	5655	X 44632-[illegible]	1311-7139
34	STATIC VOLTAGE REGULATOR	G.E. TYPE DS3820 SVRB	20025	X-20025	1311-7139
35	MAIN EXCITER BREAKER	G E CO TYPE ALF-2 MOTOR OPERATED 375V 1000 A	5655	X-44632-[illegible]	1311-7139
36	RESERVE EXCITER BREAKER CUBICLE	SEE NOTE No 1	5655	X 44632-62	1311-7139
37	GENERATOR ROTOR TEMPERATURE RECORDER SHUNT	G E CO FORM 28 1000A 100MV IN EXCITATION CUBICLE	5655	X 44632-61	1311-7139
38	GENERATOR FIELD AMMETER SHUNT	G E CO FORM 28 1000A 100MV IN EXCITATION CUBICLE	5655	X 44632 61	1311-7139
39	ISOLATED PHASE MAIN GENERATOR BUS RUN	G E CO 5000 A 15KV INSULATION LEVEL 15H 110KV IMPULSE LEVEL	6077	X 48037-[illegible]	1311-7139
40	GENERATOR NEUTRAL GROUNDING TRANSFORMER PYRANOL FILLED	G E CO TYPE HS 15KVA 14,400/13800-120/240V (CONN 240V) CAT 26H830	6077	X 48037 12	1311-7139
41	GENERATOR NEUTRAL TRANSFORMER SECONDARY LOADING RESISTOR	GE CO 0.48 OHM 300 AMP CONTINUOUS OR 914781	6077	X 48037-12	1311-7139
42	STATIC VOLTAGE REGULATOR POTENTIAL TRANSFORMER	GE CO TYPE JEG 5 14,400/120V 400VA 60/60CY MODEL #9JEG38MEI1	6077	X 48037-[illegible]	1311-7139
43	INSTRUMENT AND RELAY POTENTIAL TRANSFORMER	GE CO TYPE JEG5 14,400/120V, 400VA, 60/60CY MODEL #9JEG38MEI1	6077	X 48037-[illegible]	1311-7139
44	CURRENT LIMITING POTENTIAL TRANSFORMER FUSES	GE CO TYPE EJ 1, L 6293011G 19	6077	X 48037 [illegible]	1311-7139
45	SURGE PROTECTION ARRESTER	GE CO CAT # 9LA1HC53, 15KV	6077	X 48037-[illegible]	1311-7139
46	SURGE PROTECTION CAPACITOR	GE CO CAT #18F451, 13 8KV, 0.25 MFD	6077	X 48037-[illegible]	1311-7139
47	MAIN TRANSFORMER OA-FA-T	ALLIS CHALMERS 50 000/66 667 KVA 13 800 V DELTA 138 000 KV WYE (4) 2½% FC TAPS BELOW 138 KV	5710	X-46995-1	1311-7139
48	HIGH VOLTAGE AND NEUTRAL BUSHING CURRENT TRANSFORMER	MULTI RATIO-RELAY TYPE 1200/5A	5710	X-46995-[illegible]	1311-7139
49	RESERVE EXCITER-MOTOR DRIVEN	G E CO 300KW 375V SHUNT WOUND 450 HP MOTOR 2300V 1200 RPM 3φ 60~	6009	X 47281-1	1311-7139
50	RESERVE EXCITER FIELD RHEOSTAT	GE CO TYPE IC-8432 MOTOR OPERATED	6009	X 47281 3	1311-7139
51	STA AUX TRANS OA-T FUTURE OA FA T WITH 9375 KVA RATING TRANS No 2-G	ALLIS CHALMERS 7500 KVA 13 8KV DELTA 2 4KV WYE	6014	X 47538-1	1311-7139
52	HIGH VOLTAGE AND NEUTRAL BUSHING CURRENT TRANSFORMER	MULTI-RATIO RELAY TYPE 1200/5A	6014	—	1311-7139
53					
54	LIGHTNING ARRESTER	G E CO STATION TYPE THYRITE CAT # 9LA1HB106 121KV LINE TO GROUND	6099	X 47640-1	1311-7139
55	2 4KV STA AUX SWITCHGEAR	WE CO 5KV INDOOR-METALCLAD	6124	X 47869-1	1311-7139
56	CURRENT LIMITING RESISTOR	GE CO P-6124256G-3	6077	X 48037-[illegible]	1311-7139
57	ISOLATED PHASE BUS SECTION	GE CO 1200A 15KV	6077	X 48037 2	1311-7139
58	ISOLATED PHASE BUS SECTION	GE CO 3000A 15KV	6077	X 48037 2	1311-7139
59	2 4KV METALCLAD BUS DUCT	WE CO	6124	X 47869-[illegible]	1311-7139
60	2 4KV STA AUX SWITCHGEAR	WE CO 5KV INDOOR-METALCLAD (TYPE 50 DH-250 2000 A C B)	6507	X-47869-[illegible]	1311-7155
61	AUTO TRANSFORMER OA-T 60	GE CO 2 3/4 16 KV 7500 KVA-9375 KVA WITH FUTURE FANS	6404	X-49751-1	1311-7155
62	2 4KV METALCLAD BUS DUCT (INDOOR)	WE CO 2000 A 5KV INSULATION	6507	X-47869-22	1311-7155
63	2 4KV METALCLAD BUS DUCT (OUTDOOR)	WE CO 2000 A 5KV INSULATION	6507	X-47869-22	1311-7155
64	MAIN TRANSFORMER-FOA-T	G E CO TYPE FOA-T 60~ 3φ 125 000 KVA 138 000Y WYE 13 800 DELTA (4) 2½% FC TAPS BELOW 138 KV	—	X 50985 2	1311-7178
65	HIGH VOLTAGE AND NEUTRAL BUSHING CURRENT TRANSFORMER	MULTI RATIO RELAY TYPE 1200/5A	—	X 50985 [illegible]	1311-7178
66	ISOLATED PHASE BUS SECTION	GE CO 5000A 15 KV INSULATION 15H 110 KV BIL (BASED ON 60°C RISE)	6545	X-50673	SEE NOTE #2
67	MOTOR OPER DISC SWITCH	161 KV 1200 AMP C, 40,000 AMP M 208V 3φ MOTOR-125V DC CONTROL	LOCAL 8156 1	X-	13 7238C
68	TRANSFORMER	WEST TYPE SL 3φ-60~-138/12 47/7 2 KV- 12/16/20 MVA	LOCAL 52000	X 54400-4	13-7238C
69	BUSHING CURRENT TRANSFORMER	WEST TYPE 1200/5A	LOCAL 52000	X-54400 4	13-7238C
70	BUSHING CURRENT TRANSFORMER	WEST TYPE 600/5A	LOCAL 52000	X 54400-4	13-7238C
71	BUSHING CURRENT TRANSFORMER	WEST TYPE 600/5A	LOCAL 52000	X 54400-4	13 7238C
72	BUSHING CURRENT TRANSFORMER	WEST TYPE O 600/5A	LOCAL 52000	X 54400 4	13 7238C
73	GROUND REACTOR - 25KVA	WEST 353A, 8 32 OHM	SDG&E PO 53376		

NOTE No 1
RESERVE EXCITER BREAKER PURCHASED WITH UNIT No 3 EQUIPMENT (SD 6383) PURPOSE-SPARE EXCITER BREAKER AND GENERATOR FIELD PREHEATING.

NOTE No 2
ISOLATE PHASE BUS SECTION WAS INSTALLED TEMPORARILY ON PROJ 1311-7169 BUS DUCT TO BE INSTALLED PERMANENTLY ON PROJ 1311-7178

REVISIONS

A BROUGHT LIST OF EQUIPMENT UP TO DATE
B ADDED ITEM 2B TO FACE OF DWG & LIST OF EQUIPMENT
C ADDED REF NOS 28 TO 30 INCL GENERAL REVISIONS
D ADDED LIST OF EQUIPMENT
E CORRECTED LIST OF EQUIPMENT
F ADDED BRKR ON AUTO-TRANSF. REVISED MAIN EXCITER & RESERVE EXCITER CKT.
G [illegible]
H PROJ 13-7238C ADDED GAS TURB & ITEMS 67 TO 72 DWN 5-13-68 CHKD 6-6-68 APPD
J PROJ 13-7257 REMVD G.T. & ASSOC EQUIP. IT IS NOW SHOWN ON DWG A-38957 DWN 3-4-69 CHK 5-2-69 APPD
K [illegible]
L INSTALL NEUTRAL REACTORS WO 598110 7-30-79 RGP/WF DQ
M WO 598110 CHG'D REACTOR SIZE 9-7-79 RGP/WF DQ
N ROU EA 1665-8 REVISED PER ROU DWN TAH 12-13-93 CHKD TJC 12-17-93

P W.O. 2533940
REVISED PER GEN. BUS MEG-ALERT ADDITION ADDED GENERATOR GROUNDING SWITCH & MEG-ALERT, ADDED EQUIP. NUMBERS. FOR UNIT 1
DWN: FTS 3/24/97
CHK'D: TJC 3/24/97
APPD:
APPD:

R W.O. 2533950
REVISED PER GEN. BUS MEG-ALERT ADDITION ADDED GENERATOR GROUNDING SWITCH & MEG-ALERT, FOR UNIT 2
DWN: FTS 3/25/97
CHK'D: TJC 3/25/97
APPD:
APPD:

SDG&E POWER EQUIPMENT NUMBERS
821 . 600 . 90
821 . 610 . 90
821 . 730 . 90

R97R0054.DWG/TIF

SAN DIEGO GAS AND ELECTRIC COMPANY
ENCINA GENERATING STATION UNITS No 1 & 2
SAN DIEGO CAL

CIRCUIT DIAGRAM OF 14 4 KV EQUIPMENT AND 138 KV TRANSFORMERS

Designed By
Pioneer Service & Engineering Co
Chicago 4

DRAWN 5-5-52 CHECKED SQUAD LEADER
SCALE NONE
APPROVED 6-11-52
PROJECT No. 1311-7122
No. AA61901 REV. R

FIGURE TSE1b-3
ONE-LINE DIAGRAM
ENCINA POWER STATION UNITS 1&2
(PRE-PROJECT)

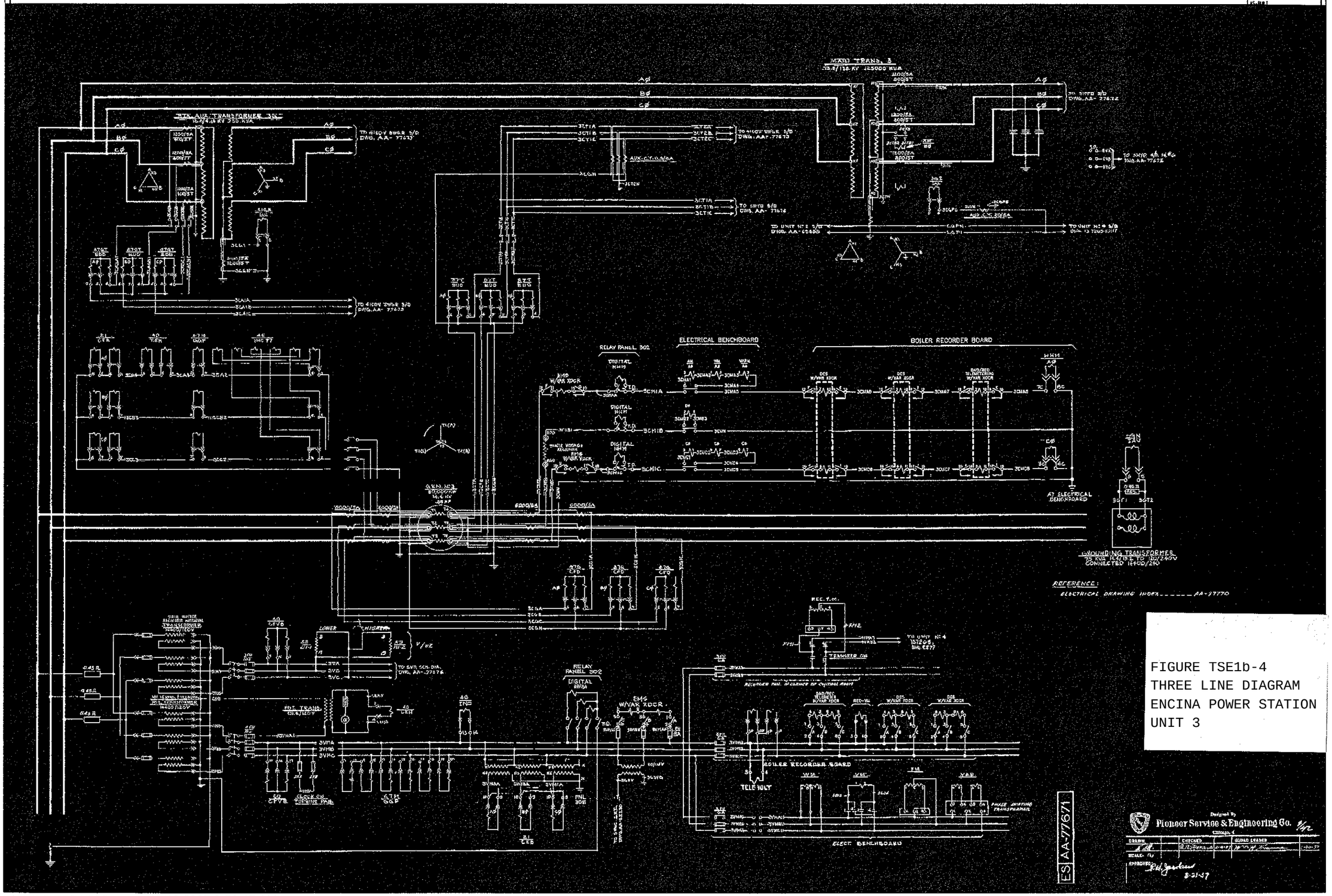
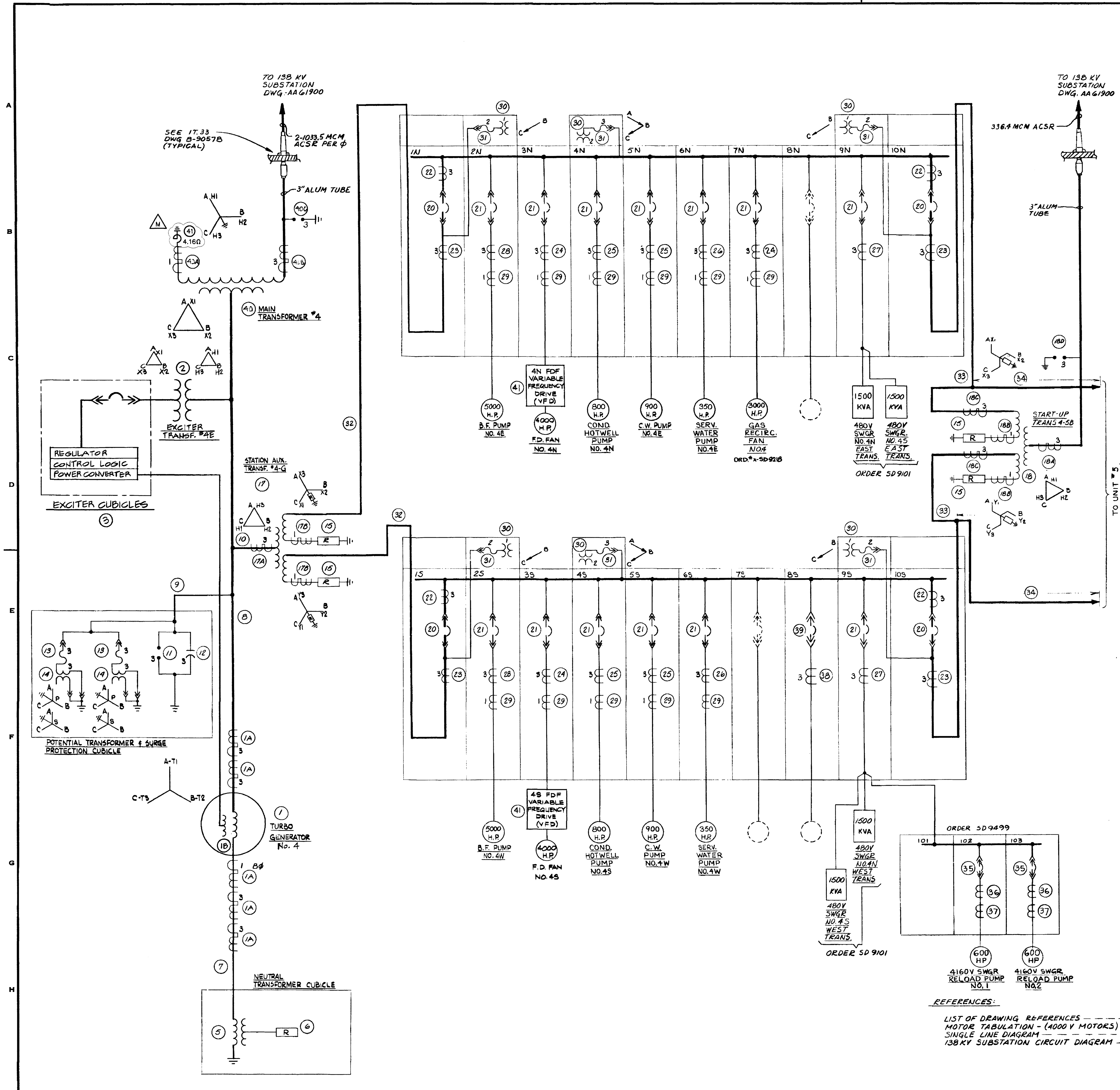


FIGURE TSE1b-4
THREE LINE DIAGRAM
ENCINA POWER STATION
UNIT 3



REFERENCES:

LIST OF DRAWING REFERENCES — — — — — — — E200
MOTOR TABULATION - (4000 V MOTORS) — — — E203
SINGLE LINE DIAGRAM — — — — — — — — — E276
138 KV SUBSTATION CIRCUIT DIAGRAM — — — AA 61900

LIST OF EQUIPMENT

REF. NO.	DESCRIPTION	TYPE & RATING	MFG. DWG. NO. XSD (ORDER NO.)
1	STEAM TURBINE DRIVEN GENERATOR	WEST., 3600 RPM, 60 Hz, 3Ø, 340,000 KVA @ .9 PF, 306,000 KW, 22 KV, (1890 PSIG @ 950°F & 60 PSIG H_2	XSD 8703-23 XSD 8703-1
1A	GENERATOR BUSHING C.T.	WEST, TYPE 10,000/5A METERING & RELAYING	XSD 8703-23,101
1B	GENERATOR FIELD	WEST. 0.102 OHMS @ 75°C, 3352 AMPS, 400V	
	(NOT USED)		
2	EXCITER TRANSFORMER	VIRGINIA TRANSFORMER CORP., 3245 KVA, 22,000Δ/576VΔ, SILICON-FILLED, 6.5% IMP.	
3	STATIC EXCITER	A-C SYSTEMS, 3556ADC, 450VDC NOMINAL, AC BREAKER-600VAC, 3200A, SEIMANS TYPE RL3200	
4	(NOT USED)		
5	GENERATOR NEUTRAL GROUNDING TRANS.	G.E. 75 KVA 22,000 - 120/240V, 1Ø	XSD 8804-12
6	GENERATOR NEUTRAL TRANSFORMER SECONDARY LOADING RESISTOR	G.E., CAST GRID, 700A, .19Ω (1 MIN. RATING)	XSD 8804-13
7	NEUTRAL BUS CONNECTION	G.E., 6½ DIA. 6 FT. LENGTH	XSD 8804-12
8	GENERATOR MAIN ISOLATED PHASE BUS DUCT.	G.E., MINFLUX, 22 KV., 9000 A (65°C/40°C RISE) 120,000 A. MOM. 50 KV HIPOT 110 KV BIL	XSD 8804-11 & -12
9	ISOLATED PHASE BUS DUCT TAP TO P.T. & SURGE PROTECTION HOUSING	G.E., MINIFLUX, 22 KV, 1200 A (65°C/40°C RISE) 120,000 A. MOM, 50 KV HIPOT, 110 KV BIL	XSD 8804-12
10	ISOLATED PHASE DUCT TAP TO STATION AUX TRANS 4G	G.E., MINIFLUX, 22 KV, 1200 A (65°C/40°C RISE) 120,000 A MOM, 50 KV, HIPOT, 110 KV BIL	XSD 8804-11
11	SURGE PROTECTION ARRESTOR	G.E., 24 KV, STATION TYPE, MOD. 9L11LAB024	XSD 8804-12
12	SURGE PROTECTION CAPACITOR	G.E. 24 KV, SINGLE POLE, (0.125 MFD) MOD 9L18ACM101	XSD 8804-12
13	CURRENT LIMITING POTENTIAL TRANSFORMER FUSES	G.E., TYPE EJ-1	XSD 8804-12
14	POTENTIAL TRANSFORMER	G.E., TYPE JVS-150, 22 KV/120V, 400 VA, 60 Hz	XSD 8804-12
15	NEUTRAL GROUNDING RESISTOR	WEST., 1.6Ω, 1500 A @ 10 SEC., 2400V	XSD 9198-1
16	(NOT USED)		
16A	(NOT USED)		
16B	(NOT USED)		
16C	(NOT USED)		
17	STATION AUX. TRANSFORMER 4-G	FEDERAL PACIFIC, 25/33.3/FUT 41.6 MVA, OA, FA, FUT. FA, 20.9 KVΔ HV, 4160/2400 Y LV & TERTIARY	XSD 8818-1
17A	HIGH VOLTAGE BUSHING C.T.	FEDERAL PACIFIC, 1200/5A, MULTI-RATIO	XSD 8818-2
17B	NEUTRAL BUSHING C.T.	FEDERAL PACIFIC, 1200/5A, MULTI-RATIO	XSD 8818-2
18	START-UP TRANSFORMER 4-5B	FEDERAL PACIFIC, 25/33.3/FUT 41.6 MVA, OA, FA, FUT FA, 138 KVΔ HV, 4.16 KV ZIG ZAG LV. & TERT.	XSD 8818-1,3
18A	HIGH VOLTAGE BUSHING C.T.	FEDERAL PACIFIC 1200/5A MULTI-RATIO	XSD 8817-2
18B	NEUTRAL BUSHING C.T.	FEDERAL PACIFIC 1200/5A MULTI-RATIO	XSD 8817-2
18C	LOW VOLTAGE BUSHING C.T.	FEDERAL PACIFIC 3000/5A MULTI-RATIO	XSD 8817-2
18D	HIGH VOLTAGE LIGHTNING ARRESTOR	O.B. CO., STATION CLASS, 120 KV TYPE MPR 120. CAT. - 211332	XSD 8817-1,3
20	AIR CIRCUIT BREAKER 3PST	G.E., TYPE PCB AM 4.16-350, 3000 A, 4160V	XSD 9004-4 XSD 9004-5
21	AIR CIRCUIT BREAKER 3PST	G.E., TYPE PCB AM 4.16-250, 1200 A, 4160V	XSD 9004-4 XSD 9004-5
22	CURRENT TRANSFORMER	G.E., TYPE 3-JCB0 5000/5A, SINGLE SEC.	XSD 9004-4 XSD 9004-5
23	CURRENT TRANSFORMER	G.E., TYPE 3-JCS0 3000/5A, SINGLE SEC.	XSD 9004-4 XSD 9004-5
24	CURRENT TRANSFORMER	G.E., TYPE 3-JCS0 800/5A, SINGLE SEC.	XSD 9004-4 XSD 9004-5
25	CURRENT TRANSFORMER	G.E., TYPE 3-JKS3 150/5A, SINGLE SEC.	XSD 9004-4 XSD 9004-5
26	CURRENT TRANSFORMER	G.E., TYPE 3-JKS3 75/5A, SINGLE SEC.	XSD 9004-4 XSD 9004-5
27	CURRENT TRANSFORMER	G.E., TYPE 3-JCS0 600/5A, SINGLE SEC.	XSD 9004-4 XSD 9004-5
28	CURRENT TRANSFORMER	G.E., TYPE 3-JCS0 900/5A, SINGLE SEC.	XSD 9004-4 XSD 9004-5
29	CURRENT TRANSFORMER	G.E., RING TYPE, GS, 50/5A	XSD 9004-4 XSD 9004-5
30	POTENTIAL TRANSFORMER	G.E., JVM3, 4200/120V, 60 Hz	XSD 9004-4 XSD 9004-5
31	CURRENT LIMITING FUSES	G.E., TYPE OC2	XSD 9004-4 XSD 9004-5
32	5KV BUS DUCT, TRANS 4-G TO UNIT 4 4160V SWGR.	G.E., 5KV, 3000A, 3Ø NON SEGREGATED BUS	XSD 9004-3 (1)(2)(3) XSD 9004-2
33	5KV BUS DUCT, TRANS 4-5B TO UNIT 4 4160 V SWGR.	G.E., 5KV, 3000A, 3Ø NON SEGREGATED BUS	XSD 9004-3 (1)(2)(3) XSD 9004-2
34	5KV BUS DUCT TRANS 4-5B TO UNIT 5 4160V SWGR	G.E. 5KV, 3000 A, 3Ø NON SEGREGATED BUS	XSD 9591- XSD 9591-
35	AIR CIRCUIT BREAKER 3PST	G.E. TYPE PCB AM 4.16-250, 1200A, 4160V	XSD 9499-4 XSD 9499-5
36	CURRENT TRANSFORMER	G.E. TYPE 3-JKS3 100/5A, SINGLE SEC.	XSD 9499-4 XSD 9499-5
37	CURRENT TRANSFORMER	G.E. RING TYPE, 50/5A	XSD 9499-4 XSD 9499-5
38	CURRENT TRANSFORMER	G.E. TYPE 3-JCS0 500/5, SINGLE SEC.	XSD 0042
39	AIR CIRCUIT BREAKER 3PST	G.E. TYPE PCB AM 4.16-250, 1250, 1200 A, 4160V	XSD 0042
40	POWER TRANSFORMER #4	G.E. 310000 KVA, 60HZ, 65°C RISE, FOA, 138000 GR Y/79674-20900 VOLT Δ	SDG&E PO 8502-28057 CO. S/N LT-980671
40A	TRANSF #4 NEUTRAL CURR. TRANSF.	G.E. 1200/5 AMP. M.R.B.C.T. CAT# 178250BB	" "
40B	TRANSF #4 H.V. CURR TRANSF	G.E. 2000/5 AMP. M.R.B.C.T. CAT# 118623BB	" "
40C	TRANSF #4 H.V. LIGHTING ARRESTOR	G.E. 138KV TYPE 9L11THA108	" "
41	NEUTRAL GROUNDING REACTOR	WEST, 25KV, 353 AMP, 4.16 OHMS	SDG&E H9-53326

REVISIONS

L W.O. 2388350 REMOVED EXISTING BRUSHLESS EXCITER & REPLACED WITH STATIC EXCITER. DWN: CG 3-2-92 CHKD: D. McCullough 03/04/92 APPD: Dave McCullough 03/04/92

M RDU EA-1982-E REVISED AS PER MARK-UP PRINT: ADDED REF. 41 AND INFORMATION ADDED EQUIPMENT NO.'s. DWN: FTS 8/18/97 CHK'D: TJC 8/18/97 APPD: APPD:

D TRANSFERRED RELOAD PUMPS FROM CUB. 9S TO 8S. ADDED DILUTION FEED & TANK FARM #5NE 480V SWGR. TO CUB. 8S. DWN. TB 4-14-75 CHK'D. 4-23-75 APP'D. 4-24-75 FILMED 4-28-75

E PROJ. 13-7348-101 REPLACED 4000 HP GAS RECIRC. FAN MOTOR WITH 3000 HP MOTOR AS ORDERED FOR UNIT #5 PER ORD. NO SD9218 DWN: 31-JULY 75 CHK'D: M.A. 8-15-75 APP'D: 8-27-75 FILMED: 8-28-75

F PROJ. 137292 CORRECTED FEED TO RELOAD PUMPS, WAS CUB. 8S & REMOVED DILUTION SWGR. FEED DWN: 11-22-76 CHKD: HH 11-24-76 APPD: 12-7-76 FILMED: 12-9-76

G REVISED TO PRESENT FIELD CONDITION 12-10-75 DWN: M.B. CHKD: HH 3-10-77 APPD: 3-14-77 FILMED: 3-15-77

H PROJ 137292 RELOCATED TANK FARM T7 FEED FROM UNIT 4 8S TO UNIT 5 9S DWN GH 4-21-77 CHKD HH 4-22-77 APPD 4-29-77 FILMED: 5-2-77

J REPLACE MAIN TRANS. ITEM #16 WITH ITEM #20 W.O. 2115503. 5-12-86. RGP/ /KJH

K W.O. 2400660 ADDED VARIABLE FREQUENCY DRIVES ON FD FANS 4N & 4S. DWN: B. SHRINER 5-24-91 CHKD: G. LOSEY 7-31-91 APPD: D.M. Deslangon 8/7/91

DESIGN SECTION APPROVALS		
SECTION	INITIALS	DATE
ELECTRICAL		
ELEC. CONTROL		
LIGHTING		
MECHANICAL		
INSTRUMENT		
HTG. PLG. & VTG.		
STR. ANAL. & SUP.		
NUCLEAR		
HYDRAULIC		
STRUCTURAL		
SUPERVISOR		

REGISTERED PROFESSIONAL ENGINEER RICHARD A. PETERSON No. 5801 1-31-72 ELECTRICAL STATE OF CALIFORNIA

SEAL

SDG&E POMMS EQUIPMENT NUMBERS
___ • ___ • ____
___ • ___ • ____
824 • 600 • 90
SDG&E POMMS EQUIPMENT NUMBERS
824 • 610 • 90
824 • 730 • 35
824 • 730 • 36
SDG&E POMMS EQUIPMENT NUMBERS
824 • 730 • 3601
824 • 730 • 37
824 • 730 • 90

R96M0400.DWG/TIF

SAN DIEGO GAS & ELECTRIC COMPANY 2/2
ENCINA POWER PLANT - UNIT NO. 4 - SAN DIEGO, CALIFORNIA

CIRCUIT DIAGRAM & EQUIPMENT TABULATION GENERATOR & 4160V. EQUIPMENT

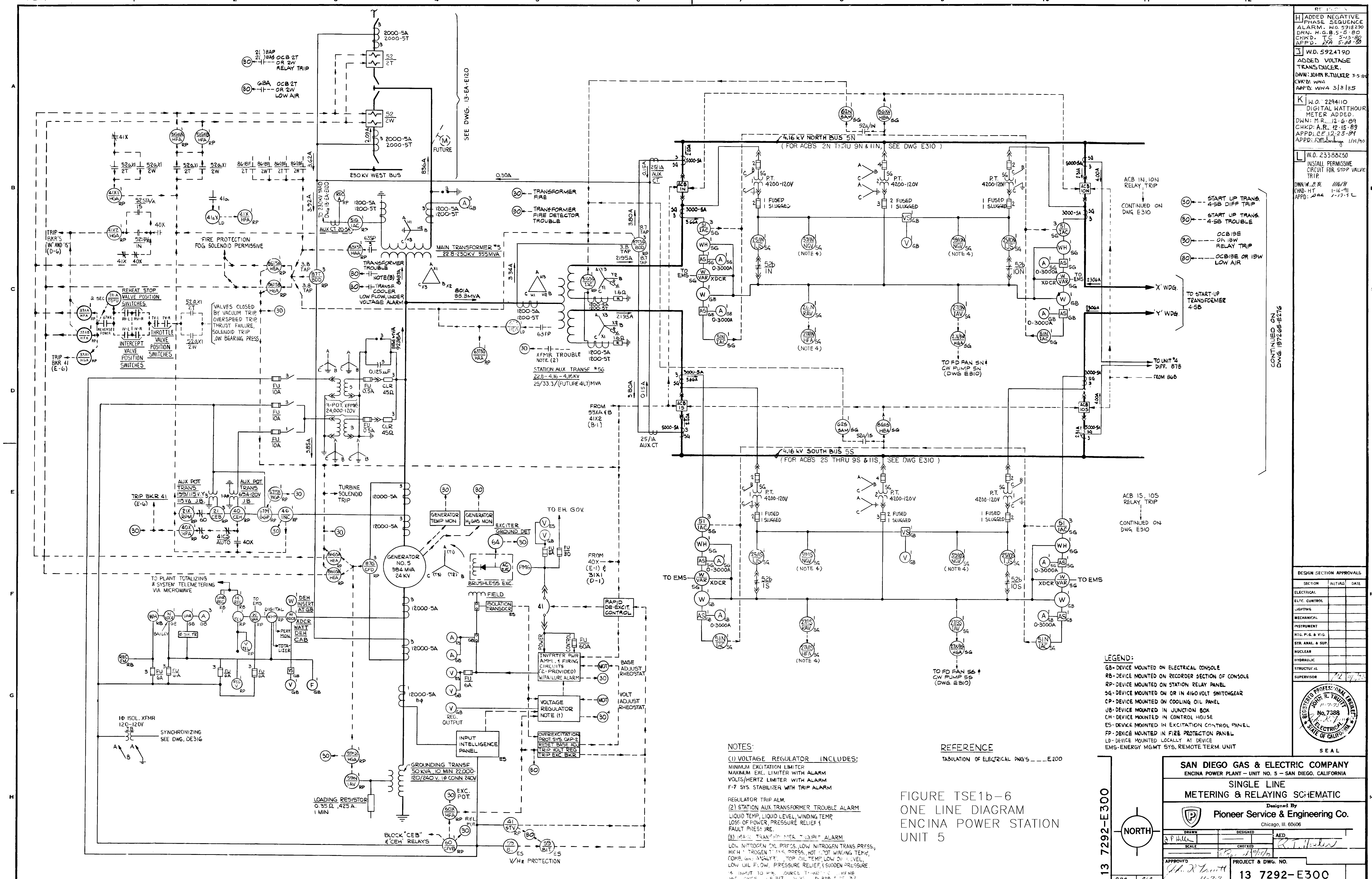
Designed By Pioneer Service & Engineering Co. Chicago

DRAWN		DESIGNED		AED	
R.M.	1-27-72		1/27/72		1/31/72
SCALE		CHECKED			
—NONE—			1/27/72		

APPROVED	PROJECT & DWG. NO.	SHEET 1	REV.
K. A. Peterson 1/31/72	13-7265 E201		M

DEC 23 1997

FIGURE TSE1b-5
ONE-LINE DIAGRAM
ENCINA POWER STATION UNIT 4
(PRE-PROJECT)



13 7292-E300
H ADDED NEGATIVE PHASE SEQUENCE ALARM. W.O. 5918290
J W.O. 5924790 ADDED VOLTAGE TRANSDUCER.
K W.O. 2294110 DIGITAL WATTHOUR METER ADDED.
L W.O. 23388250 INSTALL PERMISSIVE CIRCUIT FOR STOP VALVE TRIP.
4.16 KV NORTH BUS 5N (FOR ACBS 2N THRU 9N & 11N, SEE DWG E310)
4.16 KV SOUTH BUS 5S (FOR ACBS 2S THRU 9S & 11S, SEE DWG E310)
230KV WEST BUS
MAIN TRANSFORMER #5 22.8-230KV 355MVA
STATION AUX. TRANSF. #5G 22.8-4.16-4.16KV
GENERATOR NO. 5 384 MVA 24 KV
BRUSHLESS EXC.
INPUT INTELLIGENCE PANEL
VOLTAGE REGULATOR NOTE (1)
GROUNDING TRANSF.
LOADING RESISTOR
SYNCHRONIZING SEE DWG. DE316
TO START-UP TRANSFORMER 4-5B
CONTINUED ON DWG 13765-E276
NOTES:
(1) VOLTAGE REGULATOR INCLUDES:
MINIMUM EXCITATION LIMITER
MAXIMUM EXC. LIMITER WITH ALARM
VOLTS/HERTZ LIMITER WITH ALARM
F-7 SYS. STABILIZER WITH TRIP ALARM
REGULATOR TRIP ALM.
(2) STATION AUX. TRANSFORMER TROUBLE ALARM
LIQUID TEMP., LIQUID LEVEL, WINDING TEMP., LOSS OF POWER, PRESSURE RELIEF & FAULT PRESSURE.
(3) MAIN TRANSFORMER TROUBLE ALARM
REFERENCE
TABULATION OF ELECTRICAL DWG'S ___ E200
FIGURE TSE1b-6
ONE LINE DIAGRAM
ENCINA POWER STATION
UNIT 5
LEGEND:
GB - DEVICE MOUNTED ON ELECTRICAL CONSOLE
RB - DEVICE MOUNTED ON RECORDER SECTION OF CONSOLE
RP - DEVICE MOUNTED ON STATION RELAY PANEL
SG - DEVICE MOUNTED ON OR IN 4160 VOLT SWITCHGEAR
CP - DEVICE MOUNTED ON COOLING OIL PANEL
JB - DEVICE MOUNTED IN JUNCTION BOX
CH - DEVICE MOUNTED IN CONTROL HOUSE
ES - DEVICE MOUNTED IN EXCITATION CONTROL PANEL
FP - DEVICE MOUNTED IN FIRE PROTECTION PANEL
LD - DEVICE MOUNTED LOCALLY AT DEVICE
EMS - ENERGY MGMT SYS. REMOTE TERM. UNIT
SAN DIEGO GAS & ELECTRIC COMPANY
ENCINA POWER PLANT - UNIT NO. 5 - SAN DIEGO, CALIFORNIA
SINGLE LINE
METERING & RELAYING SCHEMATIC
Designed By
Pioneer Service & Engineering Co.
Chicago, Ill. 60606
NORTH
PROJECT & DWG. NO.
13 7292-E300
SEAL

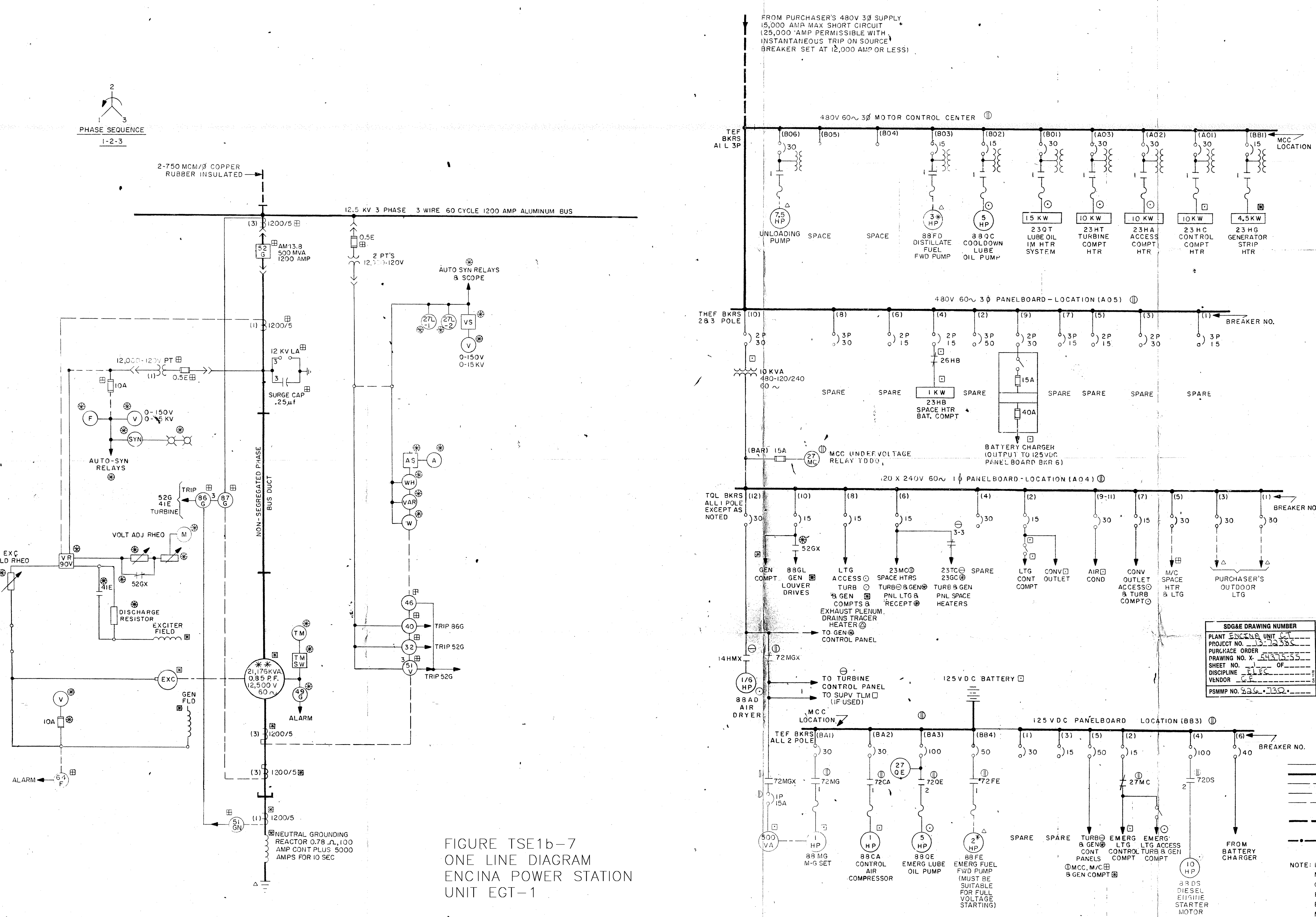


FIGURE TSE1b-7
ONE LINE DIAGRAM
ENCINA POWER STATION
UNIT EGT-1

TURB CODE: 5IN42EFDES-RPDSR-SADGE-I
GEN CODE: 5A2R6200RI-RPDGP-SADGE-I

TYPICAL RELAY & DEVICE NOMENCLATURE

- 27 L — LINE UNDERVOLTAGE
- 32 — REVERSE POWER (ICW)
- 40 — LOSS OF EXCITATION (CEH)
- 41E — EXCITER FIELD CONTACTOR
- 46 — NEGATIVE SEQUENCE (INC)
- 49 G — STATOR TEMPERATURE (IRT)
- 51 GN — GROUND FAULT BACKUP (IAC)
- 51 V — SYSTEM PHASE FAULT (IJCV)
- 52 G — GENERATOR BREAKER
- 64 F — GENERATOR FIELD GROUND (PJG)
- 72 — DC CONTACTOR
- 86 G — GENERATOR LOCKOUT (HEA)
- 87 G — GENERATOR DIFFERENTIAL (CFD)
- M — MOTOR OPERATOR
- VR — VOLTAGE REGULATOR
- TM — TEMP METER
- A — AMMETER
- V — VOLTMETER
- F — FREQUENCY METER
- W — WATTMETER
- VAR — VARMETER
- SYN — SYNCHROSCOPE
- WH — WATTHOUR METER

EQUIPMENT LOCATION KEY

- △ PURCHASER'S EQUIPMENT
- Ⓐ GE EQUIP. MTD SEPARATE FROM PACKAGE
- Ⓓ MOTOR CONTROL CENTER DEVICE
- ⊖ TURBINE CONTROL PANEL DEVICE
- ⊛ GENERATOR CONTROL PANEL DEVICE
- ⊞ METALCLAD SWITCHGEAR DEVICE
- ⊠ GENERATOR COMPARTMENT DEVICE
- □ SUPERVISORY EQUIPMENT DEVICE
- ⊡ CONTROL COMPARTMENT DEVICE
- ⊙ TURBINE DEVICE
- ✳ MAX FOR REFERENCE ONLY
- ✳✳ FOR SITE PLANT RATING SEE INST BOOK

SDG&E DRAWING NUMBER	
PLANT	ENCINA UNIT GT
PROJECT NO.	3-2633C
PURCHASE ORDER	
DRAWING NO. X-	54375353
SHEET NO.	1 OF
DISCIPLINE	ELEC
VENDOR	G.E.
PSMMP NO.	526-730

- CONTROL LINES INCLUDED WITH PKG POWER PLANT
- POWER LINES INCLUDED WITH PKG POWER PLANT
- ENCLOSURE
- MECHANICAL CONNECTION
- CONTROL LINES-NOT INCLUDED WITH STANDARD PACKAGE POWER PLANT
- POWER LINES-NOT INCLUDED WITH STANDARD PACKAGE POWER PLANT
- LINES INCLUDED IN OVERALL CONTRACT

NOTE: INTERCONNECTING WIRING, BETWEEN GENERATOR AND METALCLAD SWITCHGEAR AND BETWEEN CONTROL COMPARTMENT AND METALCLAD SWITCHGEAR IS NOT FURNISHED AS PART OF THE BASIC PACKAGE POWER PLANT. BOTH MUST BE INSTALLED IN FIELD. THE GENERATOR TO METALCLAD BUS DUCT IS FURNISHED.

DM399

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NOTICE TO PURCHASER

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DRAWN BY	M. Goodwin
CHECKED BY	
DATE ISSUED	JULY 18, 1967
REQ.	481-96755
FILE No.	614-67

ONE LINE DIAGRAM
MODEL 5181
GAS TURBINE PACKAGE POWER PLANT

MADE FOR SAN DIEGO GAS & ELECTRIC COMPANY

GENERAL ELECTRIC
CONSTRUCTION ENGINEERING SECTION
INSTALLATION AND SERVICE ENGINEERING DEPT.
SCHENECTADY, N.Y., U.S.A.

SCALE: NONE — DRAWING No. 1514-67F — REV. 2

08/40

OFFICE *Centennial, CO*

DRAWING NUMBER FIGURE TSE1c-1

INTERSTATE NO. 5

EXISTING R.O.W.

SITE BOUNDARY

CONSTRUCTION LAYDOWN AREA

FIG TSE1c-7

FIG TSE1c-2

SITE TRAILERS

FUEL OIL TANK # 4

CONSTRUCTION LAYDOWN AREA

FIG TSE1c-5

℄ ACCESS ROAD

R.O.W. LINE

ATCHISON TOPEKA & SANTA FE RAILWAY

FENCE LINE

ELEV. 9'-0" DIA. PIPE TUNNEL

POTENTIAL SPOIL AREA FOR EXCAVATED BERM MATERIAL

CUTTER STOCK TANK

CONTROL HOUSE

EVACUATION ASSEMBLY AREA

WASTEWATER CONTAINMENT AREA

BLDG. "A" (MACHINE SHOP)

BUILDING "B"

FIG TSE1c-6

OPEN DITCH

SEE FIG TSE1c-8

FIG TSE1c-3

CONSTRUCTION LAYDOWN AREA

GATE

CONSTRUCTION LAYDOWN AREA

138 KV SWITCHING STATION (FIG TSE1c-8)

BAY 1

SEE FIG TSE1c-8

230 KV. SWITCHING STA. (FIG TSE1c-8)

AMMONIUM HYDROXIDE TANKS

SEE FIG TSE1c-10 (230kV CABLE RISER)

WASTEWATER TANKS

GAS TURBINE CONTROL HOUSE UNIT #1 & #2

CONTROL HSE UNIT #3

12 KV SUB

SEE FIG TSE1c-9 (230kV CABLE POLE)

PARKING AREA INCLUDING FIELD NON MANUAL

FIG TSE1c-2

FIG TSE1c-3

FUEL OIL HOUSE

ADMIN BLDG

STORE ROOM

SHOP

FUEL OIL & WATER TK

POWER PLANT BUILDING

CHIMNEY

AESTHETIC WALL

CHANNEL EL.-20.0'

EVACUATION ASSEMBLY AREA

SCREENS

C.W. STRUCTURES

INTAKE & DISCH. STRUCT.

DISCH. BASIN

GUARD HOUSE

RET. WALL

ROAD

GATE

LEGEND:

230kV TRANSMISSION LINE

138kV TRANSMISSION LINE

DOUBLE CIRCUIT POLE

SINGLE CIRCUIT POLE

NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

26.280°

PLANT NORTH

GRAPHIC-SCALE

1"=120'-0" 10 5 0 10 20 30

REV	DESCRIPTION / ISSUE	DATE	APPROVED

NRG Energy, Inc

Shaw Stone & Webster, Inc.

DESIGNED BY:	–
DRAWN BY:	–
CHECKED BY:	__
APPROVED BY:	__

CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CA

ENCINA POWER STATION
TRANSMISSION LINE ROUTES

DATE:	SCALE:	DRAWING NO.	REV. NO.
10/16/07	1"-120'	FIGURE TSE1c-1	–

OFFICE
Centennial, CO

DRAWING NUMBER FIGURE TSE1c-2

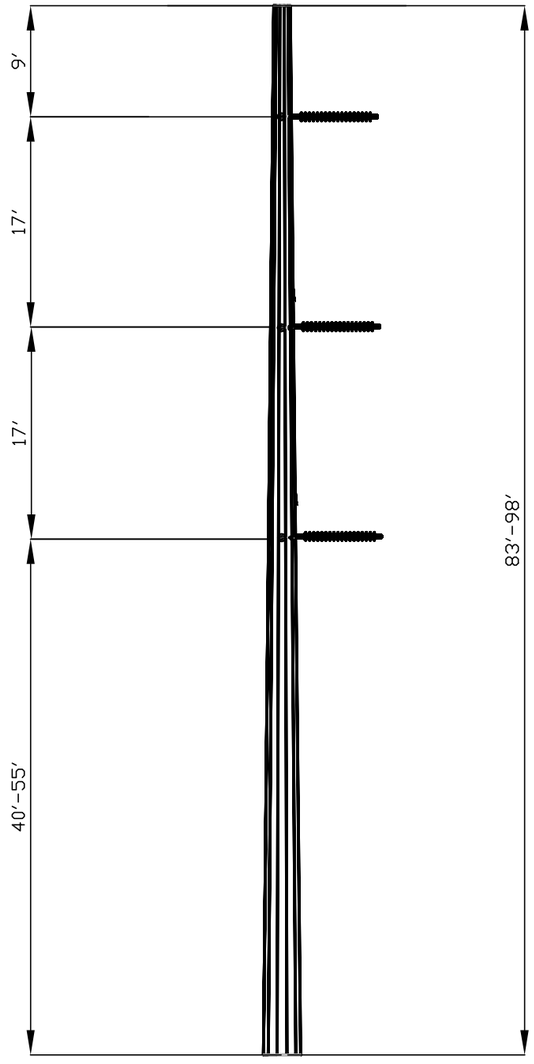


FIGURE TSE1c-2
138kV & 230kV Line Pole Cross-section
Deadend Pole

NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

REV	DESCRIPTION / ISSUE	DATE	APPROVED

NRG Energy, Inc

Shaw Stone & Webster, Inc.

DESIGNED BY: DOP	CARLSBAD ENERGY CENTER PROJECT CARLSBAD, CA			
DRAWN BY: DOP	ENCINA POWER STATION FIGURE TSE1c-2 T-LINE POLE CROSS SECTIONS			
CHECKED BY: --				
APPROVED BY: --	DATE: 10/16/07	SCALE: NTS	DRAWING NO. FIGURE TSE1c-2	REV. NO. A

OFFICE
Centennial, CO

DRAWING NUMBER FIGURE TSE1c-3

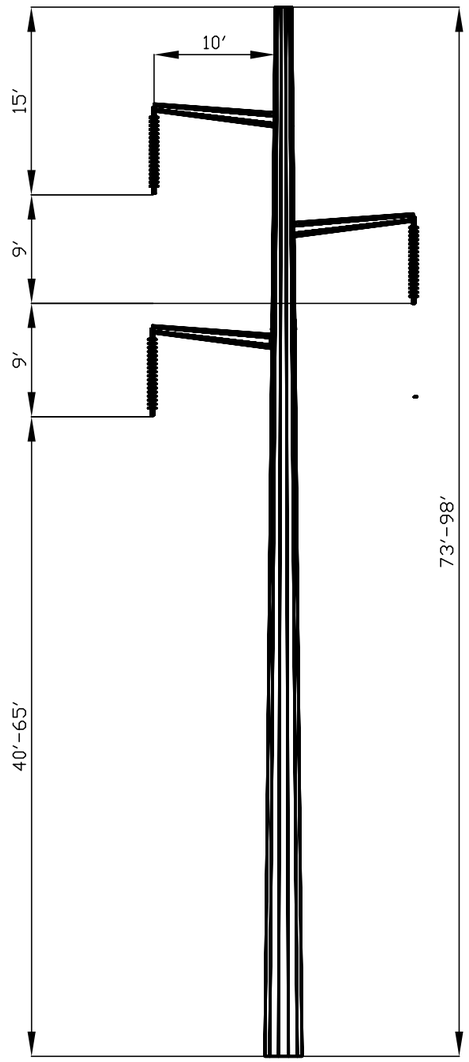


FIGURE TSE1c-3
230kV Line Pole Cross-section
Tangent Pole

NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

REV	DESCRIPTION / ISSUE	DATE	APPROVED

NRG Energy, Inc

Shaw Stone & Webster, Inc.

DESIGNED BY: DOP	CARLSBAD ENERGY CENTER PROJECT CARLSBAD, CA			
DRAWN BY: DOP	ENCINA POWER STATION FIGURE TSE1c-3 T-LINE POLE CROSS SECTIONS			
CHECKED BY: --				
APPROVED BY: --	DATE: 10/16/07	SCALE: NTS	DRAWING NO.: FIGURE TSE1c-3	REV. NO.: A

OFFICE
Centennial, CO

DRAWING NUMBER FIGURE TSE1c-4

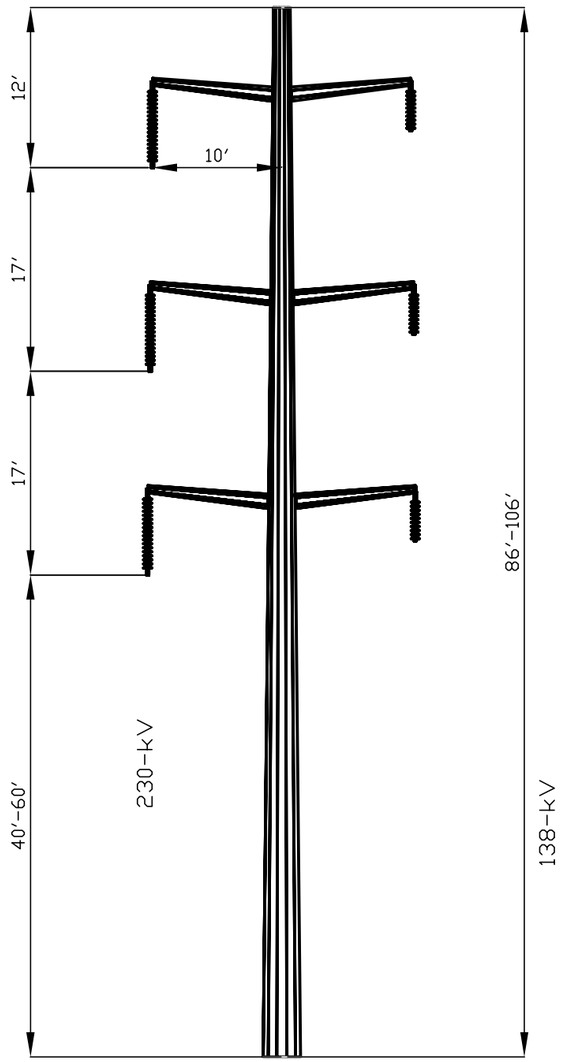


FIGURE TSE1c-4
138 & 230kV Line Pole Cross-section
Double Circuit Configuration

NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

REV	DESCRIPTION / ISSUE	DATE	APPROVED

NRG Energy, Inc

Shaw Stone & Webster, Inc.

DESIGNED BY: DOP	CARLSBAD ENERGY CENTER PROJECT CARLSBAD, CA
DRAWN BY: DOP	ENCINA POWER STATION FIGURE TSE1c-4 T-LINE POLE CROSS SECTION
CHECKED BY: --	

APPROVED BY:	DATE:	SCALE:	DRAWING NO.	REV. NO.
--	10/16/07	NTS	FIGURE TSE1c-4	A

OFFICE
Centennial, CO

DRAWING NUMBER FIGURE TSE1c-5

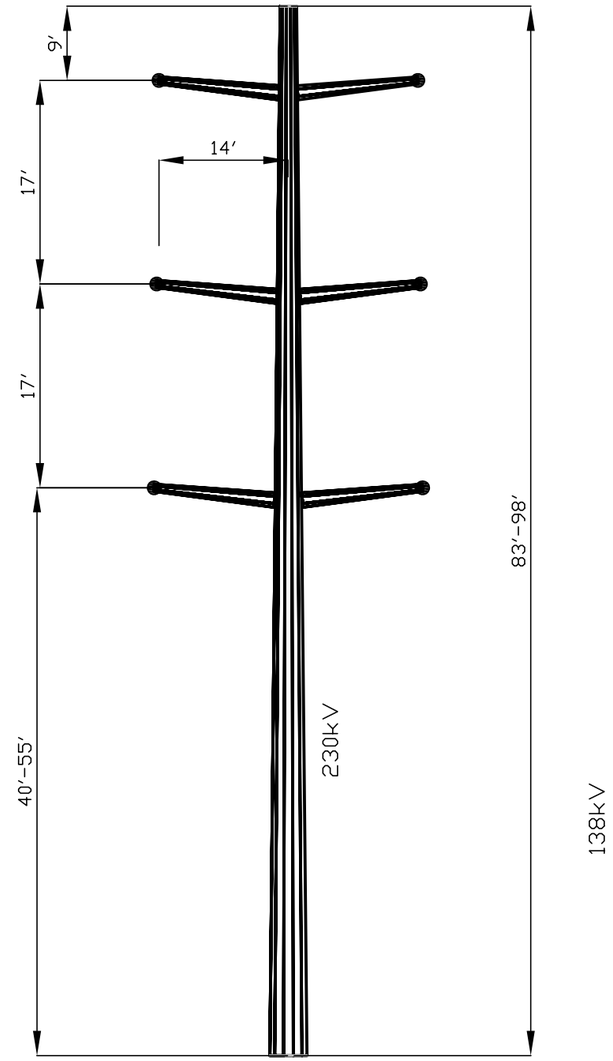


FIGURE TSE1c-5
138 & 230kV Line Pole Cross-section
Double Circuit Deadend Configuration
Line Divergence Point

NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

REV	DESCRIPTION / ISSUE	DATE	APPROVED

NRG Energy, Inc

Shaw Stone & Webster, Inc.

DESIGNED BY: DOP	CARLSBAD ENERGY CENTER PROJECT CARLSBAD, CA
DRAWN BY: DOP	ENCINA POWER STATION FIGURE TSE1c-5 T-LINE POLE CROSS SECTION
CHECKED BY: --	
APPROVED BY: --	DATE: 10/16/07 · SCALE: NTS · DRAWING NO.: FIGURE TSE1c-5 · REV. NO.: A

OFFICE
Centennial, CO

DRAWING NUMBER FIGURE TSE1c-6

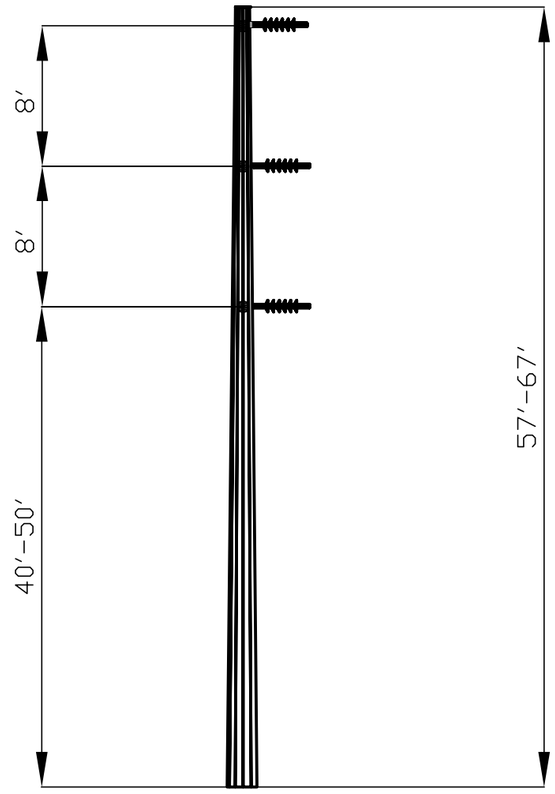


FIGURE TSE1c-6
138kV Line Pole Cross-section
Single Circuit to 138-kV Substation

NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

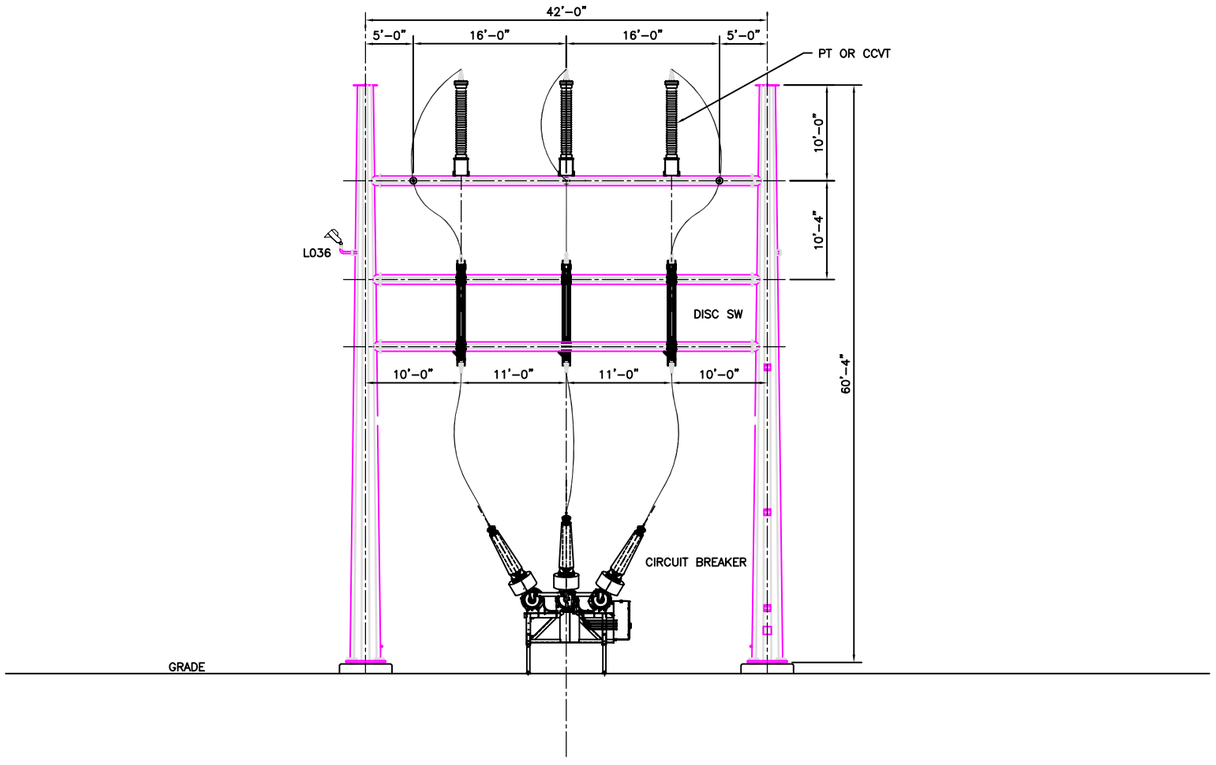
REV	DESCRIPTION / ISSUE	DATE	APPROVED

NRG Energy, Inc

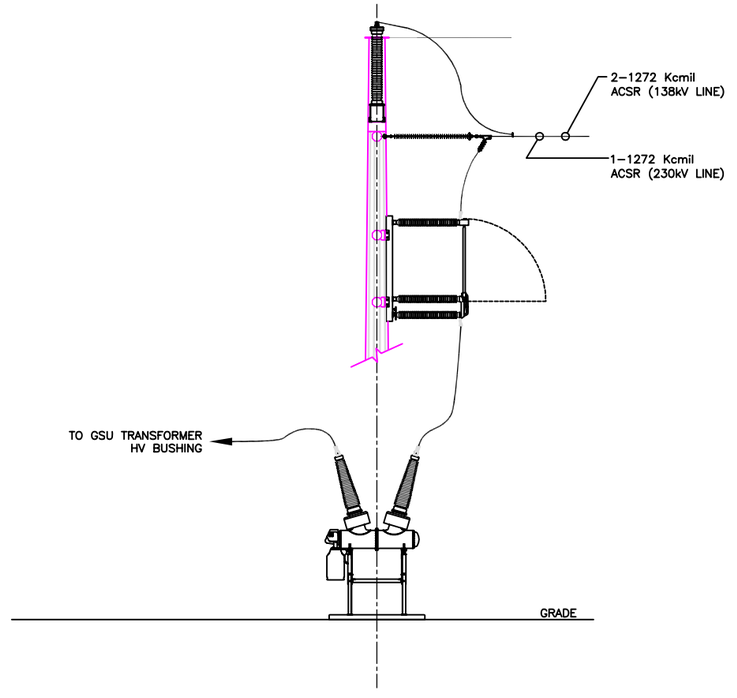
Shaw Stone & Webster, Inc.

DESIGNED BY: DOP	CARLSBAD ENERGY CENTER PROJECT CARLSBAD, CA
DRAWN BY: DOP	ENCINA POWER STATION FIGURE TSE1c-6 T-LINE POLE CROSS SECTION
CHECKED BY: --	

APPROVED BY:	DATE:	SCALE:	DRAWING NO.	REV. NO.
--	10/16/07	NTS	FIGURE TSE1c-6	A



ELEVATION
SCALE: 1/8"=1'–0"



SECTION
SCALE: 1/8"=1'–0"

NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

230kV TAKEOFF STRUCTURE

138kV TAKEOFF STRUCTURE (SIMILAR)

ENCINA POWER STATON
230kV & 138kV TAKEOFF STRUCTURE
FIGURE TSE1c–7

FIGURE TSE1C–7
10/17/07

OFFICE Centennial, CO

DRAWING NUMBER FIGURE TSE1c-11

N

FIGURE 3.2-5

FIGURE TSE1c-10

FIGURE TSE1c-9

FIGURE TSE1c-2

230kV SWITCHYARD

138kV SWITCHYARD

UNITS 1, 2 & 3

UNIT NO. 4

UNIT NO. 5

230KV SUBSTATION

PROPOSED POST PROJECT INTERCONNECTION

REFERENCES:
GENERAL ARRANGEMENT OF 138KV OUTDOOR SWITCHING STATION ——— EA-S-501
PLAN 230KV SUBSTATION ——— EA230-S-502

DWG. WAS: 13-EA-E400

REVISIONS

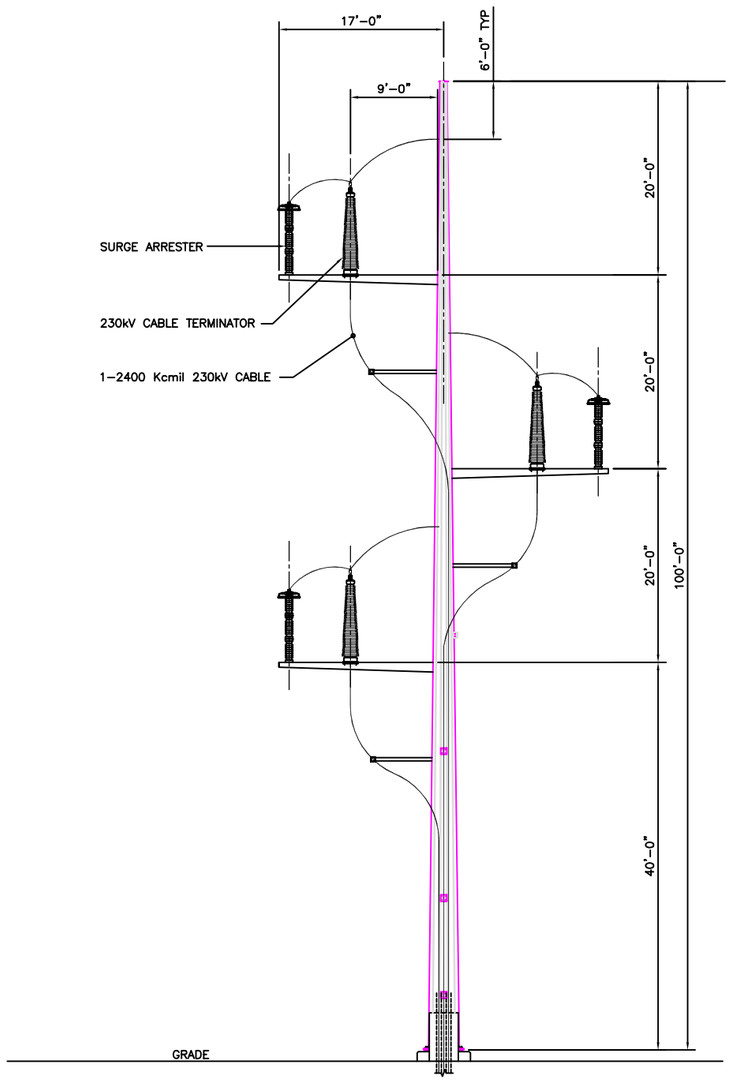
NO	WORK DONE	DATE	BY	APP'D
1	SCANNED DWG INTO TELEBLOCK WITH BARCODE AND CHANGE DWG #	W.O. 5930293 11/12/92	MN/GAS	

SAN DIEGO GAS & ELECTRIC COMPANY
SAN DIEGO, CALIFORNIA

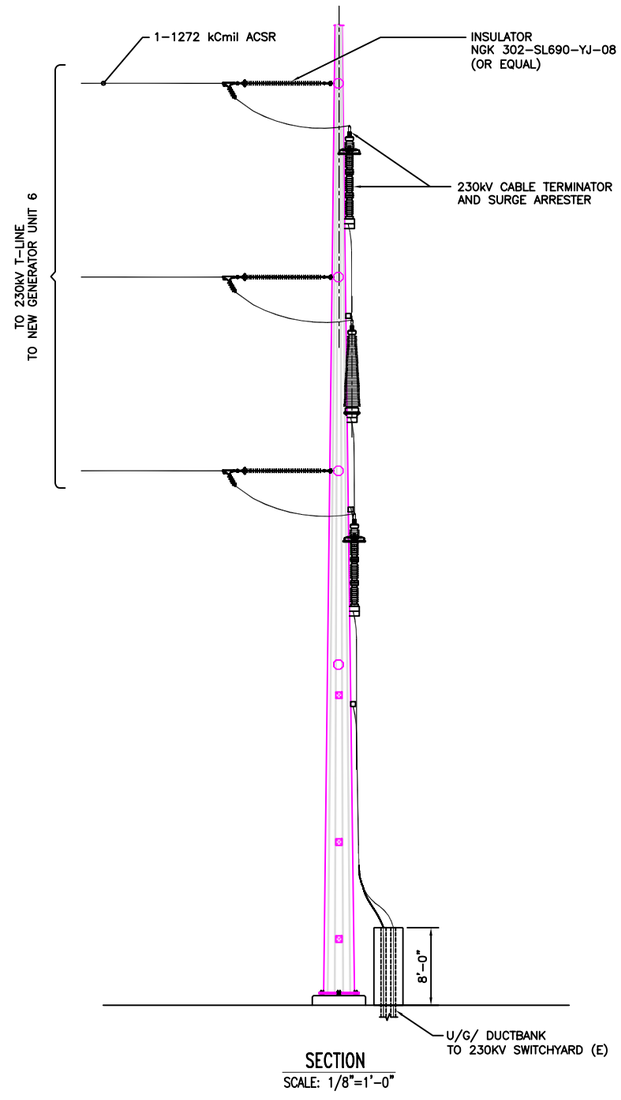
ENCINA SUBSTATION
230kV & 138 kV GENERAL ARRANGEMENT

DRAWN BY TJ	DATE 10/3/74	SCALE NONE	W.O. 5930293 REV 1
CHECKED BY	DATE		
APPROVED BY	DATE		FIGURE TSE1c-8
CAD NO EA2305501	PLOT SCALE = 1		

Nov 12 2002 - 12:48:38



ELEVATION
SCALE: 1/8"=1'-0"



SECTION
SCALE: 1/8"=1'-0"

NOTE:

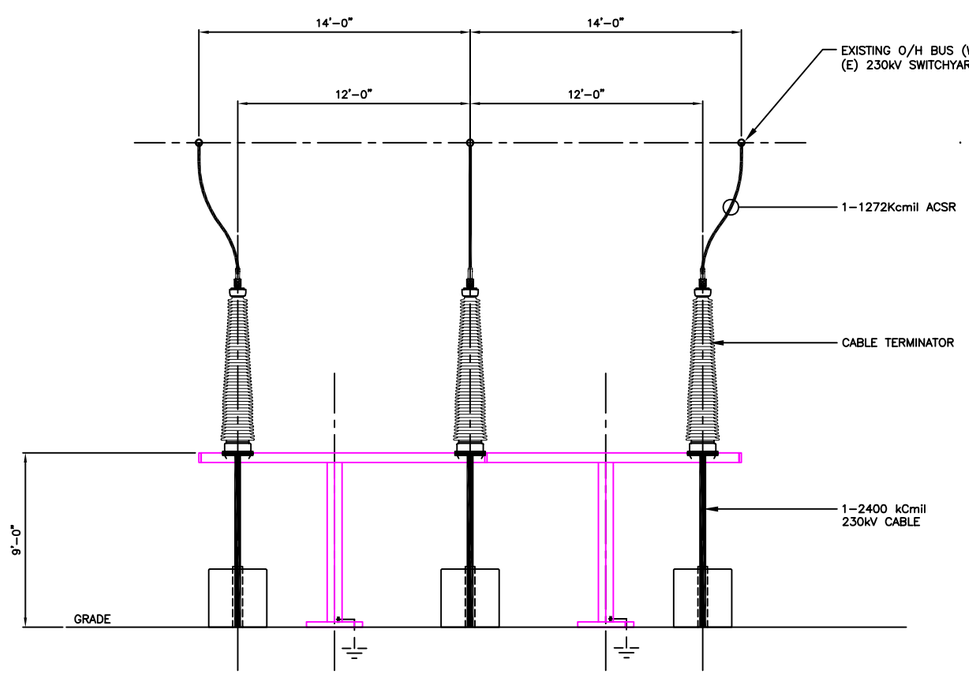
EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

LEGEND:
(E) – EXISTING

FIGURE TSE1C-9
10/17/07

230kV CABLE POLE
FIGURE TSE1c-9

ENCINA POWER STATON
230kV CABLE POLE
FIGURE TSE1c-9



230KV CABLE RISER STRUCTURE

SCALE: $\frac{1}{4}$"=1'-0"

NOTE:

EQUIPMENT CONFIGURATION & RATINGS ARE PRELIMINARY.

LEGEND:
(E) – EXISTING

ENCINA POWER STATION
230kV CABLE RISER
FIGURE TSE1c-10

FIGURE TSE1C-10
10/17/07

OFFICE Centennial, CO

DRAWING NUMBER FIGURE TSE1c-11

N

138kV SWITCHYARD

230kV SWITCHYARD

230KV SUBSTATION

UNITS 1, 2 & 3

UNIT NO. 4

UNIT NO. 5

(PRE-PROJECT)

REFERENCES:
GENERAL ARRANGEMENT OF 138KV OUTDOOR SWITCHING STATION ——— EA-S-501
PLAN 230KV SUBSTATION ——— EA230-S-502

DWG. WAS: 13-EA-E400

REVISIONS

NO	WORK DONE	DATE	BY	APPD
1	SCANNED DWG INTO TERZOLOGX WITH BARCODE AND CHANGE DWG # W.O. 5930293	11/12/02	MN/CJS	

SAN DIEGO GAS & ELECTRIC COMPANY
SAN DIEGO, CALIFORNIA

ENCINA SUBSTATION
230kV & 138 kV GENERAL ARRANGEMENT

DRAWN BY TJ	DATE 10/3/74	SCALE NONE	W.O. 5930293 REV 1
CHECKED BY	DATE		
APPROVED BY	DATE		FIGURE TSE1c-11
CAD NO EA230S501	PLOT SCALE = 1		

Nov 12 2002 - 12:48:38

5.1 Air Quality

1. SDAPCD Completeness Letter [Appendix B(g)(8)(A)]

The information necessary for the air pollution control district where the project is located to complete a Determination of Compliance.

Information required for the AFC to conform to the regulations:

Please provide a letter of data completeness from the SDAPCD when it is available or a related communication such as an e-mail.

Response—The requested letter is provided as Attachment AQ-1A**.**

2. Expected Capacity Factor [Appendix B(g)(8)(B)]

The heating value and chemical characteristics of the proposed fuels, the stack height and diameter, the exhaust velocity and temperature, the heat rate and the expected capacity factor of the proposed facility.

Information required for the AFC to conform to the regulations

Please clarify the expected capacity factor for the proposed project. In section 5.1.6.1.2, the capacity factor is reported as 4,100 hours per year per turbine (approximately 47 percent), while in section 2.3.2.1, the capacity factor is reported as between 25 and 100 percent.

Response—Both sets of numbers are correct as stated in the AFC. The reference to 4,100 hours per year per turbine in Section 5.1.6.1.2 refers to the total estimated operating hours per turbine, without regard to turbine load. The reference to a range of 25 to 100% in Section 2.3.2.1 is not related to capacity factor, which is discussed in the preceding sentence; rather, these numbers refer to the range of plant loads at any point in time, demonstrating the flexibility reflected in the plant design. For example, the plant (not each individual turbine) can operate at between 25% and 100% of rated capacity to respond to dispatch requests.

3. Expected SF_6 Emissions [Appendix B(g)(8)(E)]

The emission rates of criteria pollutants and greenhouse gases (CO2, CH4, N2O, and SF6) from the stack, cooling towers, fuels and materials handling processes, delivery and storage systems, and from all on-site secondary emission sources.

Information required for the AFC to conform to the regulations:

Please report all expected emissions of SF_6 from the project switching and transformer equipment mentioned on page 1-3. Please provide an estimate and discussion of the potential PM10 emissions from the evaporative cooler.

Response—The following new equipment that will contain SF6 is expected to be used with the project:

- Three 230 kV circuit breakers (161 pounds of SF6 each)
- Four 138 kV circuit breakers (75 pounds of SF6 each)

Thus, the total charge of SF6 associated with new equipment is expected to be 783 pounds.

Emissions of SF6 from this equipment are estimated based on the procedures set forth in the "2006 IPCC Guidelines for National Greenhouse Gas Inventories - Volume 3: Industrial Processes and Product Use." Chapter 8 of this document (p. 8.15) recommends the use of an emission factor (expressed as a fraction per year of nameplate capacity) of 0.14 for Closed Pressure Electrical Equipment (HV Switchgear). Based on this emission factor, SF6 emissions are estimated at 109.6 pounds per year. Based on the California Air Resources Board's default Global Warming Potential (GWP) factor of 23,900 for SF6[1], this is equal to 1,188 metric tons of CO_{2e}.

With respect to the potential PM10 emissions from the evaporative cooler, the total dissolved solids level in the reclaimed water is expected to be 922 ppm by weight (AFC, Appendix 5.15E, Table 5.15F-1); this water is blended, 50/50, upon being supplied to the evaporative cooler (AFC Figure 2.2-6b), resulting in a calculated TDS level of 461 ppmw. The maximum (hot weather) evaporative cooler water consumption rate would be 110 gallons per minute for both units, or 55 gpm for each unit. Virtually all of these solids are retained in the evaporative cooler blowdown, and do not enter the turbine gas path. The evaporative cooler would only be turned on during hours of baseload operation when the ambient temperature is higher than approximately 60°F and during hours of power augmentation. Siemens' proposed emission rate of 9.5 lbs/hr of PM at the stack includes their assumption of these parameters for the evaporative cooler. Consequently, the Applicant doesn't believe that the proposed PM levels for the plant need to be modified.

4. Initial Commissioning Estimates [Appendix B(g)(8)(I)(iv)]

An air dispersion modeling analysis of the impacts of the initial commissioning phase emissions on state and federal ambient air quality standards for NO_X, SO_2, CO, PM_{10}, and $PM_{2.5}$.

Information required for the AFC to conform to the regulations:

Please provide emission impact estimates of SO_2, PM10 and PM2.5 emissions from the proposed project's initial commissioning.

Response—Maximum hourly emission rates from the facility during commissioning activities are shown in the AFC in Appendix 5.1B, Table 5.1B-1A. Similarly, maximum daily and annual emission rates during commissioning are shown in AFC Tables 5.1B-2A and 5.1B-3, respectively. (In all of these tables, $PM_{2.5}$ emissions are identical to the PM_{10} emission rates shown.) AFC Table 5.1B-9 shows the detailed emissions estimates for each commissioning activity; the fuel consumption rates can be used to calculate SOx emissions via a mass balance if desired; however, the maximum SOx emission rates during commissioning activities are estimated in the tables referenced above.

[1].http://www.arb.ca.gov/cc/ccei/reporting/GHGReportingReg8_10_07.pdf page B-2.

The modeled ambient impacts for CO and NO_2 during the commissioning phase of the project are shown in AFC Table 5.1-28. Because SOx and $PM_{10}/PM_{2.5}$ emissions during the commissioning phase of the project will not be higher then under the normal operating modes evaluated in AFC Section 5.1.6.3.1, a separate modeling analysis for these pollutants was not performed for the commissioning phase of the project. The maximum SO_2 and $PM_{10}/PM_{2.5}$ impacts during the normal gas turbine operating modes are summarized on AFC Table 5.1-27. A more detailed summary of the normal operating modeling results are shown on AFC Table 5.1D-2. As shown on this table, the screening level modeling shows that maximum SO_2 impacts occur at peak load gas turbine operation (with an ambient temperature of 73.6 degrees F [°F]). Consequently, the emissions and stack parameters for this gas turbine operating mode were used for the refined SO_2 impact modeling analysis (refined modeling inputs are shown in AFC Table 5.1-D). The maximum $PM_{10}/PM_{2.5}$ impacts occur at low load gas turbine operation (with an ambient temperature of 104 °F). Therefore, the emission and stack parameters for this gas turbine operating mode were used for the refined $PM_{10}/PM_{2.5}$ modeling analysis (refined modeling inputs are shown in AFC Table 5.1-D).

ATTACHMENT AQ-1A

SDAPCD Completeness Letter

AIR POLLUTION CONTROL DISTRICT
COUNTY OF SAN DIEGO

October 17, 2007 via certified US Mail

TIM HEMIG
VICE PRESIDENT
CARLSBAD ENERGY CENTER
1817 ASTON AVE 101, SUITE 104
CARLSBAD, CA 92008

Application Nos. 985745, 985746, 985747, and 985748

APPLICATION STATUS

Your applications for Authorities to Construct for two new 279 MW combined cycle turbines (Encina Units Nos. 6 and 7) and one new 246 HP emergency fire pump for the Carlsbad Energy Center Project (CECP) located at the Encina Power Plant facility at 4600 Carlsbad Boulevard, Carlsbad California, were received on September 17, 2007, and assigned Application Nos. 985745, 985746 and 985748, respectively. In addition, your application to modify operations of three existing boilers having Permits to Operate Nos. 791, 792, and 793 as part of the CECP, also located at the Encina Power Plant, was received on September 17, 2007, and is assigned Application No. 985747. After initial review of the information submitted with the application and additional supplemental information submitted by you in a letter dated October 10, 2007, and an email dated October 12, 2007, the District has determined that Applications Nos. 985745, 985746, 985747, and 985748 are complete for purposes of Rule 18 Section (a), effective October 17, 2007.

However, pursuant to Rule 23 the District has determined that there are elements within the application which need clarification, amplification, or additional information in order to efficiently process the application. These elements are listed below (unless otherwise noted, references refer to the supporting documentation accompanying the application submittal) and will require a written response from the applicant to be submitted to the District no later than November 16, 2007. If more time is needed to prepare a complete response, please contact the District. Please be advised that, pursuant to District Rules 14, 17, and 23, additional information may be requested in the future as evaluation of the application proceeds.

BEST AVAILABLE CONTROL TECHNOLOGY (BACT)

Please provide an estimate of potential particulate emissions resulting from the use of reclaimed water in the evaporative cooler at the combustion turbine inlet. Also, provide the basis of the reclaimed water composition listed in Table 5.15F-1 in Appendix 5.15E.

OPERATIONS ON LNG DERIVED GAS

It is likely that the this turbine may be operated continuously or intermittently on natural gas derived from imported liquefied natural gas with a significantly different composition than the natural gas historically used in San Diego. In particular, the gas may have significantly higher amounts of ethane and propane relative to methane resulting in a significantly higher Wobbe No. for the fuel. Please provide the following information from the combustion turbine manufacturer:

1. The latest fuel specification for the turbine model specified in the application.

2. A guarantee that the combustion turbine in combination with the add-on emission control system will be able to meet the proposed exhaust stack emission limits in the application when operated over the expected Wobbe No. range of 1335–1385 and a description of the any measures and ancillary equipment needed to achieve this guarantee.

3. The maximum allowable amount of ethane, propane, and/or higher hydrocarbons in the fuel that the combustion turbine in combination with the add-on emission control system can tolerate and still meet the proposed emission limits in application.

4. The maximum allowable rate of change in Wobbe No. that the combustion turbine in combination with the add-on emission control system can tolerate and still meet the proposed emission limits in application.

5. The maximum allowable rate of change in ethane, propane, and/or higher hydrocarbons fuel content that the combustion turbine in combination with the add-on emission control system can tolerate and still meet the proposed emission limits in application.

AIR QUALITY IMPACT ANALYSIS (AQIA) AND HRA MODELING

AQIA Model

It appears that the air impact modeling was done using AERMOD version 06341. The latest version of AERMOD is version 07026, which was released in January of this year. If the air impact modeling was done using AERMOD version 06341, please resubmit the air impact modeling using the latest version of AERMOD or provide a demonstration that, for purposes of this project, AERMOD version 06341 and AERMOD version 07026 give the same results.

AQIA Analysis

On page 5.1-48, it is stated that, since the maximum background level of PM_{10} already exceeds the state 24-hour standard, the test for a significant impact is based on the whether the project emissions exceed the prevention of significance deterioration (PSD)

significant impact levels (SILs). However, under District Rule 20.3 (d)(2), it must be demonstrated that the project will not cause any additional exceedances of an ambient air quality standard. When the background exceeds an annual ambient air quality standard, it may be appropriate to use the SIL to determine if a significant impact has occurred. However, this is not true for ambient air quality standards with shorter averaging times. In this case, the District requires an analysis considering the impacts on days when the background concentration does not exceed the standard. Please provide such an analysis for the impact of PM_{10} with respect to the state 24-hour standard. The District meteorology staff should be contacted for details of the analysis procedure.

In addition, please provide the following information:

1. A key to identify all of the source groups used in the AERMOD calculations. In addition, provide a plain language summary of the electronic files submitted with the application so that they can be easily related to the information in the report. The summary should include a description of each source group being modeled.

2. Confirm that air quality impact calculations were made without considering emissions decreases from the eventual retirement of the three existing boilers.

HRA Analysis

Please provide the following information and clarifications:

1. Explain why cancer risk is calculated using more than the Office of Environmental Health Hazard Assessment (OEHHA) Derived (Adjusted) Method. It makes the review process more cumbersome and makes it more difficult for the public to evaluate the analysis and report. Moreover, it results in much lengthier AERMOD model runs and reports than are needed.

2. A key to identify all of the source groups used in the AERMOD calculations. In addition, provide a plain language summary of the electronic files submitted with the application specifically for the health risk assessment so that they can be easily related to the information in the report. The summary should include a description of each source group being modeled.

3. Information on whether health risk calculations were made with or without considering emissions decreases from the eventual retirement of the three existing boilers.

4. A separate calculation of health risk for startup and commissioning activities and an explanation as to how this risk was analyzed and incorporated into the overall health risk estimates including a description of exactly which commissioning activities were analyzed. If estimates of health risk under these conditions are expected to be negligible, this needs to be clearly demonstrated.

5. Identification of the computer file(s) that contain the maximum health risk impacts will be found. Health risk results should not just be stated, but should be clearly referenced.

Startup, Shutdown, and Commissioning

Since this plant is being proposed as a large power plant that is anticipated to undergo many startups and shutdowns during the year, it is important to have the most accurate information possible to model the air quality impact during startups and shutdown. In addition, it is also important to have the most accurate information possible during the commissioning period since, although of short duration on an annual basis, commissioning emissions may be much larger than during normal operations. Therefore, please provide the following actual or estimated/projected information for the combustion turbine.

1. Representative measured or calculated minute-by-minute exhaust stack temperature, fuel flow rate, oxygen content, and turbine load and controlled and uncontrolled carbon monoxide (CO) emissions, volatile organic compound (VOC) emissions, and oxides of nitrogen (NOx) emissions during a representative warm startup (overnight or shorter shutdown), cold startup (weekend shutdown) and supporting information. The data should extend until the steam turbine has reached full load.

2. Representative measured or calculated minute-by-minute exhaust stack temperature, fuel flow rate, oxygen content, and turbine load and controlled and uncontrolled CO emissions, VOC emissions, and NOx emissions during a representative shutdown and supporting information.

3. The basis for assuming that CO emissions are reduced by 20% during the first 12 minutes of a startup and by 90% during the final 10 minutes of a startup during normal operations (Table 5.1 B-8).

4. The approximate minimum load at which the combustion turbine is able to achieve the proposed best available control technology emission limits for NOx and CO.

5. During combustion turbine commissioning operations without add-on air pollution control equipment in place, exhaust stack temperature and oxygen content when the turbine is operating at full speed no load, 10% load, 25% load, and 40% load.

6. Details of combustion turbine commissioning activities indicating the approximate amount time in each operating mode during the activity.

TOXIC AIR CONTAMINANT EMISSION FACTORS

Maximum Hourly Emission Rates

The footnotes to Table 5.9B-1 indicate that the emission factors for acrolein, benzene, and formaldehyde are based on Table 3.1-1 in EPA's AP-42 emission factor compilation. In addition, the footnotes indicate that no control factor for the oxidation catalyst has been applied to these emission factors to account for startups when the oxidation catalyst may have less or no effectiveness.

However, a comparison of Table 5.9B-1 to Table 3.1-1 in AP-42 indicates that control factors of approximately 50%, 75%, and 50% have been applied to the AP-42 acrolein, formaldehyde, and benzene emission factors, respectively, to generate the emission factors in Table 5.9B-1. At a minimum (see below), please revise the hourly emission rates in Table 5.9-1 and the health risk assessment to reflect no emission control factor for acrolein, formaldehyde, and benzene or provide a justification of the control factors used.

The District also notes that the AP-42 emission factors or emission factors measured at high loads for toxic air contaminants may not be applicable to operations at low load operations that occur during startup, shutdown, and commissioning operations. The District may request the use of alternative emission factors for some air pollutants during low load operations. The District recommends providing any available test information for toxic air contaminant emissions for the model of combustion turbine proposed in the application, or a similar model, when operating at low load (i. e., not in the lean-premix combustion mode).

Annual Emission Rates

A comparison of Table 5.9B-1 to Table 3.1-1 in AP-42 indicates that control factors of approximately 50%, 75%, and 50% have been applied to the AP-42 acrolein, formaldehyde, and benzene emission factors to generate the annual emission rates listed in Table 5.9B-1. Please revise the annual emission rates in Table 5.9-1 and the health risk assessment to reflect no emission control factor for acrolein, formaldehyde, and benzene or provide a justification of the control factors used.

Please be advised that to evaluate the application the District may use suitably conservative assumptions or information from similar types of equipment in place of elements of the above requested information if the requested information is not available or not provided in a timely manner. In addition, changes in emission estimates may require the reassessment of the project's ambient air quality impacts and health risk assessment.

This is not a Permit to Operate. If you have any questions concerning the above, please contact me at (858) 586-2750.

Steven Moore

Steven Moore
Senior Air Pollution Control Engineer

cc: James W. Reede, Jr., Ed.D., California Energy Commission

5.2 Biological Resources

1. Agency Consultation [Appendix B(g)(13)(F)(ii)]

All off-site habitat mitigation and habitat improvement or compensation, and an identification of contacts for compensation habitat and management;

Information required for the AFC to conform to the regulations:

Consultation with state and federal agencies, including but not limited to the California Department of Fish and Game, California Coastal Commission, and U.S. Fish and Wildlife Service, may be needed regarding potential effects of the proposed CECP on special-status species and to determine if habitat mitigation or compensation is warranted. A record of conversation, including the agency official's name and contact information should be provided.

Response—Copies of the records of conversation with state and federal agencies is provided in Attachment BR-1A.

2. Agency Consultation [Appendix B(g)(13)(H)]

Submit copies of any preliminary correspondence between the project applicant and state and federal resource agencies regarding whether federal or state permits from other agencies such as the U. S. Fish and Wildlife Service, the National Marine Fisheries Service, the U.S. Army Corps of Engineers, the California Department of Fish and Game, and the Regional Water Quality Control Board will be required for the proposed project.

Information required for the AFC to conform to the regulations:

Consultation with state and federal agencies, including but not limited to the California Department of Fish and Game, California Coastal Commission, and U.S. Fish and Wildlife Service, may be needed regarding potential effects of the proposed CECP on special-status species. A record of conversation, including the agency official's name and contact information, needs to be provided.

Response—Copies of the records of conversation with state and federal agencies is provided in Attachment BR-1A.

3. Agency Consultation [Appendix B(i)(2)]

The name, title, phone number, address (required), and email address (if known), of an official who was contacted within each agency, and also provide the name of the official who will serve as a contact person for Commission staff.

Information required for the AFC to conform to the regulations:

Consultation with state and federal agencies, including but not limited to the California Department of Fish and Game, California Coastal Commission, and U.S. Fish and Wildlife Service, may be needed regarding potential effects of the proposed CECP on special-status species. A record of conversation, including the agency official's name and contact information, needs to be provided.

Response— Copies of the records of conversation with state and federal agencies is provided in Attachment BR-1A.

ATTACHMENT BR-1A

Biology Records of Conversation

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Marilyn Fluharthy,
California Department of Fish and Game

Phone No.: 858.467.4231 **Date:** September 20, 2007

Call From: Sophie Chiang **Time:** 11:30 AM

Message Taken By:

Subject: Biological/Sensitive Species concerns related to CECP

Project No.: **361219**

I received Marilyn's voicemail – she will be out until October 3, 2007. I left her a message explaining that I was the project biologist for the CECP which is located in Carlsbad in the vicinity of Agua Hedionda Lagoon and that this was a courtesy call to see if the Department had any questions or concerns. I explained that the AFC was just filed to the CEC last week and that the anticipated document distribution would occur around the middle to end of October.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Marilyn Fluharthy,
California Department of Fish
and Game

Phone No.: 858.467.4231 **Date:** October 3, 2007

Call From: Marjorie Eisert **Time:** 14:30

Message Taken By:

Subject: Biological/Sensitive Species concerns related to CECP

Project No.: 361219

I followed up with Marilyn regarding a message left by Sophie Chiang on 9/20/07. I received Marilyn's voicemail and left a message requesting a call back if she had any concerns regarding the CECP project. I also mentioned in my message that I was trying to contact Warren Wong/CDFG as well.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Warren Wong/CDFG
Lands Manager for Agua Hedionda Lagoon

Phone No.: 858-467-4249 **Date:** October 03, 2007

Call From: Marjorie Eisert **Time:** 02:23 PM

Message Taken By: Marjorie Eisert

Subject: CDFG Concerns regarding the CECP project

Project No.: **361219**

I received Warren's voicemail. I left a message for Warren explaining that I am contacting him to discuss potential CDFG concerns with the CECP project (adjacency to the Agua Hedionda Lagoon) and asked him to contact me to discuss the project.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Warren Wong/CDFG
Lands Manager for Agua Hedionda Lagoon

Phone No.: 858-467-4249 **Date:** October 09, 2007

Call From: Marjorie Eisert **Time:** 05:40 PM

Message Taken By: Marjorie Eisert

Subject: CDFG Concerns regarding the CECP project

Project No.: **361219**

Mr. Wong and I spoke regarding the CECP project (adjacency to the Agua Hedionda Lagoon) and asked if he had any specific concerns regarding T&E species issues. I told him I would send a figure showing the site location to ascertain adjacency issues. Mr. Wong said he would send a map showing the CDFG boundaries of the Agua Hedionda Lagoon. The lagoon is shared with regards to land ownership/management. We agreed to discuss on Thursday (10/11) since he was out of the office tomorrow (10/10).

Eisert, Marjorie/SAC

From: Warren Wong [WWong@dfg.ca.gov]
Sent: Thursday, October 11, 2007 9:47 AM
To: Eisert, Marjorie/SAC
Cc: Marilyn Fluharty
Subject: RE: Agua Hedionda Lagoon Ecological Reserve map

Attachments: CECP_Figure_3.2-1r.pdf; CECP_regional_bio_resources.pdf; Table 5.doc; Warren Wong.vcf


CECP_Figure_3.2-1r.pdf (2 MB)


CECP_regional_bio_resources.pd...


Table 5.doc (226 KB)


Warren Wong.vcf (469 B)

Hi Marjorie,
It looks like the project as proposed is well outside the boundaries of the Ecological Reserve but indirect effects (e.g., lighting, noise, runoff, discharge, etc.) to species/habitat (which should include fish species/habitat) both inside and outside of the ER should be analyzed in the CEQA document in addition to direct effects. I have not looked at your species list in detail, but it appears that most of the species that I'd be concerned about are included.

When circulating the documents, please send them to the DFG South Coast Region's CEQA supervisor, Marilyn Fluharty, for distribution to staff for review. She is headquartered in our regional office (same address as mine, below) and I'm cc'ing her on this email.

Please let me know if you have questions. Thanks!
Warren

Warren Wong
Associate Biologist
California Department of Fish and Game
4949 Viewridge Avenue
San Diego, CA 92123
(858) 467-4249 (office)
(858) 467-4299 (fax)

>>> <Marjorie.Eisert@CH2M.com> 10/10/2007 11:45 PM >>>
Hi Warren,
Here is a table listing the T&E species considered in our document. I also attached two figures showing the project location; our project site is west of the Agua Hedionda Lagoon, and should be sufficiently far enough away from the northeast portion of the lagoon owned and managed by CDFG. Would we need to consider impacts to T&E fish species if our project site is located on an existing industrial facility location that is bermed around its borders? Please let me know if you have any concerns regarding species not identified in our species table. Thank you for your help. Have a good day.
Cheers,
Marjorie

Marjorie A. Eisert
Operations Leader/Senior Project Manager West Region, Environmental Services
2485 Natomas Park Drive, Suite 600

Sacramento, California 95833
U.S.A.
Direct - 916.286.0290
Fax - 916.614.3490
Mobile - 916.806.9250
www.ch2mhill.com

-----Original Message-----
From: Warren Wong [mailto:WWong@dfg.ca.gov]
Sent: Tuesday, October 09, 2007 5:40 PM
To: Eisert, Marjorie/SAC
Subject: Agua Hedionda Lagoon Ecological Reserve map

Hi Marjorie,
It was nice to finally speak to you in person. Attached is a map of the Department's property on Agua Hedionda Lagoon. My contact info follows.

Warren

Warren Wong
Associate Biologist
California Department of Fish and Game
4949 Viewridge Avenue
San Diego, CA 92123
(858) 467-4249 (office)
(858) 467-4299 (fax)

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Marci Koski
Fish and Wildlife Service, Carlsbad Field Office

Phone No.: 760.431.9440 ext. 304 **Date:** September 20, 2007

Call From: Sophie Chiang **Time:** 11:40 AM

Message Taken By:

Subject: Biological/Sensitive Species concerns related to CECP

Project No.: 361219

I received Marci's voicemail. I left her a message explaining that I was the project biologist for the CECP which is located in Carlsbad in the vicinity of Agua Hedionda Lagoon and that this was a courtesy call to see if the Service had any questions or concerns. I explained that the AFC was just filed to the CEC last week and that the anticipated document distribution would occur around the middle to end of October.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Marci Koski
Fish and Wildlife Service Carlsbad Field Office

Phone No.: 760.431.9440 ext. 304 **Date:** September 24, 2007

Call From: Sophie Chiang **Time:** 11:40 AM

Message Taken By:

Subject: Biological/Sensitive Species concerns related to CECP

Project No.: 361219

Marci returned my call. She appreciates the heads up and will keep an eye out for the document. She suggested that we talk to Warren Wong, the CDFG lands manager for Agua Hedionda, when the document is available. Warren's phone number is 858.467.4249. The CDFG contact (Marilyn Fluharty) who I left a message with is his supervisor.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Tom Luster
California Coastal Commission

Phone No.: (415) 904-5248 **Date:** 10/23/2007

Call From: Robert Mason **Time:** 9:00 am

Message Taken By:

Subject: Carlsbad Energy Center Project (CECP) – Biological Resources

Project No.: 361219

I called Tom Luster of the California Coastal Commission requesting his input on potential biological resource issues related to the Carlsbad Energy Center Project (CECP). Tom indicated that while he has received the AFC for the CECP, that as stated in the letter of October 16, 2007 (see attached) from Peter Douglas, Executive Director of the Coastal Commission to B.B. Blevins, Executive Director of the CEC tha, due to Coastal Commission staff's substantial workload and limited resources, the Coastal Commission is prevented from participating in the AFC process for several coastal power plants, include the AFC process for the CECP.

Based on this letter, Tom indicated he will not be reviewing the CECP AFC or participating in the AFC process; however, he did indicate during this call that, based on his knowledge of the Encina Power Station site and his knowledge of the CECP itself, he is not aware of significant coastal related biological resource issues that will be associated with the construction and operation of the CECP. Tom indicated that the location of the CECP within the existing tank farm would avoid any direct impact to habitat. Tom also noted that, as stated in the Mr. Douglas's letter of Octover 16, 2007, that CECP's use of dry cooling technology rather than using seawater for once-through-cooling removes the single most important environmental concern that the Coastal Commission has regarding power plants in the coastal zone.

Tom did note during the call that there could be minor biological issues that should be considered including air emissions – specifically the drift of nitrogen oxides over nearby habitat, and he assumes the CECP AFC addresses this issue. I told Tom that this issue is specifically addresses in the Biological Resources section of the CECP AFC.

STATE OF CALIFORNIA—THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *GOVERNOR*

CALIFORNIA COASTAL COMMISSION

45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105- 2219
VOICE AND TDD (415) 904- 5200
FAX (415) 904- 5400

October 16, 2007

B.B. Blevins, Executive Director
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

RE: Coastal Commission review of projects subject to the Energy Commission's Application For Certification

VIA FACSIMILE: (916) 654-4420

Dear Mr. Blevins:

As you know, staff of the Coastal Commission and Energy Commission have worked together over the past several years on a number of proposed power plant projects. Both the Warren-Alquist Act and the Coastal Act provide that the Coastal Commission play a key role in the Energy Commission's Application For Certification (AFC) process for projects proposed along California's coast.[1] The main purpose of the Coastal Commission's involvement is to ensure those projects conform to Coastal Act policies meant to protect coastal resources. Additionally, staff of the two Commissions worked to strengthen their relationship during these AFC reviews by developing in 2005 a Memorandum of Agreement that further specified how these reviews were to be implemented.

We have recently determined, however, that Coastal Commission staff's substantial workload and limited resources prevent us from participating in the AFC reviews currently before the Energy Commission, including the Humboldt Bay Repowering Project (06-AFC-7), the Encina Replacement Project (07-AFC-6), and the South Bay Replacement Project (04-AFC-3). We will also be unable to participate in the Energy Commission's review of a proposed amendment to the El Segundo Power Redevelopment Project (00-AFC-14c). As a result, we will not be developing the reports required for these proposals pursuant to Coastal Act Section 30413(d).

We note that all the projects listed above are proposing to end the environmentally destructive use of seawater for once-through cooling and instead employ dry cooling technology, which the Coastal Commission has strongly supported during past power plant reviews. This move away from once-through cooling removes what has been the single most contentious and environmentally damaging aspect of past project proposals. It also reduces the Coastal Commission's concerns about the type and scale of impacts associated with these proposed projects and about the ability of these projects to conform to Coastal Act provisions.

[1] The roles of the Energy Commission and Coastal Commission in these AFC proceedings are described respectively in Warren-Alquist Act Section 25500 *et seq.* and Coastal Act Section 30413(d).

Although each of these proposed projects have the potential to cause other types of adverse effects to coastal resources, we trust that the Energy Commission staff will continue to thoroughly review these projects as it has done in past AFC proceedings and we hope they can incorporate some aspects of Coastal Act conformity into their review.

While we will not be able to participate in your review of these current AFC proceedings, we look forward to re-starting our review obligations as soon as our resources allow. We will keep you informed as our workload and resources change. Thank you for your understanding of our decision, and please let me know if you have any questions about this issue.

Sincerely,

Peter M. Douglas
Executive Director

Cc: Resources Agency – Secretary Mike Chrisman
Coastal Commissioners

5.3 Cultural Resources

1. Technical Report [Appendix B(g)(2)(C)(i)]

The summary from Appendix B (g)(2)(A) and the literature search results from Appendix B (g)(2)(B);

Information required for the AFC to conform to the regulations:

The technical report shall include (summary from Appendix (B) (g) (2) (A)), of the ethnology, prehistory, and history of the region emphasizing no more than a 5-mile radius of the project location as required by Appendix B (g) (2) (C).

Response— The revised technical report is being submitted as Attachment CR-1A under a request for confidentiality.

2. Technical Report [Appendix B(g)(2)(C)(iv)]

A map at a scale of 1:24,000 U.S. Geological Survey quadrangle depicting the locations of all previously known and newly identified cultural resources compiled through the research required by Appendix B (g)(2)(B) and Appendix B (g)(2)(C) (ii)

Information required for the AFC to conform to the regulations:

Please add map from Appendix 5.3E to technical report provided as Confidential Filing, Appendix 5.3F as required by Appendix B (g) (2) (C).

Response— The map has been added to the revised technical report, which is being submitted as Attachment CR-1A under a request for confidentiality.

5.6 Land Use

1. Legal Parcel [Appendix B(g)(3)(C)]

A discussion of the legal status of the parcel(s) on which the project is proposed. If the proposed site consists of more than one legal parcel, describe the method and timetable for merging or otherwise combining those parcels so that the proposed project, excluding linears and temporary laydown or staging area, will be located on a single legal parcel. The merger need not occur prior to a decision on the Application but must be completed prior to the start of construction.

Information required for the AFC to conform to the regulations:

For staff to determine whether Assessor Parcel Number 210-01-41 (the parcel identified in the Application for Certification as the 30-acre parcel where the Carlsbad Energy Center Project is proposed to be constructed) is a legal parcel as defined in the California Subdivision Map Act, please provide one of the following bulleted items:

- *Certificate of Compliance from the City of Carlsbad;*
- *Final Parcel Map as recorded by the City of Carlsbad;*
- *Tentative Parcel Map with a recorded legal description from the City of Carlsbad; or*
- *Current grant deed AND a grant deed that was recorded closest to but preceding the date of March 4, 1972.*

Response— As described in the Section 1.0 of the CECP AFC and as shown by the Certificate of Compliance issued by the City of Carlsbad, the CECP site is part of the 95-acre Encina Power Station parcel. The Encina Power Station parcel consists of an approximately 65-acre parcel (designated by the San Diego County Assessor as Assessor Parcel Number [APN] 210-01-43), which contains the existing generating equipment and a 31.08-acre parcel east of the railroad tracks (designated by the San Diego County Assessor as APN 210-01-41) containing the fuel tanks that are being removed and upon which CECP will be constructed (see Attachment LU-1A).

The Encina Power Station parcel is owned by Cabrillo Power I LLC, an indirectly wholly owned subsidiary of NRG Energy, Inc. Carlsbad Energy Center LLC is also an indirectly wholly owned subsidiary of NRG Energy, Inc. At this time, it is the intent of Carlsbad Energy Center LLC to lease APN 210-010-41 from Cabrillo Power LLC for purposes of constructing the CECP. APN 210-010-41 will be a leasehold parcel only. The attached Certificate of Compliance recorded with San Diego County Recorder's Office on October 30, 2001 (see Attachment LU-1A) reflects an adjustment to Parcel 4, as shown on Exhibit B, which was identified in 2001 as portions of APNs 210-010-39 and 210-010-40. The portion of Parcel 4 that is located northeast of the railroad tracks is APN 210-010-41.

ATTACHMENT LU-1A

Land Use Data

09

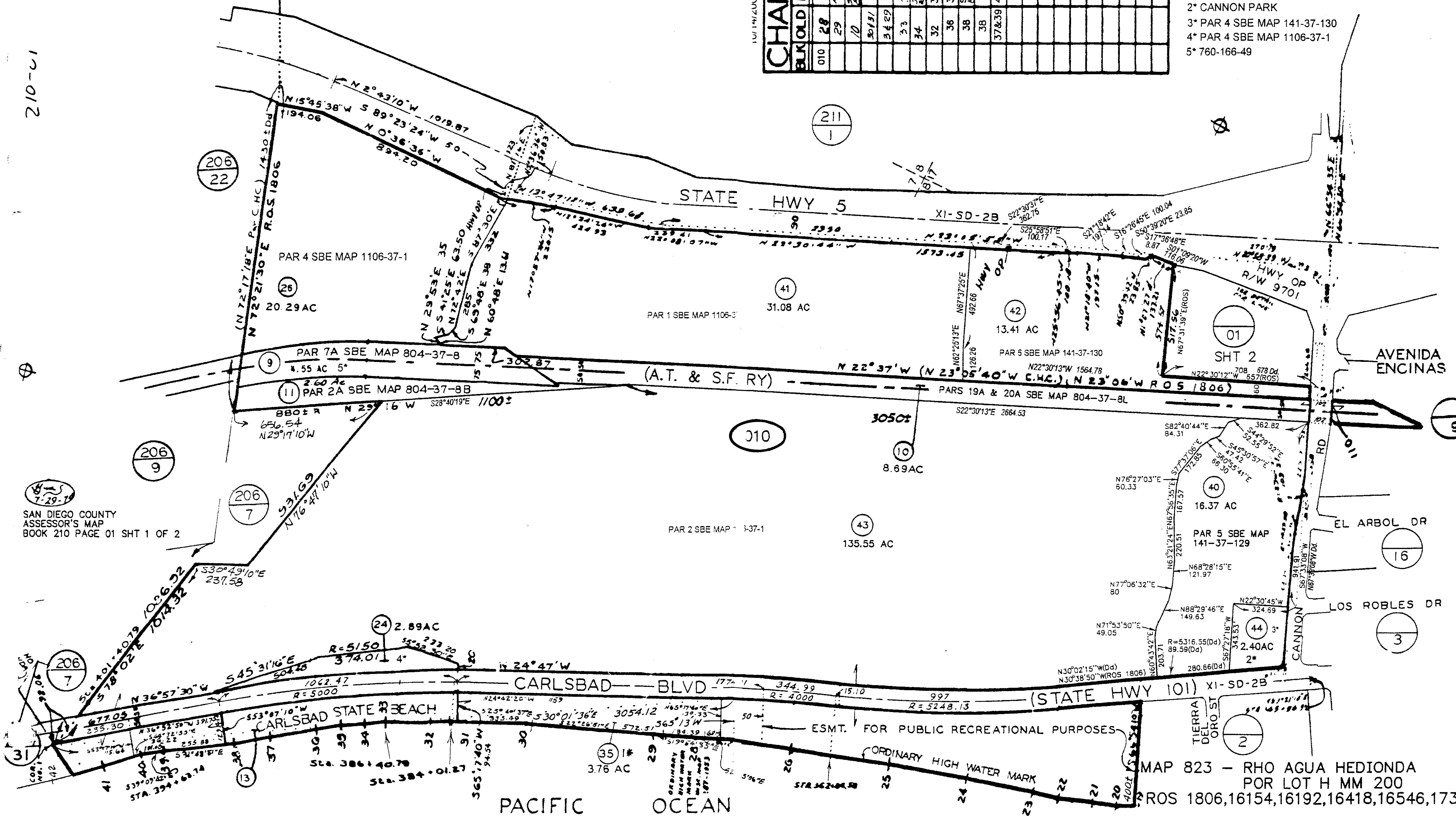
THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY. NO LIABILITY IS ASSUMED FOR THE ACCURACY OF THE DATA SHOWN. ASSESSOR'S PARCELS MAY NOT COMPLY WITH LOCAL SUBDIVISION OR BUILDING ORDINANCES.

210-01
SHT 1 OF 2

1"=400'

CHANGES				
BLK	OLD	NEW	YR	CUT
010	28	31	75	2496
	29	APP ONLY	77	4880
	10	SAME EOP	77	4539
	30&31	32	80	954
	3&29	33	83	3494
	33	34&35	90	2230
	34	[illegible]	92	1737
	32	37&38	99	1420
	36	39&40	00	2033
	38	SAME & AC CHG	01	5615
	38	-011- 1-5	04	1272
	37&39	41-44	04	1830

1* CARLSBAD STATE BEACH
2* CANNON PARK
3* PAR 4 SBE MAP 141-37-130
4* PAR 4 SBE MAP 1106-37-1
5* 760-166-49



SAN DIEGO COUNTY ASSESSOR'S MAP BOOK 210 PAGE 01 SHT 1 OF 2

MAP 823 – RHO AGUA HEDIONDA POR LOT H MM 200
ROS 1806,16154,16192,16418,16546,17350

DOC # 2001-0789068

OCT 30, 2001 4:59 PM

RECORDING REQUESTED BY
STEWART TITLE OF CALIFORNIA

AND WHEN RECORDED MAIL TO:

City Clerk
CITY OF CARLSBAD
1200 Carlsbad Village Dr.
Carlsbad, CA 92008

F&P
1 COM

025091

OFFICIAL RECORDS
SAN DIEGO COUNTY RECORDER'S OFFICE
GREGORY J. SMITH, COUNTY RECORDER
FEES: 23.00

2001-0789068

SPACE ABOVE THIS LINE FOR RECORDER'S USE

ASSESSOR'S PARCEL NO. 210-010-40-00 (portion) and 210-010-39-00 (portion)

PROJECT NO. & NAME: ADJ 00-10, Parcel 4
Encina Adjustment

Case No. CE 01-39

CERTIFICATE OF COMPLIANCE
FOR ADJUSTMENT PLAT
(Section 66499.35 of the Government Code)

The City Engineer has determined that the real property described below, has been divided or has resulted from a division or combining of lots in compliance with the Subdivision Map Act and with the provisions of the Carlsbad Municipal Code pursuant thereto.

OWNER(S): Cabrillo Power I LLC, a Delaware Limited Liability Company

DESCRIPTION: (See Exhibit "A" attached. Exhibit "B" is attached for clarity only.)

NOTE: The description in Exhibit "A" attached has been provided by the owner of the property and neither the City of Carlsbad nor any of its officers or employees assume responsibility for the accuracy of said description.

This Certificate of Compliance shall have no force and effect if the above owners or any subsequent transferee or assignee acquires any contiguous property other than a lot or lots shown on a recorded subdivision map, parcel map or record of survey map filed pursuant to and prior to repeal (Stats. 1955, Ch. 1593) of Section 11575 of the Business and Professions Code;

This Certificate of Compliance shall in no way affect the requirements of any other County, State or Federal agency that regulates development of real property.

DATE: 10/29/01

BY: Robert J. Wojcik
Deputy City Engineer
RCE ~~33081~~ 33698 EXP. ~~8~~/30/02

025092

EXHIBIT "A"
LEGAL DESCRIPTION
ADJ 00-10 - ENCINA

PARCEL 4

That portion of Lot "H" of Rancho Agua Hedionda, in the City of Carlsbad, County of San Diego, State of California, according to Partition Map thereof No. 823, filed in the Office of the County Recorder of San Diego County, November 16, 1896, described as follows:

Commencing at the intersection of the Easterly line of the 100.00 foot wide right-of-way of the Atchison Topeka and Santa Fe Railroad with the Northerly line of Cannon Road (60.00 feet wide); thence along said Easterly line North 22°30'13" West, 1564.78 feet to the TRUE POINT OF BEGINNING; thence continuing along said Easterly line North 22°30'13" West, 1990.35 feet to the beginning of a non-tangent curve concave to the Northwest having a radius of 1005.37 feet, a radial to said beginning bears South 85°54'14" East; thence Northeasterly 36.76 feet along said curve through a central angle of 02°05'42"; thence non-tangent to said curve North 22°30'13" West, 302.87 feet; thence leaving said Easterly line North 61°25'37" East, 14.19 feet; thence North 30°30'37" East, 34.90 feet; thence South 40°47'23" East, 63.50 feet; thence South 69°10'23" East, 38.00 feet; thence North 79°19'37" East, 285.00 feet; thence North 88°07'37" East, 333.14 feet; thence North 81°53'37" East, 13.68 feet to the Westerly right-of-way line of California State Highway XI-SD-2B (I-5); thence along said right-of-way line South 17°57'05" East, 204.93 feet; thence South 12°34'11" East, 424.72 feet; thence South 22°07'51" East, 239.68 feet; thence South 22°30'37" East, 1210.91 feet; thence leaving said right-of-way line South 67°37'25" West, 492.66 feet; thence South 62°25'13" West, 126.26 feet to the TRUE POINT OF BEGINNING,

TOGETHER WITH that portion of said Lot H described as follows:

Commencing at the Northeasterly corner of Record of Survey No. 14621, in the City of Carlsbad, County of San Diego, State of California, recorded in the Office of the County Recorder of San Diego County, August 14, 1994 as File No. 1994-500086, said corner being on the Westerly line of the right-of-way of the Atchison Topeka and Santa Fe Railroad; thence along said Westerly line and Easterly line of said Record of Survey 14621 South 28°40'19" East, 656.70 feet to the most Southerly corner of said Record of Survey No. 14621; thence continuing South 28°40'19" East, 275.00 feet to the TRUE POINT OF BEGINNING; thence leaving said Westerly line South 56°25'30" West, 61.30 feet; thence South 04°59'18" West, 27.61 feet; thence South 39°37'42" East, 61.38 feet; thence South 77°21'22" East, 49.55 feet; thence South 26°45'23" East, 232.92 feet; thence South 17°52'19" East, 115.92 feet; thence South 02°16'37" East, 55.06 feet; thence South 24°00'58" West, 44.47 feet; thence South 40°45'14" West, 126.60 feet; thence South 29°41'50" West, 83.42 feet; thence South 27°27'35" West, 90.04 feet; thence South 35°18'30" West, 212.59 feet; thence South 19°22'01" East, 108.34 feet; thence South 30°56'56" East, 304.06

feet; thence South 14°30'21" West, 175.27 feet; thence South 00°09'57" East, 123.11 feet; thence South 26°53'37" East, 119.99 feet; thence South 34°46'51" West, 23.60 feet; thence North 61°27'21" West, 142.77 feet; thence North 22°47'32" West, 47.01 feet; thence South 67°12'28" West, 16.03 feet; thence South 22°47'32" East, 22.23 feet; thence South 58°37'31" West, 97.99 feet; thence South 41°35'28" West, 110.44 feet; thence North 74°44'52" West, 164.81 feet; thence North 05°57'51" West, 202.95 feet; thence North 30°14'20" West, 64.23 feet; thence North 64°31'22" West, 293.59 feet to the Easterly line of the 100.00 foot wide Carlsbad Boulevard; thence along said Easterly line of Carlsbad Boulevard South 24°07'36" East, 913.18 feet to the beginning of a curve concave Southwesterly having a radius of 4050.00 feet; thence Southeasterly 348.89 feet along said curve through a central angle of 04°56'09"; thence South 19°11'27" East, 15.63 feet to the beginning of a curve concave Northeasterly having a radius of 5216.55 feet; thence Southeasterly 900.29 feet along said curve through a central angle of 09°53'18"; thence leaving said Easterly line of Carlsbad Boulevard North 60°43'42" East, 103.71 feet; thence North 71°53'50" East, 49.05 feet; thence North 88°29'46" East, 149.63 feet; thence North 77°06'32" East, 80.00 feet; thence North 68°28'15" East, 121.97 feet; thence North 63°21'24" East, 220.51 feet; thence North 67°56'35" East, 167.57 feet; thence North 76°27'03" East, 60.33 feet; thence South 77°37'06" East, 172.85 feet; thence South 60°55'41" East, 66.30 feet; thence South 45°30'57" East, 47.42 feet; thence South 82°40'44" East, 84.31 feet; thence South 44°29'52" East, 52.55 feet to said Westerly right-of-way line of said Atchison Topeka and Santa Fe Railroad; thence along said Westerly line North 22°30'13" West, 2664.53 feet; thence North 28°40'19" West, 835.14 feet to the TRUE POINT OF BEGINNING.

The hereinabove described parcel of land contains 95.08 acres more or less.

Prepared by:

Nolte Associates, Inc.

Ronald C. Parker 10/22/01

Ronald C. Parker
Director of Survey

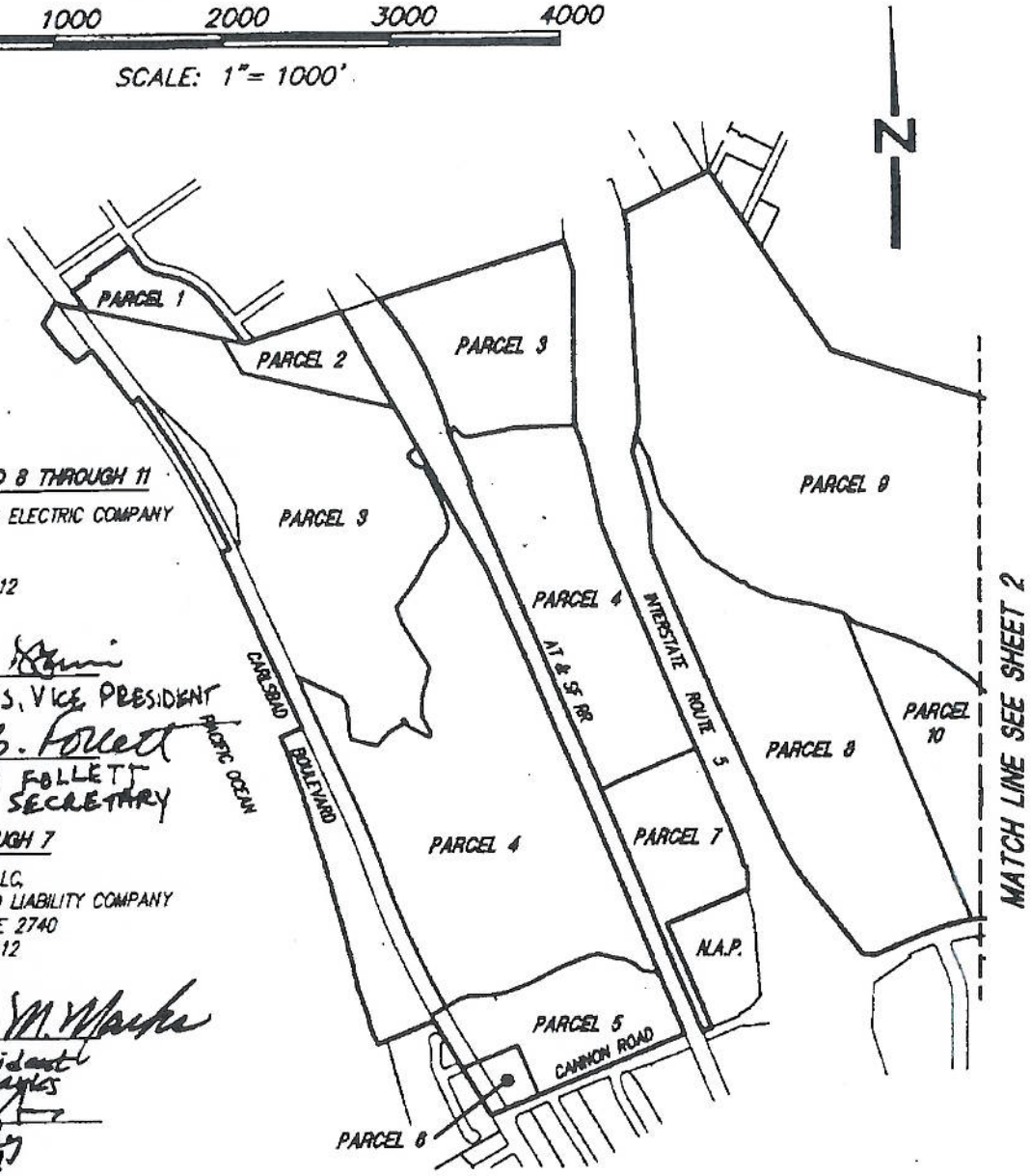
Date

025094

GRAPHIC SCALE

0 1000 2000 3000 4000

SCALE: 1"= 1000'



OWNERS:

PARCELS 1, 2, AND 8 THROUGH 11

SAN DIEGO GAS AND ELECTRIC COMPANY
A CORPORATION
101 ASH STREET
SAN DIEGO, CA 92112

BY: _____
STEVEN P. DAVIS, VICE PRESIDENT

BY: David B. Follett
DAVID B FOLLETT
ASSISTANT SECRETARY

PARCELS 3 THROUGH 7

CABRILLO POWER I LLC,
A DELAWARE LIMITED LIABILITY COMPANY
750 B STREET, SUITE 2740
SAN DIEGO, CA 92112

BY: Stan M. Marks
VICE President
STAN M. MARKS

BY: _____
Secretary
David Lloyd

LICENSED LAND SURVEYOR
RONALD C. PARKER
No. 4312
EXP. 6-30-04
STATE OF CALIFORNIA

RONALD C. PARKER LS 4312
EXP. 6-30-04

EXHIBIT "B"

SHEET 1 OF 2
ADJ NO. 00-10

ADJUSTMENT PLAT-CITY OF CARLSBAD

APPLICANT:	PREPARED BY:	APPROVED BY:	A.P.N.:
SAN DIEGO GAS & ELECTRIC CO 101 ASH STREET SAN DIEGO, CA 92112 (619) 696-2485	NOLTE BEYOND ENGINEERING 13996 AVENUE OF SCIENCE, SUITE 104 SAN DIEGO, CA. 92128 858.385.8500 TEL. 858.385.8400 FAX WWW.NOLTE.COM N:\SDGE\SD970048\CADD\ADJPLT805.DWG	DAVID HAUSER, DEPUTY CITY ENGINEER R.C.E. 33081 EXP. 6-30-2002	206-070-11 210-010-24, 26, 32 36

025095

GRAPHIC SCALE

0 1000 2000 3000 4000

SCALE: 1"= 1000'

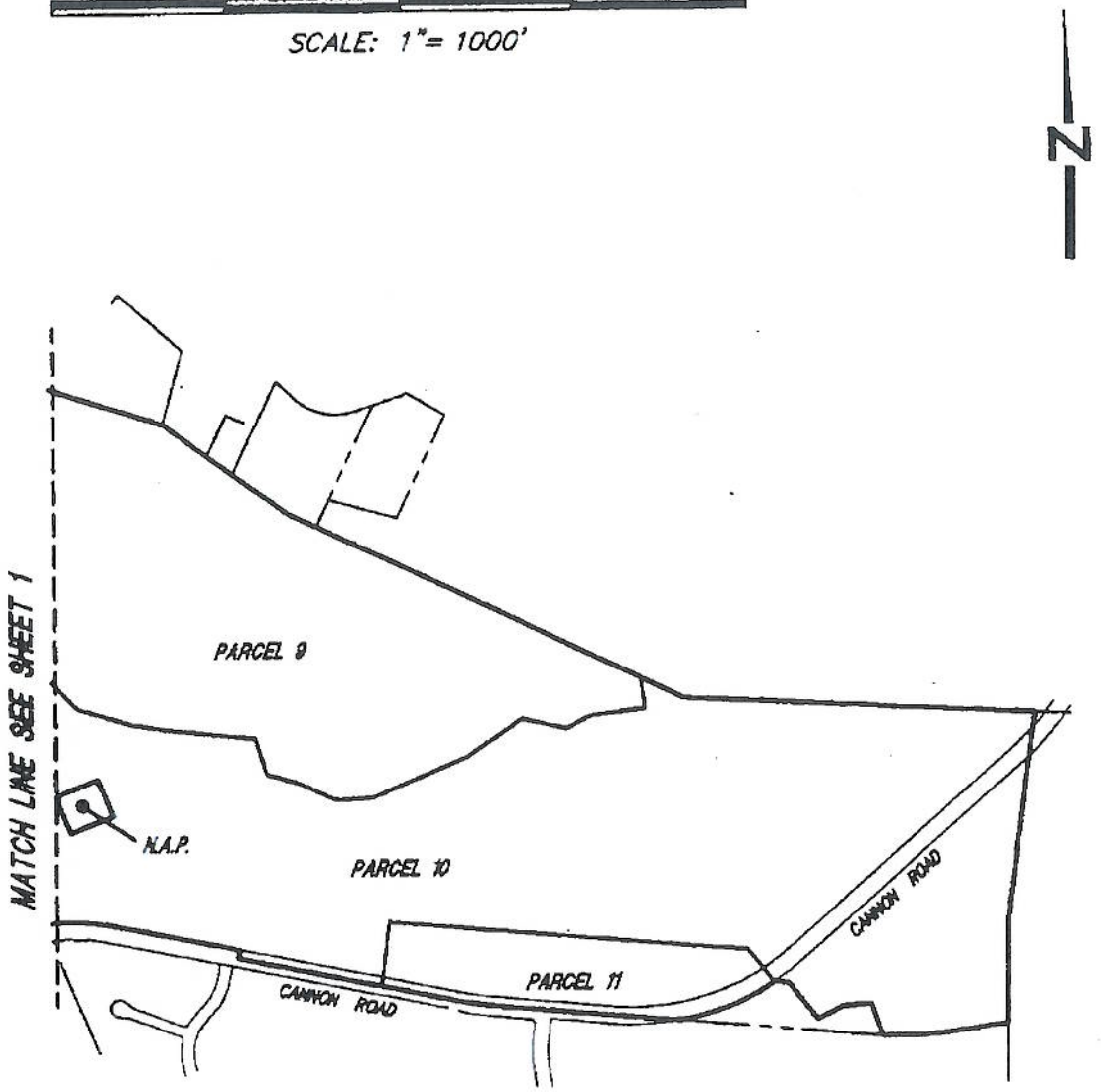


EXHIBIT "B"

SHEET 2 OF 2
ADJ NO. 00-10

ADJUSTMENT PLAT-CITY OF CARLSBAD

APPLICANT:	PREPARED BY:	APPROVED BY:	A.P.N.:
SAN DIEGO GAS & ELECTRIC CO 101 ASH STREET SAN DIEGO, CA 92112 (619) 696-2485	NOLTE BEYOND ENGINEERING 16890 AVENUE OF SCIENCE, SUITE 101 SAN DIEGO, CA. 92128 858.385.0500 TEL 858.385.0400 FAX WWW.NOLTE.COM N:\SDGE\SD97004B\CADD\ADJPLTPOS.DWG	DAVID A. HAUSER DEPUTY CITY ENGINEER R.C.E. 33081 EXP. 6-30-2002	206-070-11 210-010-24, 26, 32 36

025096

State of California)
County of San Diego)

On October 29, 2001 (Date) before me, Kelly Murphy (Name, Title of Officer),

personally appeared Robert J. Wojcik (Name[s] of Signer[s]),

[X] personally known to me

- OR - [ ] (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal

KELLY MURPHY
COMM. #1172528
NOTARY PUBLIC • CALIFORNIA
ORANGE COUNTY
Commission Expires Feb. 6, 2002

Kelly Murphy
Signature of Notary

(This area for official notary seal)

Title or Type of Document Certificate of Compliance for Adjustment Plat ADJ 01-10, Parcel 4

Date of Document 10/29/01 No. of Pages 5

Signer(s) other than named above

5.10 Socioeconomics

1. Vacancy Rate Data [Appendix B(g)(7)(A)(v)]

Availability of temporary and permanent housing and current vacancy rate;

Information required for the AFC to conform to the regulations:

Please provide the current vacancy rates for temporary housing (and date) i.e., the 448 hotel/motels with 53,598 rooms in San Diego County and 16 recreational vehicle (RV) parks within 13 miles of the City of Carlsbad discussed in the AFC.

Response— The construction workforce will most likely commute daily to the project site; however, if needed, there are, as of August 2007, about 449 hotels/motels with 53,840 rooms in San Diego County to accommodate workers who may choose to commute to the project site on a workweek basis. Between August 2006 and August 2007, the average hotel/motel vacancy rate in San Diego County was about 26 percent while the average room rate was $137 (Smith Travel Research, 2007).

Fourteen RV parks found in an internet business search of RV parks within 15 miles of the project site were contacted for vacancy information. Of those, only nine returned our calls and/or provided information. These nine facilities have a total of 834 RV spaces. The vacancy information was consistently divided between peak and off-peak seasons. The peak season, when tourism in the area is high, lasts from June 1 to the end of September. The combined vacancy rate for the responding sites during the peak season is 2.40 (20 of 834 lots available). The off-peak season represents the rest of the year, and has a vacancy rate of 6.75 (58 of 834 lots available). Records of Conversation for each responding facility are available upon request.

[**Reference:** Smith Travel Research, 2007. Market trend report, San Diego County.]

5.12 Traffic and Transportation

1. Air Navigation Impacts [Appendix B(g)(5)(B)]

If the proposed project including any linear facility is to be located within 20,000 feet of an airport runway that is at least 3,200 feet in actual length, or 5,000 feet of a heliport (or planned or proposed airport runway or an airport runway under construction, that is the subject of a notice or proposal on file with the Federal Aviation Administration), discuss the project's compliance with the applicable sections of the current Federal Aviation Regulation Part 77 – Objects Affecting Navigable Airspace, specifically any potential to obstruct or impede air navigation generated by the project at operation; such as, a thermal plume, a visible water vapor plume, glare, electrical interference, or surface structure height. The discussion should include a map at a scale of 1:24,000 that displays the airport or airstrip runway configuration, the proposed power plant site and related facilities.

Information required for the AFC to conform to the regulations:

There is no discussion as to whether the project operation would impede/obstruct air navigation (e.g., thermal plume, visible plume, glare, electrical interference etc.) as required under this siting regulation.

Response – As discussed in AFC Section 3.3.3, the runway of the McClellan Palomar Airport is located about 14,300 feet away from the CECP project. Figure 5.12-6R (which replaces AFC Figure 5.12-6) shows the location of the airport to the CECP project site.

Thermal Plumes. As shown on Figure 5.12-6R, the plant is almost 1 mile north of the Airport Influence Zone. The plant will generate a thermal plume from the combustion turbine exhaust stacks, but the plume would not have an affect on aircraft since it is located well outside the Airport Influence Zone.

Water Vapor Plumes. As discussed in AFC Section 5.13.3.2.4, Water Vapor Plumes, water vapor plumes currently occur from the existing Encina Power Station and additional visible plumes from the CECP exhaust stacks would only occur on rare occasions. When the CECP would be operating at times of low temperature and high humidity, the potential exists for the exhaust from the HRSG stacks to condense and form visible water vapor plumes. However, the amount of time the CECP is likely to produce visible plumes is limited by typical meteorological conditions at the site.

It is anticipated, based on analyses of similar generation projects in the same region, that HRSG stack water vapor plumes may occur on rare occasions during daylight, non-fog, non-rain hours over the course of each year. The height of the plume (whether visible or not) would be a function of the buoyant rise of the heated air from the HRSG exhaust stack. The width of a HRSG visible water vapor plume would depend on the length of time it takes for the plume to be diluted with ambient air, such that the moisture content of the air drops below the dew point, and the plume becomes visible.

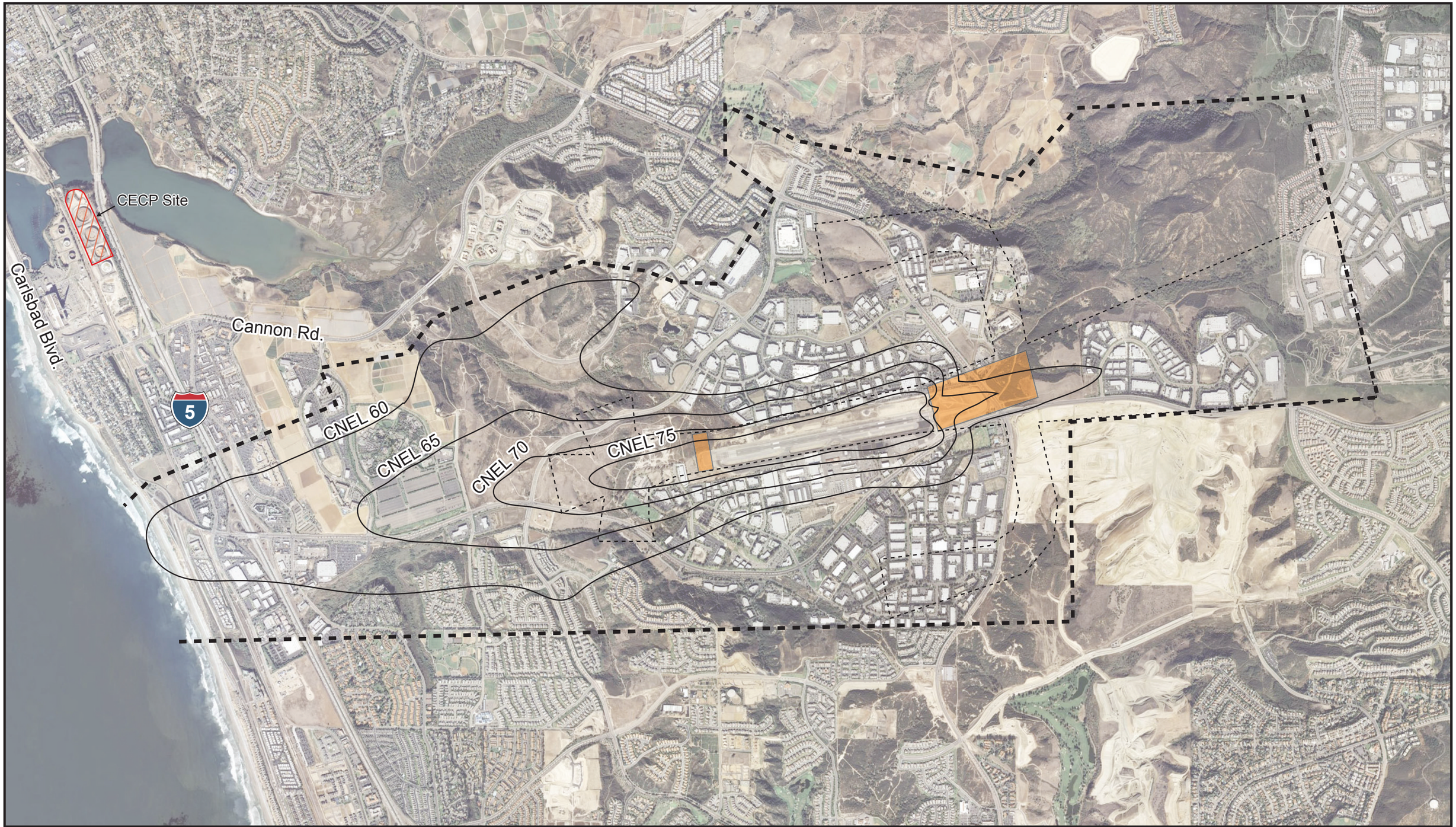
Regardless of the frequency of visible water vapor plumes, they will not interfere with air navigation because they would occur about 1 mile north of the Airport Influence Zone.

Glare. Impacts from glare are discussed in Section 5.13.3.3.4, item 4. In addition to glare from nighttime lighting, the plant surfaces will not reflect sunlight and therefore would not affect aircraft. Even if some glare from reflected sunlight were to occur, it would not affect aircraft more than 1 mile from the plant.

Electrical Interference. We assume that by this topic, the CEC is concerned with interference on aircraft communication systems. The power plant and transmission line will not interfere with radio communications. The reason is that the power lines operate at 60 Hz frequency, which is everywhere there is electricity, including the radio rooms and radio equipment of ground-based emergency operation centers (e.g., fire and police dispatchers). The radio signals are much higher frequency (megahertz to gigahertz) and the radio systems are designed to be immune from 60 Hz interference from power lines so frequency interference should not be an issue.

There are only potential sources for intermittent interference from overhead electric transmission lines is corona discharges. The potential for corona impacts are discussed in Section 3.3.2.5, Communications (Radio/TV) Interference. Even if they were to occur they would not affect air traffic more that one mile from the plant site.

Conclusion. To ensure that the project would impede/obstruct air navigation, the Applicant called and discussed the project with the FAA (see records of conversation provided as Attachment TT-1A. As requested by FAA, the Applicant is preparing an FAA Form 7460-1 and will submit it to FAA.



Source: Figure 2, Airport Land Use Compatibility Plan, McClellan-Palomar Airport (October 4, 2004)

0 0.5 1 Miles

Approximate Scale = 1:24,000

- Airport Influence Zone
- Flight Activity Zone
- Runway Protection Zone

FIGURE 5.12-6R
MCCLELLAN-PALOMAR AIRPORT'S AIRPORT INFLUENCE AREA, RUNWAY PROTECTION ZONE AND FLIGHT ACTIVITY ZONE
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

EY072007001SAC figure_5_12_6R.ai 10/11/07 afint

ATTACHMENT TT-1A

Records of Conversation

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Karen McDonald (karen.mcdonald@faa.gov)

Phone No.: (310) 725-6557 **Date:** October 3, 2007

Call From: John El Khoury **Time:** 4:00 pm

Message Taken By:

Subject: FAA Notice of Proposed Construction or Alteration (7460-1)

Project No.: 361219

Karen McDonald answered the phone call. I asked about the FAA requirements regarding construction near the McClellan Airport in Carlsbad. McDonald directed me to the FAA online website through which all agencies can file the notice of construction or alteration. The website is: https://oeaaa.faa.gov/oeaaa/external/portal.jsp

So, I continued the conversation telling her more about the project and the maximum height of the proposed contruction (75 ft). Then, I read the requirements to filing a notice to the FAA which were readily available at the website she directed me to. The requirements said:

CFR Title 14 Part 77.13 states that any person/organization who intends to sponsor any of the following construction or alterations must notify the Administrator of the FAA:

- *any construction or alteration exceeding 200 ft above ground level*
- *any construction or alteration:*
  - *1- within 20,000 ft of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with at least one runway more than 3,200 ft*
  - *2- within 10,000 ft of a public use or military airport which exceeds a 50:1 surface from any point on the runway of each airport with its longest runway no more than 3,200 ft*
  - *3- within 5,000 ft of a public use heliport which exceeds a 25:1 surface*
- *any highway, railroad or other traverse way whose prescribed adjusted height would exceed that above noted standards*
- *when requested by the FAA*
- *any construction or alteration located on a public use airport or heliport regardless of height or location.*

She said that this information is reviewed by the questioning agency (CH2M HILL / CEC) and it is not based on her judgment. She said that she usually advises everyone to submit the form since it is free of charge and can be done online, but will not make the decision about it. So, I said that since we have thoroughly reviewed the requiremenets and found that our project does not meet the requirements that warrant a notice application, then we should be ok not to file. She again mentioned that it is not her decision and that we need to make sure that we do not make a mistake in the calculation (in reference to the height of construction that we are proposing, which in fact falls below the 100:1 slope). She then asked that all notices be done online and correspondence through the email, if any.

CH2MHILL TELEPHONE CONVERSATION RECORD

Call To: Karen McDonald (karen.mcdonald@faa.gov)

Phone No.: (310) 725-6557 **Date:** October 4, 2007

Call From: John El Khoury **Time:** 10:45 am

Message Taken By:

Subject: FAA Notice of Proposed Construction or Alteration (7460-1)

Project No.: 361219

Karen McDonald answered the phone call. I mentioned that the phone call is a follow-up from yesterday's (October 3, 2007) phone call. I said that I was clarifying a detail that was brought up in the previous phone call. The detail is related to the maximum height of construction, which is in fact 100 ft and not 75 ft, as was mentioned before. I also mentioned that the Project will be filing the FAA 7460-1 form online, as Karen has already advised. McDonald answered saying that filing the form online is a better way to fulfill the requirements rather than a phone call record. I confirmed that we will file the form.

5.13 Visual Resources

1. Photographic Reproductions [Appendix B(g)(6)(F)]

Provide:

i) full-page color photographic reproductions of the existing site, and

ii) full-page color simulations of the proposed project at life-size scale when the picture is held 10 inches from the viewer's eyes, including any project-related electrical transmission lines, in the existing setting from each key observation point. If any landscaping is proposed to comply with zoning requirements or to mitigate visual impacts, include the landscaping in simulation(s) representing sensitive area views, depicting the landscaping five years after installation; and estimate the expected time until maturity is reached.

Information required for the AFC to conform to the regulations:

On AFC page 5.13-10 it states "The simulation images presented in this AFC include 50 mm lens photos printed at a size which is about 9 inches in width. These images should be viewed at a distance of approximately 12.5 inches to gain an optimal impression of the project's scale in relationship to the surrounding landscape."

The images are not presented at life-size scale. The purpose behind the use of a life-size (approximately tabloid size) photo is that if an individual extended it to a normal reading range and lined it up with the horizon at the KOP location, the photo simulation if accurate will lineup/match the actual physical setting providing a true to life view of the proposed power plant. Please provide individual life-size photos of Figure 5.13-6, Figure 5.13-7, Figure 5.13-8, Figure 5.13-9, Figure 5.13-10, Figure 5.13-11 and Figure 5.13-12.

Response—The Applicant respectfully disagrees with Staff that an 11 x 17 is necessary to provide a "life-size" view of the KOP. We maintain that an 8 x 10 is appropriate. However, as noted, these photos were less than 10 inches in width. Therefore, as requested, AFC Figures 5.13-6, 5.13-7, 5.13-8, 5.13-9, 5.13-10, 5.13-11 and 5.13-12.have been resized to 11 x 17 and are attached. The figures showing the existing conditions have been labeled with an "a" and the figures providing the simulation has been labeled "b."

Existing View from Carlsbad Boulevard at Agua Hedionda Lagoon looking southeast

For viewpoint location refer to Figure 5.13-3 Viewpoint 7

Source: Environmental Vision

FIGURE 5.13-6a
KOP 1: CARSLBAD BOULEVARD AT LAGOON EXISTING VIEW AND VISUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

EY072007001SAC Figure_5.13-6a.ai 10/11/07 tdaus

Visual Simulation of Proposed Project
For viewpoint location refer to
Figure 5.13-3 Viewpoint 7

NOTE: Simulation does not portray new project landscaping

Source: Environmental Vision

FIGURE 5.13-6b
KOP 1: CARSLBAD BOULEVARD AT LAGOON EXISTING VIEW AND VISUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

Existing View from Pannonia Trail at Capri Park looking southwest

For viewpoint location refer to Figure 5.13-3 Viewpoint 18

Source: Environmental Vision

FIGURE 5.13-7a
KOP 2: PANNONIA TRAIL AT CAPRI PARK EXISTING VIEW AND VISUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

EY072007001SAC Figure_5.13-7a.ai 10/11/07 tdaus

Visual Simulation of Proposed Project
For viewpoint location refer to
Figure 5.13-3 Viewpoint 18

NOTE: Simulation does not portray new project landscaping

Source: Environmental Vision

FIGURE 5.13-7b
KOP 2: PANNONIA TRAIL AT CAPRI PARK
EXISTING VIEW AND VISUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

EY072007001SAC Figure_5.13-7b.ai 10/11/07 tdaus

Existing View from end of
Cove Drive looking southwest

For viewpoint location refer to
Figure 5.13-3 Viewpoint 20

Source: Environmental Vision

FIGURE 5.13-8a
KOP 3: END OF COVE DRIVE
EXISTING VIEW AND VISUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

EY072007001SAC Figure_5.13-8a.ai 10/11/07 tdaus

Visual Simulation of Proposed Project
For viewpoint location refer to
Figure 5.13-3 Viewpoint 20

NOTE: Simulation does not portray new project landscaping

Source: Environmental Vision

FIGURE 5.13-8b
KOP 3: END OF COVE DRIVE
EXISTING VIEW AND VISUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

EY072007001SAC Figure_5.13-8b.ai 10/11/07 tdaus

Existing View from end of
Hoover Street looking southwest

For viewpoint location refer to
Figure 5.13-3 Viewpoint 22

Source: Environmental Vision

FIGURE 5.13-9a
KOP 4: HOOVER STREET
EXISTING VIEW AND VISUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

EY072007001SAC Figure_5.13-9a.ai 10/11/07 tdaus

Visual Simulation of Proposed Project
For viewpoint location refer to
Figure 5.13-3 Viewpoint 22

NOTE: Simulation does not portray new project landscaping

Source: Environmental Vision

FIGURE 5.13-9b
KOP 4: HOOVER STREET
EXISTING VIEW AND VISUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

EY072007001SAC Figure_5.13-9b.ai 10/11/07 tdaus

Existing View from Harbor Drive looking south

For viewpoint location refer to Figure 5.13-3 Viewpoint 26

Source: Environmental Vision

FIGURE 5.13-10a
KOP 5: HARBOR DRIVE
EXISTING VIEW AND VISUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

EY072007001SAC Figure_5.13-10a.ai 10/11/07 tdaus

Visual Simulation of Proposed Project
For viewpoint location refer to
Figure 5.13-3 Viewpoint 26

NOTE: Simulation does not portray new project landscaping

Source: Environmental Vision

FIGURE 5.13-10b
KOP 5: HARBOR DRIVE
EXISTING VIEW AND VISUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

EY072007001SAC Figure_5.13-10b.ai 10/11/07 tdaus

Existing View from southbound Interstate 5 looking south

For viewpoint location refer to Figure 5.13-3 Viewpoint 28

Source: Environmental Vision

FIGURE 5.13-11a
KOP 6: SOUTHBOUND INTERSTATE 5 EXISTING VIEW AND VISUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

EY072007001SAC Figure_5.13-11a.ai 10/11/07 tdaus

Visual Simulation of Proposed Project
For viewpoint location refer to
Figure 5.13-3 Viewpoint 28

NOTE: Simulation does not portray new project landscaping

Source: Environmental Vision

FIGURE 5.13-11b
KOP 6: SOUTHBOUND INTERSTATE 5
EXISTING VIEW AND VISUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

EY072007001SAC Figure_5.13-11b.ai 10/11/07 tdaus

Existing View from northbound Interstate 5 looking northwest

For viewpoint location refer to Figure 5.13-3 Viewpoint 29

Source: Environmental Vision

FIGURE 5.13-12a
KOP 7: NORTHBOUND INTERSTATE 5 EXISTING VIEW AND VISUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

EY072007001SAC Figure_5.13-12a.ai 10/11/07 tdaus

Visual Simulation of Proposed Project
For viewpoint location refer to
Figure 5.13-3 Viewpoint 29

NOTE: Simulation does not portray new project landscaping

Source: Environmental Vision

FIGURE 5.13-12b
KOP 7: NORTHBOUND INTERSTATE 5
EXISTING VIEW AND VISUAL SIMULATION
CARLSBAD ENERGY CENTER PROJECT
CARLSBAD, CALIFORNIA

CH2MHILL

EY072007001SAC Figure_5.13-12b.ai 10/11/07 tdaus

5.14 Water Resources

1. Section 401 Certification [Appendix B(g)(14)(A)(i)]

Waste Discharge Requirements; National Pollutant Discharge Elimination System Permit; and/or a Section 401 Certification or Waiver from the appropriate Regional Water Quality Control Board (RWQCB);

Information required for the AFC to conform to the regulations:

Please provide a copy of the current Section 401 Certification from the San Diego Regional Water Quality Control Board for the discharge of stormwater into Aqua Hedionda Lagoon; a discussion of the requirements for a new Section 401 Certification; and all information required to apply for a new Section 401 Certification.

Response—Rather than a Section 401 Certification from the San Diego Regional Water Quality Control Board (RWQCB), the existing Encina Power Station industrial water and stormwater discharge, including discharge from the East Tank Farm area in which the Carlsbad Energy Center Project (CECP) will be located, is permitted through an existing Section 402, National Pollutant Discharge Elimination System (NPDES) Permit for the Encina Power Station's stormwater discharge into the Aqua Hedionda Lagoon. A copy of the existing NPDES Permit is provided as Attachment WR-1A (Order No. R9-2006-0042, NPDES No. CA0001350) for the Cabrillo Power I LLC Encina Power Station, which includes the stormwater discharge.

The CECP does not include any construction activities, or any activities that involves dredged or fill material, that will affect waters of the U.S. As such a Section 404 permit will not be required for the CECP, and therefore, a 401 Certificate is not required for the CECP. Rather, as discussed in Section 5.15.2.2.2 of the CECP AFC (Subsection Industrial Storm Water NPCES Permit (pg. 5-15-3 of the AFC), as CECP will consist of a new facility to be constructed within a portion of the East Tank Farm at the Encina Power Station, operating under a separate entity, a Notice of Intent for discharge of storm water associated with Industrial Activity will be submitted to the RWQCB. A copy of the Notice of Intent to be filed is provided as Attachment WR-1B. A Draft Industrial Storm Water Pollution Prevention Plan was provided as Appendix 5.15D of the AFC.

The Draft Industrial Storm Water Pollution Prevention Plan (Appendix 5.15D of the AFC) provides the information required to apply for the NPDES permit for CECP, including:

- Statement of Company Policy
- Storm Water Pollution Prevention Plan Certification
- Storm Water Pollution Prevent Plan Team
- Storm Water Pollution Prevent Plan
  - Company Management and Organization
  - Facility Description
  - Significant Materials

2. Rationale for Using Potable Water for Construction [Appendix B(g)(14)(C)(i)]

Source(s) of the primary and back-up water supplies and the rationale for their selection;

Information required for the AFC to conform to the regulations:

Please provide the rational for using potable water from the City of Carlsbad for construction activities.

Response—Most construction water will be used for erosion control during initial site preparation and grading. Erosion control is a recognized use of reclaimed water; however, reclaimed water is not currently available at the CECP site. With the development of the CECP, the City of Carlsbad will extend an existing reclaimed water line on Cannon Road north to the project site (approximately 2,500 feet). At this time, the City's schedule for installing the new pipeline is unknown, but it will be available for use by the time the CECP is online. It is not anticipated that the new line will be ready for use during the time of highest construction water use (e.g., during initial site preparation and grading). Potable water is, however, immediately available. Use of potable water for construction is not prohibited in the San Diego RWQCB Basin Plan.

Although onsite reclaimed water will not immediately be available, it is possible that water trucks could drive to a nearby reclaimed water connection point for filling. The nearest feasible reclaimed water filling point is a hydrant at the City complex on El Camino Real, just north of Palomar Airport Road. This hydrant is located approximately 6 miles east of the CECP site via Palomar Airport Road. The use of reclaimed water from this filling point is proposed because of the additional construction-related truck trips required to haul reclaimed water to the CECP site from this nearest reclaimed water filling point, and the associated environmental impacts such as traffic and air emissions from these additional construction-related truck trips.

3. Recycled Water Will-serve Letter [Appendix B(g)(14)(C)(v)]

For all water supplies intended for industrial uses to be provided from public or private water purveyors, a letter of intent or will-serve letter indicating that the purveyor is willing to serve the project, has adequate supplies available for the life of the project, and any conditions or restrictions under which water will be provided. In the event that a will-serve letter or letter of intent can not be provided, identify the most likely water purveyor and discuss the necessary assurances from the water purveyor to serve the project;

Information required for the AFC to conform to the regulations:

Please provide a will-serve letter from the City of Carlsbad indicating that the City is willing to serve the CECP; has adequate supplies of tertiary treated recycled water for the life of the project; and any conditions or restrictions under which water will be provided.

In the event that a will-serve letter cannot be provided, please provide a discussion of the necessary assurances from the City to serve the CECP with up to 945 gpm of tertiary treated recycled water for a period of 30 – 35 years.

Response—Based on publicly available information and information provided by the City of Carlsbad, the City currently produces approximately 6.75 million gallons per day of reclaimed water from three sources. Two of these sources were developed during

Phase I of the City's water reclamation program – the 2.0 mgd Meadowlark Water Reclamation Facility (WRF) and the 0.75 Gafner WRF (City of Carlsbad, 2000). An additional 4.0 mgd was recently brought online with the completion of the Encina WRF, located 2 miles south of the CECP site at the existing Encina Wastewater Treatment Plant. The Gafner WRF serves only one user and is not connected to the remainder of the City system; therefore, the interconnected City reclaimed water system effectively produces 6.0 mgd. On a peak day, anticipated CECP Title 22 reclaimed water demands are 945 gallons per minute, or 1.36 mgd (see Table 5.15-3 of the AFC).

As described in the AFC (see Section 2.2.7), the CECP will connect to the Encina WRF distribution system on Cannon Road (about 2,500 feet south of the CECP site). This is in pressure Zone 384 of the reclaimed water distribution system. The City's ability to serve the CECP without adversely affecting other reclaimed water customers is determined by it's ability to maintain adequate pressure in Zone 384.

The largest current customer in Zone 384 is the Aviara Golf Course and Resort. Other notable customers include Legoland, the Seacliff Homeowners' Association, La Costa Greens Homeowners' Association, and the new Carlsbad Crossings municipal golf course west of College Boulevard. Peak use for these landscape customers is between 10 p.m. and 5 a.m. for nighttime irrigation (Wojcik, pers. comm). Daytime peak use by the CECP is not expected to adversely affect these landscape customers. This will be confirmed by distribution system modeling for Zone 384, currently being performed by the City for the CECP process. The City has indicated that it supports and encourages CECP's use of reclaimed water, and the City has indicated that it should be able to serve the CECP and continue to meet flow and pressure standards in the remainder of Zone 384 (Attachment WR-3A). If modeling shows that flow and pressure design standards will not be met with the addition of the CECP (thus affecting existing customers), the City has indicated there are several options available to meet the reclaimed water needs of CECP and other reclaimed water users. These options include but are not necessarily limited to: additional capital improvements to the reclaimed water system; the purchase of reclaimed water from an adjacent water district; the construction of additional reclaimed water storage capacity; or some combination of these three options.

[**References**:

City of Carlsbad. 2000. Encina Basin Recycled Water Distribution System. Prepared by John Powell & Associates. May.

City of Carlsbad's website, http://www.carlsbadca.gov/water/wdrecycle.html, accessed 10/8/07.

Bob Wojcik, pers comm. with Mike Hogan, Manager of the Encina Water Reclamation Facility. 10/11/08.]

4. Wastewater Will-server Letter [Appendix B(g)(14)(C)(viii)]

For all projects which have a discharge, provide a copy of the will-serve letter, permit or contract with the public or private entity that will be accepting the wastewater and contact storm water from the project. The letter, permit or contract, if possible, shall be explicit about identify the

discharge volumes and the chemical or physical characteristics under which the wastewater and contact storm water will be accepted.

In the event that a will-serve letter, permit, or contract cannot be provided, identify the most likely wastewater/storm water entity and discuss why you were the applicant was unable to secure the necessary assurances to serve the project's wastewater/storm water needs. Also, discuss the term of the wastewater service to the project, whether the wastewater entity has adequate permit capacity for the volume of wastewater from the project and has adequate permit levels for the chemical/physical characteristics of the project's wastewater and storm water for the life of the project, and any issues or conditions/restrictions the wastewater entity may impose on the project.

Information required for the AFC to conform to the regulations:

Please provide a will-serve letter from the City of Carlsbad for the discharge of sanitary and industrial wastewater into the City's sanitary sewer system that identifies the discharge volumes and the chemical or physical characteristics under which the wastewater and contact stormwater will be accepted.

In the event a will-serve letter from the City cannot be provided, please provide a discussion of the wastewater service required for the CECP; whether the City has adequate permit capacity for the quantity and quality of wastewater from the CECP for the life of the project; and any conditions or restrictions the City may impose on the CECP.

Response— The CECP is adjacent to the Vista/Carlsbad (V/C) Interceptor (Segment 13), a large (42-inch) gravity sewer jointly owned by the cities of Carlsbad and Vista. The design capacity of the V/C Interceptor in this area is 20.5 mgd. Typical dry-weather flow data exists for August 2001, when flows in the V/C Interceptor were 9.73 mgd (City of Carlsbad, 2003). As described in AFC Table 5.15-4, peak discharge from the CECP project would be 302 gpm, or 0.43 mgd assuming 24-hour peak operation. This is approximately 4 percent of the daily flow in the V/C Interceptor.

Although the existing dry-weather flows in the V/C Interceptor (with or without the CECP) are much less than the design capacity of 20.5 mgd, the interceptor is at or above its design capacity when carrying peak flows (City of Carlsbad, 2003). Peak flows occur in the presence of infiltration and inflow (I/I), which typically occurs during rainfall. This pipeline reach is scheduled for a capacity upgrade, with the expanded size based on the calculated ultimate capacity of the system. With the recommended upgrade to 54 inches, the V/C Interceptor (operating at its design capacity) could accommodate the expected peak wet weather flows, including CECP flows, with no risk to public safety or the environment.

[**Reference**: City of Carlsbad. 2003. Sewer Master Plan Update. Prepared by Dudek & Associates, Inc. March 2003.]

5. Drainage and Design Criteria [Appendix B(g)(14)(D)(ii)]

Drainage facilities and the design criteria used for the plant site and ancillary facilities, including but not limited to capacity of designed system, design storm, and estimated runoff;

Information required for the AFC to conform to the regulations:

Please provide the City of Carlsbad's drainage and design criteria per the requirements of San Diego County's Municipal Storm Water NPDES Permit No. CAS0108758.

Response—The project meets the City of Carlsbad's drainage and design criteria, per the City of Carlsbad Public Works Department Standard Urban Storm Water Mitigation Plan (SUSWMP) Storm Water Standards, April 2003 (see Attachment WR-5A). The current drainage system will not be modified, which meets the City's Site Design BMPs criteria for sites that maintain pre-development rainfall runoff characteristics, as the post-development discharge rates are the same as pre-development, based on the San Diego County Hydrology Design and Procedures Manual (Storm Water Calculations, AFC Appendix 5.15B).

6. Drainage and Sediment Control Design [Appendix B(g)(14)(D)(iv)]

A copy of applicable regional and local requirements regulating the drainage systems, and a discussion of how the project's drainage design complies with these requirements.

Information required for the AFC to conform to the regulations:

Please provide a copy of Section 15.12 of the City of Carlsbad Municipal Code; a copy of the City's Standard Urban Storm Water Mitigation Plan; and a discussion of how the CECP's drainage and sediment control design complies with those requirements.

Response— As described above, the City's SUSWMP is provided as Attachment WR-5A. Section 15.12 of the City of Carlsbad Municipal Code is provided in Attachment WR-6A. The Storm Water Pollution Prevention Plan for Construction (AFC Appendix 5.15C, Sections 500.3 and 500.4) provide the pollutant source identification and BMP selections to address potential impacts from construction activities and post construction storm water management. The Storm Water Pollution Prevention Plan for Industrial Operations (AFC Appendix 5.15D) identifies the potential pollutant sources and storm water BMPs. The SWPPP meets all requirements and the intent and requirements of the Section 15.12 of the City's Municipal Codes and the City's SUSWMP to protect and enhance the water quality of the city of Carlsbad receiving waters and wetlands in a manner pursuant to and consistent with the Clean Water Act and California Regional Water Quality Control Board NPDES Permit No. CAS0108758, Order No. 2001-01 and any amendment, revision or reissuance thereof. (Ord. NS-624 § 1 2002: Ord. NS-394 § 2 (part), 1997).

7. Recycled and Potable Water Demand [Appendix B(g)(14)(E)(i)]

The effects of project demand on the water supply and other users of this source, including, but not limited to, water availability for other uses during construction or after the power plant begins operation, consistency of the water use with applicable RWQCB basin plans or other applicable resource management plans, and any changes in the physical or chemical conditions of existing water supplies as a result of water use by the power plant;

Information required for the AFC to conform to the regulations:

Please provide a discussion of the effects of CECP recycled and potable water demand on the City of Carlsbad supplies; its affect on other users of those water sources; and the consistency of potable water use for construction with the SDRWQCB basin plan or other applicable resource management plans.

Response— Information regarding recycled [reclaimed] water demand and the use of potable water for construction is provided above in Responses 3 and 2, respectively. Information regarding potable water demand is provided below.

The CECP is located in Pressure Zone 255, which includes most of the lowest-elevation areas in the City along Interstate 5. Distribution of water within the 255 Zone is generally through a series of 12-inch pipelines interconnected with other pressure zones through various pressure regulating stations and storage reservoirs. Based on recent hydraulic modeling, water distribution in the 255 Zone meets all City standards (City of Carlsbad, 2003). As described in AFC Table 5.15-3, CECP average and peak water demands would be 12 gallons per minute, or 0.02 million gallons per day. In comparison, current demands in the 255 zone are 3.67 million gallons per day (City of Carlsbad, 2003). Demands in the 255 Zone are projected to increase by 10 percent; this increase would be met by additional system interconnects.

The City of Carlsbad (acting as the Carlsbad Municipal Water District) is a member agency of the San Diego County Water Agency (SDCWA) – most water supplies in the City of Carlsbad (including the CECP area) are from SDCWA. SDCWA is the regional water wholesaler in western San Diego County, and imports water from several sources, including Northern California and the Colorado River via the Metropolitan Water District of Southern California, and from the Imperial Valley. Carlsbad can purchase additional supplies from SDCWA as necessary.

[**Reference**: City of Carlsbad. 2003. Water Master Plan Update. Prepared by Dudek & Associates, Inc. March.]

ATTACHMENT WR-1A

Waste Discharge Requirements

Linda S. Adams
Secretary for
Environmental Protection

California Regional Water Quality Control Board

San Diego Region

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Phone (858) 467-2952 • Fax (858) 571-6972
http://www.waterboards.ca.gov/sandiego

Arnold Schwarzenegger
Governor

ORDER NO. R9-2006-0043
NPDES NO. CA0001350

WASTE DISCHARGE REQUIREMENTS
FOR
CABRILLO POWER I LLC
ENCINA POWER PLANT
SAN DIEGO COUNTY

The following Discharger is authorized to discharge in accordance with the conditions set forth in this Order:

Table 1. Discharger

Discharger	**Cabrillo Power I LLC**
Name of Facility	**Encina Power Station**
Facility Address	**4600 Carlsbad Boulevard**
	Carlsbad, CA 92008-4301
	San Diego County

The Discharger is authorized to discharge from the following discharge points as set forth below:

Table 2. Discharge Locations

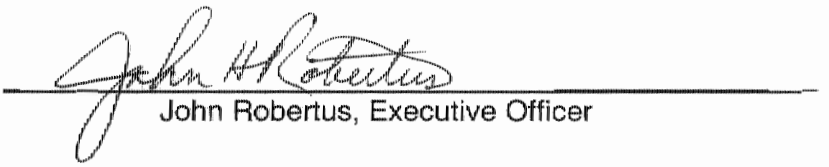
Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	non-contact cooling water; low volume wastes, metal cleaning wastes, storm water runoff	33 º 8' 17" N	117 º 20' 22" W	Pacific Ocean

Table 3. Order Information

This Order was adopted by the Regional Water Board on:	**August 16, 2006**
This Order shall become effective on:	**October 1, 2006**
This Order shall expire on:	**October 1, 2011**
The U.S. Environmental Protection Agency (U.S. EPA) and the Regional Water Board have classified this discharge as a **major** discharge.	
The Discharger shall file a Report of Waste Discharge in accordance with Title 23, California Code of Regulations, **not later than 180 days in advance of the Order expiration date** as application for issuance of new waste discharge requirements.	

IT IS HEREBY ORDERED, that Order No. 2000-03 is rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in Division 7 of the CWC and regulations adopted thereunder, and the provisions of the federal CWA, and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements herein.

I, John Robertus, Executive Officer, do hereby certify the following is a San Diego Region, on **August 16, 2006**.



John Robertus, Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
REGION 9, SAN DIEGO REGION

ORDER NO. R9-2006-0043
NPDES NO. CA0001350

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I. FACILITY INFORMATION

The following Discharger is authorized to discharge in accordance with the conditions set forth in this Order:

Table 4. Facility Information

Discharger	Cabrillo Power I LLC
Name of Facility	Encina Power Station
Facility Address	4600 Carlsbad Boulevard
	Carlsbad, CA 92008
	San Diego County
Facility Contact, Title, and Phone	Sheila Henika , P.E., Environmental Engineer, (760) 268-4018
Mailing Address	Same
Type of Facility	Industrial
Facility Design Flow	863.5 mgd

II. FINDINGS

The California Regional Water Quality Control Board, San Diego Region (hereinafter Regional Water Board), finds:

A. **Background.** Cabrillo Power I LLC (hereinafter Discharger) is currently discharging wastewater pursuant to Order No. 2000-03, National Pollutant Discharge Elimination System (NPDES) Permit No. CA0001350. The Discharger submitted a Report of Waste Discharge, dated June 23, 2004**,** and applied for a NPDES permit renewal to discharge up to 863.5 million gallons per day (mgd) of wastewater from Encina Power Station**,** hereinafter Facility. The application was deemed complete on July 16, 2004.

B. **Facility Description.** The Discharger owns and operates a steam electric generating station. The intake system consists of screening mechanisms to remove fish and debris from once-through cooling water. Sedimentation, flocculation, and neutralization are used to treat low volume and metal cleaning wastewaters. Other in-plant waste streams (storm water, lubrication water, reverse osmosis reject) are discharged directly without treatment. Wastewater is discharged from Discharge Point 001 (see table on cover page) to the Pacific Ocean a water of the United States. Attachment B provides a topographic map of the area around the facility. Attachment C provides a flow schematic of the facility. Attachment F provides a more detailed description of the facility, including all waste streams and discharges.

C. **Legal Authorities.** This Order is issued pursuant to section 402 of the Federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and Chapter 5.5, Division 7 of the California Water Code (CWC). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to Article 4, Chapter 4 of the CWC for discharges that are not subject to regulation under CWA section 402.

D. **Background and Rationale for Requirements**. The Regional Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and through special studies. Attachment **F**, which contains background information and rationale for Order requirements, are hereby incorporated into this Order and, constitute part of the Findings for this Order. Attachments A, D and E are also incorporated into this Order.

E. **California Environmental Quality Act (CEQA).** This action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code (Public Resources Code, Chapter3, Division 13 commencing with Section 21100) in accordance with Section 13389 of the CWC.

F. **Technology-based Effluent Limitations**. The Code of Federal Regulations (CFR) at 40 CFR §122.44(a) requires that permits include applicable technology-based limitations and standards. This Order includes technology-based effluent limitations based on Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category 40 CFR Part 423 and Best Professional Judgment (BPJ) in accordance with 40 CFR §125.3. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet (Attachment F).

G. **Water Quality-based Effluent Limitations.** Section 122.44(d) of 40 CFR requires that permits include water quality-based effluent limitations (WQBELs) to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water. Where numeric water quality objectives have not been established, 40 CFR §122.44(d) specifies that WQBELs may be established using USEPA criteria guidance under CWA section 304(a), proposed State criteria or a State policy interpreting narrative criteria supplemented with other relevant information, or an indicator parameter.

H. **Water Quality Control Plans**. The Regional Water Board adopted a Water Quality Control Plan for the San Diego Basin (hereinafter Basin Plan) on September 8, 1994. The Basin Plan was subsequently approved by the State Water Resources Control Board (State Water Board) on December 13, 1994. Subsequent revisions to the Basin Plan have also been adopted by the Regional Water Board and approved by the State Water Board. The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. Beneficial uses applicable to the Pacific Ocean are specified in Table 5.

Table 5. Beneficial Uses of the Pacific Ocean

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Pacific Ocean	Industrial service supply Navigation Water contact recreation Non-contact recreation Ocean commercial and sport fishing Preservation of Areas of Special Biological Significance Preservation of rare and endangered species Marine habitat Fish migration Shellfish harvesting Wildlife habitat Fish spawning Aquaculture

The Basin Plan relies primarily on the requirements of the *Water Quality Control Plan for Ocean Waters of California* (Ocean Plan, 2005) for protection of the beneficial uses of the State ocean waters. The Basin Plan, however, may contain additional water quality objectives applicable to the discharger. In addition, requirements of this Order implement provisions of the *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan, 1975).

I. **Thermal Plan Exception.** Under the terms and conditions of the Thermal Plan, the thermal discharges from Units 1 through 4 are classified as existing discharges and exempt from most of the requirements. However, the discharge from Unit 5 is classified as a new discharge and subject to the requirements in the plan. San Diego Gas & Electric (SDG&E), the previous owner of the Encina Power Plant, initiated a study in 1975 for the purpose of making a demonstration under 316(a) of the CWA in support of its application for an exception to the Thermal Plan. In 1981, SDG&E reported that the discharge from Encina Power Plant Unit 5, when added to the discharges from Units 1-4, had not resulted in "Appreciable Harm" to the balances indigenous communities of the receiving waters. SDG&E submitted a supplemental 316(a) Summary Report in 1990 that provided additional data for the period from 1981 to 1990. In 1994, USEPA and this Regional Board required SDG&E to conduct an additional study to supplement its demonstration of compliance with CWA Section 316(b). In 1997, SDG&E submitted the Supplemental 316(a) Assessment Report, which concluded that the study neither observed nor predicts adverse effects of the operation on the aquatic resources and beneficial uses of the receiving waters. In July 2005, a consultant funded by USEPA submitted comments about the 1997 Supplemental Report raising concerns about the thermal modeling and biological analysis used in the study. The consultant concluded that the data presented and analyses performed were inadequate to determine whether or not the exceedance of thermal limits cause appreciable harm to the aquatic resources in the vicinity of the discharge.

J. **Stringency of Requirements for Individual Pollutants**. This Order contains restrictions on individual pollutants that are no more stringent than the technology-based restrictions established by U.S. EPA for the steam electric power point source category, for existing and new sources, at 40 CFR Part 423 and water quality-based effluent limitations based upon water quality objectives contained in the Ocean Plan (2005) approved by US EPA on February 14, 2006.

K. **Antidegradation Policy.** Section 131.12 of 40 CFR requires that State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16, which incorporates the requirements of the federal antidegradation policy. Resolution 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. As discussed in the Fact Sheet (Attachment F) the permitted discharge is consistent with the antidegradation provision of 40 CFR §131.12 and State Water Board Resolution 68-16.

L. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and federal regulations at 40 CFR § 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as stringent as those in the previous permit, with some exceptions where limitations may be relaxed. Some effluent limitations in this Order are less stringent than those in the previous Order. As discussed in detail in the Fact Sheet (Attachment F) this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

M. **Monitoring and Reporting.** Section 122.48 of 40 CFR requires that all NPDES permits specify requirements for recording and reporting monitoring results. Sections 13267 and 13383 of the CWC authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. This Monitoring and Reporting Program is provided in Attachment E.

N. **Standard and Special Provisions.** Standard Provisions, which in accordance with 40 CFR §§122.41and 122.42, apply to all NPDES discharges and must be included in every NPDES permit, are provided in Attachment D. The Regional Water Board has also included in this Order special provisions applicable to the Discharger. A rationale for the special provisions contained in this Order is provided in the attached Fact Sheet (Attachment F).

O. **Notification of Interested Parties.** The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet (Attachment F) of this Order.

P. **Consideration of Public Comment.** The Regional Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet (Attachment F) of this Order.

III. DISCHARGE PROHIBITIONS

A. Discharges of waste in a manner or to a location that has not been specifically described to the Regional Water Board and for which valid waste discharge requirements are not in force are prohibited.

B. Discharge of oil or any residuary product of petroleum to waters of the State, except in accordance with waste discharge requirements or other provisions of Division 7 of the CWC, is prohibited.

C. The discharge of polychlorinated biphenyl compounds, such as those commonly used for transformer fluid is prohibited.

D. The discharge of waste to Areas of Special Biological Significance[1/], as designated by the State Board, is prohibited.

E. The bypassing of untreated wastes containing concentrations of pollutants in excess of those in Table B of the California Ocean Plan (2005)[2/] is prohibited, except under upset conditions, as described in *State and Federal Standard Provisions – Permit Compliance,* A.8 (see Attachment D of this Order).

F. A discharge flow rate (30-day running average) in excess of 863.5 million gallons per day (mgd) is prohibited

G. Total residual oxidants (chlorine, bromine, or others used for control of fouling within the main condenser cooling system) may not be discharged from any single generating unit for more than two hours per day unless the discharger demonstrates to the Regional Water Board that the discharge for more than two hours is required for macroinvertebrate control. Simultaneous multi-unit chlorination/bromination is permitted.

H. The discharge of any radiological, chemical, or biological warfare agent, or high-level radioactive waste into the ocean is prohibited.

I. The discharge of industrial waste sludge directly to the ocean or into a waste stream that discharges to the ocean is prohibited.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Discharge Specifications – Discharge Point 001

1. The Encina Power Station waste management systems that discharge to the Pacific Ocean through Discharge Point 001 must be designed and operated in a manner that will maintain indigenous marine life and a healthy and diverse marine community.

2. Waste discharged to the Pacific Ocean through Discharge Point 001 must be essentially free of:

   a. Material that is floatable or will become floatable upon discharge.

   b. Settleable material or substances that may form sediments, which will degrade benthic communities or other aquatic life.

   c. Substances that will accumulate to toxic levels in marine waters, sediments, or biota.

   d. Substances that significantly decrease the natural light to benthic communities and other marine life.

   e. Materials that result in aesthetically undesirable discoloration of the ocean surface.

3. Wastewater must be discharged through Discharge Point 001 in a manner that provides sufficient initial dilution to minimize concentrations of substances not removed in the treatment process.

4. All waste treatment, containment, and disposal facilities shall be protected against 100-year peak stream flows as defined by the San Diego County flood control agency.

5. All waste treatment, containment, and disposal facilities shall be protected against erosion, overland runoff, and other impacts resulting from a 100-year frequency 24-hour storm.

6. Collected screenings, sludges, and other solids removed from liquid wastes, shall be disposed of in accordance with all applicable requirements.

7. The Encina Power Station discharge of elevated temperature wastes to the Pacific Ocean shall comply with limitations necessary to assure protection of beneficial uses and designated Areas of Special Biological Significance[1/].

8. At all times except during heat treatment operations, as described in Attachment F (Fact Sheet) of this Order, the temperature of the combined discharge from the Encina Power Station to the Pacific Ocean shall not average more than 20°F (11.1°C) above that of the incoming lagoon water during any 24-hour period. The combined discharge shall not at any time exceed 25°F (13.9°C) above that of the incoming lagoon water.

9. During heat treatment operations, heat added to the cooling water shall not cause the temperature of the combined discharge to the Pacific Ocean to exceed 120°F (48.9°C). This maximum temperature of 120°F (48.9°C) shall not be maintained for more than two hours.

B. Effluent Limitations and Performance Goals – Combined Discharge (Discharge Point 001)

1. The combined discharge[4/, 5/] of once-through (non-contact) cooling water, low volume wastes, metal cleaning wastes, and stormwater runoff shall not exceed the effluent limitations listed in Table 6 at Discharge Point 001, with compliance measured at Monitoring Location M-001 as described in the attached Monitoring and Reporting Program (Attachment E):

Table 6. Effluent Limitations for Discharge Point 001 (Combined Discharge)

Parameter	Units[6/]	Effluent Limitations				
		Daily Max	**Monthly Average**	**Weekly Average**	**Instantaneous Maximum[8/]**	**6 Month Median[9/]**
pH	Standard units	Within the limits of 6.0 to 9.0 at all times				
Turbidity[10/]	NTU		75	100	225	
Total Chlorine Residual[11/]	µg/L	132			200	33
Chronic Toxicity	TUc[12/]	16.5				

2. Constituents that do not have reasonable potential are referred to as performance goal constituents and assigned the performance goals listed in the following Table 7. Performance goal constituents shall also be monitored at M-001, but the results will be used for informational purposes only and for later reasonable potential analysis, not compliance determination. The listed effluent performance goals are not enforceable effluent limitations or standards.

Table 7. Performance Goals for Discharge Point 001 (Combined Discharge)

Parameter	Units[6/]	Performance Goals		
		Daily	**Instantaneous Maximum[8/]**	**Six-Month Median[9/]**
Arsenic	µg/L	480	1300	86
Cadmium	µg/L	66	170	17
Chromium (Hexavalent)[13/]	µg/L	130	330	33
Copper	µg/L	170	460	19
Lead	µg/L	130	330	33
Mercury	µg/L	2.6	6.6	0.65
Nickel	µg/L	330	830	83
Selenium	µg/L	990	2500	250
Silver	µg/L	44	110	9.1
Zinc	µg/L	1200	3200	210
Cyanide[14/]	µg/L	66	170	17
Ammonia	µg/L	40000	99000	9900
Non-Chlorinated Phenolic Compounds	µg/L	2000	5000	500

Parameter	Units[6/]	Performance Goals		
		Daily	Instantaneous Maximum[8/]	Six-Month Median[9/]
Chlorinated Phenolic Compounds	µg/L	66	170	17
Endosulfan	µg/L	0.3	0.45	0.15
Endrin	µg/L	0.066	0.099	0.033
HCH	µg/L	0.13	0.20	0.066

C. **Effluent Limitations – Metal Cleaning Wastes (Discharge Point 001-A)**

The discharge of metal cleaning wastes[15/] (chemical and non-chemical) shall not exceed the effluent limitations listed in Table at Discharge Point 001-A, with compliance measured at Monitoring Location M-001-A as described in the attached Monitoring and Reporting Program (Attachment E):

[Mass-based limitations for TSS, oil and grease, copper and iron in the tables below are based on maximum chemical/non-chemical metal cleaning flows. Compliance determination will account for the actual low volume wastewater flow rate on the day of sampling; i.e., the actual limitation shall be determined for the period of sampling in accordance with the following equation:

$L_f = (Q_a / Q_m)\ Lt$; where

L_f = the final limitation, in lbs/day, used for compliance determination
Q_a = actual metal cleaning flows (chemical and non-chemical), in mgd, at the time of sampling
Q_m = 0.7971 mgd, the maximum possible flow of combined metal cleaning wastewaters for Discharge Point 001-A
Lt = the appropriate, maximum limitations, in lbs/day, shown in the Table]

Table 8. Effluent Limitations for Discharge Point 001-A (Metal Cleaning Wastes)

Discharge Point	Units	Effluent Limitations							
		TSS		Oil/Grease		Copper		Iron	
		30-Day Avg.[8/]	Daily Max[7/]	30-Day Avg.	Daily Max	30-Day Avg.	Daily Max	30-Day Avg.	Daily Max
001-A	mg/L	30	100	15	20	1.0	1.0	1.0	1.0
	lbs/day	200	660	100	130	7.0	7.0	7.0	7.0

D. **Effluent Limitations –Low Volume Wastewaters (Discharge Points 001-B through 001-H)**

All low volume, in-plant wastewaters (i.e. Discharge Points 001-B through 001-H) shall be composited on a flow-weighted basis. The composite sample shall not exceed the effluent limitations listed in Table 9 at Discharge Points 001-B through 001-H, with compliance measured at Monitoring Locations M-001-B through M-001-H as described in the attached Monitoring and Reporting Program (Attachment E):

[Mass-based limitations for TSS, oil and grease, and toxics are based on a total maximum low volume wastewater flow of 4.09 mgd. Compliance determination will account for the actual (preferred) or estimated combined low volume wastewater flow rate on the day of sampling; i.e. the actual limitation shall be determined for the period of sampling in accordance with the following equation:

$L_f = (Q_a / Q_m) L_t$; where

L_f = the final limitation, in lbs/day, used for compliance determination
Q_a = the combined discharge flow rate, in mgd, of all low volume, in-plant wastewaters at the time of sampling
Q_m = 4.09 mgd, the maximum possible combined flow of low volume, in-plant wastewaters for Discharge Points 001-B through 001-H
L_t = the appropriate maximum mass-based limitation, in lbs/day, show in Table 9]

Table 9. Effluent Limitations for Low Volume Wastewaters (Discharge Points 001-B through 001-H)

Parameter	Units	Effluent Limitations[17/]		
		Daily Maximum[7/]	**30-Day Average[8/]**	**Six-Month Median[9/]**
pH	standard units	Within the limits of 6.0 to 9.0 at all times		
Total Suspended Solids (TSS)	mg/L		100	30
	lbs/day		3,200	950
Oil and Grease	mg/L		20	15
	lbs/day		630	480
Chromium (Hexavalent)[13/]	lbs/day	4.5		1.1
Copper	lbs/day	5.7		0.63
Mercury	lbs/day	0.089		0.022
Nickel	lbs/day	11		2.8

V. COOLING WATER INTAKE SPECIFICATIONS

A. The Discharger shall maintain velocities at design levels in front of the intake structure and routinely clean the bar racks at the Encina Power Station. The Discharger shall rotate and clean intake screen assemblies as needed when the cooling water pumps are in operation, for the purpose of maintaining intake water velocities as close as practical to design levels.

B. The Discharger shall minimize once-through cooling water flow where possible when units are operating at reduced load or out of service, except as required to ensure equipment and personnel safety.

C. The Discharger shall avoid sudden increases in once-through cooling water flow whenever possible.

VI. RECEIVING WATER LIMITATIONS

Receiving water limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order. The discharge shall not cause the following in receiving waters of the Pacific Ocean:

A. Water Quality Objectives Established by the Thermal Plan

Discharges from Encina Power Station through Discharge Point 001 to the Pacific Ocean , by itself or jointly with any other discharge or discharges, shall not cause violation of the following water quality objective for coastal waters established by the Thermal Plan:

> *Elevated temperature wastes shall comply with limitations necessary assure protection of the beneficial uses and Areas of Special Biological Significance.*

B. Water Quality Objectives Established by the Ocean Plan

Discharges from Encina Power Station through Discharge Point 001 to the Pacific Ocean shall not, by itself or jointly with any other discharge or discharges, cause violation of the following receiving water quality objectives established by the Ocean Plan. Compliance with these objectives shall be determined by samples collected as stations representative of the area within the waste field where initial dilution is completed.

1. Bacterial Characteristics

a. Within a zone bounded by the shoreline and a distance of 1,000 feet from the shoreline or the 30-foot depth contour, whichever is further from the shoreline, and in areas outside this zone used for water contact sports, as determined by the Regional Water Board, but including all kelp beds, the following bacterial objectives shall be maintained throughout the water column:

i. Samples of water from each sampling station shall have a density of total coliform organisms less than 1,000 per 100 ml (10 per ml); provided that not more than 20 percent of the samples at any sampling station, in any 30-day period, may exceed 1,000 per 100 ml (10 per ml), and provided further that no single sample, when verified by a repeat sample taken within 48 hours, shall exceed 10,000 per 100 ml (100 per ml).

ii. The fecal coliform density, based on a minimum of not less than five samples for any 30-day period, shall not exceed a geometric mean of 200 per 100 ml nor shall more than 10 percent of the total samples during any 60-day period exceed 400 per 100 ml.

iii. The Initial Zone of Dilution of wastewater outfalls shall be excluded from designation as kelp beds for purposes of bacterial standards, and Regional Water Boards should recommend extension of such exclusion zones, where warranted, to the State Board (for consideration as Areas of Special Biological Significance/State Water Quality Protection Areas). Adventitious

assemblages of kelp plants on waste discharge structures (e.g. outfall pipes and diffusers) do not constitute kelp beds for purposes of bacterial standards.

b. At all areas where shellfish may be harvested for human consumption, as determined by the Regional Water Board, the median total coliform density shall not exceed 70 per 100 ml throughout the water column, and not more than 10 percent of the samples shall exceed 230 per 100 ml.

2. **Physical Characteristics**

a. Floating particulates and grease and oil shall not be visible.

b. The discharges of waste shall not cause aesthetically undesirable discoloration of the ocean surface.

c. Natural light shall not be significantly reduced at any point outside the initial dilution zone as the result of the discharge of waste.

d. The rate of deposition of inert solids and the characteristics of inert solids in ocean sediments shall not be changed such that benthic communities are degraded.

3. **Chemical Characteristics**

a. The dissolved oxygen concentrations shall not at any time be depressed more than 10 percent from that which occurs naturally, as the result of the discharge of oxygen-demanding waste materials.

b. The pH shall not be changed at any time more than 0.2 units from that which occurs naturally.

c. The dissolved sulfide concentration of waters in and near sediments shall not be significantly increased above that present under natural conditions.

d. The concentration of substances set forth in Chapter II, Table B, of the 2005 Ocean Plan shall not be increased in marine sediments to levels that would degrade indigenous biota.

e. The concentration of organic material in marine sediments shall not be increased to levels that would degrade marine life.

f. Nutrient materials shall not cause objectionable aquatic growths or degrade indigenous biota.

g. Numerical water quality objectives established in Chapter II, Table B, of the 2001 California Ocean Plan shall not be exceeded as a result of discharges from Encina Power Station through Discharge Point 001.

4. **Biological Characteristics**

   a. Marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded.

   b. The natural taste, odor, and color of fish, shellfish, or other marine resources used for human consumption shall not be altered.

   c. The concentration of organic materials in fish, shellfish, or other marine resources used for human consumption shall not bioaccumulate to levels that are harmful to human health.

VII. PROVISIONS

A. Standard Provisions

1. **State and Federal Standard Provisions.** The Discharger shall comply with all *State and Federal Standard Provisions* included in Attachment D of this Order.

2. **Regional Water Board Standard Provisions.** The Discharger shall comply with the following provisions:

   a. Neither the treatment nor the discharge of pollutants shall create a pollution, contamination, or nuisance as defined by Section 13050 of the CWC.

   b. The Discharger shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this Order, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the noncomplying discharge.

   c. This Order may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:

      i. Violation of any terms or conditions of this Order;

      ii. Obtaining this Order by misrepresentation or failure to disclose fully all relevant facts, or;

      iii. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

   d. In addition to any other grounds specified herein, this permit may be modified or revoked at any time if, on the basis of any data, the Regional Water Board determines that continued discharges may cause unreasonable degradation of the marine environment.

   e. In an effluent standard or discharge prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307 (a) of the Clean Water Act (CWA) for a toxic pollutant that is present in the discharge, and such standard or prohibition is more stringent than

any limitation for that pollutant in this Order, this Order may be modified or revoked and reissued to conform to the effluent standard or discharge prohibition.

f. This discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Regional Water Board or State Board as required by the CWA and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the CWA or amendments thereto, the Regional Water Board may modify this Order in accordance with more stringent standards.

g. All analytical data shall be reported uncensored with detection limits and quantitation limits identified. For any effluent limitation, compliance shall be determined using appropriate statistical methods to evaluate multiple samples. Sufficient sampling and analysis shall be conducted to determine compliance.

h. The provisions of this Order are severable, and if any provisions of this Order, or the application of any provision of this Order to any circumstances, is held invalid, the application of such provision to other circumstances, and to the remainder of this Order, shall not be affected thereby.

B. Monitoring and Reporting Program Requirements

1. The Discharger shall notify the Regional Water Board and San Diego offices of the California Department of Fish and Game, where practicable, at least 48 hours in advance of any heat treatment at the Encina Power Station.

2. The discharger shall comply with the Monitoring and Reporting Program, and future revisions thereto, in Attachment E of this Order.

C. Special Provisions

1. Special Studies, Technical Reports, and Additional Monitoring Requirements

   a. CWA Section 316 (a) Assessment Report

      Within 90 days of adoption of this Order, the Discharger shall submit a plan and time schedule to address the comments on the 1997 *Encina Power Plant Supplemental 316 (a) Assessment Report* contained in the July 8, 2005 Tetra Tech, Inc. memorandum.

   b. CWA Section 316 (b) Demonstration Study

      The Discharger shall comply with applicable requirements of U.S. EPA regulations pertaining to cooling water intake structures, which implement section 316 (b) of the CWA and are codified at 40 CFR Part 125, Subpart J – *Requirements Applicable to Cooling Water Intake Structures for Phase II Existing Facilities under Section 316 (b) of the Clean Water Act.* To the extent that the requirements of this Order are inconsistent with or are not as comprehensive as the requirements presented by the U.S. EPA regulations cited, the requirements of 40 CFR Part 125, Subpart J will apply.

The Discharger shall satisfy the following requirements pertaining to Section 316 (b) of the CWA:

i. Before January 9, 2008, submit to the Regional Water Board a C*omprehensive Demonstration Study* to characterize impingement mortality and entrainment, to describe the operation of the Encina Power Station cooling water intake structure, and to confirm that the technologies, operational measures, and/or restoration measures selected and installed, or planned for installation, will meet the applicable requirements of 40 CFR 125.94. The *Comprehensive Demonstration Study* will for the basis for the Regional Water Board's determination of specific requirements, for inclusion in the Discharger's NPDES permit, that establish best technology available (BTA) to minimize adverse environmental impacts associated with the operation of the cooling water intake structure. The Study shall include the following components, if applicable:

(1) *Source Waterbody Flow Information*, as described at 40 CFR 125.95(b)(2);

(2) *Impingement Mortality and/or Entrainment Characterization Study*, as described at 40 CFR 125.95(b)(3), to support development of a calculation baseline for evaluating impingement mortality and entrainment and to characterize current impingement mortality and entrainment;

(3) *Design and Construction Technology Plan* and a *Technology Installation and Operation Plan*, as described at 40 CFR 125.95(b)(4);

(4) *Restoration Plan*, as described at 40 CFR 125.95(b)(5);

(5) Information to Support Site-Specific Determination of BTA, as described at 40 CFR 125.95(b)(6);

(6) *Verification Monitoring Plan*, as described at 40 CFR 125.95 (b)(6).

2. Best Management Practices and Pollution Prevention

The Discharger shall maintain the BMP Plan in accordance with 40 CFR 125.100-104 and shall update the plan whenever there is a change in facility design, construction, operation, or maintenance, which materially affects the potential for discharge from Encina Power Station of significant amounts of hazardous or toxic pollutants into waters of the United States. The BMP Plan and any updates thereto, shall be subject to the approval of the Regional Water Board and shall be modified as directed by the Regional Water Board. The Discharger shall submit the BMP Plan and any updates thereto to the Regional Water Board upon request of the Regional Water Board. A copy of the up-to-date BMP Plan shall be maintained at Encina Power Station and shall be readily available to operating personnel at all times.

VIII. COMPLIANCE DETERMINATION

Compliance with the effluent limitations contained in Section IV of this Order will be determined as specified below:

A. **Average Monthly Effluent Limitation (AMEL).**
If the average of daily discharges over a calendar month exceeds the AMEL for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for each day of that month for that parameter (e.g., resulting in 31 days of non-compliance in a 31-day month). The average of daily discharges over the calendar month that exceeds the AMEL for a parameter will be considered out of compliance for that month only. If only a single sample is taken during the calendar month and the analytical result for that sample exceeds the AMEL, the Discharger will be considered out of compliance for that calendar month. For any one calendar month during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar month.

B. **Average Weekly Effluent Limitation (AWEL).**
If the average of daily discharges over a calendar week (Sunday through Saturday) exceeds the AWEL for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for each day of that week for that parameter, resulting in 7 days of non-compliance. The average of daily discharges over the calendar week that exceeds the AWEL for a parameter will be considered out of compliance for that week only. If only a single sample is taken during the calendar week and the analytical result for that sample exceeds the AWEL, the Discharger will be considered out of compliance for that calendar week. For any one calendar week during which no sample (daily discharge) is taken, no compliance determination can be made for that calendar week.

C. **Maximum Daily Effluent Limitation (MDEL).**
The MDEL shall apply to flow weighted 24-hour composite samples. If a daily discharge exceeds the MDEL for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for that parameter for that 1 day only within the reporting period. For any 1 day during which no sample is taken, no compliance determination can be made for that day.

D. **Instantaneous Minimum Effluent Limitation.**
The instantaneous minimum effluent concentration limitation shall apply to grab sample determinations. If the analytical result of a single grab sample is lower than the instantaneous minimum effluent limitation for a parameter, a violation will be flagged and the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both are lower than the instantaneous minimum effluent limitation would result in two instances of non-compliance with the instantaneous minimum effluent limitation).

E. **Instantaneous Maximum Effluent Limitation.**
The instantaneous maximum effluent concentration limitation shall apply to grab sample determinations. If the analytical result of a single grab sample is higher than the instantaneous maximum effluent limitation for a parameter, a violation will be flagged

and the Discharger will be considered out of compliance for that parameter for that single sample. Non-compliance for each sample will be considered separately (e.g., the results of two grab samples taken within a calendar day that both exceed the instantaneous maximum effluent limitation would result in two instances of non-compliance with the instantaneous maximum effluent limitation).

F. **Six-month Median Effluent Limitation.**
If the median of daily discharges over any 180-day period exceeds the six-month median effluent limitation for a given parameter, an alleged violation will be flagged and the Discharger will be considered out of compliance for each day of that 180-day period for that parameter. The next assessment of compliance will occur after the next sample is taken. If only a single sample is taken during a given 180-day period and the analytical result for that sample exceeds the six-month median, the Discharger will be considered out of compliance for the 180-day period. For any 180-period during which no sample is taken, no compliance determination can be made for the six-month median limitation.

G. **Effluent Limitations/Performance Goals for Discharge Point 001 (Combined Discharge)**
Samples of the combined discharge shall be monitored and the results reported in accordance with Effluent Monitoring Requirement A.1. Upon commencement of discharges from the Poseidon Resources Desalination Project via Discharge Point 001, as an alternative to moving the discharge point, Cabrillo Power I LLC may assess compliance of the combined discharge from the Encina Power Station with the Effluent Limitations specified in Table 6 and consistency with the Performance Goals specified in Table 7 by taking into account the pollutant loading of the combined Encina/Poseidon discharge at Discharge Point 001 less the pollutant loading at Discharge Point 001 from the Poseidon Desalination Project. This alternative assessment method may be conducted provided sampling at Discharge Point 001 and at Poseidon's Monitoring Point 001 as prescribed in NPDES Permit CA0109223 are conducted simultaneously and all data and calculations are submitted as part of the monitoring reports prescribed under this Order.

IX. ENDNOTES

1. An Area of Special Biological Significance may also be known as a State Water Quality Protection Area, in accordance with Section 36700 of the California Public Resources Code.

2. The California Ocean Plan (Water Quality Control Plan for Ocean Waters of California adopted by the State Water Resources Control Board, 2005) includes two tables of numeric water quality objectives for ocean waters. Tables A and B of the Ocean Plan contain, respectively:

    - Effluent limitations for publicly owned treatment works and industrial dischargers to the ocean for which Effluent Limitations Guidelines have not been established pursuant to sections 301, 302, 304, or 306 of the CWA.

    - Water quality objectives for chemical characteristics in ocean waters for protection of aquatic life and human health.

3. Flow rates are based on information provided by the Discharger in materials submitted for application to renew Waste Discharge Requirements.

4. "Combined discharges through Discharge Point 001" are the combined flows of once through main condenser cooling water, low volume wastewaters, and all other wastewater flows that are discharged to the Pacific Ocean through Discharge Point 001.

5. Numeric effluent limitations established by this Order and derived from water quality objectives of the California Ocean Plan for chronic toxicity, chlorine, and toxic pollutants (the Table B pollutants) have been determined using methods required by the Ocean Plan. An initial dilution of 15.5 to 1 for discharges through Discharge Point 001 has been used in these calculations.

   Section III. C. 7. d of the Ocean Plan establishes procedures for determining compliance with Table B water quality objectives for power plants. It requires application of all Table B effluent limitations (derived from the water quality objectives of Table B) to "all in-plant waste streams taken together which discharge into the cooling water flow, except that limits for total chlorine residual, acute [if applicable per section (3) (c)] and chronic toxicity and instantaneous maximum concentrations in Table B shall apply to, and be measured in, the combined final effluent, as adjusted for dilution with ocean water."

   The following equation from section III. C.3.a of the Ocean Plan was used to calculate all water quality based effluent limitations for Table B pollutants (except chlorine) established by this Order.

   $$Ce = Co + Dm (Co - Cs)$$

   Where:

   Ce = the effluent concentration limit, µg/L
   Co = the concentration (water quality objective) to be met at the completion of initial dilution, µg/L
   Cs = background seawater concentration, µg/L
   Dm = minimum probable initial dilution expressed as parts seawater per part wastewater

   Background concentrations for all Table B parameters were assumed to be zero (Cs = 0), except for the following five metals.

Constituent	Background Concentration (µg/L)
Arsenic	3.
Copper	2.
Mercury	0.0005
Silver	0.16
Zinc	8.

   A minimum probable initial dilution of 15.5 to 1 for discharges through Discharge Point 001 was used in these calculations (Dm = 15.5).

6. Units are defined as follows:
   a. mg/L = milligrams per liter
   b. µg/L = micrograms per liter
   c. NTU = Nephelometric Turbidity Units
   d. lbs/day = pounds per day

7. Maximum daily limitation is the highest allowable daily discharge of a pollutant.

8. A 30-day average limitation is the highest allowable average of daily discharges over a running 30-day period, calculated as the sum of all daily discharges measured during a running 30-day period divided by the number of daily discharges measured during that 30-day period.

9. Instantaneous maximum limitation is the highest allowable value for any single grab sample or aliquot (i.e. each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

10. Compliance with the turbidity limitation shall be based on the difference (delta) between the intake and discharge values. Therefore the incremental contribution to turbidity caused by the operation of the Encina Power Station and onsite discharges (including stormwater) must be less than the values stated in Discharge Specification IV.A.2 of this Order.

11. These limitations for chlorine are water quality based effluent limitations derived from the Ocean Plan's Table B water quality objectives for chlorine:

Total Chlorine – Water Quality Objectives (µg/L)	
6-Month Median	**Daily Maximum**
2	8

6-month median and daily maximum effluent limitations were calculated in accordance with procedures established in section III. C. 3. a of the Ocean Plan (and described in endnote reference 5, above). The instantaneous maximum limitation was calculated for intermittent discharges of chlorine in accordance with note c to Table B of the Ocean Plan.

The instantaneous maximum limitation is derived from Effluent Limitation Guidelines at 40 CFR 423.13(b)(1), which limit the maximum concentration of total residual chlorine in once-through cooling water to 0.20 mg/L (200 µg/L).

12. Chronic toxicity expressed as TUc:

TUc = 100/NOEL where

NOEL = No Observed Effect Level

The NOEL is expressed as the maximum percent effluent or receiving water that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test listed in Appendix II of the Ocean Plan.

13. Dischargers may meet this limitation as a total chromium limitation.

14. If a discharger can demonstrate to the satisfaction of the Regional Water Board (subject to U.S. EPA approval) that an analytical method is available to reliably distinguish between strongly and weakly complexed cyanide, effluent limitations for cyanide may be met by the combined measurement of free cyanide, simple alkali metal cyanides, and weakly complexed organometallic cyanide complexes. In order for the analytical method to be acceptable, the recovery of free cyanide from metal complexes must be comparable to that achieved by the approved method in 40 CFR Part 136, as revised May 14, 1999.

15. "Metal cleaning waste," as defined in the Effluent Limitations Guidelines for the Steam Electric Power Generating Point Source Category at 40 CFR 423.11, means any wastewater resulting from cleaning (with or without chemical cleaning compounds) metal process equipment including, but not limited to, boiler tube cleaning, boiler fireside cleaning, and air heater cleaning.

16. "Low volume wastewaters", as defined in the Effluent Limitations Guidelines for the Steam Electric Power Generating Point Source Category at 40 CFR 423.11, means, taken collectively as if from one source, wastewater from all sources except those for which specific limitations are otherwise established in the Effluent Limitations Guidelines.

    The individual, low volume wastewaters authorized by this Order for the Encina Power Station are:

    - Seepage and groundwater
    - Boiler blowdown
    - Freshwater R.O. Brine
    - Seawater R.O. Brine
    - Fuel line/tank hydrotest
    - Pilot desalination plant
    - Low Volume Waste Treatment Facility

    Because the Low Volume Waste Treatment Facility receives and treats several waste streams (low volume) prior to discharge to the once-through cooling flow, it is regulated as a single low volume source. The contributing waste streams to the Low Volume Waste Treatment Facility are:

    - Portable demineralizer
    - Evaporator blowdown
    - Sample drains
    - Floor drains
    - Demineralizer
    - Softeners
    - Condenser cleaning
    - Sand filter backwash
    - Portable demineralizer rinse flush
    - R.O. membrane cleaning

17. Mass-based effluent limitations for low volume discharges were calculated based on a maximum discharge flow rate of 4.09 mgd. Compliance determination will account for the actual (preferred) or estimated combined low volume wastewater flow rate on the day of sampling; i.e., the actual limitation shall be determined for the period of sampling in accordance with the following equation.

    $L_f = (Q_a / Q_m) L_t$ where

    L_f = the final limitation, in lbs/day, used for compliance determination
    Q_a = the combined discharge flow rate, in mgd, of all low volume wastewaters at the time of sampling

Q_m = 4.09 mgd, the maximum possible combined flow of low volume wastewaters for Discharge Point 001

L_t = the appropriate maximum limitation, in lbs/day, from the Discharge Specifications stated at IV.D of this Order.

18. Mass-based effluent limitations for individual low volume wastewater discharges were calculated based on maximum discharge flow rates provided by the Discharger in materials submitted for application for renewal of Waste Discharge Requirements. Actual mass-based effluent limitations shall be recalculated based on the actual low volume wastewater discharge rate on the day of monitoring.

ATTACHMENT A – DEFINITIONS

Average Monthly Effluent Limitation (AMEL): the highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Daily Discharge: Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of one day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

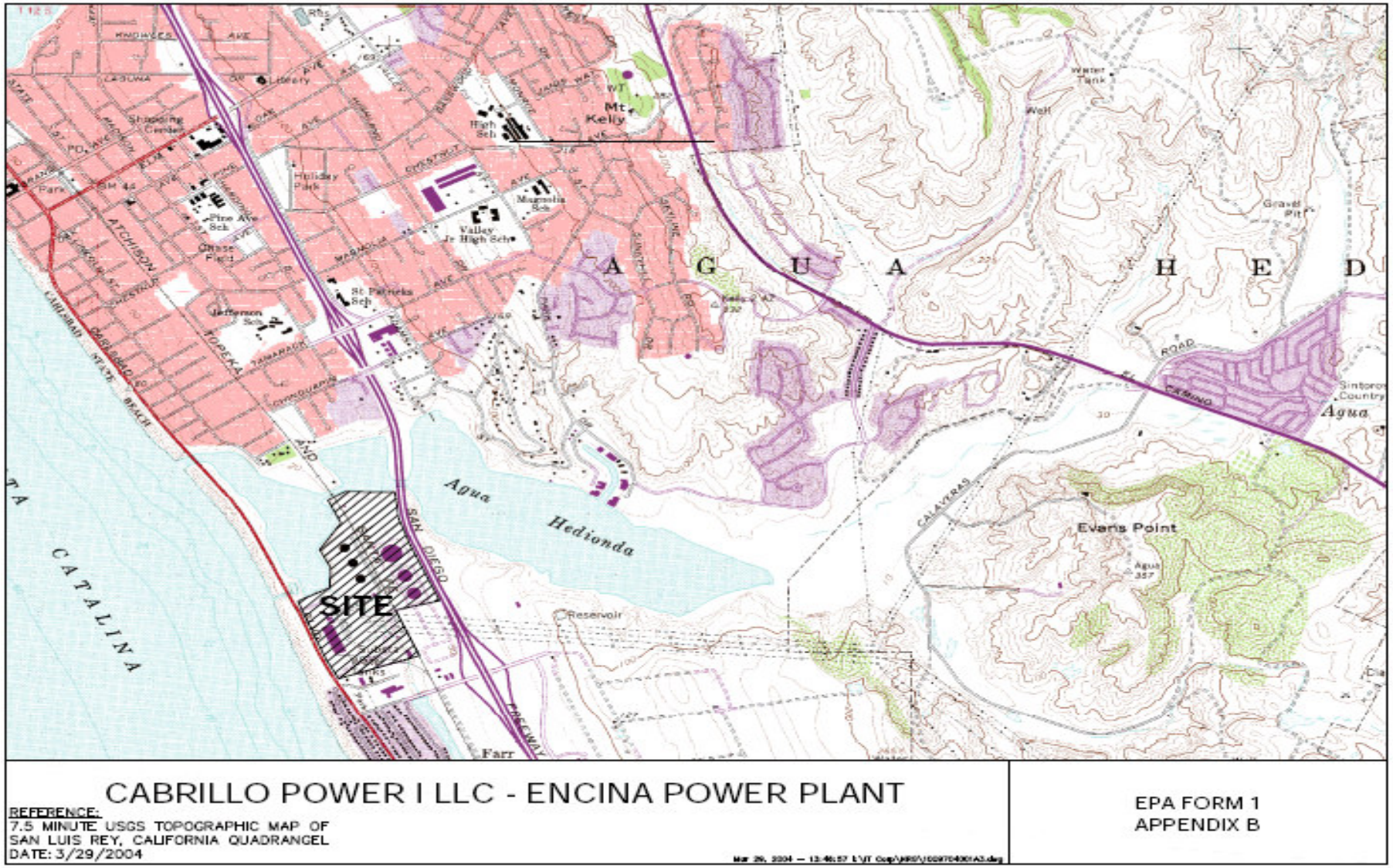
Instantaneous Maximum Effluent Limitation: the highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation: the lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

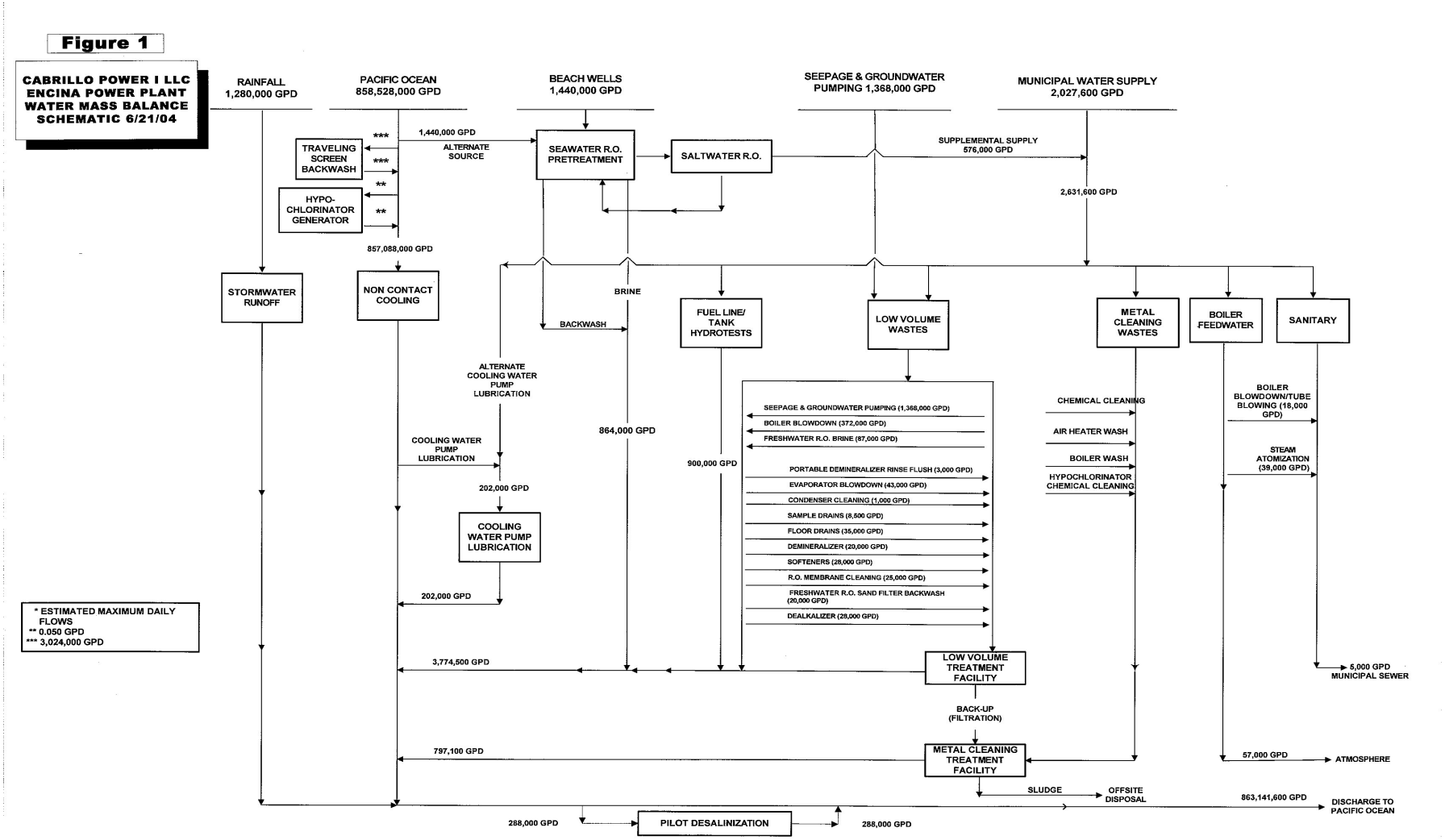
Maximum Daily Effluent Limitation (MDEL): the highest allowable daily discharge of a pollutant.

Six-month Median Effluent Limitation: the highest allowable moving median of all daily discharges for any 180-day period.

ATTACHMENT B – TOPOGRAPHIC MAP



ATTACHMENT C – FLOW SCHEMATIC



Attachment D – Federal Standard Provisions

I. Standard Provisions – Permit Compliance

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code (CWC) and is grounds for enforcement action, for permit termination, revocation and reissuance, or denial of a permit renewal application [*40 CFR §122.41(a)*].

2. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not been modified to incorporate the requirement [*40 CFR §122.41(a)(1)*].

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order [*40 CFR §122.41(c)*].

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment [*40 CFR §122.41(d)*].

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order [*40 CFR §122.41(e)*].

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges [*40 CFR §122.41(g)*].

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations [*40 CFR §122.5(c)*].

F. Inspection and Entry

The Discharger shall allow the Regional Water Quality Control Board (RWQCB), State Water Resources Control Board (SWRCB), United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to [*40 CFR §122.41(i)*] [*CWC 13383(c)*]:

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order [*40 CFR §122.41(i)(1)*];

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order [*40 CFR §122.41(i)(2)*];

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order [*40 CFR §122.41(i)(3)*];

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the CWC, any substances or parameters at any location [*40 CFR §122.41(i)(4)*].

G. Bypass

1. Definitions

   a. “Bypass” means the intentional diversion of waste streams from any portion of a treatment facility [*40 CFR §122.41(m)(1)(i)*].

   b. “Severe property damage” means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production [*40 CFR §122.41(m)(1)(ii)*].

2. Bypass not exceeding limitations – The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3 and I.G.5 below [*40 CFR §122.41(m)(2)*].

3. Prohibition of bypass – Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless [*40 CFR §122.41(m)(4)(i)*]:

   a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage [*40 CFR §122.41(m)(4)(A)*];

   b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance [*40 CFR §122.41(m)(4)(B)*]; and

c. The Discharger submitted notice to the Regional Water Board as required under Standard Provision – Permit Compliance I.G.5 below [*40 CFR §122.41(m)(4)(C)*].

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above [*40 CFR §122.41(m)(4)(ii)*].

5. Notice

   a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass [*40 CFR §122.41(m)(3)(i)*].

   b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below [*40 CFR §122.41(m)(3)(ii)*].

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation [*40 CFR §122.41(n)(1)*].

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph H.2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review [*40 CFR §122.41(n)(2)*].

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that [*40 CFR §122.41(n)(3)*]:

   a. An upset occurred and that the Discharger can identify the cause(s) of the upset [*40 CFR §122.41(n)(3)(i)*];

   b. The permitted facility was, at the time, being properly operated [*40 CFR §122.41(n)(3)(i)*];

   c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b [*40 CFR §122.41(n)(3)(iii)*]; and

   d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above [*40 CFR §122.41(n)(3)(iv)*].

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof [*40 CFR §122.41(n)(4)*].

II. Standard Provisions – Permit Action

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition [*40 CFR §122.41(f)*].

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit [*40 CFR §122.41(b)*].

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the CWC [*40 CFR §122.41(l)(3)*] [*40 CFR §122.61*].

III. Standard Provisions – Monitoring

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity [*40 CFR §122.41(j)(1)*].

B. Monitoring results must be conducted according to test procedures under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 unless other test procedures have been specified in this Order [*40 CFR §122.41(j)(4)*] [*40 CFR §122.44(i)(1)(iv)*].

IV. Standard Provisions – Records

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time [*40 CFR §122.41(j)(2)*].

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements [*40 CFR §122.41(j)(3)(i)*];

2. The individual(s) who performed the sampling or measurements [*40 CFR §122.41(j)(3)(ii)*];

3. The date(s) analyses were performed [*40 CFR §122.41(j)(3)(iii)*];

4. The individual(s) who performed the analyses [*40 CFR §122.41(j)(3)(iv)*];

5. The analytical techniques or methods used [*40 CFR §122.41(j)(3)(v)*]; and

6. The results of such analyses [*40 CFR §122.41(j)(3)(vi)*].

C. Claims of confidentiality for the following information will be denied [*40 CFR §122.7(b)*]:

1. The name and address of any permit applicant or Discharger [*40 CFR §122.7(b)(1)*]; and

2. Permit applications and attachments, permits and effluent data [*40 CFR §122.7(b)(2)*].

V. Standard Provisions – Reporting

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, SWRCB, or USEPA within a reasonable time, any information which the Regional Water Board, SWRCB, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, SWRCB, or USEPA copies of records required to be kept by this Order [*40 CFR §122.41(h)*] [*CWC 13267*].

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, SWRCB, and/or USEPA shall be signed and certified in accordance with paragraph (2.) and (3.) of this provision [*40 CFR §122.41(k)*].

2. All permit applications shall be signed as follows:

   a. For a corporation: By a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (i) A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures [*40 CFR §122.22(a)(1)*];

   b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively [*40 CFR §122.22(a)(2)*]; or

c. For a municipality, State, federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA) [*40 CFR §122.22(a)(3)*].

3. All reports required by this Order and other information requested by the Regional Water Board, SWRCB, or USEPA shall be signed by a person described in paragraph (b) of this provision, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described in paragraph (2.) of this provision [*40 CFR §122.22(b)(1)*];

   b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company (a duly authorized representative may thus be either a named individual or any individual occupying a named position) [*40 CFR §122.22(b)(2)*]; and

   c. The written authorization is submitted to the Regional Water Board, SWRCB, or USEPA [*40 CFR §122.22(b)(3)*].

4. If an authorization under paragraph (3.) of this provision is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (3.) of this provision must be submitted to the Regional Water Board, SWRCB or USEPA prior to or together with any reports, information, or applications, to be signed by an authorized representative [40 CFR §122.22(c)].

5. Any person signing a document under paragraph (2.) or (3.) of this provision shall make the following certification:

   "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations" [*40 CFR §122.22(d)*].

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program in this Order [*40 CFR §122.41(l)(4)*].

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or SWRCB for reporting results of monitoring of sludge use or disposal practices [*40 CFR §122.41(l)(4)(i)*].

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board [*40 CFR §122.41(l)(4)(ii)*].

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order [*40 CFR §122.41(l)(4)(iii)*].

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date [*40 CFR §122.41(l)(5)*].

E. Twenty-Four Hour Reporting

1. The Discharger shall report any noncompliance that may endanger health or the environment. Any information shall be provided orally within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance [*40 CFR §122.41(l)(6)(i)*].

2. The following shall be included as information that must be reported within 24 hours under this paragraph [*40 CFR §122.41(l)(6)(ii)*]:

   a. Any unanticipated bypass that exceeds any effluent limitation in this Order [*40 CFR §122.41(l)(6)(ii)(A)*].

   b. Any upset that exceeds any effluent limitation in this Order [*40 CFR §122.41(l)(6)(ii)(B)*].

   c. Violation of a maximum daily discharge limitation for any of the pollutants listed in this Order to be reported within 24 hours [*40 CFR §122.41(l)(6)(ii)(C)*].

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours [*40 CFR §122.41(l)(6)(iii)*].

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when [*40 CFR §122.41(l)(1)*]:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR §122.29(b) [*40 CFR §122.41(l)(1)(i)*]; or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in this Order nor to notification requirements under 40 CFR Part 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1) [*40 CFR §122.41(l)(1)(ii)*].

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan [*40 CFR §122.41(l)(1)(iii)*].

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or SWRCB of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements [*40 CFR §122.41(l)(2)].*

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting E.3, E.4, and E.5 at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E [*40 CFR §122.41(l)(7)*].

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, SWRCB, or USEPA, the Discharger shall promptly submit such facts or information [*40 CFR §122.41(l)(8)*].

VI. Standard Provisions – Enforcement

A. The CWA provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed $25,000 per day for each violation. The CWA provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of $2,500 to $25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than $50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of $5,000 to $50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than $100,000 per day of violation, or imprisonment

of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than $250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than $500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the Clean Water Act, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than $1,000,000 and can be fined up to $2,000,000 for second or subsequent convictions [*40 CFR §122.41(a)(2)*] [*CWC 13385 and 13387*].

B. Any person may be assessed an administrative penalty by the Regional Water Board for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed $10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed $25,000. Penalties for Class II violations are not to exceed $10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed $125,000 [*40 CFR §122.41(a)(3)*].

C. The CWA provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000, or by imprisonment for not more than 2 years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than $20,000 per day of violation, or by imprisonment of not more than 4 years, or both [*40 CFR §122.41(j)(5)*].

D. The CWA provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this Order, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both [*40 CFR §122.41(k)(2)*].

VII. Additional Provisions – Notification Levels

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural dischargers shall notify the Regional Water Board as soon as they know or have reason to believe [*40 CFR §122.42(a)*]:

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [*40 CFR §122.42(a)(1)*]:

   a. 100 micrograms per liter (µg/L) [*40 CFR §122.42(a)(1)(i)*];

b. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony [*40 CFR §122.42(a)(1)(ii)*];

c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [*40 CFR §122.42(a)(1)(iii)*]; or

d. The level established by the Regional Water Board in accordance with 40 CFR §122.44(f) [*40 CFR §122.42(a)(1)(iv)*].

2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" [*40 CFR §122.42(a)(2)*]:

a. 500 micrograms per liter (µg/L) [*40 CFR §122.42(a)(2)(i)*];

b. 1 milligram per liter (mg/L) for antimony [*40 CFR §122.42(a)(2)(ii)*];

c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge [*40 CFR §122.42(a)(2)(iii)*]; or

d. The level established by the Regional Water Board in accordance with 40 CFR §122.44(f) [*40 CFR §122.42(a)(2)(iv)*].

B. Publicly-Owned Treatment Works (POTWs)

All POTWs shall provide adequate notice to the Regional Water Board of the following [*40 CFR §122.42(b)*]:

1. Any new introduction of pollutants into the POTW from an indirect discharger that would be subject to Sections 301 or 306 of the CWA if it were directly discharging those pollutants [*40 CFR §122.42(b)(1)*]; and

2. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of adoption of the Order [*40 CFR §122.42(b)(2)*].

Adequate notice shall include information on the quality and quantity of effluent introduced into the POTW as well as any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW [*40 CFR §122.42(b)(3)*].

Attachment E – Monitoring and Reporting Program – Table of Contents

LIST OF TABLES

ATTACHMENT E – MONITORING AND REPORTING PROGRAM (MRP)

The Code of Federal Regulations (CFR) at 40 CFR §122.48 requires that all NPDES permits specify monitoring and reporting requirements. CWC sections 13267 and 13383 also authorize the Regional Water Quality Control Board (RWQCB) to require technical and monitoring reports. This MRP establishes monitoring and reporting requirements which implement the federal and California regulations.

I. General Monitoring Provisions

A. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring points specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring points shall not be changed without notification to and the approval of the Regional Water Board.

B. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and the reliability of measurements of volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurements is consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of ± 10 percent from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration and operation of acceptable flow volume measurement devices can be obtained from the following references:

1. *A Guide to Methods and Standards for the Measurement of Water Flow*, U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 421, May 1975, 96pp. [Available from the U.S. Government Printing Office, Washington, DC 20402. Order by SD Catalog No. C13.10:421.]

2. *Water Measurement Manual*, U.S. Department of Interior, Bureau of Reclamation, Second Edition, Revised Reprint, 1974, 327 pp. [Available from the U.S. Government Printing Office, Washington, DC 20402. Order by Catalog No. 172.19/2:W29/2, Stock No. S/N 24003-0027.]

3. *Flow Measurement in Open Channels and Closed Conduits*, U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 928 pp. [Available in paper copy of microfiche from National Technical Information Services (NTIS) Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST.]

4. *NPDES Compliance Sampling Manual*, U.S. Environmental Protection Agency, Office of Water Enforcement, Publication MCD-51, 1977, 140 pp. [Available from the General Services Administration (8FFS), Centralized Mailing Lists Services, Building 41, Denver Federal Center, CO 80225.]

C. Monitoring must be conducted according to U.S. EPA test procedures approved at 40 CFR Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants

under the Clean Water Act as amended, unless other test procedures are specified in Order No. R9-2006-0043 and/or in this MRP and/or by the Regional Water Board.

D. Duplicate copies of the monitoring reports, signed and certified as required by *State and Federal Standard Provisions – Reporting*, E.2 (see Attachment C of Order No. R9-2006-0043) must be submitted to the SWRCB and Regional Water Board at the addresses listed in the *Reporting Requirements,* below of this MRP.

E. If the Discharger monitors any pollutant more frequently than required by Order R9-2006-0043 or this MRP, using test procedures approved under 40 CFR Part 136, or as specified in Order R9-2006-0043, or this MRP, or by the Regional Water Board, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the Discharger's monitoring report. The increased frequency of monitoring shall be also be reported.

F. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by Order No. R9-2006-0043, and this MRP, for a period of at least three years from the date of sample, measurement, report, or application. This period may be extended by request of the Regional Water Board at any time.

G. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in Order No. R9-2006-0043 or this MRP.

H. All analyses shall be performed in a laboratory certified to perform such analyses by the California Department of Health Services or a laboratory approved by the Regional Water Board.

I. The Discharger shall report all instances of noncompliance not reported under *State and Federal Standard Provisions – Reporting*, E.3, E.4, and E.5 (see Attachment C of Order No. R9-2006-0043) at the time monitoring reports are submitted. The reports shall contain the information listed in *State and Federal Standard Provisions – Reporting*, E.5. [40 CFR 122.41(1)(7)]

J. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;

2. The individual(s) who performed the sampling or measurements;

3. The date(s) analyses were performed;

4. The individual(s) who performed the analyses;

5. The analytical techniques or methods used, including the method detection limit (MDL), for each analysis performed; and

6. The results of such analyses.

In addition, records of all cooling water intake monitoring, effluent monitoring, and receiving water monitoring shall include:

1. The applicable tide table for the day(s) on which sampling/monitoring was conducted; and

2. The moon phase (in days after the new moon) for the day(s) on which sampling was conducted.

K. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year, or more frequently, to ensure continued accuracy of the devices.

L. The Discharger shall have, and implement, an acceptable written quality assurance (QA) plan for laboratory analyses. Duplicate chemical analyses must be conducted on a minimum of ten percent of the samples or at least on sample per month, whichever is greater. A similar frequency shall be maintained for analyzing spiked samples. When requested by U.S. EPA or the Regional Water Board, the Discharger will participate in the NPDES discharge monitoring report QA performance study. The Discharger should have a success rate equal to or greater than 80 percent.

M. Analysis for pollutants with effluent limitations based on water quality objectives of the California Ocean Plan (2005) shall be conducted in accordance with procedures described in Attachment E of Order R9-2006-0043.

N. Toxicity Provisions

1. Chronic toxicity monitoring shall be conducted in accordance with procedures described in Attachment E of Order R9-2006-0043.

2. Toxicity Reopener

   This permit may be modified in accordance with the requirements set forth at 40 CFR Parts 122 and 124 to include appropriate conditions or limits to address demonstrated effluent toxicity based on newly available information, or to implement any U.S. EPA approved new state water quality standards applicable to effluent toxicity.

3. Monitoring results shall be reported at intervals and in a manner specified in Order R9-2006-0043 or in this MRP.

4. Revisions of Monitoring and Reporting Program by the Regional Water Board are appropriate to ensure that the Discharger is in compliance with requirements and provisions contained in this Order. Revisions may be made by the Regional Water Board at any time during the term of this Order, and may include a reduction or increase in the number of parameters to be monitored, the frequency of monitoring, or the number and size of samples collected.

II. Monitoring Locations

The Discharger shall establish the monitoring locations as specified in

Table **E-1** to assess compliance with the effluent limitations, discharge specifications, and other requirements in this Order.

Table E-1. Monitoring Locations

Discharge Point Name	Discharge Point	Monitoring Location Name	Monitoring Location Description (include Latitude and Longitude when available)
Receiving Water	--	--	All receiving water samples shall be collected at monitoring stations as described in this Order.
Cooling Water Intake	--	M-INT	32deg 57min N, 117deg 16min W
Combined Discharge	001	M-001	33deg 08min 17sec N, 117deg 20min 22sec W
Metal Cleaning Treatment Facility	001-A	M-001-A	Flow is monitored in the wastewater treatment tank area (F-6 of 137292 S-451)
Boiler Chemical Cleaning	001-A1	M-001-A	Flow is monitored in the wastewater treatment tank area (F-6 of 137292 S-451)
Hypochlorinator Chemical Cleaning	001-A2	M-001-A	Flow is monitored in the wastewater treatment tank area (F-6 of 137292 S-451)
Air Heater Wash	001-A3	M-001-A	Flow is monitored in the wastewater treatment tank area (F-6 of 137292 S-451)
Boiler Fireside Wash	001-A4	M-001-A	Flow is monitored in the wastewater treatment tank area (F-6 of 137292 S-451)
Evaporator Chemical Cleaning	001-A5	M-001-A	Flow is monitored in the wastewater treatment tank area (F-6 of 137292 S-451)
Catalytic Reduction Wash	001-A6	M-001-A	Flow is monitored in the wastewater treatment tank area (F-6 of 137292 S-451)
Seepage and Groundwater Pumping	001-B	M-001-B	Unit 4 flow is monitored in the basement of Unit 4 (K-14 of 137292 S-451); Unit 5 flow is monitored in the basement of Unit 5 (K-16 of 137292 S-451)
Boiler Blowdown	001-C	M-001-C	Units 1 through 5 flow values are estimated based on valve flow rates. These valves are located within each unit's boiler equipment (K-10, K-12, K-14, and K-16 of 137292 S-451, respectively)
Freshwater R.O. Brine	001-D	M-001-D	Flow is monitored at the Reverse Osmosis area (H-16 of 137292 S-451)
Seawater R.O. Brine	001-E	M-001-E	Not discharging this stream at this time as the exact location of the proposed system is yet to be determined. Prior to commencement of discharge, Discharger will notify the Regional Water Board of the exact location compliance will be determined.
Fuel Line/Tank Hydrotest	001-F	M-001-F	Flow is monitored in the wastewater treatment tank area (F-6 of 137292 S-451) or at the offshore marine terminal located at 33deg 07.8min N, 118deg 20.8min W
Pilot Desalination Plant	001-G	M-001-G	The combined pilot plant discharge shall be monitored from the discharge pipe just above the ramp to the discharge pond.
Low Volume Waste Treatment Facility	001-H	M-001-H	Flow is monitored in the wastewater treatment tank area (F-6 of 137292 S-451)
Stormwater	001-I	M-001-I	Flows are sampled and monitored in various locations as depicted in 137292 S-451, Stormwater Pollution Prevention Plan drawing.

III. Influent Monitoring Requirements

A. Cooling Water Intake

1. The Discharger shall annually measure bar rack approach velocity and sediment accumulation at the intake structure and shall submit to the Regional Water Board an annual summary describing any operational difficulties at the intake structure or the bar rack. The Discharger shall also discuss preventative maintenance and corrective measures take to assure intake water velocities are as close as practical to design levels.

2. The Discharger shall monitor the main condenser inflow of cooling water at Monitoring Location M-INT as specified in Table E-2.

Table E-2. Intake Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Reporting Frequency
Temperature	ºF	Measurement	Once every 2 hours	monthly
Total Suspended Solids	mg/L	grab	monthly	monthly
Turbidity	NTU	grab	monthly	monthly
pH	standard units	grab	monthly	monthly

IV. Effluent Monitoring Requirements

A. Combined Discharge (Discharge Point 001)

1. Samples of the combined discharge through Discharge Point 001 shall be collected at Monitoring Location M-001 and analyzed as specified in Table E-3.

Table E-3. Effluent Monitoring Requirements (Discharge Point 001)

Parameter	Units	**Sample Type**	**Minimum Frequency of Analysis**	**Reporting Frequency**
Flow	mgd	meter or estimate	continuous	monthly
Temperature (Avg. and Max. Daily)	ºF	measurement	once every 2 hours	monthly
pH	standard units	grab	monthly	monthly
Turbidity	NTU	grab	monthly	monthly
Total Chlorine Residual[1/]	µg/L	grab	weekly	monthly
Total Chlorine Residual[2/]	µg/L	grab	annually	annually
Chronic Toxicity (General)[3/]	TUc	composite	semiannually	semiannually

Parameter	Units	Sample Type	Minimum Frequency of Analysis	Reporting Frequency
Chronic Toxicity (Metal Cleaning)[4/]	TUc	composite	as needed	annually
Total Suspended Solids	mg/L	grab	monthly	monthly
Arsenic	µg/L	grab	semiannually	semiannually
Cadmium	µg/L	grab	semiannually	semiannually
Chromium (Hexavalent)	µg/L	grab	semiannually	semiannually
Copper	µg/L	grab	semiannually	semiannually
Lead	µg/L	grab	semiannually	semiannually
Mercury	µg/L	grab	semiannually	semiannually
Nickel	µg/L	grab	semiannually	semiannually
Selenium	µg/L	grab	semiannually	semiannually
Silver	µg/L	grab	semiannually	semiannually
Zinc	µg/L	grab	semiannually	semiannually
Cyanide	µg/L	grab	semiannually	semiannually
Ammonia	µg/L	grab	semiannually	semiannually
Non-Chlorinated Phenolic Compounds	µg/L	grab	semiannually	semiannually
Chlorinated Phenolic Compounds	µg/L	grab	semiannually	semiannually
Endosulfan	µg/L	grab	semiannually	semiannually
Endrin	µg/L	grab	semiannually	semiannually
HCH	µg/L	grab	semiannually	semiannually

B. Metal Cleaning Wastes (Discharge Point 001-A)

1. Chemical and non-chemical metal cleaning waste streams shall be sampled at Monitoring Locations M-001-A and analyzed as specified in Table E-4.

Table E-4. Effluent Monitoring Requirements (Discharge Point 001-A)

Parameter	Units	Sample Type	Minimum Frequency of Analysis	Reporting Frequency
Flow	mgd	meter or estimate	continuous	monthly
pH	standard units	grab	prior to discharge	monthly
Total Suspended Solids (TSS)	mg/L, lbs/day	grab	prior to discharge	monthly
Oil and Grease	mg/L, lbs/day	grab	prior to discharge	monthly
Total Copper	mg/L, lbs/day	grab	prior to discharge	monthly
Total Iron	mg/L, lbs/day	grab	prior to discharge	monthly

C. Combined Low Volume Wastewaters (Discharge Points 001-B through 001-H)

1. Low volume wastewaters (Discharge Points 001-B through 001-H) shall be sampled at Monitoring Locations M-001-B through M-001-H and analyzed as specified in Table E-5. Reported values shall result from individual grab samples of low volume waste streams that are collected and composited on a flow-weighted basis. Measurements or estimates of flows of individual low volume waste streams used as a basis for compositing shall include as many wastewaters as possible. The flow rate used to determine the proportion of each waste stream in the composited sample shall be the actual (preferred) or estimated flow rate for the day on which samples are collected.

Table E-5. Effluent Monitoring Requirements (Discharge Points 001-B through 001-H)

Parameter	Units	**Minimum Frequency of Analysis**	**Reporting Frequency**
Flow	mgd	monthly	monthly
pH	standard units	monthly	monthly
Total Suspended Solids (TSS)	mg/L	monthly	monthly
	lbs/day	monthly	monthly
Oil and Grease	mg/L	monthly	monthly
	lbs/day	monthly	monthly
Arsenic	lbs/day	semiannually	semiannually
Cadmium	lbs/day	semiannually	semiannually
Chromium (Hexavalent)	lbs/day	semiannually	semiannually
Copper	lbs/day	semiannually	semiannually
Lead	lbs/day	semiannually	semiannually
Mercury	lbs/day	semiannually	semiannually
Nickel	lbs/day	semiannually	semiannually
Selenium	lbs/day	semiannually	semiannually
Silver	lbs/day	semiannually	semiannually
Zinc	lbs/day	semiannually	semiannually
Cyanide	lbs/day	semiannually	semiannually
Ammonia	lbs/day	semiannually	semiannually
Non-Chlorinated Phenolic Compounds	lbs/day	One time during the permit period	As part of the renewal application in 2010
Chlorinated Phenolic Compounds	lbs/day	One time during the permit period	As part of the renewal application in 2010
Endosulfan	lbs/day	One time during the permit period	As part of the renewal application in 2010
Endrin	lbs/day	One time during the permit period	As part of the renewal application in 2010
HCH	lbs/day	One time during the permit period	As part of the renewal application in 2010
Acrolein	lbs/day	One time during the permit period	As part of the renewal application in 2010
Antimony	lbs/day	One time during the permit period	As part of the renewal application in 2010
Bis(2-chloroethoxyl) methane	lbs/day	One time during the permit period	As part of the renewal application in 2010
Bis(2-chloroisopropyl) ether	lbs/day	One time during the permit period	As part of the renewal application in 2010

Parameter	Units	**Minimum Frequency of Analysis**	**Reporting Frequency**
Chlorobenzene	lbs/day	One time during the permit period	As part of the renewal application in 2010
Chromium III	lbs/day	One time during the permit period	As part of the renewal application in 2010
Di-n-butly phthalate	lbs/day	One time during the permit period	As part of the renewal application in 2010
Dichlorobenzenes	lbs/day	One time during the permit period	As part of the renewal application in 2010
Diethyl phthalate	lbs/day	One time during the permit period	As part of the renewal application in 2010
Dimethyl phthalate	lbs/day	One time during the permit period	As part of the renewal application in 2010
4,6-dinitro-2-methylphenol	lbs/day	One time during the permit period	As part of the renewal application in 2010
2,4-dinitrophenol	lbs/day	One time during the permit period	As part of the renewal application in 2010
Ethylbenzene	lbs/day	One time during the permit period	As part of the renewal application in 2010
Fluoranthene	lbs/day	One time during the permit period	As part of the renewal application in 2010
Hexachlorocyclopentadine	lbs/day	One time during the permit period	As part of the renewal application in 2010
Nitrobenzene	lbs/day	One time during the permit period	As part of the renewal application in 2010
Thallium	lbs/day	One time during the permit period	As part of the renewal application in 2010
Toluene	lbs/day	One time during the permit period	As part of the renewal application in 2010
1,1,1-trichloroethane	lbs/day	One time during the permit period	As part of the renewal application in 2010
Tributyltin	lbs/day	One time during the permit period	As part of the renewal application in 2010
Acrylonitrile	lbs/day	One time during the permit period	As part of the renewal application in 2010
Aldrin	lbs/day	One time during the permit period	As part of the renewal application in 2010
Benzene	lbs/day	One time during the permit period	As part of the renewal application in 2010
Benzidine	lbs/day	One time during the permit period	As part of the renewal application in 2010
Beryllium	lbs/day	One time during the permit period	As part of the renewal application in 2010
Bis(2-chloroethyl) ether	lbs/day	One time during the permit period	As part of the renewal application in 2010
Bis(2-ethylhexyl) phthalate	lbs/day	One time during the permit period	As part of the renewal application in 2010
Carbon tetrachloride	lbs/day	One time during the permit period	As part of the renewal application in 2010
Chlordane	lbs/day	One time during the permit period	As part of the renewal application in 2010
Chlorodibromomethane	lbs/day	One time during the permit period	As part of the renewal application in 2010
Chloroform	lbs/day	One time during the permit period	As part of the renewal application in 2010
DDT	lbs/day	One time during the permit period	As part of the renewal application in 2010
1,4-dichlorobenzene	lbs/day	One time during the permit period	As part of the renewal application in 2010
3,3'-dichlorobenzidine	lbs/day	One time during the permit period	As part of the renewal application in 2010
1,2-dichloroethane	lbs/day	One time during the permit period	As part of the renewal application in 2010
1,1-dichloroethylene	lbs/day	One time during the permit period	As part of the renewal application in 2010

Parameter	Units	**Minimum Frequency of Analysis**	**Reporting Frequency**
Dichlorobromomethane	lbs/day	One time during the permit period	As part of the renewal application in 2010
Dichloromethane	lbs/day	One time during the permit period	As part of the renewal application in 2010
1,3-dichloropropene	lbs/day	One time during the permit period	As part of the renewal application in 2010
Dieldrin	lbs/day	One time during the permit period	As part of the renewal application in 2010
2,4-dinitrotoluene	lbs/day	One time during the permit period	As part of the renewal application in 2010
1,2-diphenylhydrazine	lbs/day	One time during the permit period	As part of the renewal application in 2010
Halomethanes	lbs/day	One time during the permit period	As part of the renewal application in 2010
Heptachlor	lbs/day	One time during the permit period	As part of the renewal application in 2010
Heptachlor epoxide	lbs/day	One time during the permit period	As part of the renewal application in 2010
Hexachlorobenzene	lbs/day	One time during the permit period	As part of the renewal application in 2010
Hexachlorobutadiene	lbs/day	One time during the permit period	As part of the renewal application in 2010
Hexachloroethane	lbs/day	One time during the permit period	As part of the renewal application in 2010
Isophorone	lbs/day	One time during the permit period	As part of the renewal application in 2010
N-nitrosodimethylamine	lbs/day	One time during the permit period	As part of the renewal application in 2010
N-nitrosodi-N-propylamine	lbs/day	One time during the permit period	As part of the renewal application in 2010
N-nitrosodiphenylamine	lbs/day	One time during the permit period	As part of the renewal application in 2010
PAHs	lbs/day	One time during the permit period	As part of the renewal application in 2010
PCBs	lbs/day	One time during the permit period	As part of the renewal application in 2010
TCDD Equiv.	lbs/day	One time during the permit period	As part of the renewal application in 2010
1,1,2,2-tetrachloroethane	lbs/day	One time during the permit period	As part of the renewal application in 2010
Tetrachloroethylene	lbs/day	One time during the permit period	As part of the renewal application in 2010
Toxaphene	lbs/day	One time during the permit period	As part of the renewal application in 2010
Trichloroethylene	lbs/day	One time during the permit period	As part of the renewal application in 2010
1,1,2-trichloroethane	lbs/day	One time during the permit period	As part of the renewal application in 2010
2,4,6-trichlorophenol	lbs/day	One time during the permit period	As part of the renewal application in 2010
Vinyl chloride	lbs/day	One time during the permit period	As part of the renewal application in 2010

V. Whole Effluent Toxicity Testing Requirements

A. Chronic Toxicity Monitoring

The Discharger shall conduct semiannual toxicity tests on 24-hour composite effluent samples. Testing shall be performed using methods outlined in "Chapman, G.A., D.L. Denton, and J.M. Lazorchak. 1995. Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms" or SWRCB 1996. Procedures Manual for Conducting Toxicity Tests Developed by the Marine Bioassay Project. 96-1WQ."

Combined discharge samples shall be taken during a period when low volume wastes are being discharged. Samples shall be taken at the NPDES sampling location of the combined discharge identified in Section II of this MRP. At the time of the first toxicity test immediately following adoption of this Order, the Discharger shall conduct toxicity tests with an invertebrate, *Haliotis rufescens*, a plant, *Macrocystis pyrifera*, and a vertebrate, *Atherinops Affins*. After this screening period, monitoring will be conducted on the most sensitive species. Every two years the Discharger shall re-screen to determine the most sensitive species. This screening shall be performed during a different month that the previous species screenings. The most sensitive species shall then be used for continued monitoring.

At least five concentrations of effluent (one concentration must bracket the initial dilution on 10% effluent) plus one control shall be tested. A minimum of four replicates is required per concentration. The effluent tests must be conducted with concurrent reference toxicant tests. Both the reference toxicant and effluent tests must meet all test acceptability criteria as specified in the chronic toxicity manuals. If the test acceptability criteria are is not achieved, the Discharger must re-sample and re-test within 14 days.

The summary report submitted to the Regional Water Board must follow the guidelines specified in Chapter 10 of Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms. Sections 10.2 and 10.3.2 of that chapter are not required.

Compliance shall be determined from TUc, which equals 100/NOEC. NOEC (No Observed Effect Concentration) is the highest concentration of toxicant, in terms of percent effluent, to which the test organisms are exposed that causes no observable adverse effect. The chronic toxicity limitation is: 1) a monthly median expressed as 10 TUc or 2) any one test that demonstrates a 50% toxic effect.

B. Implementation of Chronic Toxicity Limitations

If the results of a chronic toxicity test exceed the limitations specified in this Order, the Discharger shall:

1. Take all reasonable measures necessary to immediately minimize toxicity; and

2. Increase the frequency of the toxicity test(s) that violated the effluent limitation to least two times per month until the results of at least three consecutive toxicity tests meet the required standard. Re-sampling should occur under conditions that mimic the conditions of the initial non-compliant toxicity test.

If the Regional Water Board determines that toxicity testing shows a consistent violation of the limitations specified in this Order, the Discharger shall conduct a Toxicity Reduction Evaluation (TRE), which includes all reasonable steps to identify the source of the toxicity. Once the source of the toxicity is identified, upon Regional Water Board request, the Discharger shall take all reasonable steps to reduce the toxicity to meet the toxicity limitations contained in this Order. The TRE shall be conducted based on the procedures established by the U.S. EPA in guidance manuals EPA/600/6-91/005F (Phase I), EPA/600/R-92/080 (Phase II), and EPA/600/R-92/081 Phase III, and EPA/600/2-88/070 (TRE protocols for industrial discharges).

Within 14 days of the TRE, the Discharger shall submit the results of the TRE, including a summary of the findings, data generated, a list of corrective actions necessary to achieve consistent compliance with this Order and prevent all future violations, and a time schedule for implementation of such corrective actions. The corrective actions and time schedule shall be modified at the discretion of the Regional Water Board.

VI. Receiving Water Monitoring Requirements

Receiving water and kelp monitoring shall be conducted as specified below. Sampling, sampling preservation, and analysis, when not specified, shall be by methods approved by the Regional Water Board.

Dispersion Area Stations: There are 10 stations located on three transects in the dispersion area. The transects shall be established normal to the shore. Transects and stations shall be located and numbered as specified in Table E-6.

Table E-6. Dispersion Area Stations

Transect (Description)	Station	Description
C (1000 feet upcoast (northerly) of the discharge channel)	C-10	521 feet offshore
	C-20	956 feet offshore
	C-30	2000 feet offshore
D (Discharge channel)	D-10	565 feet offshore
	D-20	1129 feet offshore
	D-30	1600 feet offshore
	D-50	2800 feet offshore
E (1000 feet downcoast (southerly) of the discharge channel)	E-10	652 feet offshore
	E-20	1086 feet offshore
	E-30	2000 feet offshore

Reference Area Stations: There are four stations located on a transect in the reference area. The transect shall be established normal to the shore. The transect and stations shall be located and numbered as specified in Table E-7.

Table E-7. Reference Area Stations

Transect (Description)	Station	Description
A (7000 feet upcoast (northerly) of the discharge channel)	A-10	At 10 foot depth (-10 ft MLLW)
	A-20	At 20 foot depth (-20 ft MLLW)
	A-30	At 30 foot depth (-30 ft MLLW
	A-50	3400 feet offshore

A. Dispersion and Reference Area Stations

1. The Discharger shall monitor the Pacific Ocean at stations A-10, A-20, A-30, A-50, C-10, C-20, C-30, D-10, D-20, D-30, D-50, E-10, E-20, and E-30 as specified in Table E-8.

Table E-8. Dispersion and Reference Area Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	**Reporting Frequency**
Light Transmittance (Secchi disk)	feet	--	semiannually	semiannually
Dissolved oxygen	mg/L	grab	semiannually	semiannually
pH	standard units	grab	semiannually	semiannually

2. The thermal plume shall be characterized via infrared mapping on a semiannual basis.

The report for items monitored at receiving water monitoring stations and thermal plume characterization shall include an in-depth discussion of the results of the surveys. The discussion shall compare data from the reference station(s) with data from the stations located in the area of the discharge and shall note compliance with objectives found in this order and the Ocean Plan. The report shall include a description of the methods and equipment used to obtain the data.

B. Kelp Bed Monitoring

Kelp bed monitoring is conducted to assess the extent to which the discharge of wastes may affect the areal extent and the health of the coastal kelp beds.

The Discharger shall participate with other ocean dischargers in the San Diego Region in an annual regional kelp bed photographic survey. Kelp beds shall be monitored annually by means of vertical aerial infrared photography to determine the maximum areal extent of the region's coastal kelp beds within the calendar year. Surveys shall be conducted as close as possible to the time when kelp bed canopies cover the greatest area, which ordinarily occurs in August or September in the San Diego Region. The entire San Diego Region, from the International Boundary to the San Diego/Santa Ana Regional boundary shall be photographed on the same day. The date of each annual survey shall be approved by the Regional Water Board. (Verbal approval will be sufficient, so that the survey will not be delayed, while written approval is prepared and distributed.)

The images produced by the surveys shall be presented in the form of a 1:24,000 scale photo-mosaic of the entire San Diego Region coastline. Onshore reference points, locations of all ocean outfalls and diffusers, and the 30-foot (MLLW) and 60-foot (MLLW) depth contours shall be shown.

The areal extent of the various kelp beds photographed in each survey shall be compared to that noted in surveys of previous years. Any significant losses which persist for more than one year shall be investigated by divers to determine the probable reason for the loss.

VII. Other Monitoring Requirements

A. In addition to the Core (Intake, Effluent, and Receiving Water Monitoring) requirements, the Discharger shall comply with the following monitoring requirements:

1. Regional Watershed/Ocean Monitoring

   The Discharger shall participate and coordinate with state and local agencies and other dischargers in the San Diego Region in development and implementation of a regional watershed or ocean monitoring program for the Pacific Ocean as directed by the Regional Water Board. The intent of a regional monitoring program is to maximize the efforts of all monitoring partners using a more cost-effective monitoring design and to best utilize the pooled resources of the region. During the coordinated monitoring effort, the Discharger's monitoring program may be expanded to provide a regional assessment of the impact of discharges to the watershed or Pacific Ocean.

2. Special Studies

   Special studies are intended to be short-term and designed to address specific research or management issues that are not addressed be the routine core monitoring program. The Discharger shall implement special studies as directed by this Regional Water Board. This includes conducting and implementing a *Comprehensive Demonstration Study* as required by the CWA Section 316(b) Phase II Rule (40 CFR 125.91). The Study is due no later than January 9, 2008.

VIII. Reporting Requirements

A. General Monitoring and Reporting Requirements

The Discharger shall comply with all *State and Federal Standard Provisions* (Attachment D) related to monitoring, reporting, and recordkeeping.

B. Self Monitoring Reports (SMRs)

1. At any time during the term of this permit, the State or Regional Water Board may notify the Discharger to electronically submit self-monitoring reports. Until such notification is given, the Discharger shall submit self-monitoring reports in accordance with the requirements described below.

2. The Discharger shall submit monthly, semiannual, and annual Self Monitoring Reports including the results of all required monitoring using USEPA-approved test methods or other test methods specified in this Order. Monthly reports shall be due on the 1st day of the second month following the end of each calendar month; Quarterly reports shall be due on May 1, August 1, November 1, and February 1 following each calendar quarter; Semi-annual reports shall be due on August 1 and February 1 following each semi-annual period; Annual reports shall be due on February 1 following each calendar year.

3. Monitoring periods and reporting for all required monitoring shall be completed according to the schedule specified in Table E-9.

Table E-9. Monitoring and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	October 1, 2006	All	First day of second calendar month following month of sampling
Monthly	October 1, 2006	1st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
Quarterly	October 1, 2006	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31	May 1 August 1 November 1 February 1
Semiannually	October 1, 2006	January 1 through June 30 July 1 through December 31	August 1 February 1
Annually	October 1, 2006	January 1 through December 31	February 1

4. The Discharger shall report with each sample result the applicable Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in 40 CFR Part 136.

5. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations.

6. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

7. Other reports, as required by this Order, shall be submitted to the Regional Water Board according to the following schedule:

   a. *Proposal for Information Collection* regarding Clean Water Act Section 316(b) *Comprehensive Demonstration Study* will be due no later than 180 days after the effective date of this Order.

   b. Clean Water Act 316(b) *Comprehensive Demonstration Study* will be due no later than January 9, 2008.

c. The Receiving Water Monitoring Report is due by August 1 of each year flowing the previous calendar year's receiving water monitoring activity.

8. Self Monitoring Reports, signed and certified as required by Attachment D of this Order, must be must be reported on forms approved by the Regional Water Board and submitted to the following address:

   Industrial Compliance Unit
   California Regional Water Quality Control Board
   San Diego Region
   9174 Sky Park Court, Suite 100
   San Diego, CA 92123-4340

C. Discharge Monitoring Reports (DMRs)

1. As described in Section X.B.1 above, at any time during the term of this permit, the State or Regional Water Board may notify the discharger to electronically submit self-monitoring reports. Until such notification is given, the Discharger shall submit discharge monitoring reports (DMRs) in accordance with the requirements described below.

2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharge shall submit the original DMR and one copy of the DMR to the address listed below:

   State Water Resources Control Board
   Discharge Monitoring Report Processing Center
   Post Office Box 671
   Sacramento, CA 95812

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated or modified cannot be accepted.

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ATTACHMENT F – FACT SHEET

As described in Section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

I. Permit Information

Table F-1 summarizes administrative information related to the facility.

Table F-1. Permit Information

WDID	9 000000092
Discharger	Cabrillo Power I LLC
Name of Facility	Encina Power Station
Facility Address	4600 Carlsbad Boulevard Carlsbad, CA 92008 San Diego County
Facility Contact, Title and Phone	Sheila Henika , P.E., Environmental Engineer, (760) 268-4018
Authorized Person to Sign and Submit Reports	Jerry L. Carter, Plant Manager, (760) 268-4000
Mailing Address	SAME
Billing Address	SAME
Type of Facility	Industrial, SIC #4911
Major or Minor Facility	Major
Threat to Water Quality	1
Complexity	A
Pretreatment Program	N
Reclamation Requirements	N/A
Facility Permitted Flow	863.5 mgd
Facility Design Flow	863.5 mgd
Watershed	
Receiving Water	Pacific Ocean
Receiving Water Type	Marine

A. Cabrillo Power I LLC (hereinafter Discharger) is the owner of Encina Power Station (hereinafter Facility) a steam electric generating facility, located in the City of Carlsbad, California, adjacent to the Agua Hedionda Lagoon on the Pacific Ocean. The Encina Power Station is located in Section 18, T12S, R4W, SBBM.

B. The Facility discharges wastewater to the Pacific Ocean, a water of the United States and is currently regulated by Order No. 2000-03 which was adopted on February 9, 2000 and expired on February 8, 2005. The terms of the existing Order automatically continued in effect after the permit expiration date.

C. The Discharger filed a report of waste discharge and submitted an application for renewal of its Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit on June 23, 2004. The Discharger submitted supplemental information regarding an impingement mortality and entrainment study on September 9, 2004.

II. Facility Description

A. Description of Wastewater Sources, Treatment and Controls

The Encina Power Station is a fossil-fueled steam electric power generating station comprised of five steam turbine generators and one gas turbine generator for a total maximum generating capacity of 939 megawatts. Table F-2 lists the generating capacity for each unit and the date the unit began operating. Natural gas is the primary fuel with fuel oil used for power generation during peak capacity or emergency periods. Once-through cooling water is withdrawn from the Pacific Ocean via the Agua Hedionda Lagoon at a maximum rate of 857.3 million gallons per day (mgd). A single cooling water system serves the five steam generating units; the gas turbine is air-cooled.

Table F-2. Generating Capacity

Generating Unit	In-service Year	Net Generating Capacity (MWe)
Unit 1	1954	107
Unit 2	1956	104
Unit 3	1958	110
Unit 4	1973	287
Unit 5	1978	315
Gas Turbine	1968	16

The Discharger's Report of Waste Discharge indicates that a maximum of approximately 863 mgd of wastewater is discharged through Discharge Point 001. Internal discharge point designations (001-A through 001-H) are based on the discrete location at which the in-plant waste stream discharges to the main waste stream. The discharges from Encina Power Station are made up of the cooling and in-plant waste streams specified in Table F-3.

Table F-3. Discharge Points and In-plant Waste Streams

Discharge Point	Wastewater Discharge*	Maximum Flow (mgd)
001	**Once-through (non-contact) cooling water**	**857.3**
001	(a) Condenser cooling	--
001	(b) Cooling water pump lubrication and seal water	--
001	(c) Cooling water pump lubrication and seal water pretreatment backwash	--
001	(d) Salt water heat exchanger	--
001	(e)Traveling screen backwash water	--
001	(f) Tunnel and forebay cleaning	--
001	(g) Hypochlorinator bearing cooling water	--
001-A	**Metal cleaning wastes**	**0.7971**
001-A	(a) Boiler chemical cleaning	--
001-A	(b) Hypochlorinator chemical cleaning	--
001-A	(c) Evaporator chemical cleaning	--
001-A	(d) Air heater wash	--
001-A	(e) Boiler fireside wash	--
001-A	(f) Selective catalytic reduction wash	--
001-B	**Seepage and groundwater pumping**	**1.368**
001-C	**Boiler blowdown**	**0.372**
001-D	**Freshwater reverse osmosis brine**	**0.087**
001-E	**Seawater reverse osmosis brine**	**0.864**
001-F	**Fuel Line/Tank hydrotests**	**0.900**
001-G	**Poseidon pilot desalinization plant**	**0.288**

Discharge Point	Wastewater Discharge*	Maximum Flow (mgd)
001-H	**Low volume waste treatment facility (LVWTF)**	**0.2115**
001-H	(a) Evaporator blowdown	--
001-H	(b) Sample drains	--
001-H	(c) Floor drains	--
001-H	(d) Demineralizer regenerants	--
001-H	(e) Softeners	--
001-H	(f) Condenser cleaning	--
001-H	(g) Sand filter backwash	--
001-H	(h) Portable demineralizer rinse flush	--
001-H	(i) R.O. Membrane cleaning	--
001-H	(j) Salt water heat exchanger drains	--
001-I	**Stormwater**	**1.280**

*Bold entries indicate discrete discharge points and may represent an aggregate of the contributing waste streams listed below.

Over the previous four years, the Encina Power Station has reported combined discharge flows ranging from 99.8 mgd to 794.9 mgd with a daily average of 600.4 mgd. Most of the combined discharge consists of once-through cooling water, with low volume wastes contributing an average of only 0.121 mgd and with no metal cleaning waste having been discharged in the last four years. Domestic wastewater is discharged to the municipal sewer system for treatment and disposal. Attachment C contains a water balance diagram containing the configuration and maximum flow rates for each waste stream.

1. **Cooling Water System and Associated Wastes (Discharge Point 001)**

   Cooling water is withdrawn from the pacific Ocean via the Agua Hedionda Lagoon. The cooling water intake structure complex is located approximately 2,200 feet from the ocean inlet to the lagoon. Variations in the water surface level due to tide are from a low of -5.07 feet to a high of +4.83 feet (elevation 0 = mean sea level, or msl). The intake structure is located in the lagoon approximately 525 feet in front of the generating units.

   The mouth of the intake structure is 49 feet wide. Booms are situated in the lagoon across the front of the intake structure to screen floating debris. Water passes through metal trash racks (vertical bars spaced 3-1/2 inches apart) to screen large debris. The intake forebay tapers into two 12-foot wide intake tunnels. From these tunnels, water enters one of four 6-foot wide conveyance tunnels. Cooling water for conveyance tunnels 1 and 2 passes through two vertical traveling screens to prevent fish, grass, kelp, and debris from entering intakes 1, 2, and 3. Conveyance tunnels 3 and 4 carry cooling water to intake 4 and 5, respectively. Vertical traveling screens are located at the intakes of pump 4 and pump 5.

   Each pump intake consists of two circulating water pump cells and one or two service pump cells. During normal operation, one circulating water pump serves each half of the condenser, i.e. when a unit is on line, both pumps are in operation.

   Seven vertical traveling screens remove any fish or debris that has passed through the trash racks. The screens are conventional through-flow, vertically rotating, single entry-single exit, band-type screens and are mounted in the screen wells of the intake channel. Each screen consists of a series of baskets or screen panels attached to a chain drive. The screening surface is made of 3/8-inch stainless steel mesh panels, with the exception

of the Unit 5 screens, which have 5/8-inch square openings. The screens rotate automatically when the buildup of debris on the screen face causes the water level behind the screen to drop below that of the water in front of the screen and a predetermined pressure differential is reached. The screens rotate at a speed of 3 feet per minute, making one complete revolution in approximately 20 minutes. A screen wash system, using sea water from the intake tunnel, washes the debris from the traveling screen into a debris trough. Accumulated organic debris is discharge to Discharge Point 001.

The condensers are a shell-and-tube arrangement in which heat is transferred from the turbine exhaust steam to the circulating (cooling) water. Units 1, 2, and 3 have two-pass condensers (water enters the bottom, passes through the condenser twice, and exits the top). The tubing, made of No. 18 BWG aluminum-brass, has a 30-foot length and a 1-inch outside diameter. The condensers for Units 4 and 5 are a single-pass design. The tubing is No. 20 BWG copper-nickel with a 36-foot length and 1 and 1/8-inch outside diameter.

Wastewater discharges associated with the operation of the cooling water system discharge directly to Discharge Point 001 without additional treatment.

a. Cooling Water Pump Lubrication and Seal Water Pretreatment Backwash

The circulating water pumps have bronze bearings that are sealed and lubricated with either seawater or fresh water. Where seawater is used, it must first be filtered to prevent solids from reaching and damaging the bearings. Filtration of the seawater is accomplished using small microfiltration units. These units are designed to automatically backwash every hour to remove the accumulated solids from the filtering media. The backwash water is routed to the once-through cooling water system.

b. Salt Water Heat Exchanger Cooling Water.

Once-through cooling water is used to cool facility equipment in addition to condensing steam. Cooling of facility equipment is accomplished through the use of auxiliary heat exchanger systems that use salt water to cool a closed-loop “service water” system that is piped throughout the facility to cool equipment. There are four heat exchange systems with each system comprised of two individual heat exchangers. Normally, only one heat exchanger is used at a time. Under certain operating conditions, however, both heat exchangers in a system may operate at the same time. The once-through cooling water used in the heat exchangers is discharged to the main once-through cooling water discharge tunnel.

The salt water condenser leaks intermittently and infrequently. When leaks do occur, however, they can cause significant operational problems and increase the frequency of boiler chemical cleanings. The Discharger uses alfalfa (or other acceptable materials approved by the Executive Officer) to temporarily plug leaks to allow the unit to function until such time as the system can be removed from service for repair.

c. Traveling Screen Backwash Water

Traveling screens are used to remove small debris from the cooling water stream that could otherwise interfere with the heat exchange process in the condenser tubing. As each screen is rotated, a high-pressure spray washes any accumulated debris off the screen face into debris baskets. Water for the high-pressure spray is pumped from the once-through cooling water flow to the spray heads. The water that removes the

debris drains through the baskets and screen panels and re-enters the once-through cooling water flow. Organic debris removed from the screens is discharged to the discharge channel.

d. Tunnel and Forebay Cleaning

Over time, sediment from the Agua Hedionda Lagoon and shells from encrusting organisms that grow on the tunnel walls can accumulate in the facility's cooling water intake tunnels and forebays to an extent that it threatens to restrict the flow of cooling water to the units during low tide conditions. Cleaning of the cooling water tunnels and pump forebays is conducted periodically to remove the accumulated debris. Because tunnel/forebay cleaning is normally conducted during a unit overhaul, only the tunnel or forebay for the unit removed from service is cleaned at a given time. Tunnel/forebay cleaning for an individual unit is conducted approximately once every one to three years. Water from the tunnel/forebay being cleaned is pumped to the cooling water discharge tunnel. Resulting materials from the cleaning process are discharged to either the cooling water discharge tunnel of to the cooling water discharge pond.

e. Hypochlorinator DC Rectifier Cooling Water

The Discharger produces its own sodium hypochlorite for use in chlorinating the cooling water system. Make-up water is drawn from the once-through cooling water stream and passed through the DC rectifier. A small volume of once-through non-contact cooling water is used to cool the DC rectifier and is discharged to the cooling water system. This cooling water stream runs continuously only when the rectifier is in operation. When all cooling pumps are in operation, the hypochlorinator generator runs approximately 85-100% of the time.

2. **Metal Cleaning Wastes (Discharge Point 001-A)**

All wastewaters from metal cleanings and washings are collected in one or both of the wastewater receiving tanks that comprise the Metal Cleaning Treatment Facility (MCTF). They are then neutralized, flocculated, chemically precipitated and filtered to remove metals and solids and routed to wastewater tanks, where they are held for testing prior to discharge. When the MCTF effluent is deemed compliant with all applicable effluent limitations, the treated wastewater is discharge to the once-through cooling system. Discharges normally occur daily during the processing of wastewater from metal cleanings and washes. The sludge generated by the treatment process is dewatered using a filter press and disposed of in a landfill permitted to receive such wastes. Metal cleaning wastes are generated from the following processes:

a. Chemical Cleaning

Boiler tube waterside cleanings are performed using either a dilute acid solution or an organic chelant-based cleaning solution. The boiler to be cleaned is drained of the water it contains and filled with fresh water, then fired to heat the water and metal up to treatment temperature. When the required temperature is attained, a "fast drain" is performed. The warm water is pumped back into the boiler with the chemicals mixed into the water during pumping. At this point, the boiler is allowed to sit for six hours with the cleaning solution inside. The temperature is monitored so that if the system cools too quickly it can be drained sooner. After the treatment process, another "fast drain" is performed, followed by several rinse cycles. The third rinse typically contains

citric acid, while the final volume of water contains phosphate and sodium hydroxide as neutralizing agents. Chemical cleaning discharges to the MCTF normally occur daily during the cleaning process, with the treated wastes discharged to the once-through cooling system over the course of two to four weeks. An individual unit's boiler is typically cleaned once every six to seven years. Conditions may occur, however, that require more frequent cleaning.

b. Air Heater Wash

Air heater and air pre-heater fireside washes are performed to remove soot and accumulated combustion by-products from metal surfaces in order to maintain efficient heat transfer. These washes are accomplished by spraying high-pressure municipal water against the surfaces to be cleaned. The resulting wastewater contains an assortment of dissolved and suspended solids with loadings and constituents that are dependent on the nature and quality of the fuel and metals from corrosion of the heater. Air heater wash discharges to the MCTF normally occur daily during the cleaning process, with the treated wastes discharged to the once-through cooling system over the course of two to four weeks.

c. Boiler Wash

Boiler tube fireside washes are performed to remove soot and accumulated combustion by-products from metal surfaces in order to maintain efficient heat transfer. These washes are accomplished by spraying high-pressure municipal water against the surface to be cleaned. The resulting wastewater contains an assortment of dissolved and suspended solids with loadings and constituents that are dependent on the nature and quality of the fuel and metals from corrosion of the boiler. Boiler wash discharges to the MCTF normally occur daily during the cleaning process, with the treated wastes discharged to the once-through cooling system over the course of two to four weeks.

d. Hypochlorinator Chemical Cleaning

Cleaning of the hypochlorinator electrolytic cells is conducted approximately once every six weeks to remove mineral scale. Wastewaters from the cleaning are routed to the MCTF for treatment and subsequent discharge to the once-through cooling system.

3. **Low Volume Wastes (Discharge Points 001-B through 001-H)**

a. Seepage and Groundwater Pumping (Discharge Point 001-B)

The basements of Units 4 and 5 are over sixteen feet below sea level. Hence, they receive a large amount of seepage from groundwater. In order to prevent flooding of these basements, sumps were installed to collect the seepage water. Pumps automatically discharge the sump contents directly to the once-through-cooling system.

b. Boiler Blowdown (Discharge Point 001-C)

The boilers at the facility require high quality water to operate at optimal conditions. The high quality water is prepared for use in the boilers from municipal water through one of several pretreatment systems (reverse osmosis/demineralization or water

softening/evaporation). Despite the pretreatment systems employed, the dissolved solids concentration of boiler water increases over time. To reduce the dissolved solids content, the boiler is "blown down", i.e. a valve is opened on the steam discharge line to release boiler water with elevated concentrations of dissolved solids. At the same time, make-up water treated through the pretreatment system is added to the boiler. Blowdown discharges are intermittent and infrequent under normal unit operating conditions, and are determined largely by boiler water chemistry. Blowdown also occurs during unit start-up and in the event of condenser leaks. In order to meet NPDES monitoring requirements, boilers in operation are blown down monthly to collect appropriate samples. The blow down line for each unit is routed directly to the cooling water intake tunnel on the cooling water deck.

c. Freshwater Reverse Osmosis Brine (Discharge Point 001-D)

Municipal water used in the boilers to generate steam must first be pretreated to produce demineralized water. As a first step in the reverse osmosis/demineralization water purification process, municipal water is passed through sand filters to remove suspended solids. The reverse osmosis membrane removes dissolved solids and discharges the resulting "brine" (composed of approximately 25% of the incoming water and the rejected solids) directly to the once-through cooling water system. Brine discharges normally occur intermittently throughout each day.

d. Seawater Reverse Osmosis Brine and Backwash (Discharge Point 001-E)

It is anticipated that, in the event of a fresh water shortage, a reverse osmosis unit may be used to produce water for plant operations from seawater. Depending on the suspended solids loadings of the source water, it may need to be pretreated to remove the solids prior to treatment in the reverse osmosis unit. This system has not yet been installed. It is anticipated, however, that when it is operational the pretreatment discharges would occur intermittently throughout the day and be combined with the brine prior to discharge to the once-through cooling system.

It is anticipated that the proposed seawater reverse osmosis unit would produce a "brine" composed of approximately 60% of the incoming water and the rejected solids. This brine would be discharged through a line that is routed directly to the once-through cooling system. Discharge of the brine would occur intermittently throughout the day.

e. Fuel Line/Tank Hydrotests (Discharge Point 001-F)

EPS has the capability of using Residual Fuel Oil for boiler fuel. This fuel is stored in large floating roof tanks onsite. To repair a fuel tank or fuel line it is drained and cleaned. After a fuel tank or fuel line repair, a hydrotest is performed to verify system integrity. The water used for this hydrotest is then discharged to a stormwater drain.

f. Pilot Desalinization Plant (Discharge Point 001-G)

In September, 2002 the Regional Water Board approved the installation and operation of the seawater desalinization plant as proposed by Poseidon Resources. In January 2003, Poseidon initiated seawater desalinization operations and testing in accordance with the conditions set forth by the Regional Water Board in a letter dated September 24, 2004.

The Regional Water Board approved the diversion of up to 104 gallons per minute (gpm) (0.015 mgd) of water from the cooling water discharge pond to a pretreatment system (sand filtration or microfiltration) for removal of suspended solids. On June 11, 2004 the Discharger submitted a request to increase the diversion rate to 200 gpm (0.288 mgd).

A portion of the pretreated water is conveyed to an reverse osmosis system for membrane filtration treatment and production of desalinated water.

The waste streams generated by operation of the pilot plant are routed directly back to the cooling water discharge pond on a continuous basis while operating. Based on the 200 gpm diversion rate, the effluent components include:

i. Backwash water from pretreatment system (20 gpm)
ii. Wasted pretreated seawater (130 gpm)
iii. Backwash water from the R.O. system (waste brine) (25 gpm)
iv. Product (desalinated) water (25 gpm)

In addition to the above waste and product streams, the pilot plant also produces intermittent discharges of waste from the reverse osmosis filtration membrane cleaning. This is necessary for the removal of mineral deposits, which may interfere with the optimal operation of the membrane. The intermittent process generates a small stream of wastewater that can either be routed to the facility's cooling water discharge pond or may be discharged to the sewer system.

g. Low Volume Waste Treatment Facility (LVWTF) (Discharge Point 001-H)

The LVWTF treats all of the facility's low volume wastewaters, except for reverse osmosis brine, boiler blowdown, seawater reverse osmosis pretreatment backwash, fuel line/tank hydrotest and groundwater dewatering from the Units 4 and 5 basement subdrain systems. The LVWTF is comprised of two 100% capacity wastewater treatment trains. Each train is composed of a Surge & Equalization Tank (to accommodate the various intermittent wastewater flows and flow rates from the facility) and an Oil/Solids Coalescer and Separator Unit. Effluent from the LVWTF is discharged to the facility's once-through cooling water system. Discharges occur intermittently throughout the day based on the wastewater flow rate from the facility. Filtration of the low volume wastewater in the metal cleaning waste treatment facility's multimedia filter may be performed as an alternative treatment or as a back-up treatment in the event the oil/solids separator becomes inoperable. The contributing waste streams to the LVWTF are described below:

i. Evaporator Blowdown. Evaporators are an integral component of an alternate boiler make-up water pretreatment system (i.e. water softening/evaporation). When the total dissolved solids in the evaporator increase to preset levels, a portion of the evaporator water is discharged to the LVWTF to flush out high mineral-content water. When in use, blowdown discharges occur intermittently throughout the day. Evaporators are not routinely used, but remain available as part of the facility's alternative water make-up system.

ii. Sample Drains. The facility must maintain the quality of water used in different systems (e.g. boiler water) within certain operational parameters. This is

accomplished by the use of online automatic samplers/analyzers and discrete samples to evaluate water quality. Many of these sample streams run continuously. Some of the sample water is recovered for reuse in the facility, while the rest is discharged to the LVWTF.

iii. Floor Drains. Floor drains are located throughout the facility and, in addition to being used for routing low volume waste streams to the LVWTF, are used to collect miscellaneous wastewaters from the facility's operating equipment. Wastewater that enters a floor drain is collected in sumps. Once a sump reaches a preset level, the water is pumped to the LVWTF.

iv. Demineralizers. Demineralizers are used as the second and final step in the plant's primary make-up water treatment process (i.e. reverse osmosis, demineralization). The demineralizers further polish boiler water first treated in the freshwater reverse osmosis system. Over time, demineralizer resins become exhausted and need to be regenerated using an acid/caustic process. Regenerants flushed from system are routed to the LVWTF. Demineralizer resin regeneration occurs on a periodic basis (approximately once every three weeks) based on facility operations and the demand for make-up water.

v. Softeners. Water softening is part of the alternate make-up water pretreatment system (i.e. water softening/evaporation). Municipal water is pretreated through a softener prior to being routed to the evaporator. Periodically, the softener requires regeneration using a brine solution made from salt. Regenerations wastes are routed to the LVWTF. Water softening is not routinely used, but remains available for use in the alternate make-up water system. When in use, the softener requires regeneration approximately once per day based on facility operations and the demand for make-up water.

vi. Condenser Cleaning. Periodic manual cleaning of the condenser tubes is conducted to maintain optimal heat transfer of the cooling system and prevent localized pitting of the tube material. Manual cleaning is conducted using a high-pressure air/water stream forced through the tubes and/or metal or plastic scrapers pushed through the tubes using water pressure. Cleanings are periodic (approximately once every 2 to 12 weeks) and occur more frequently during the summer months when water temperatures are higher and the growth of fouling organisms is more pronounced. Cleaning wastes are discharged to the LVWTF.

vii. Sand Filter Backwash. Water passed through the freshwater reverse osmosis. membranes is pretreated through sand filters to remove suspended solids and debris to prevent premature fouling of the membranes. The sand filters require periodic backwashing to maintain their effectiveness. The frequency of backwashes is dependent on the load of suspended solids present in the municipal water and can occur on a daily basis. Wastewaters generated by the backwash process are routed through a self-neutralization tank prior to discharge to the LVWTF.

viii. Portable Demineralizer Rinse Flush. Under certain circumstances (e.g. main demineralizer is out of service, unit service after overhaul) a portable demineralizer(s) is brought on-site to provide demineralized water to the facility. Prior to using the water produced by the portable system, the system is run until the water produced is of the quality required by the facility's systems. This "rinse flush"

water is discharged to the LVTWF. Use of portable demineralizer units is infrequent. The "rinse flush" may last approximately one to two hours at the beginning of each use of the unit.

ix. Reverse Osmosis Membrane Cleaning. The membranes in the reverse osmosis unit require occasional cleaning to remove mineral deposits from the membrane surface. Membrane cleaning occurs approximately once every six months, but the actual frequency depends on the fouling rate of the membranes. Wastewaters generated by the cleaning process are routed to a self-neutralization tank and then to the LVWTF.

x. Salt Water Heat Exchanger Drains. Once-through cooling water is used to remove waste heat from facility machinery in addition to condensing steam. Leaks that occur from the heat exchangers are drained to the LVWTF.

4. Storm Water (Discharge Point 001-I)

Storm water collected in Basins D and E is discharged under this Order. Basins D and E drain areas containing the following: Power Station, gas turbine, main transformers, paint booth, and sodium hypochlorite tanks, sulfuric acid and sodium hydroxide tanks, employee parking area, administrative buildings and maintenance building. All other storm water (Basins A, B, C, F) discharge under authority of the General Permit for Industrial Storm Water Discharges (CAS000001).

B. Chlorination

Intermittent chlorine treatment is used to minimize the formation of slime, which accumulates in the condenser tubes if control measures are not employed. Sodium hypochlorite is generated on-site, as needed, through electrolytic conversion of sodium chloride naturally present in seawater. Seawater from the intake is pumped through each of the two hypochlorinators, which are comprised of electrolytic cell modules arranged in series. The sodium hypochlorite produced is fed into a holding tank where it is diluted with intake water. Hypochlorination is conducted for approximately five minutes per hour per unit on a timed cycle by injecting the diluted sodium hypochlorite into the intake channel immediately upstream of the circulating and salt water pumps for each unit. This method results in a minimal chlorine residual in the cooling water discharged to the Pacific Ocean. Periodic cleanings using nitric and hydrochloric acid are required to remove accumulated mineral scale from the hypochlorinators. Wastes from these cleanings are routed to the LVWTF.

A bromide additive (sodium bromide), which reacts with chlorine to form hypobromous acid, and a biodispersant (Nalco Sure Cool 1367) were tested between 1989 and 1991 at the SDG&E (now Duke Energy) South Bay Power Plant for their ability to control biofouling on the cooling water side of the condensers. Based on this testing, the Discharger may use sodium bromide and the biodispersant (or equivalent) at the Encina Power Station. Test methods for total residual chlorine (TRC) measure total residual oxidants, which include hypobromous acid. Consequently, the TRC effluent limitation in this Order regulates the discharge of bromide.

C. Heat Treatment

Encrusting organisms in the early stages of development are small enough to pass through the traveling screens and enter the intake tunnels and condenser tubing. These organisms can attach themselves to the tunnel walls, traveling screens, and other parts of the cooling

water system. If not removed, the encrusting organisms grow and accumulate at a rate of approximately 1000 cubic yards over a 6-month period. These accumulations restrict the flow of cooling water to and through the condensers, causing a rise in the condenser operating temperature and the once-through cooling water discharge temperature. Although intermittent chlorination is practiced at the facility, only the condensers and salt water heat exchangers are chlorinated. Due to the ability of encrusting organisms to withstand intermittent exposure to chlorine, effective control of biofouling would require continuous chlorination of the entire intake system. This is not viable due to the large volume of chlorine or bromide required. Consequently, thermal tunnel recirculation treatment procedures, or heat treatments are conducted periodically at five to eight week intervals, or as determined by the Heat Treatment Decision Diagram in Attachment G. In addition to preventing the disruption of cooling water flows, heat treatment helps maintain a lower temperature rise across the condenser, thereby improving plant efficiency and reducing normal plant cooling water discharge temperatures.

Heat treatment is performed by restricting the flow of cooling water from the Agua Hedionda Lagoon and recirculating the condenser discharge water through the conveyance tunnels and condensers until the inlet temperature is increased to the effective treatment temperature. Recirculation of the cooling water is accomplished through a cross-over tunnel located approximately 120 feet from the discharge, adjacent to the intake tunnel. The temperature is raised to 105°F and maintained (heat soak) for approximately two hours. This temperature and duration have proven effective at killing and removing encrusting organisms.

Each time the cooling water passes through the condensers, it picks up additional heat rejected from the steam cycle—as much as 15°F per pass. Because the cooling water continues to circulate and the generating units continue to operate, the post-condenser temperature in the discharge channel can reach 120°F. To maintain the optimal treatment temperature of 105°F during the heat soak phase, additional lagoon water is blended into the cooling water system and a corresponding volume of water is discharged to the Pacific Ocean.

The heat treatment duration of two hours represents the total duration of the process once the cooling water has reached the optimal treatment temperature of 105°F; this does not include the time required to reach the target temperature or return to normal operations. The total time for heat treatment, including temperature buildup and cool-down is approximately seven to nine hours. Because the cooling water discharge is restricted during the heat treatment in order to recirculate the heated effluent, the plant's discharge flow rate is reduced to approximately 7 to 45 percent of its full flow rate during normal operations.

III. Discharge Points and Receiving Waters

Cooling water from the condensers from all five steam generating units, as well as all in-plant waste streams (metal cleaning, low volume wastes, storm water), flows into a common discharge tunnel. The concrete discharge tunnel (15 feet wide) runs along the east side of the inlet conveyance tunnels, past the traveling screen structures, then crosses under the inlet tunnels and runs parallel to the west side of the conveyance tunnels. The cooling water flows into a discharge pond before discharging into a riprap-lined channel, a surface jet discharge, and then into the Pacific Ocean (Discharge Point 001). The coordinates for Discharge Point 001 are 32°-57'-45" N, 117°-16'-05" W.

The waters and beaches along the area of coast surrounding the Encina Power Station provide excellent opportunities for water-related recreational activities, which include sightseeing, sunbathing, swimming, surfing, diving, fishing, camping, picnicking, bird watching and boating.

IV. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

Discharge Monitoring Reports submitted to the Regional Water Board indicate that the Discharger consistently fulfills the monitoring requirements of Order No. 2000-03 and consistently meets the discharge limitations and conditions imposed by that Order. Monthly Discharge Monitoring Reports from February 2001 through December 2004 were examined to compile the following characterization of discharges from the Encina Power Station through Discharge Point 001:

A. Flow

The combined discharge through Discharge Point 001 did not exceed 795.1 mgd, with an average monthly discharge of 599 mgd, during this 47-month period. Main condenser cooling water flow consistently accounts for greater than 99.7 percent of the combined discharge through Discharge Point 001. Order No. 200-03 included a maximum flow limitation for discharges through Discharge Point 001 of 863.142 mgd.

The average monthly flow of low volume wastewaters was 0.192 mgd, with a daily maximum flow of 1.074 mgd during this period. Metal cleaning wastes were not discharged during this period.

B. Temperature

The daily average temperature differential (ΔT) in cooling water through the main condenser was 12º F, and the maximum observed daily ΔT was 23.6º F during this period. Order No. 2000-03 included a daily average ΔT of 20º F, with a maximum permissible ΔT of 25º F.

Heat treatments are conducted periodically to control Bay Mussel growth within the condenser and cooling water lines. Order 2000-03 prohibits the temperature of the combined discharge to exceed 120º F for a maximum of two hours during heat treatments. Typical heat treatments at the Encina Power Station result in target temperature of approximately 103º F that is maintained for two hours. The maximum ΔT reported during heat treatments during the period was 46.9º F. The frequency of heat treatments is determined, in part, by a growth model for the Bay Mussel. The average number of heat treatments conducted per year is six.

C. Combined Discharge

1. Between January 2001 and November 2003 the Discharger has analyzed the combined discharge from Discharge Point 001 six times for the parameters listed in Table F-4. The analytical results for all parameters were below the applicable effluent limitations derived from water quality criteria of the Ocean Plan when taking into consideration a minimum probable initial dilution of 15.5 to 1. Summary data are presented in Table F-4. (Note: Figures that appear in **bold** in Table F-4 are measured concentrations. Other figures are the analytical method detection limits reported by the lab; i.e. the lab result was reported as ND (not detected)).

Table F-4. Combined Discharge Effluent Monitoring Data for Toxic Parameters

Parameter	Previous Limitation (Order 2000-03)	Units	Sample Date					
			1/29/2001	7/26/2001	2/25/2002	8/27/2002	5/21/2003	11/10/2003
Arsenic	1,300	µg/L	0.5	0.5	0.56	0.56	**1.7**	0.5
Cadmium	170	µg/L	0.5	0.5	0.56	0.56	0.5	0.5
Chromium (Hexavalent)*	330	µg/L	0.5	**0.51**	0.56	0.56	**0.85**	0.5
Copper	460	µg/L	**13**	2.5	2.8	2.8	2.8	2.5
Lead	330	µg/L	2.5	2.5	2.8	2.8	2.8	2.5
Mercury	6.6	µg/L	0.1	0.1	0.1	0.1	0.1	0.1
Nickel	830	µg/L	**9.5**	2.5	2.8	2.8	2.8	2.5
Zinc	3,200	µg/L	**10**	10	10	12	11	10
Acute Toxicity Daily Maximum	2.0	TU_a	0.59	0.51	0.73	0.59	0.41	0.65
Acute 6-month Median	1.5	TU_a	0.5	0.26	0.37	0.3	0.21	0.44
Chronic Toxicity (Germination)	16.5	TU_c	4	4	4.17	1	1	1
Chronic Toxicity (Growth)	16.5	TU_c	8	4	8.33	1	2	1

*Chromium reported as total chromium

2. Average monthly total chlorine residuals and pH were consistently measured to be less than the effluent limitations established by Order 2000-03. The majority of chlorine residual samples taken from February 2001 through May 2004 were not detected. Average pH values were consistently within the range of 6.0 to 9.0. Summary data are presented in Table F-5.

Table F-5. Combined Discharge Effluent Monitoring Data for Chlorine and pH

Parameter	Previous Limitation (Order 2000-03)	Units	Minimum	Maximum
Chlorine residual (Instantaneous Maximum)	200	µg/L	ND	60
pH	6.0 – 9.0	standard units	7.88	8.19

3. Average monthly turbidity levels were consistently measured to be less than the effluent limitations established by Order 2000-03. Summary data for the period of February 2001 through May 2004 are presented in Table F-6.

Table F-6. Combined Discharge Effluent Monitoring Data for Turbidity

Parameter	Previous Limitation (Order 2000-03)	Units	Minimum	Maximum
Turbidity (Daily Maximum)	100	NTU	ND	4.5
Turbidity (Instantaneous Maximum)	225	NTU	ND	4.5

D. Low Volume Wastes

1. The Discharger reported low volume waste flows from the following sources during the period of February 2001 through May 2004: boiler and evaporator blowdown, sample and floor drains, water purification systems (demineralization and reverse osmosis), and seepage and groundwater. Low volume waste flow volumes typically represent a small percentage of the overall volume of water discharged through Discharge Point 001. During the review period, the Discharger reported a maximum low volume waste flow of 1.074 mgd, or approximately 0.14% of the total facility discharge. Low volume waste flows average 0.192 mgd.

2. Results for combined low volume waste monitoring for total suspended solids (TSS) and oil and grease (O&G) during the review period are in summarized in Table F-7. Sample results were consistently less than the effluent limitations established by Order 2000-03. (Note: Figures that appear in **bold** in Table F-7, are measured concentrations. Other figures are the analytical method detection limits reported by the lab; i.e. the lab result was reported as ND (not detected). Order 2000-03 required the Discharger to monitor TSS and O&G once per month. The single sample is subject to all applicable effluent limitations (monthly average, daily maximum, instantaneous maximum). The most stringent limitation (monthly average) is presented.)

Table F-7. Low Volume Waste Effluent Monitoring Data for TSS and Oil and Grease

Parameter	Previous Limitation (Order 2000-03)	Units	Minimum	Maximum
TSS	30	mg/L	**0.02**	**4.2**
O&G	15	NTU	0.4	**4.5**

3. Between January 2001 and February 2004, the Discharger sampled and analyzed the combined low volume waste discharger six times for the toxic pollutants listed in Table F-8. Sample results were consistently less than the effluent limitations established by Order 2000-03 when taking into consideration a minimum initial probable dilution of 15.5 to 1. Except as noted, effluent limitations are for a 30-day average. (Note: Figures that appear in **bold** in the Table F-8 are measured concentrations. Other figures are the analytical method detection limits reported by the lab; i.e. the lab result was reported as ND (not detected). Order 2000-03 required the Discharger to monitor the parameters listed above once every six months. The single sample is subject to all applicable effluent limitations (6-month median, daily maximum). The most stringent limitation (6-month median) is presented.)

Table F-8. Low Volume Waste Effluent Monitoring Data for Toxic Parameters

Parameter	Previous Limitation (Order 2000-03)	Units	Sample Date					
			1/29/2001	7/26/2001	2/25/2002	8/27/2002	5/21/2003	11/10/2003
Arsenic[1]	620	lbs/day	0.001	0.004	0.001	0.001	**0.002**	0.000
Cadmium[1]	120	lbs/day	0.001	0.004	0.001	0.001	0.001	0.000
Chlorinated Phenolic Compounds[1]	120	lbs/day	0.012	0.010	0.163	0.011	0.015	0.010
Chromium (Hexavalent)[1]	240	lbs/day	0.001	**0.001**	0.002	**0.001**	**0.002**	**0.001**
Copper[1]	130	lbs/day	**0.015**	**0.011**	0.039	**0.026**	**0.024**	**0.017**
Cyanide[1]	120	lbs/day	0.006	0.004	**0.011**	0.006	0.018	0.012
Lead[1]	240	lbs/day	0.003	0.002	**0.008**	0.003	0.004	0.002
Mercury[1]	5	lbs/day	0.000	0.000	0.000	0.000	0.000	0.000
Nickel[1]	590	lbs/day	**0.011**	**0.004**	**0.029**	**0.006**	**0.014**	**0.004**
Ammonia[1]	55,000	lbs/day	**0.195**	**0.114**	**0.081**	0.057	0.076	0.049
Non-chlorinated Phenolic Compounds[1]	3,100	lbs/day	0.012	0.010	0.016	0.011	0.015	0.010
Selenium[1]	1,800	lbs/day	0.057	0.044	0.187	0.064	0.091	0.049
Silver[1]	70	lbs/day	0.001	0.000	0.001	0.001	0.001	0.000
Zinc[1]	1,500	lbs/day	**0.012**	**0.009**	**0.016**	0.014	0.017	0.013
Chlorobenzene	68,000	lbs/day	0.006	0.004	0.008	0.003	0.008	0.005
Chromium (III)	23,000,000	lbs/day	0.001	**0.001**	**0.002**	0.001	**0.002**	**0.001**
Dichlorobenzenes	610,000	lbs/day	0.006	0.004	0.008	0.003	0.008	0.005
1,1 Dichloroethylene	840,000	lbs/day	0.006	0.004	0.008	0.003	0.008	0.005
Ethylbenzene	490,000	lbs/day	0.006	0.004	0.008	0.003	0.008	0.005
Nitrobenzene	580	lbs/day	0.012	0.010	0.016	0.011	0.015	0.010
Toluene	10,000,000	lbs/day	0.006	0.004	0.008	0.003	0.008	0.005
1,1,1 Trichloroethane	64,000,000	lbs/day	0.006	0.004	0.008	0.003	0.008	0.005
1,1,2 Trichloroethane	5,100,000	lbs/day	0.006	0.004	0.008	0.003	0.008	0.005
Benzene	700	lbs/day	0.006	0.004	0.008	0.003	0.008	0.005
Chloroform	15,000	lbs/day	**0.007**	0.010	0.008	0.003	0.008	**0.006**
1,4 Dichlorobenzene	2,100	lbs/day	0.001	0.004	0.016	0.011	0.015	0.010
1,2 Dichloroethane	15,000	lbs/day	0.006	0.004	0.008	0.003	0.008	0.005
Dichloromethane	53,000	lbs/day	0.006	0.004	0.008	0.006	0.015	0.010

Parameter	Previous Limitation (Order 2000-03)	Units	Sample Date					
			1/29/2001	7/26/2001	2/25/2002	8/27/2002	5/21/2003	11/10/2003
1,2 Diphelyhydrazine	19	lbs/day	0.012	0.010	0.016	0.011	0.015	0.010
Tetrachloroethane	12,000	lbs/day	0.006	0.004	0.008	0.003	0.008	0.005
Trichloroethane	3,200	lbs/day	0.006	0.004	0.008	0.003	0.008	0.005

V. Planned Changes

The Regional Water Board received an application for NPDES requirements from Poseidon Resources Corporation on October 7, 2005 proposing to construct and operate the Carlsbad Desalination Project (CDP) on a 4 acre parcel within the site of the Encina Power Station. Poseidon Resource Corporation has entered into a renewable 60-year lease with Cabrillo Power I LLC for the desalination project site. The CDP would use 100 mgd of cooling water from the Encina Power Station as source water. NPDES requirements issued to Poseidon for the CDP discharge is an independent regulatory action from Order No. R9-2006-0043.

VI. Applicable Plans, Policies, and Regulations

The requirements contained in the proposed Order are based on the requirements and authorities described in this section.

A. Legal Authorities

This Order is issued pursuant to section 402 of the Federal Clean Water Act (CWA) and implementing regulations adopted by the U.S. Environmental Protection Agency (USEPA) and Chapter 5.5, Division 7 of the California Water Code (CWC). It shall serve as a NPDES permit for point source discharges from this facility to surface waters. This Order also serves as Waste Discharge Requirements (WDRs) pursuant to Article 4, Chapter 4 of the CWC for discharges that are not subject to regulation under CWA section 402.

B. California Environmental Quality Act (CEQA)

This action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21100, et seq.) in accordance with Section 13389 of the CWC.

C. State and Federal Regulations, Policies, and Plans

1. Water Quality Control Plans. The Water Quality Control Plan for the San Diego Basin (9), the Basin Plan, was adopted by the Regional Water Board on September 8, 1994 and approved by the State Board on December 13, 1994. The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. For the protection and enhancement of ocean water quality, the Basin Plan incorporates by reference the provisions of the State Board's Water Quality Control Plan for Ocean Waters of California (Ocean Plan) and the Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (the Thermal Plan).

   Although the Ocean Plan establishes most water quality objectives and procedures for implementing those objectives for ocean discharges, the Basin Plan identifies beneficial uses of the coastal waters of the Pacific Ocean as specified in Table F-9. Basin Plan Beneficial Uses for the Pacific Ocean.

Table F-9. Basin Plan Beneficial Uses for the Pacific Ocean

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Pacific Ocean	a. Industrial service supply b. Navigation c. Contact and non-contact water recreation d. Commercial and sport fishing e. Preservation of Areas of Special Biological Significance (ASBS) f. Preservation of rare, threatened and endangered species g. Marine habitat h. Migration of aquatic organisms i. Shellfish harvesting j. Wildlife habitat k. Spawning, reproduction, and/or early development l. Aquaculture

In addition to incorporating by reference the Ocean Plan and the Thermal Plan, the Basin Plan establishes specific water quality objectives for pH and dissolved oxygen that are applicable to the Encina Power Station.

2. **Thermal Plan and CWA Section 316 (a).** On May 18, 1972 the State Board adopted the Thermal Plan, which includes narrative and numeric water quality objectives for discharges of elevated temperature wastes for existing discharges (those discharges at least under construction prior to the adoption of the Plan) and for new discharges. A revised Thermal Plan was adopted by the State Board on September 18, 1975.

   Under the terms and conditions of the Thermal Plan, elevated temperature wastes from Units 1-4 are classified as existing discharges. The waste from Unit 5, which was constructed after May 18, 1972, is classified as a new discharge.

   Section 316 (a) of the CWA requires compliance with State water quality standards for the discharge of thermal effluent. In 1973, SDG&E (previous owner of EPS) conducted a thermal effects study as required by the Thermal Plan. The study concluded that the existing discharges from Units 1-3 caused no prior appreciable harm to the aquatic communities of the coastal waters of the Pacific Ocean. The Discharger further predicated that the increased discharge from Unit 4 would not cause significant changes in the existing conditions or beneficial uses.

   On March 6, 1975, under provisions of Section 316 (a) of the CWA, SDG&E applied for an exception for the discharger from Unit 5 under the new source performance standards contained in the Thermal Plan and power plant regulations in effect in 1975, specifically:

   a. Thermal Plan Objective 3.B.(1)

      Elevated temperature waste shall be discharged to the open ocean away from the shoreline to achieve dispersion through the vertical water column.

b. Thermal Plan Objective 3.B.(4)

The discharges of elevated wastes shall not result in increases in the natural water temperature exceeding 4°F at (a) the shoreline, (b) the surface of any ocean substrate, or (c) the ocean surface beyond the 1,000 feet from the discharge system. The surface temperature limitation shall be maintained at least 50 percent of the duration of any tidal cycle.

c. Power plant regulations in effect in 1974, 40 CFR 423.15 (L) that there shall be no discharge of heat from the main condensers except:

i. Heat many be discharged in blowdown from recirculated cooling water systems provided the temperature at which the blowdown is discharged does not exceed at any time the lowest temperature of recirculated cooling water prior to the addition of the make-up water.

ii. Heat may be discharged in blowdown from cooling ponds provided the temperature at which the blowdown is discharged does not exceed at any time the lowest temperature of the recirculated cooling water prior to the addition of the make-up water.

On July 16, 1976 the U.S Court of Appeals for the Fourth Circuit remanded certain provisions (including the thermal limitation discussed above) of the power plant regulations in effect in 1974 for further consideration. U.S. EPA has not promulgated a new heat discharge limitation for power plants to date.

SDG&E initiated a study in 1975 for the purpose of making a demonstration under Section 316 (a) of the CWA in support of its application for the exceptions to the Thermal Plan discussed above. As a part of its application for such exceptions under the Thermal Plan, SDG&E proposed alternative thermal discharge limitations that would allow discharges from Unit 5 to be made in the same "across the beach" channel used for the thermal discharges from Units 1-4, and allow for an alternative to the surface water temperature limitation. SDG&E's study was undertaken to demonstrate the proposed alternatives would ensure the protection and propagation of the beneficial uses of the receiving waters, including a balanced, indigenous population of shellfish, fish, and wildlife.

SDG&E submitted the results of the 316 (a) study in 1981. SDG&E concluded that the additional discharge from the Unit 5, when added to the discharges from Units 1-4, had not resulted in "appreciable harm" to the balanced indigenous communities of the receiving waters, or in adverse effects on the beneficial uses of the coastal waters of in the vicinity of the facility discharge.

SDG&E submitted a supplemental 316 (a) Summary Report in 1990. This report provided additional data for the period from 1981 to 1990 and amended the original request based on actual operating experience.

Prior to the adoption of Order 94-59, and based upon a review of the findings of the 316 (a) demonstration studies, the Regional Water Board and U.S. EPA concluded that additional information was needed to determine if the thermal discharge from Encina will allow the propagation of a balanced indigenous community and will ensure the protection of beneficial uses of the receiving water. Order 94-59 required

SDG&E to conduct an additional study to supplement its demonstration of compliance with Section 316 (a). SDG&E submitted this supplemental study on August 8, 1997. The supplemental study concludes that no adverse effects of the present operation have been observed or are predicted. Cabrillo Power resubmitted the 1997 report in February 2004.

In July 2005, Tetra Tech Inc., under contract to US EPA and on behalf of the Regional Water Board reviewed the supplemental study and concluded that the report did not provide the information necessary to determine if the thermal discharge from Encina Power Plant would allow for the propagation of a balanced, indigenous population and will ensure the protection of beneficial uses of water. A copy of the Tetra Tech comments has been provided to the Discharger and is available for review by contacting the Regional Board office (see Fact Sheet section XI.G below).

3. **CWA Section 316 (b).** Current CWA Section 316 (b) implementing regulations are applicable to facilities that meet the definition of a Phase II existing facility at 40 CFR 125.91. Such facilities withdraw cooling water from a water of the United States; have, or are required to have, an NPDES permit; generate and transmit electric power as their primary business activity; have a total design intake capacity of 50 mgd or greater; and use at least 25 percent of the withdraw water exclusively for cooling purposes. Pursuant to CWA 316 (b) regulations, the Encina Power Station is classified as a Phase II existing facility.

   Section 316 (b) of the Clean Water Act provides that any standard established pursuant to Section 301 or 306 of the Act and applicable to a point source must require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental effects. By letter dated October 30, 1977 the Regional Water Board requested SDG&E to initiate studies to demonstrate conformance with the requirements of Section 316 (b).

   In December 1980 the SDG&E submitted a final report that concluded “the low and insignificant level of impact demonstrates that the existing Encina Power Plant intake system represents the best technology available for this specific site to minimize adverse environmental impacts” (SDG&E, 1980. Summary, pp. 4-26).

   Prior to the adoption of Order 94-59 and based upon a review of the findings of the 316(b) demonstration studies, the Regional Water Board and U.S. EPA concluded that additional information was needed to determine the location, design, construction and capacity of the cooling water intake structures at the facility reflect the best technology available (BTA) for minimizing adverse environmental impacts and protecting beneficial uses of the receiving water. Order 94-59 required SDG&E to conduct an additional study to supplement its demonstration of compliance with Section 316 (b) requirements. SDG&E submitted the study to the Regional Water Board on August 6, 1997. The study concluded that the cooling water intake structure is not having an adverse environmental impact as defined under Section 316 (b) and, therefore, the existing intake structure constitutes BTA.

   The Regional Water Board has opted to forgo a formal determination of BTA based on the 1997 study submitted by the Discharger in light of the new CWA Section 316(b) regulations for existing facilities adopted by U.S. EPA. As part of the

compliance requirements for the new regulations, the Discharger submitted an Entrainment and Impingement Sampling Plan for review by the Regional Water Board on September 2, 2004. The plan will enable the Discharger to characterize the nature of impingement and entrainment rates resulting from the operation of the intake structure and serve as a basis for compliance with the new regulations. Comments on the Plan were provided by the Regional Water Board, which were addressed by the discharger in a letter dated January 10, 2005.

U.S. EPA finalized regulations regarding cooling water intake structures for existing facilities, which are applicable to the Encina Power Station, on February 16, 2004. The regulations, commonly referred to as "316 (b) Phase II", were published in the Federal Register on July 9, 2004, and became effective on September 7, 2004. Facilities that meet the definition of a Phase II facility must comply, or demonstrate a compliance strategy, when they become subject to a reissued NPDES permit adopted on or after the effective date of the regulations.

Ultimately, dischargers must demonstrate compliance with 316 (b) Phase II regulations by choosing one of five alternatives. These alternatives are generally summarized as: (1) demonstrate that the facility has reduced cooling water intake velocity to 0.5 feet per second or less; (2) demonstrate that the existing design and construction technologies, operational measures, and/or restoration measures meet the performance standards established by the regulations; (3) demonstrate that the facility has selected design and construction technologies, operational measures, and/or restoration measures that will, in combination with any existing design and construction technologies, operational measures, and/or restoration measures, meet the performance standards; (4) demonstrate that the facility has installed and properly operates and maintains an approved technology; or (5) demonstrate that a site-specific determination of best technology available is appropriate.

Most facilities, including Encina Power Station, will be required to prepare a Comprehensive Demonstration Study to include the following components, if applicable.

a. *Source Waterbody Flow Information*, as described at 40 CFR 125.95 (b) (2);

b. *Impingement Mortality and/or Entrainment Characterization Study*, as described at 40 CFR 125.95 (b) (3), to support development of a calculation baseline for evaluating impingement mortality and entrainment and to characterize current impingement mortality and entrainment;

c. Design and Construction Technology Plan and a Technology Installation and Operation Plan, as described at 40 CFR 125.95 (b) (4);

d. *Restoration Plan*, as described at 40 CFR 125.95 (b) (5);

e. Information to Support Site-Specific Determination of BAT, as described at 40 CFR 125.95 (b) (6);

f. *Verification Monitoring Plan*, as described at 40 CFR 125.95 (b) (6).

On April 3, 2006, the Regional Water Board received from the discharger a *Proposal for Information Collection* (PIC) as required by Section 125.95(b)(1) of the Phase II rule. The *Proposal for Information Collection* included the following information:

1. A description of the proposed and/or implemented technologies, operational measures, and/or restoration measures to help develop a compliance strategy to meet the performance standards;

2. A list and description of any historical studies characterizing impingement mortality and entrainment and/or the physical and biological conditions in the vicinity of the cooling water intake structure and their relevance to this proposed Study;

3. A summary of any past or ongoing consultations with appropriate fish and wildlife agencies and stakeholders that are relevant to this Study; and

4. A sampling plan for any new field studies the Discharger proposes to conduct in order to ensure that there is sufficient data to develop a scientifically valid estimate of impingement mortality and entrainment at the site.

The provisions, compliance requirements, and compliance schedules for the 316(b) Phase II rule have been incorporated into Order R9-2006-0043.

4. **Storm Water.** In Water Quality Order No. 97-03-DWQ, the State Board adopted Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activity, Excluding Construction Activity. On March 15, 1999, the Discharger submitted a Notice of Intent to obtain coverage, effective May 22, 1999, for the Encina Power Station under the General Industrial Storm Water Permit Order 97-03-DWQ. The Best Management Practices (BMPs) contained in the Discharger's Storm Water Pollution Prevention Plan to represent the BMPs required pursuant to Provision 3 of Order 97-03-DWQ. As discussed in Section II.A.4 of this fact sheet, storm water originating in Basins D and E is subject to the wastewater discharge requirements contained in Order R9-2006-0043. Storm water originating in Basins A, B, C or F is covered under the General Permit.

5. **Effluent Limitations Guidelines.** At 40 CFR 125, U.S. EPA has established criteria and standards for the NPDES permitting process, including Criteria and Standards for Imposing Technology-Based Treatment Requirements Under Sections 301 (b) and 402 of the Clean Water Act (Subpart A) and Ocean Discharge Criteria (Subpart M). On November 19, 1982, at 40 CFR 423, U.S. EPA established technology-based effluent limitations guidelines for the steam electric power point source category, which are applicable to the Encina Power Station.

6. **Antidegradation Policy.** Section 131.12 of 40 CFR requires that State water quality standards include an antidegradation policy consistent with the federal policy. The State Board established California's antidegradation policy in State Board Resolution 68-16, which incorporates the requirements of the federal antidegradation policy. Resolution 68-16 requires that existing water quality is maintained unless degradation is justified based on specific findings. As discussed in detail in this Fact Sheet, the permitted discharge is consistent with the antidegradation provision of 40 CFR §131.12 and State Board Resolution 68-16.

7. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and 40 CFR §122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. All effluent limitations in this Order are at least as stringent as the effluent limitations in the previous Order.

8. **Monitoring and Reporting Requirements.** Section 122.48 of 40 CFR requires that all NPDES permits specify requirements for recording and reporting monitoring results. Sections 13267 and 13383 of the CWC authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (MRP) establishes monitoring and reporting requirements to implement federal and State requirements. This MRP is provided in Attachment E.

9. **Impaired Water Bodies on CWA 303(d) List.** On June 5 and July 25, 2003 the U.S. EPA approved major portions of the list of impaired water bodies, prepared by the State Board pursuant to Section 303 (d) of the CWA, which are not expected to meet applicable water quality standards after implementation of technology-based effluent limitations for point sources. This 303 (d) list does not include the Pacific Ocean shoreline in the vicinity of the facility discharge point.

VII. Rationale For Effluent Limitations and Discharge Specifications

The CWA requires point source discharges to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations; and other requirements in NPDES permits. There are two principal bases for effluent limitations: 40 CFR §122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR §122.44(d) requires that permits include water quality-based effluent limitations to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water. Where numeric water quality objectives have not been established, three options exist to protect water quality: 1) 40 CFR §122.44(d) specifies that WQBELs may be established using USEPA criteria guidance under CWA section 304(a); 2) proposed State criteria or a State policy interpreting narrative criteria supplemented with other relevant information may be used; or 3) an indicator parameter may be established. Dischargers are required to comply with the effluent limitations that are the most stringent.

A. Discharge Prohibitions

1. Discharge of wastes in a manner or to a location not specifically described or regulated by this Order is prohibited. This prohibition is retained from Order 2000-03.

2. Discharge of oil or other residuary petroleum products, except as authorized by effluent limitations contained in this Order or by provision of Division 7 of the CWC is prohibited. This prohibition is retained from Order 2000-03.

3. Discharge of polychlorinated biphenyl compounds is prohibited. This prohibition is a restatement of the applicable effluent limitations guidelines for steam electric power plants at 40 CFR 423.13 (a).

4. Discharge to Areas of Special Biological Significance is prohibited. This prohibition is a restatement of an applicable discharge prohibition from Section III. H of the Ocean Plan.

5. Bypass of untreated waste containing concentrations of pollutants in excess of those in Tables A and B of the Ocean Plan, except under upset conditions, is prohibited. This prohibition is a restatement of an applicable discharge prohibition from Section III. H of the Ocean Plan.

6. A total discharge volume in excess of 863.5 mgd is prohibited. This prohibition reflects the maximum possible discharge from the Encina Power Station as described by the Discharger in its application materials for renewal of its Waste Discharge Requirements. This provision is retained from Order 2000-03 with a modification reflecting the increased maximum flow resulting from inclusion of the Pilot Desalinization Plant.

7. Discharge of chlorine from any single generating unit for more than two hours per day is prohibited. This prohibition is a restatement of the applicable effluent limitations guidelines for steam electric power plants at 40 CFR 423.13 (b) (2).

8. Discharge of warfare agents or high-level radioactive waste is prohibited. This prohibition is a restatement of an applicable discharge prohibition from Section III. H of the Ocean Plan.

9. Discharge of sludge to the ocean is prohibited. This prohibition is a restatement of an applicable discharge prohibition from Section III. H of the Ocean Plan.

B. Technology-Based Effluent Limitations

1. Scope and Authority

   The CWA requires that technology-based effluent limitations be established based on several levels of controls:

   a. Best practicable treatment control technology (BPT), which is based on the average of the best performance by plants within an industrial category or subcategory. BPT standards apply to toxic, conventional, and non-conventional pollutants.

   b. Best available technology economically achievable (BAT), which represents the best existing performance of treatment technologies that are economically achievable with an industrial point source category. BAT standards apply to toxic and non-conventional pollutants.

   c. Best conventional pollutant control technology (BCT), which is a standard for the control from existing industrial point sources of conventional pollutants including BOD, TSS, fecal coliform, pH, and oil and grease. The BCT standard is

established after considering the cost reasonableness of the relationship between the cost of attaining a reduction in effluent discharger and the benefits that would result, and also the cost effectiveness of additional industrial treatment beyond BPT.

d. New source performance standards (NSPS) that represent the best available demonstrated control technology standards. The intent of the NSPS guidelines is to set limitations that represent the state-of-the-art treatment technology for new sources.

The CWA requires EPA to develop effluent limitations, guidelines, and standards (ELGs) representing application of BPT, BCT, BAT, and NSPS. Section 402 (a) (1) of the CWA and 40 CFR 125.3 of the NPDES regulations authorize the use of best professional judgment (BPJ) to derive technology-based effluent limitations on a case-by-case basis where ELGs are not available for certain industrial categories and/or pollutants of concern.

2. Applicable Technology-Based Effluent Limitations

Pursuant to Section 306 (b) (1) of the CWA, U.S. EPA has established standards of performance for the steam electric power point source category, for existing and new sources, at 40 CFR Part 423. These regulations apply to the Encina Power Station as "an establishment primarily engaged in the generation of electricity for distribution and sale which results primarily from a process utilizing fossil-type fuel…in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium." (40 CFR 423.10) Standards of performance for existing facilities (instead of new source performance standards) are applicable to all units of the Encina Power Station because their construction was completed or commenced prior to publication of regulations on November 19, 1982, which proposed standards of performance for the industry. The following are applicable technology based-standards of performance (BPT and BAT) applicable to the Encina Power Station from the effluent limitations guidelines for existing sources at 40 CFR 423. The guidelines do not include standards of performance based on BCT.

a. Standards of Performance Based on BPT

i. The pH of all discharges, except once-through cooling water, shall be within the range of 6.0 – 9.0 [40 CFR 423.12 (b) (1)].

ii. Low volume wastes are defined as those wastewater sources for which specific limitations are not established by the effluent limitations guidelines at 40 CFR 423. The quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of the low volume waste sources times the concentration as specified in Table F-10 [40 CFR 423.12 (b) (3)].

Table F-10. Effluent Limitation Guidelines for Low Volume Waste

Pollutant	Daily Max (mg/L)	30 Day Avg (mg/L)
Total Suspended Solids	100	30
Oil and Grease	20	15

iii. The quantity of pollutants discharged in metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of metal cleaning wastes times the concentration as specified in Table F-11 [40 CFR 423.12 (b) (5)]:

Table F-11. Effluent Limitation Guidelines for Metal Cleaning Waste

Pollutant	Daily Max (mg/L)	30 Day Avg (mg/L)
Total Suspended Solids	100	30
Oil and Grease	20	15
Total Iron	1.0	1.0
Total Copper	1.0	1.0

iv. At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as concentration-based limitations instead of the mass-based limitations required by (ii.) and (iii.) above [40 CFR 423.12 (b) (11)].

b. Standards of Performance Based on BAT

i. There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid [40 CFR 423.13 (a)].

ii. The quantity of pollutants discharged in once-through cooling water from each discharge point shall not exceed the quantity determined by multiplying the flow of once-through cooling water from each discharge point times the concentration as specified in Table F-12 [40 CFR 423.13 (b) (1)]:

Table F-12. Effluent Limitation Guidelines for Total Residual Chlorine

Pollutant	Max Concentration (mg/L)
Total Residual Chlorine	0.2

iii. Total residual chlorine may not be discharged from any single generating unit for more than two hours per day unless the Discharger demonstrates to the permitting authority that discharge for more than two hours per day is required for macroinvertebrate control [40 CFR 423.13 (b) (2)]. The duration of each chlorination cycle shall not exceed 25 minutes.

iv. At the permitting authority's discretion, the quantity of pollutants allowed to be discharged may be expressed as concentration-based limitations instead of mass-based limitations required by (ii.) above [40 CFR 423.13 (g)].

c. Differences Between Order and ELGs and/or Order 2000-03

i. Pursuant to 40 CFR 423.13 (b)(12), effluent limitations for the individual waste streams that contribute to the metal cleaning waste treatment facility shall be applied to each waste stream. Order No. 2000-03 omitted this provision. Order R9-2006-0043 applies the appropriate effluent limitations to the four metal cleaning waste streams that contribute to the metal cleaning

waste treatment facility (chemical cleaning, air heater wash, boiler wash, hypochlorinator wash).

C. Water Quality Based Effluent Limitations (WQBELs)

1. **Scope and Authority**

U.S. EPA regulations at 40 CFR 122.44 (d) (1) (i) require permits to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels which cause, have reasonable potential to cause, or contribute to an excursion above any state water quality standard. For discharges to the Pacific Ocean, the Ocean Plan allows the Regional Water Board little discretion in the application of WQBELs. The Ocean Plan requires the establishment of WQBELs in discharger permits for all Table B toxic pollutants in the Ocean Plan.

2. **Applicable Beneficial Uses and Water Quality Criteria and Objectives**

a. Basin Plan

The Water Quality Control Plan, San Diego Basin (9) (the Basin Plan) was adopted by the Regional Water Board on September 8, 1994 and approved by the State Water Resources Control Board on December 13, 1994. The Basin Plan identifies the following beneficial uses of the coastal waters of the Pacific Ocean:

i. Industrial service supply;
ii. Navigation;
iii. Contact water recreation;
iv. Non-contact water recreation;
v. Commercial sport fishing;
vi. Preservation of biological habitats of special significance;
vii. Wildlife habitat;
viii. Rare, threatened, or endangered species;
ix. Marine habitat;
x. Aquaculture;
xi. Migration of aquatic organisms;
xii. Spawning, reproduction, and/or early development; and
xiii. Shellfish harvesting.

By reference, the Basin Plan adopts the *Water Quality Control Plan for Ocean Waters of California* (the Ocean Plan) and the *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (the Thermal Plan). Although these two plans include most water quality objectives and implementing procedures that are applicable to discharges to the Pacific Ocean, the Basin Plan includes the following water quality objectives for dissolved oxygen and pH in ocean waters, which have been incorporated into Order No. R9-2006-0043.

<u>Dissolved Oxygen</u>
The dissolved oxygen concentration in ocean waters shall not at any time be depresses more than 10 percent from that which occurs naturally, as a result of the discharge of oxygen-demanding waste materials.

pH
The pH of receiving waters shall not be changed at any time more than 0.2 pH units from that which occurs naturally.

b. Ocean Plan

The Basin Plan for the San Diego Basin adopts by reference the Ocean Plan (2005), which establishes beneficial uses for and water quality objectives and procedures for their implementation to protect the quality of the State's ocean waters. Order No. 2000-03 was written using the guidance of the 1997 Ocean Plan, while Order No. R9-2006-0043 has been written using the guidance of the 2005 Ocean Plan.

For all ocean waters of the State, the Ocean Plan establishes the beneficial uses described previously in this Fact Sheet. The Ocean Plan includes general provisions and water quality objectives for bacterial characteristics, physical characteristics, chemical characteristics, biological characteristics, and radioactivity. The water quality objectives from the Ocean Plan have been incorporated verbatim as receiving water limitations into Order No. R9-2006-0043.

Table B of the Ocean Plan includes the following water quality objectives for chemicals and chemical characteristics, and requires that effluent limitations be established in NPDES permits for each chemical or chemical characteristic:

(1) 6-month median, instantaneous maximum, and/or daily maximum objectives for 21 chemicals and chemical characteristics, including total residual chlorine and acute and chronic toxicity, for the protection of marine aquatic life.

(2) 30-day average objectives for 20 non-carcinogenic chemicals for the protection of human health.

(3) 30-day average objectives for 42 carcinogenic chemicals for the protection of human health.

Determining the Need for WQBELs

40 CFR 122.44(d) requires that NPDES permits include any requirements necessary to achieve water quality standards that are in addition to or more stringent than technology-based standards. 40 CFR 122.44(d) requires that limitations must control all pollutants or pollutant parameters which are or may be discharged at a level that cause, has reasonable potential to cause, or contribute to an excursion above a water quality objective for a constituent (i.e., the permitting authority may not omit an effluent limitation for pollutants with demonstrated reasonable potential).

For Order No. R9-2006-0043 the need for effluent limitations based on water quality objectives in Table B of the Ocean plan was evaluated in accordance with 40 CFR 122.44(d) and guidance for statistically determining the "reasonable potential" for a discharged pollutant to exceed an objective, as outlined in the

Technical Support Document for Water Quality-based Toxics Control (TSD; EPA/505/2-90-001, 1991) and the California Ocean Plan Reasonable Potential Analysis (RPA) Amendment that was adopted by the State Water Board on April 21, 2005. The statistical approach combines knowledge of effluent variability (as estimated by a coefficient of variation) with the uncertainty due to a limited number of effluent data to estimate a maximum effluent value at a high level of confidence. This estimated maximum effluent value is based on a lognormal distribution of daily effluent values. Projected receiving water values (based on the estimated maximum effluent value or the reported maximum effluent value and minimum probable initial dilution), can then be compared to the appropriate objective to determine the potential for an exceedance of that objective and the need for an effluent limitation. The Ocean Plan RPA can yield three endpoints: 1) Endpoint 1, an effluent limitation is required and monitoring is required; 2) Endpoint 2, an effluent limitation is not required and the Regional Water Board may require monitoring; and 3) Endpoint 3, the RPA is inconclusive, monitoring is required, and an existing effluent limitation may be retained or a permit reopener clause may be included to allow inclusion of an effluent limitation if future monitoring warrants the inclusion.

Effluent monitoring data from the facility was utilized in part to perform a RPA. The RPA was conducted using the RPcalc 2.0 software tool developed by the State Water Board for conducting a RPA, the applicable Table B water quality objectives, an applicable dilution credit of 15.5:1, and the projected maximum concentrations for pollutants contained in the effluent for which water quality objectives exist in Table B of the Ocean Plan. Results of the RPA indicate that constituents in effluent limits must be established for hexavalent chromium, copper, mercury, and nickel from the Low Volume Discharges.

Discharges for Table 7 do not have the reasonable potential to exceed Ocean Plan objectives (i.e., Endpoint 2), and therefore do not require effluent limitations. Instead, a narrative limit statement to comply with all Ocean Plan objective requirements is provided. This Order includes desirable maximum effluent concentrations for constituents that do have the reasonable potential which were derived using the effluent limitation determination procedure described above and are referred to in this Order as “performance goals”. The Discharger is required to monitor for these constituents as stated in the Monitoring and Reporting Program to gather data for use in RPAs for future permit renewals and/or updates.

WQBELs and Performance Goal Calculations

From the Table B water quality objectives, effluent limitations and performance goals for the combined discharge from the Encina Power Station are calculated according to the following equation for chemical characteristics, except for chlorine, acute toxicity, and radioactivity:

$$Ce = Co + Dm (Co – Cs)$$

Where:

Ce = the effluent limitation/performance goal (µg/L)

Co = the water quality objective to be met at the completion of initial dilution (µg/L)
Cs = background seawater concentration
Dm = minimum probable initial dilution expressed as parts seawater per part wastewater

For the Encina Power Station Dm equals 15.5, based on observed waste flow characteristics, receiving water density structure, and the assumption that that no currents of sufficient strength to influence the initial dilution process flow across the discharger structure. Initial dilution is the process that results in the rapid and irreversible turbulent mixing of the wastewater with the ocean water around the point of discharge. In accordance with Table B implementing procedures, Cs equals zero for all chemicals and chemical characteristics, except as specified in Table F-13.

Table F-13. Background Seawater Concentrations

Pollutant	Cs (µg/L)
Arsenic	3
Copper	2
Mercury	0.0005
Silver	0.16
Zinc	8

Table F-14. Water Quality Objectives for Copper, Chloroform, and Chlorine

Pollutant	6-month Median	Daily Maximum	Instantaneous Maximum	30-Day Average
Copper (µg/L)	3	12	30	-
Total Chlorine Residual (µg/L)	2	8	60	-

Example 1. Performance Goal Calculation for Copper

Using the background concentration from Table F-13 and water quality objectives from Table F-14, the performance goal for copper is calculated:

Ce = 3 + 15.5 (3 – 2) = 19 µg/L (6-month Median)
Ce = 12 + 15.5 (12 – 2) = 170 µg/L (Daily Maximum)
Ce = 30 + 15.5 (30 – 2) = 460 µg/L (Instantaneous Maximum)

Example 2. Effluent Limitation Calculation for Chlorine (Continuous Discharger)

Using the background concentration from Table F-13 and water quality objectives from Table F-14, the final effluent limitation for chlorine is calculated:

Ce = 2 + 15.5 (2 – 0) = 33 µg/L (6-month Median)
Ce = 8 + 15.5 (8 – 0) = 132 µg/L (Daily Maximum)
Ce = 60 + 15.5 (60 – 0) = 990 µg/L (Instantaneous Maximum)

Example 3. Effluent Limitation Calculation for Chlorine (Intermittent Discharger)

For intermittent chlorine dischargers (such as Encina Power Station, which chlorinates 24 times per day in 5-minute cycles, water quality objectives for total chlorine residual are determined in accordance with the following equation from footnote (c) of Table B:

$$\log y = - 0.43 (\log x) + 1.8$$

where:

y = the water quality objective to apply when chlorine is being discharged (µg/L)
x = the duration of uninterrupted chlorine discharges in minutes

For Encina Power Station, which discharges chlorine for 5-minute uninterrupted intervals, the applicable water quality objective for intermittent discharges of total chlorine residual is calculated as follows:

$$\log y = - 0.43 (\log 5) + 1.8$$

$$y = 31.6$$

Based on a water quality objective for chlorine of 31.6 µg/L for intermittent chlorine applications, using the equation, Ce = Co + Dm (Co – Cs), an effluent limitation is calculated:

$$Ce = 31.6 + 15.5 (31.6-0) = 521 \text{ µg/L}$$

The effluent limitation guidelines at 40 CFR 423.13 (b) (1) state that, for any power plant with a generating capacity of greater than 25 MWe, the discharge of total chlorine residual may not exceed a maximum value of 0.20 mg/L (200 µg/L). Because the more stringent limitation of the Ocean Plan and BAT effluent limitation guidelines are always applied, the instantaneous maximum limitation for total chlorine residual is 200 µg/L.

Acute and Chronic Toxicity

Section III.C of the Ocean Plan (2005) requires only chronic, not acute, toxicity monitoring when the minimum initial dilution is below 100 to 1. The Ocean Plan provides an equation for determining acute toxicity limitations, which allows for a mixing zone for the acute toxicity objective that is 10 percent of the distance from the edge of the outfall structure to the edge of the chronic mixing zone. The Ocean Plan states that this equation applies only when the minimum probable initial dilution is greater than 24 to 1. The Regional Water Board, in consultation with State Board staff, has concluded that an acute toxicity limitation is not required for the discharges from Encina Power Station through Discharge Point 001, which receives a minimum probable initial dilution of 15.5 to 1. Because new information (the revised Ocean Plan) is available since adoption of Order No. 2000-03, the elimination of acute toxicity limitations from the current Order does not violate anti-

backsliding prohibitions of the Clean Water Act. The chronic toxicity limitation is retained from Order No. 2000-03.

Effluent Limitations for Power Plants and Heat Exchange Dischargers

Based on the implementing procedures described above, effluent limitations have been calculated for all Table B pollutants from the Ocean Plan and incorporated into the Order. Section III.C.7.d of the Ocean Plan describes compliance determination for Table B pollutants for dischargers that use a large volume of ocean water for once-through cooling and states:

> *Effluent concentration values (Ce) shall be determined through the use of equation 1 considering the minimum probable initial dilution of the combined effluent (in-plant waste streams plus cooling water flow). These concentration values shall then be converted to mass emission limitations as indicated in equation 3. The mass emission limits will then serve as requirements applied to all in-plant waste streams taken together which discharge into the cooling water flow, except for total chlorine residual, acute [if applicable per Section 3 (c)] and chronic toxicity, and instantaneous maximum concentrations in Table B shall apply to, and be measured in, the combined final effluent, as adjusted for dilution with ocean water.*

In accordance with guidance of the Ocean Plan for dischargers that use a large volume of ocean water for once-through cooling, Order No. R9-2006-0043 establishes water quality-based effluent **concentration limitations**, applicable to the **combined discharge** through Discharge Point 001, for total chlorine residual, chronic toxicity, and for all toxic chemicals requiring instantaneous maximum limitations for protection of marine aquatic life. In addition, **mass emission limitations**, applicable to the **combined flow of low volume, in-plant wastes**, are established for pollutants requiring 6-month median and daily maximum limitations for protection of marine aquatic life and for pollutants requiring 30-day average effluent limitations for protection of human health.

c. Revisions of Effluent Limitations from Order No. 2000-03

Most of the water quality-based effluent limitations established by Order No. 2000-03 are retained in Order No. R9-2006-0043. Differences between the water quality-based effluent limitations in the order and Order No. 2000-03 are described below:

i. Mass emission limitations for toxics in the **combined low volume, in-plant discharges**, for the Encina Power Station were based on the combined discharge flow of 863.19 mgd (i.e. total volume of cooling water and other flows being discharged from Discharge Point 001) in Order No. 2000-03. In the Order, the mass emission limitation calculations are based exclusively on the total maximum low volume in-plant wastestream flows (cooling water flows are not factored into

the calculations). The mass emission limitations calculations for individual toxics in the Order used a combined low volume flow of 4.09 mgd in conjunction with a Dm value of 15.5 and the water quality objectives listed in Table B of the Ocean Plan.

The maximum combined low volume discharges from the Encina Power Station are 4.09 mgd in volume and include the following waste streams (pursuant to 40 CFR 423, *Effluent Limitations Guidelines for the Steam Electric Power Generating Point Source Category*, metal cleaning wastes are not categorized as low volume waste waters):

- Seepage and Groundwater
- Boiler Blowdown
- Freshwater R.O. Brine
- Seawater R.O. Brine
- Fuel Line/Tank Hydrotest
- Pilot Desalinization Plant
- Low Volume Waste Treatment Facility

The Low Volume Waste Treatment Facility (LVWTF) receives wastewater from several sources and provides treatment prior to discharge to the once-through cooling system (i.e. oil separation, sedimentation). Because the contributing waste streams are combined and treated prior to discharge to the once-through cooling water, the LVWTF is considered a single low volume waste stream with mass-based effluent limitations applied at its discharge point to the once-through cooling water flow. The maximum discharge flow from the LVWTF is 0.2115 mgd and is composed of the following:

- Portable Demineralizer Rinse Flush
- Evaporator Blowdown
- Condenser Cleaning
- Sample Drains
- Floor Drains
- Demineralizer
- Softeners
- R.O. Membrane Cleaning
- Freshwater R.O. Sand Filter Backwash
- Dealkalizer

Performance Goals

Performance goals serve to encourage high effluent quality and support State and federal antidegradation policies. Additionally, performance goals provide all interested parties with information regarding the expected levels of pollutants in the discharge that should not be exceeded in order to maintain the water quality objectives established in the Ocean Plan. Performance goals are not limitations or standards for the regulation of the discharge. Effluent concentrations above the performance goals will not be considered as violations of the permit but serve as red flags that indicate water quality concerns. Repeated red flags may prompt the Regional Water Board to reopen and amend the permit to replace performance goals for constituents of concern with effluent

limitations, or the Regional Water Board may coordinate such actions with the next permit renewal.

Constituents that do not have reasonable potential are listed as performance goals in this Order. The following table lists the performance goals established by Order No. R9-2006-0043. These constituents shall be monitored at M-001, but the results will be used for informational purposes only, not compliance determination.

Performance Goals based on the California Ocean Plan

Constituent	Units	Performance Goals					
		Max Daily	Average Monthly	Average Weekly	Instantaneous Min	Instantaneous Max	6 Month Median
Arsenic	µg/L	480				1300	86
Cadmium	µg/L	66				170	17
Chromium VI	µg/L	130				330	33
Copper	µg/L	170				460	19
Lead	µg/L	130				330	33
Mercury	µg/L	2.6				6.6	0.65
Nickel	µg/L	330				830	83
Selenium	µg/L	990				2500	250
Silver	µg/L	44				110	9.1
Zinc	µg/L	1200				3200	210
Cyanide	µg/L	66				170	17
Ammonia (expressed as nitrogen)	µg/L	40000				99000	9900
Phenolic Compounds (non-chlorinated)	µg/L	2000				5000	500
Phenolic Compounds (chlorinated)	µg/L	66				170	17
Endosulfan	µg/L	0.3				0.45	0.15
Endrin	µg/L	0.066				0.099	0.033
HCH	µg/L	0.13				0.20	0.066

VIII. Rationale for Receiving Water Limitations

A. Elevated temperature wastes shall comply with limitations necessary to assure protection of the beneficial uses and areas of special biological significance. This limitation is a restatement of water quality objectives for existing dischargers described at Objective 3.A. (1) of the Thermal Plan.

B. Discharges from the Encina Power Station shall not cause violation of water quality objectives as described in the Ocean Plan. Objectives for Bacterial, Physical, Chemical, and Biological Characteristics are restatements of criteria outlined in Sections II.B through II.E of the Ocean Plan.

IX. Rationale for Monitoring and Reporting Requirements

Pursuant to Section 122.48 of 40 CFR, all NPDES permits specify recording and reporting of monitoring results. Sections 13267 and 13383 of the California Water Code authorize the Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program, Attachment E of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the Monitoring and Reporting Program for this facility.

In an effort to standardize monitoring and reporting requirements and in order to support electronic data submittal of discharger self-monitoring reports, reporting units, definitions, and deadlines specified in the Orders have been written consistent with the State Water Resource Control Board's *Water Quality Permit Standards Team Final Report***.**

A. Cooling Water Intake Structure Monitoring

Order No. 2000-03 requires the Discharger to annually measure the bar rack approach velocity and the depth of sediment accumulation in the intake channel to demonstrate the optimal operation of the cooling water intake structure. Such monitoring is in support of CWA Section 316(b) requirements that the location, design and capacity of cooling water intake structures reflect the best technology available. The Order retains the requirements of Order No. 2000-03 for velocity and sediment monitoring at the intake structure.

Order No. 2000-03 requires the Discharger to periodically monitor temperature, total suspended solids, turbidity, and pH at the intake structure. Such monitoring is required to determine compliance with certain effluent limitations based on the difference (delta) between influent and effluent values for a particular parameter. The Order retains the requirements of Order 2000-03 for influent monitoring at the intake structure.

B. Effluent Monitoring

In an effort to standardize monitoring and reporting requirements and in order to support electronic data submittal of discharger self-monitoring reports, reporting units, definitions, and deadlines specified in the MRPs for Order No. R9-2006-0043 have been written consistent with the State Water Resource Control Board's *Water Quality Permit Standards Team Final Report***.** Monitoring requirements in the MRP are summarized in Table F-15. The MRP contains specific monitoring requirements.

Table F-15. Summary of Effluent Monitoring Frequency

System	Monitoring Frequency
Main Condenser Cooling Water Inflow	
Flow, Temperature	continuous
pH, Turbidity	monthly
Combined Discharge (Discharge Point 001)	
Flow, Temperature	continuous
pH, Turbidity	monthly
Chlorine	weekly
Chronic Toxicity	semiannually
Table B Pollutants (Aquatic Life)	semiannually
Combined Low Volume Wastewaters	
Table B Pollutants	semiannually

System	Monitoring Frequency
Individual Low Volume Wastewaters	
Metal Cleaning Wastewaters (Discharge Point 001-A)	
TSS, O&G	prior to discharge
Iron, Copper	prior to discharge
Other Low Volume Wastewaters (Discharge Points 001-B through 001-H)	
Flow	continuous
pH, TSS, O&G	monthly

Discussion of monitoring requirements in MRP No. 2000-03 and those in the MRP, highlighting differences between the orders, follows.

1. Due to reformatting, many provisions of MRP No. 2000-03 appear in endnotes or in attachments to MRP No. R9-2006-0043.

2. Order No. 2000-03 requires both acute and chronic toxicity monitoring. As discussed previously in the Fact Sheet, only a chronic toxicity limitation is established by Order No. R9-2006-0043, and therefore, only chronic toxicity monitoring is required by the MRP. A chronic toxicity limitation (and quarterly monitoring requirement) will provide more meaningful information regarding the nature of the discharge than an acute toxicity limitation and monitoring requirement in the high volume, dilute flows typical of Discharge Point 001. Chronic toxicity monitoring procedures are changed to conform to the requirements of the 2001 Ocean Plan.

3. Order No. 2000-03 requires semiannual monitoring for 10 metals that have water quality criteria listed in the Ocean Plan for protection of aquatic life. As discussed previously, Order No. 2000-03 did not include combined discharge limitations for organics and non-metals which have aquatic life protection criteria. These additional seven pollutants (i.e. cyanide, ammonia, non-chlorinated phenolic compounds, chlorinated phenolics, endosulfan, endrin, and HCH) were only addressed in the in-plant, low volume monitoring program. In accordance with Section III.C.7.d of the Ocean Plan, Order No. R9-2006-0043 has established concentration-based effluent limitations and semiannual monitoring for these seven additional pollutants for the combined discharge.

4. Order No. 2000-03 requires total residual chlorine in the combined discharge to be monitored on a monthly basis. Although monitoring data for the last four years have not indicated any violations in the total chlorine residual discharge limitation, this monitoring regimen may be insufficient due to the intermittent nature of chlorination cycles (i.e. 4 cycles per day, 25 minutes per Unit per cycle). The monitoring frequency for total residual chlorine in the MRP has been increased from monthly to weekly.

5. Order No. 2000-03 established monitoring requirements for “in-plant waste streams.” The discharger was required to composite a flow proportionate sample from specifically identified wastewater streams, which generally included all wastewaters originating from the Encina Power Station, except discharges of once through cooling water and storm water. In-plant waste streams described in Order No. 2000-03 included Seawater R.O. pretreatment, Saltwater R.O. Brine, Low Volume Waste Treatment Facility, Metal Cleaning Treatment Facility, Boiler Blowdown, Basement

Sumps, Fuel Line Hydrotest, and Freshwater R.O. Brine. Analysis of pH, total suspended solids, and a subset of Table B pollutants was required on a semiannual basis.

Proposed Order No. R9-2006-0043 includes monitoring requirements for "combined low volume wastewaters," which are the equivalent of "in-plant waste streams" from Order No. 99-48. In general these wastewaters include all wastewaters originating from the Encina Power Station, except discharges of once through cooling water and storm water. To remain consistent with the definition of low volume wastes from the Effluent Limitations Guidelines for the Steam Electric Power Generating Point Source Category (40 CFR 423), Order No. R9-2006-0043 does not include metal cleaning wastes as a low volume wastewater. The individual, low volume wastewaters recognized by this Order are:

a. Seepage and Groundwater
b. Boiler Blowdown
c. Freshwater R.O. Brine
d. Seawater R.O. Brine
e. Fuel Line/Tank Hydrotest
f. Pilot Desalination Plant
g. Low Volume Waste Treatment Facility

Order No. R9-2006-0043 requires semiannual collection of a flow-weighted composite sample of low volume wastewaters and monitoring for the full schedule of Table B pollutants at least once during the permit period. The Regional Water Board acknowledges that, at the time of sample collection, it may not be possible to collect a sample aliquot from each low volume wastewater, and therefore certain wastewaters are identified as being of higher priority. The proportion of each waste stream to be added to the composite sample must be based on the actual (preferred) or estimated flow rates for the day on which samples are collected. The following example describes how a flow-weighted composite sample should be collected.

Example 2. Calculation of a Flow-weighted Composite Sample

Say that the following individual low volume wastewaters are sampled. The flow rate for each individual wastewater is determined for that day, and the relative amount/volume, in percent, of each individual waste stream is determined. Using the percentages of each individual waste stream in the total, the amount of each individual waste stream to be composited in a five gallon (18,927 mLs) sample is calculated. In the example, below, on the day of sample collection, seepage and groundwater flow accounts for 33 percent of the total flow of the low volume wastewaters that are sampled. 33 percent of five gallons equals 0.33 x 18,927 milliliters, which equals 6,330 milliliters. (There are 3,785 mLs per gallon and 18,927 mLs per five gallons.)

Table F-16. Example of Flow-weighted Composite Sample

Low Volume Wastewater	Flow (mgd)	Percent of Total Flow	mLs to be Composited in a 5 Gal Sample
Seepage and Groundwater	1.368	33	6,330
Boiler Blowdown	0.372	9	1,721
Freshwater R.O. Brine	0.087	2	403
Seawater R.O. Brine	0.864	21	3,998
Fuel Line/Tank Hydrotest	0.900	22	4,164
Pilot Desalination Plant	0.288	7	1,333
Low Volume Waste Treatment Facility	0.2115	5	979
Total	4.091	100%	18,927

6. Order No. 2000-03 established concentration-based monitoring requirements for discharges from the metal cleaning waste treatment facility (Discharge Point 001-A). The Order retains those monitoring requirements and incorporates mass-based monitoring for total suspended solids, oil and grease, copper and iron as required by 40 CFR 423.13 (b)(5).

7. Order No. 2000-03 established concentration-based monitoring requirements for discharges from low volume waste streams (Discharge Points 001-B through 001-H). The Order retains those monitoring requirements and incorporates mass-based monitoring for total suspended solids and oil and grease as required by 40 CFR 423.12 (b)(3).

8. Proposed Order No. R9-2006-0043 reduces the frequency of monitoring for those constituents that neither an effluent limit is required nor the Reasonable Potential Analysis Procedure is inconclusive.

C. Receiving Water Monitoring

Receiving Water is being monitored semiannually at ten dispersion area stations and four reference area stations for light transmittance, dissolved oxygen and pH at the surface. Temperature is measured at the surface and at depth at twenty-eight stations to characterize the thermal plume. Cabrillo Power I LLC participates with other ocean dischargers in the San Diego Region in an annual regional kelp bed photographic survey.

1. Light Transmittance

The Permit specifies that "Natural light shall not be significantly reduced at any point outside the initial dilution zone as the result of the discharge." Significant difference is defined as a statistically significant difference in the means of two distributions of sampling results at the 95% confidence level. No significant differences were found between the mean of the reference stations and the mean of each discharge station (e.g., C-10 to C-30) for light transmittance in 9 of 10 monitoring periods between Spring 2001 and Fall 2005. The receiving water report for the Fall 2004 found a significant difference between the reference stations and the mean of the discharge

stations along Transect D, due to the relatively low transmittance at nearshore station D-10, which was attributed to wave activity causing sediment re-suspension.

2. Dissolved Oxygen and pH

The Permit specifies that "The dissolve oxygen concentration shall not at any time be depressed more than 10% from that which occurs, naturally, as the result of the discharge of oxygen demanding waste materials." The dissolved oxygen concentrations at the individual discharge stations were not depressed by more than 10% from the corresponding (similar depth) reference stations in the receiving water for 9 of the 10 monitoring periods between Spring 2001 and Fall 2005. In the Fall 2004 report, the dissolved oxygen was depressed more than 10% at discharge stations C-20, E-10, and E-20.

The Permit specifies that "The pH shall not be changed at any time more than 0.2 units from that which occurs naturally." The pH values were consistent with the Permit requirement for 8 of the 10 monitoring periods. In the Spring 2003 report, values for pH at individual discharge stations did not change more than 0.2 units from corresponding reference stations unless compared to reference stations A-30 and A-50. The pH measured 7.5 and 7.6 at these two reference stations, were lower than all other stations measured that period. In the Fall 2004 report, the pH values at Stations C-50, D-20, and D-30 were more than 0.2 units compared to the referenced stations.

3. Thermal Plume

As an example of the data submittal for temperature, Table F-17 presents the temperature (°F) and depth measurements, offshore Encina Power Plant for Spring 2005.

**Table F-17 Temperature (°F) and depth measurements, offshore Encina Power Plant,
Spring 2005**

Depth	A				B				C			
(ft)	10	20	30	40	10	20	30	40	10	20	30	40
1	63.6	63.8	63.7	63.8	64.3	64.4	64.9	64.0	64.3	64.7	64.1	63.4
5	63.5	63.6	63.6	63.7	63.7	63.6	64.5	62.7	64.2	64.6	63.1	63.4
10	63.5	63.5	63.5	63.1	62.7	62.3	63.9	62.5	63.8	62.0	62.8	63.2
15		63.3	63.2	62.6		59.5	62.9	61.9		61.6	61.1	62.3
20		63.2	63.0	62.1		57.9	60.9	60.4		61.3	61.0	61.1
25			62.8	60.2			57.7	57.6			58.9	58.6
30			62.4	58.5				56.7			57.2	57.3
35				57.1				55.4				55.6
40				56.8				54.9				55.4
45				56.1				54.6				55.0
50				55.4				54.3				54.2

Table F-17 (continued) Temperature (°F) and depth measurements, offshore Encina Power Plant, Spring 2005

Depth	D				E				F			
(ft)	10	20	30	50	10	20	30	50	10	20	30	50
1	62.8	68.8	64.7	63.5	64.6	65.5	65.5	64.1	63.6	63.4	63.4	63.6
5	62.6	65.5	63.8	63.5	64.4	65.3	64.8	64.0	63.5	63.3	63.3	63.4
10	62.5	62.2	62.7	63.3	64.4	63.7	63.9	63.8	63.0	63.1	62.7	63.0
15		62.0	61.2	63.0		63.0	63.5	63.6		61.9	61.7	62.6
20		61.5	61.1	61.7		62.9	63.1	63.5		61.7	60.0	62.2
25			60.7	60.1			59.2	58.3			58.9	58.6
30			57.0	58.9			57.0	56.9			58.3	57.7
35				56.5				55.6				55.5
40				55.5				55.3				55.1
45				54.7				54.8				54.6
50												54.6

Depth	G			
(ft)	10	20	30	50
1	63.8	62.7	62.4	62.9
5	63.7	62.5	62.3	62.8
10	63.6	62.4	62.3	62.4
15		61.8	61.9	60.5
20		61.3	61.7	59.7
25			61.1	57.4
30			57.8	56.5
35				56.1
40				56.0
45				55.6
50				55.2

Kelp Bed Monitoring

The annual regional kelp bed monitoring In addition to participating in the annual regional kelp bed monitoring survey, Cabrillo Power I LLC assesses, pursuant to California Coastal Commission Permit No. A-78-75, four kelp stand study stations. In Spring 2005, mean densities of adult *Macrocystis pyrifera* ranged from 0.01 at Station NKS-1 to 0.18 plans per m^2 at Station CKS-2. The presence of adult plants had increased in recent years (2000-2004) when adults were absent or scare along all four transects. In Spring 2005, however, densities of adult plants decreased at all stations with the exception of the control site, CKS-2. A slight decrease in adult *Macrocystis pyrifera* was also observed in Spring 2004 as compared to Fall 2003.

In the Spring 2005 survey, mean densities of juvenile plants ranged from 0 at Station NKS-1 and SKS-3 to 0.05 per m^2 at Station CKS-2. From 2000 to 2003, the meanjunenile plant densities of all stations remained relatively constant during the spring survey, fluctuating between 0.02 and 0.03 plants per m^2. In 2004 the average density of juvenile plants across all stations fell to 0.003 plants per per m^2. In recent years, mean juvenile Fall plant densities surveyed had fallen from a high of 0.07 plants per m^2 in Fall 2000 to 0.01 plants per m^2 in Fall 2003. In fall 2004, however, overall mean juvenile plant densities increased to 0.045 plants per m^2, while in the Spring 2005 survey, 0.015 plants per m^2 were observed across all stations.

X. Rationale for Provisions

A. Standard Provisions

Standard Provisions, which in accordance with 40 CFR §§122.41and 122.42, apply to all NPDES discharges and must be included in every NPDES permit, are provided in Attachment D to the Order.

B. Special Provisions

1. Reopener Provisions

This Order may be modified in accordance with the requirements set forth at 40 CFR Parts 122 and 124 to include appropriate conditions or limitations to address demonstrated effluent toxicity based on newly available information, or to implement any U.S. EPA-approved new state water quality standards applicable to effluent toxicity.

2. Special Studies and Additional Monitoring Requirements

On June 9, 2004, U.S. EPA promulgated new requirements to minimize adverse environmental impacts associated with existing cooling water intake structures under Section 316(b) of the Clean Water Act. This regulation, commonly referred to as "316(b) Phase II", will require existing dischargers of a certain size to adopt new technologies to reduce impingement mortality and entrainment to within a targeted range, or demonstrate a reasonable alternative for compliance. The facility will be required to update existing 316(b) demonstration studies and to provide a basis for selecting a compliance strategy as BTA.

3. Best Management Practices and Pollution Prevention

Section 402 of the Clean Water Act and U.S. EPA regulations 40 CFR 122.44 (k) authorize the requirement of best management practices, or BMPs, in NPDES permits. BMPs are measures for controlling the generation of pollutants and their release to waterways. These measures are important tools for waste minimization and pollution prevention.

The Orders require the Discharger to maintain a BMP Plan that incorporates practices to achieve the objectives and specific requirements in the permit. The BMP Plan must be revised as new practices are developed for the facility.

The BMP Plan must be designed to prevent, or minimize the potential for, the release of toxic or hazardous pollutants, including any such pollutants from ancillary activities to waters of the United States. The BMP Plan shall be consistent with the general guidance contained in the U.S. EPA *Guidance Manual for Developing Best Management Practices (BMPs)* (EPA 833-B-93-004). The Discharger shall maintain the BMP Plan in an up-to-date condition and shall amend the BMP Plan in accordance with 40 CFR 125.100 - 125.104 whenever there is a change in facility design, construction, operation, or maintenance, which materially affects the

potential for discharge from the Encina Power Station facilities of significant amounts of hazardous or toxic pollutants into waters of the United States.

XI. Public Participation

The California Regional Water Quality Control Board, San Diego Region (Regional Water Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for the Encina Power Station. As a step in the WDR adoption process, the Regional Water Board staff has developed WDRs. The Regional Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through the posting of the item on the Regional Board web page and publication in the San Diego Union-Tribune.

B. Written Comments

The staff determinations are . Interested persons are invited to submit written comments concerning these WDRs. Comments should be submitted either in person or by mail to the Executive Office at the Regional Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Regional Water Board, written comments should be received at the Regional Water Board offices by 5:00 p.m. on **August 2, 2006.**

C. Public Hearing

The Regional Water Board will hold a public hearing on the WDRs during its regular Board meeting on the following date and time and at the following location:

Date: **August 16, 2006**
Time: **9:00 A.M.**
Location: **Water Quality Control Board**
9174 Sky park Court
San Diego, California 92123-4340

Interested persons are invited to attend. At the public hearing, the Regional Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our web address is www.waterboards.ca.gov/sandiego where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Resources Control Board to review the decision of the Regional Water Board regarding the final WDRs. The petition must be submitted within 30 days of the Regional Water Board's action to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

Order No. R9-2006-0043, the Report of Waste Discharge (RWD), related documents, comments received, and other information are on file and may be inspected at the Regional Board office located at 9174 Sky Park Court, San Diego between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Regional Water Board by calling (858) 467-2952.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Regional Water Board, reference this facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Bob Morris at (858) 467-2962 or Eric Becker at (858) 492-1785..

XII. Endnotes

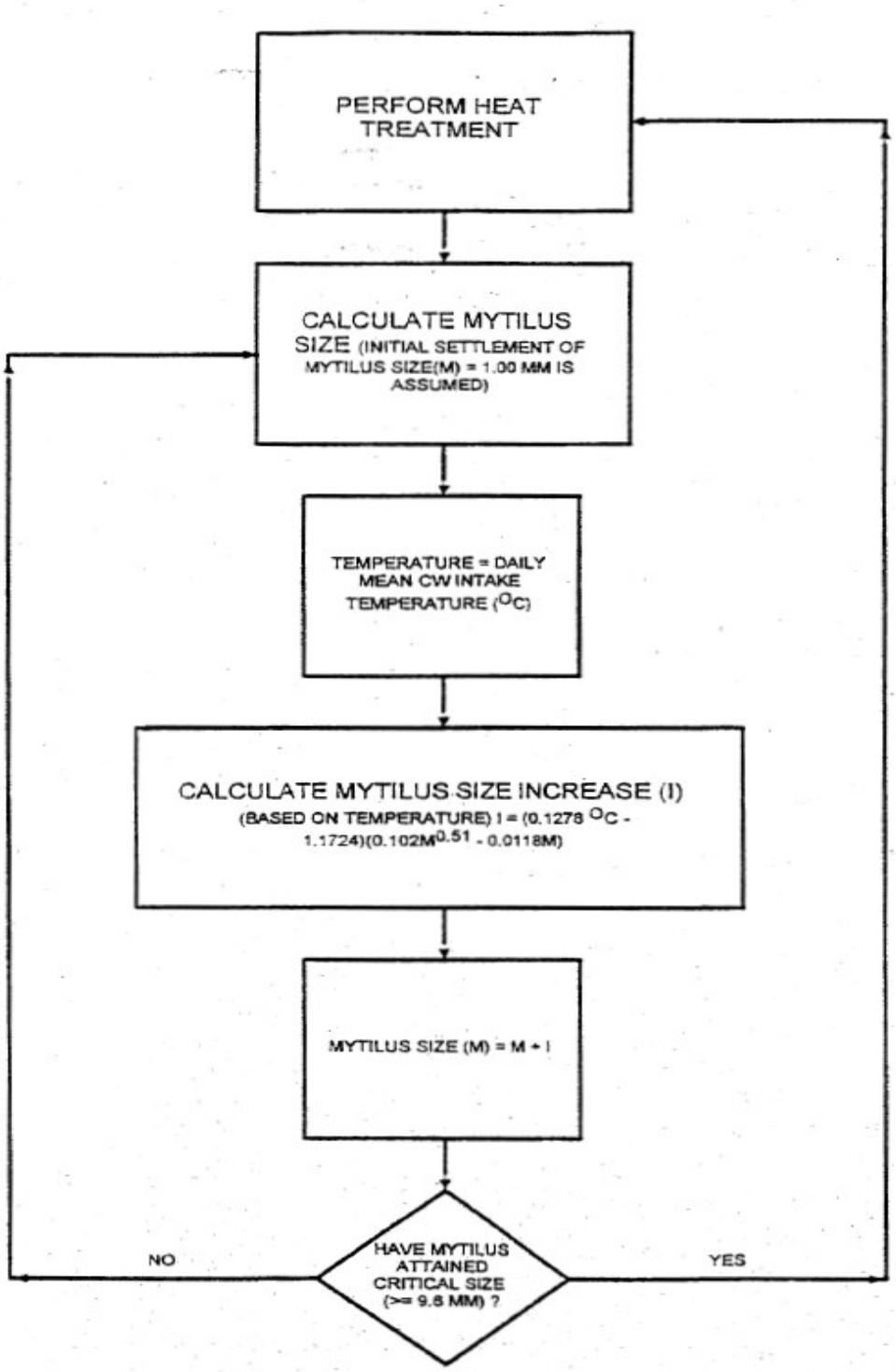
1. Samples shall be collected and analyzed for total chlorine residual at times when the concentrations of total chlorine residual in the combined discharge are greatest. On the day the samples are collected, the duration of chlorination and the time of sample collection shall be reported. The instantaneous chlorine residual limitation for intermittent discharges shall apply to this sample.

2. This sample should be taken when there is no chlorine residual resulting from chlorination of the main condensers. The 6-month and daily maximum limits for continuous chlorine discharges shall apply.

3. Sampling for general toxicity tests should be performed on days where expected inputs from in-plant waste streams are maximized or immediately subsequent to changes in the character of the discharge.

4. During chemical metal cleaning processes, toxicity testing shall be performed. Sampling shall occur at such time as to maximize the input from metal cleaning wastes. The sample shall consist of aliquots taken at least every hour that discharge of such waste occurs for a maximum of 24 hours. It is not necessary to perform toxicity testing during the discharge of Air Heater wash or Hypochlorinator wash waters.

ATTACHMENT G – HEAT TREATMENT DIAGRAM



ATTACHMENT WR-1B

Notice of Intent

State of California
State Water Resources Control Board

NOTICE OF INTENT

TO COMPLY WITH THE TERMS OF THE
GENERAL PERMIT TO DISCHARGE STORM WATER
ASSOCIATED WITH **INDUSTRIAL ACTIVITY** (WQ ORDER No. 97-03-DWQ)
(Excluding Construction Activities)

SECTION I. NOI STATUS (please check only one box)

A. [X] New Permittee B. [ ] Change of Information WDID # |_____|

SECTION II. FACILITY OPERATOR INFORMATION (See instructions)

A. NAME: Carlsbad Energy Center, LLC | Phone: 760-268-4011

Mailing Address: 4600 Carlsbad Boulevard

City: Carlsbad | State: CA | Zip Code: 92008

Contact Person: Jerry Carter

B. OPERATOR TYPE:
(check one) 1.[ ] Private Individual 2.[X] Business 3.[ ] Municipal 4.[ ] State 5.[ ] Federal 6.[ ] Other

SECTION III. FACILITY SITE INFORMATION

A. FACILITY NAME Carslbad Energy Center | Phone: 760-268-4018

Facility Location: 4600 Carlsbad Boulevard | County: San Diego

City: Carlsbad | State: CA | Zip Code: 92008

B. MAILING ADDRESS: 4600 Carlsbad Boulevard

City: Carlsbad | State: CA | Zip Code: 92008

Contact Person: Sheila Henika

C. FACILITY INFORMATION (check one)
Total Size of Site: 23 Acres [X] Sq. Ft. [ ]
Percent of Site Impervious (*including rooftops*) 45 %

D. SIC CODE(S) OF REGULATED ACTIVITY: E. REGULATED ACTIVITY (*describe each SIC code*):

1. 4911 Electric Generating
2.
3.

FOR STATE USE ONLY:

SECTION IV. ADDRESS FOR CORRESPONDENCE

[ ] Facility Operator Mailing Address (Section II)	[ ] Facility Mailing Address (Section III, B.)	[X] Both

SECTION V. BILLING ADDRESS INFORMATION

SEND BILL TO: [X] Facility Operator Mailing Address (Section II) [ ] Facility Mailing Address (Section III, B.) [ ] Other (*enter information below*)

Name:		Phone: ___-___-____
Mailing Address:		
City:	State: ___	Zip Code: _____-____
Contact Person:		

SECTION VI. RECEIVING WATER INFORMATION

Your facility's storm water discharges flow: (*check one*) [ ] Directly OR [X] Indirectly to waters of the United States.

Name of receiving water: Aqua Hedionda Lagoon
(river, lake, stream, ocean, etc.)

SECTION VII. IMPLEMENTATION OF PERMIT REQUIREMENTS

A. STORM WATER POLLUTION PREVENTION PLAN (SWPPP) (*check one*)
[X] A SWPPP has been prepared for this facility and is available for review.
[ ] A SWPPP will be prepared and ready for review by (enter date): ____/____/____.

B. MONITORING PROGRAM (check one)
[X] A Monitoring Program has been prepared for this facility and is available for review.
[ ] A Monitoring Program will be prepared and ready for review by (enter date): ____/____/____.

C. PERMIT COMPLIANCE RESPONSIBILITY
Has a person been assigned responsibility for:

1. Inspecting the facility throughout the year to identify any potential pollution problems?	✓ YES	___NO
2. Collecting storm water samples and having them analyzed?	✓ YES	___NO
3. Preparing and submitting an annual report by July 1 of each year?	✓ YES	___NO
4. Eliminating discharges other than storm water (*such as equipment or vehicle wash-water*) into the storm drain?	✓ YES	___NO

SECTION VIII. SITE MAP

I HAVE ENCLOSED A SITE MAP YES[X] A new NOI submitted without a site map will be rejected.

SECTION IX. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment. In addition, I certify that I have read the entire General Permit, including all attachments, and agree to comply with and be bound by all of the provisions, requirements, and prohibitions of the permit, including the development and implementation of a Storm Water Pollution Pervention Plan and a Monitoring Program Plan will be complied with."

Printed Name: Jerry Carter

Signature: _____ Date _____

Title: Plant Manager

DRAWING NUMBER 100971500-B2

APPROVED BY

CHECKED BY

DRAWN BY 8/17/07 SJZ

OFFICE Concord

X-REF ---

IMAGE CABRILLO

UNDARY

6" PIPE

INTERSTATE NO. 5

EXISTING R.O.W.

INTERSTATE NO. 5

EXISTING 6" PIPES

B-1 SAMPLING POINT

BASIN A

BASIN B1

FUEL OIL TANK # 4

18" CMP

STORM OUTLET

DISCHARGE AQUA HEDIONDA LAGOON

A SAMPLING POINT

STORM INLET

FUEL OIL TANK # 4 PIPING

GAS

SS

20" TL2009

29'-0" DIA. PIPE TUNNEL

SPOIL BERM FOR EXCAVATED BERM MATERIAL (APPROX EL. 66')

SPOIL AREA FOR EXCAVATED BERM MATERIAL (APPROX EL. 60')

PARKING AREA

SPOIL BERM FOR EXCAVATED BERM MATERIAL (APPROX EL. 66')

FUEL OIL TANK #1

FUEL OIL TANK #2

FUEL OIL TANK #3

CUTTER STOCK TANK

3-20,000 GAL OIL TANKS

CONTROL HOUSE

EVACUATION ASSEMBLY AREA

PARKING AREA

WASTEWATER CONTAINMENT AREA

OPEN

EQUIPMENT LIST

1 GAS TURBINE ENCLOSURE
2 HEAT RECOVERY STEAM GENERATOR (HRSG)
3 STEAM TURBINE
4 STEAM TURBINE FIN FAN COOLER
5A STEAM TURBINE GENERATOR TRANSFORMER
5B COMBUSTION TURBINE GENERATOR TRANSFORMER
6A FUEL GAS CONDITIONING/METERING
6B FUEL GAS COMPRESSORS ENCLOSURE
7 RAW / RECLAIM WATER TANK
8 DEMINERALIZED WATER STORAGE TANK
9 GAS TURBINE GENERATOR
10 STEAM TURBINE GENERATOR
11 FIRE WATER TANK
12 HEAVY HAUL ACCESS ROAD
13 HRSG STACK
14 AMMONIA STORAGE/ UNLOADING
15 OIL/WATER SEPARATOR
16 BALANCE OF PLANT POWER CONTROL CENTER
17 CONTINUOUS EMISSIONS MONITORING SYSTEM
18 SELECTIVE CATALYTIC REDUCTION SKID
19 CRANE MAINTENANCE PAD
20 LUBE OIL COOLER
21 ELECTRICAL PACKAGE
22 MEDIUM VOLTAGE SWITCHGEAR
23 BOILER BLOWDOWN TANK
24 BOILER FEEDWATER PUMP
25 ROTOR AIR FIN FAN COOLER
26 GENERATOR CIRCUIT BREAKER
27 AUXILIARY TRANSFORMER
28 GAS TURBINE INLET FILTER
29 AIR COMPRESSOR
30 STEAM TURBINE POWER CONTROL CENTER
31 GLAND STEAM CONDENSER
32 STEAM TURBINE LUBE OIL COOLER
33 CONDENSATE POLISHING FIN FAN COOLER
34 CHEMICAL DOSING EQUIPMENT
35 DEAERATOR/DRAIN TANKS/CONDENSATE PUMPS
36 RAW WATER FORWARDING PUMPS
37 FIRE WATER PUMPS ENCLOSURE
38 DEMINERALIZED WATER FORWARDING PUMPS
39 REVERSE OSMOSIS DRAIN
40 SECONDARY ACCESS ROAD

SCALE
0 150 300FEET

REFERENCE:
SHAW STONE & WEBSTER
DWG:100975_0_M_PP_006_F

Shaw® Shaw Environmental, Inc.

CARLSBAD ENERGY CENTER LLC
CARLSBAD ENERGY CENTER FACILITY
CARLSBAD, CALIFORNIA

FIGURE 2

SITE MAP

ATTACHMENT WR-3A

Record of Conversation

ATTACHMENT WR-3A

T E L E P H O N E C O N V E R S A T I O N R E C O R D

Call To: Mike Hogan
Manager
Encina Water Reclamation Facility

Phone No.: (760) 438-3941 ext3500 **Date:** October 11, 2007

Call From: Bob Wojcik **Time:** between 8:30 and 9:30am
Hofman Planning and Engineering

Message Taken By: Bob Wojcik

Subject: Carlsbad Energy Center Project – Availability of Reclaimed Water

I talked to Mike Hogan, and he indicated that there is no anticipated problem in delivering the quantity of reclaimed water for a future industrial user such as that amount requested in the CECP will-serve letter request.

ATTACHMENT WR-5A

City of Carlsbad Public Works Department Standard Urban Storm Water Mitigation Plan (SUSWMP) Storm Water Standards

City of Carlsbad
Public Works Department

Standard Urban Storm Water Mitigation Plan

Storm Water Standards

A Manual for Construction & Permanent Storm Water Best Management Practices Requirements

April 2003

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I. INTRODUCTION

1. Storm Water Standards Manual Organization

This manual is intended to provide information to applicants for private projects processed through the Development Services Division of the Engineering Department (DSD), on how to comply with the permanent and construction storm water requirements for new private and public development projects in the City of Carlsbad. This manual further guides the project applicant through the selection, design, and incorporation of storm water BMPs into the project's design plan.

Section 1, "Introduction," describes storm water pollution background information and legal or regulatory requirements associated with storm water pollution control.

Section II, "Project Review & Permitting Process," outlines the project plan review and approval process for both discretionary actions and construction permits for private development projects. Applicants should use Section II as the roadmap to navigate through this manual and ensure storm water requirements are accurately and efficiently incorporated into their projects during project review. The remaining sections provide technical information necessary to incorporate the storm water requirements in the review process outlined in Section II.

Section III, "Permanent Storm Water BMP Selection Procedure," lists the permanent storm water BMP requirements, which are organized into a progression intended to dovetail with a typical project planning and design process and maximize storm water protections while minimizing project costs. Section IV, "Construction Storm Water BMP Performance Standards," describes the City's construction storm water BMP standards. Section V, "Implementation & Maintenance of Requirements," describes how implementation and maintenance of construction and permanent BMPs must be assured for both construction permits and discretionary actions. For permanent BMPs, this section provides a process and requirements for executing a maintenance agreement with the City. Section VI contains appendices to the Storm Water Standards manual that are either necessary or designed to provide guidance in completing the storm water requirements in this manual.

2. Background

Urban runoff discharged from municipal storm water conveyance systems has been identified by local, regional, and national research programs as one of the principal causes of water quality problems in most urban areas. The City of Carlsbad's storm water conveyance system, which collects runoff and rainwater from our streets, rooftops, driveways, parking lots, and other impervious areas, flows directly to our beaches and lagoons without receiving treatment (our storm water conveyance system is separate from our sanitary sewer system). Urban runoff potentially contains a host of

pollutants like trash and debris, bacteria and viruses, oil and grease, sediments, nutrients, metals, and toxic chemicals. These contaminants can adversely affect receiving and coastal waters, associated wildlife, and public health. Urban runoff pollution is not only a problem during rainy seasons, but also year-round due to many types of urban water use that discharge runoff to the storm water conveyance system.

Storm water pollution can negatively affect human health and aquatic plant and animal life. Potentially harmful viruses and bacteria are now found in our coastal waters along with soil particles, solids/debris, litter, oil, grease, and chemical compounds. Oil and grease from parking lots, pesticides, cleaning solvents, and other toxic chemicals can contaminate storm water and these contaminants can be transported into receiving waters—the beaches, lagoons and creeks we all enjoy. Fertilizer constituents from lawns and golf courses or leaking septic tanks can cause algal blooms and encourage microbial growth to create an increasing spiral of biological activity known as eutrophication. Disturbances of the soil from construction can allow silt to wash into storm channels and receiving waters making them muddy, turbid, and inhospitable to natural aquatic organisms. Many artificial surfaces of the urban environment such as galvanized metal, paint, or preserved wood containing metals, contribute to pollution by storm water run-on or leaching by storm water as the surfaces corrode, flake, dissolve, or decay. Heavy metals, such as, copper from automobile brakes, and lead and chromium from paints and primer coatings, are toxic to aquatic organisms and may bio-accumulate.

Land development and construction activities significantly alter drainage patterns and contribute pollutants to urban runoff primarily through erosion and removal or change of existing natural vegetation during construction, and the creation of new impervious surfaces, such as parking lots, which often permanently contribute pollutants throughout the “use” of the project site. When homes, work places, recreational areas, roads, parking lots, and structures are built, new impervious areas are built- creating the potential for a “double-negative” impact to water quality. First, the natural landscape’s ability to infiltrate and cleanse storm water and urban runoff is “capped” by the impervious surfaces. As impervious surfaces increase, water that normally would have percolated into the soil where it could be naturally filtered now flows over the land surface directly to downstream wetlands, creeks, and eventually the Pacific Ocean. Accordingly, increases in impervious cover can increase the frequency and intensity of storm water flows. Second, new impervious surfaces often become a source of pollutants associated with development such as, automotive fluids, cleaning solvents, toxic or hazardous chemicals, detergents, sediment, metals, pesticides, oil and grease, and food wastes. These pollutants, which are often temporarily captured on impervious surfaces, are transported to the storm water conveyance system by storm water and urban runoff. The pollutants flow untreated through the storm water conveyance system and ultimately into our creeks, rivers, beaches, and lagoons. With the growing concerns of urban runoff and storm water pollution, local, state, and federal agencies devised regulations requiring development planning and construction controls to treat storm water-related pollution from new development projects before it reaches any receiving waters.

The Municipal Storm Water National Pollutant Discharge Elimination System (NPDES) Permit (Municipal Permit), issued on February 21, 2001 to the City of San Diego, the County of San Diego, the Port of San Diego, and 17 other cities in the region by the San Diego Regional Water Quality Control Board (Regional Board), requires the development and implementation of storm water regulations addressing storm water pollution issues in development planning and construction associated with private and public development projects. Specifically, private and public development projects are required to include storm water best management practices (BMPs) both during construction, and in the projects permanent design, to reduce pollutants discharged from the project site, to the maximum extent practicable (see Appendix C for a detailed description of the various types and categories of BMPs discussed in this manual). The primary objectives of the Storm Water Standards manual requirements are to: (1) Effectively prohibit non-storm water discharges; and (2) Reduce the discharge of pollutants from storm water conveyance systems to the Maximum Extent Practicable (MEP statutory standard) both during construction and throughout the use of a developed site. To address pollutants that may be generated from new development once the site is in use, the Municipal Permit further requires that the City implement a series of permanent BMPs described in a document called the Model Standard Urban Storm Water Mitigation Plan, or SUSMP (pronounced “sue-sump”), which was approved by the Regional Board on June 12, 2002.

The City’s Storm Water Standards manual is intended to provide information on how to comply with all of the City’s permanent and construction storm water BMP requirements, for new private and public development projects in the City of Carlsbad. The effective date of the Storm Water Standards manual is December 2, 2002, and applies to all projects requiring any permit approvals on or after December 2, 2002, even if the project is currently under review or if previous approvals have been obtained. These Standards will be modified from time to time and are effective on the date issued.

3. Legal Framework

The requirement to implement storm water BMP requirements for development projects is based on Section 402 (p) of the Clean Water Act. The Federal Clean Water Act amendments of 1987 established a framework for regulating storm water discharges from municipal, industrial, and construction activities under the NPDES program. Under the Federal Clean Water Act, municipalities throughout the nation are issued a Municipal NPDES Permit. The primary goal of the Municipal Permit is to reduce polluted discharges from entering the storm water conveyance system and local receiving and coastal waters and to ensure the beneficial uses of protected receiving waters.

In California, the State Water Resources Control Board (SWRCB), through the nine Regional Boards, administers the NPDES storm water municipal permitting program. Based on the San Diego Municipal Permit issued by the San Diego Regional Board, the City is required to develop and implement construction and permanent storm water BMPs addressing pollution from new private and public development projects.

II. PROJECT REVIEW & PERMITTING PROCESS

Per the National Pollution Discharge Elimination System (NPDES) permit (Order No. 2001-01 NPDES No. CAS0108758) the City of Carlsbad requires development and significant redevelopment, that fall under the category of "priority projects", include Best Management Practices (BMP's) be incorporated to ensure that those projects reduce potential urban pollutant runoff to the maximum extent practicable (MEP). These storm water pollution prevention requirements, which are described in detail in Sections III, "Permanent Storm Water Best Management Practices Selection Procedure," and Section IV, "Construction Storm Water Best Management Practices Performance Standards," are site specific and vary based on the project's potential impact on receiving water quality.

The steps below describe the elements of the development application plan review and permitting processes for storm water best management practice (BMP) requirements. The flow chart in Figure 1, "Review Process For Discretionary Actions" demonstrates how storm water requirements are incorporated into projects requiring subdivision approvals, development permits, discretionary actions or ministerial permits. The flow chart in Figure 2, "Construction Permit Review & Approval Process" describes how storm water requirements are incorporated into projects during the construction permit review process.

Public projects are also subject to the requirements of this Storm Water Standards manual, and although this manual is designed to address the development review process for private projects, City project managers should use this document to identify storm water requirements that must be incorporated into capital improvement projects.

Step 1: Determine Applicable Storm Water BMP Requirements

Prior to submittal, applicants must complete the "Storm Water Requirements Applicability Checklist" in Appendix A, to determine if their project is subject to permanent and construction storm water best management practice (BMP) requirements. (Note: this form must be completed for all permit applications, even if previous approvals exist. Projects with previous approvals will be required to comply with the storm water requirements in this document). This checklist must be completed, signed by the responsible party for the project, and submitted with the permit application. For private projects, the project design must include all required permanent BMPs prior to deeming the application package complete. For public projects, the City project manager shall review and approve the required BMP information prior to bidding for construction contracts.

Figure 1. Review Process for Discretionary Actions

The following figure provides an overview of the project review process for projects that require a discretionary action by the City of Carlsbad. Discretionary actions include land use plan amendments, rezonings, subdivisions, planned development permits, planned industrial permits, redevelopment permits, coastal development permits, conditional use permits, site development plans.

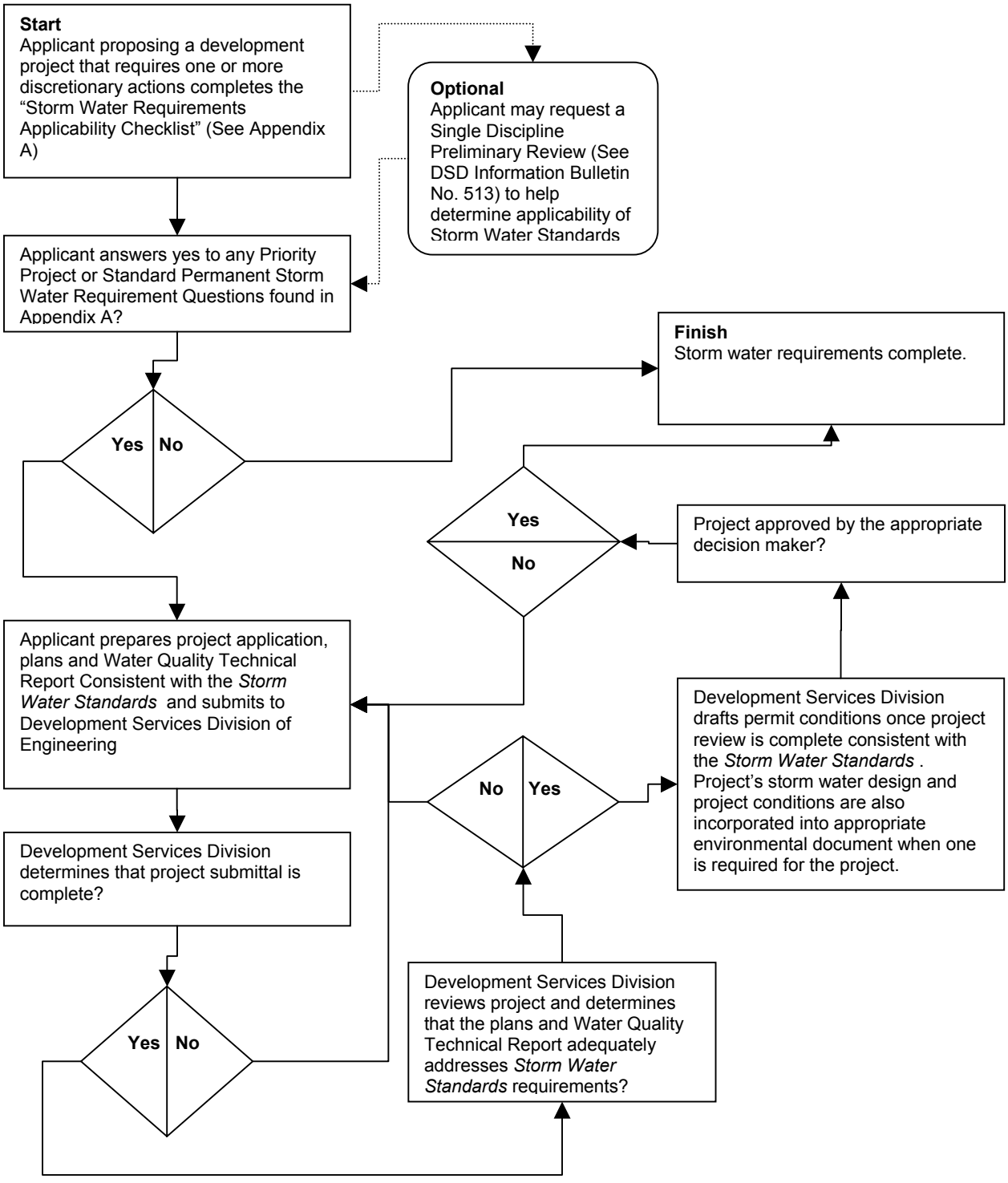
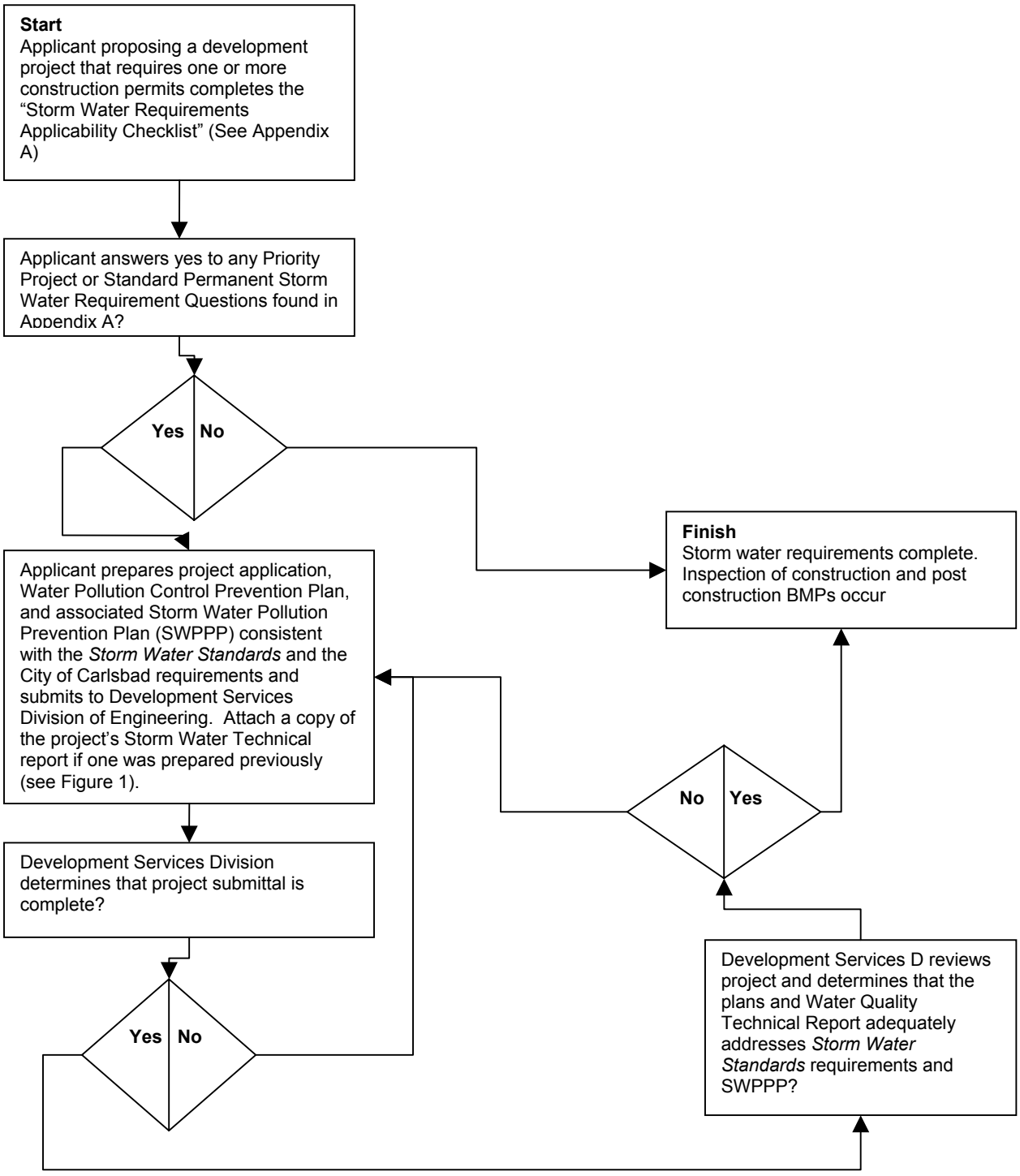


Figure 2. Construction Permit Review & Approval Process

The following figure provides an overview of the project review process for projects that require a construction permit from the City of Carlsbad. Construction permits include building permits, grading permits, demolition permits, ministerial permits and public right-of-way permits.



A. Permanent Storm Water BMP Requirements

i. Standard Requirements. Projects subject to standard permanent storm water requirements as appropriate will incorporate the site design and source control requirements identified in Sections III.2.A and B (requirements 1 through 15), into the project (see Table 1). Refer to Step 2: "Prepare & Submit Appropriate Plans," for guidance in the BMP design process.

ii. Priority Project Requirements. Projects subject to priority project permanent storm water requirements as appropriate will incorporate all applicable requirements in Section III.2, "Establish Permanent Storm Water Best Management Practices," (requirements 1 through 35) into the project design. This includes the site design and source control BMPs, BMPs applicable to individual priority project categories, and treatment control BMP requirements. If a priority project meets more than one priority project category definition, as shown in Table 1, the project is subject to all BMPs applicable to individual priority project categories that apply. For example, if a project is proposing to build 50 attached residential units and a 6,000 square foot restaurant with a 70-space surface parking lot, the project would be subject to the individual priority project category BMP requirements for "Attached Residential Development," "Restaurants," and "Parking Lots," as shown in Table 1 below. Refer to Step 2: "Prepare & Submit Appropriate Plans," for guidance in the permanent BMP design process.

Table 1. Standard Development Project & Priority Project Storm Water BMP Requirements Matrix.

	Site Design BMPs(1)	***Source Control BMPs(2)***	***BMPs Applicable to Individual Priority Project Categories(3)***										***Treatment Control BMPs(4)***
			a. Private Roads	b. Residential Driveways & Guest Parking	c. Dock Areas	d. Maintenance Bays	e. Vehicle Wash Areas	f. Equipment Wash Areas	g. Outdoor Processing Areas	h. Surface Parking Areas	i. Fueling Areas	j. Hillside Landscaping	
Standard Projects	R	R	O	O	O	O	O	O	O	O	O	O	O
Priority Projects:													
Detached Residential Development	R	R	R	R								R	S
Attached Residential Development	R	R	R										S
Commercial Development >100,000 ft^2	R	R			R	R	R		R				S
Automotive Repair Shop	R	R			R	R	R	R			R		S
Restaurants	R	R			R			R					S
Hillside Development >5,000 ft^2	R	R	R									R	S
Parking Lots	R	R								R(5)			S
Streets, Highways & Freeways	R	R											S

R = Required; select one or more applicable and appropriate BMPs from the applicable steps in Section III.2.A-D, or equivalent as identified in Appendix C.

O = Optional/ or may be required by City staff. As appropriate, applicants are encouraged to incorporate treatment control BMPs and BMPs applicable to individual priority project categories into the project design. City staff may require one or more of these BMPs, where appropriate.

S = Select one or more applicable and appropriate treatment control BMPs from Appendix C.

(1) Refer to Section III.2.A.

(2) Refer to Section III.2.B.

(3) Priority project categories must apply specific storm water BMP requirements, where applicable. Priority projects are subject to the requirements of all priority project categories that apply.

(4) Refer to Section III.2.D.

(5) Applies if the paved area totals >5,000 square feet or with >15 parking spaces and is potentially exposed to urban runoff.

B. Construction Storm Water BMP Requirements

Projects subject to the construction storm water best management practices requirements must comply with the standards included in Section IV, "Construction Storm Water BMP Performance Standards," as appropriate depending on the site conditions, season, and project design, and construction methods. Each project must be given a priority ranking (high, medium or low) for the construction phase (see Appendix A). The prioritization will determine the inspection frequency by City staff but will not change the construction BMP requirements. Refer to Step 2: "Prepare & Submit Appropriate Plans," for guidance in navigating through this manual to ensure construction BMP performance standards are met.

Step 2 – Prepare & Submit Appropriate Plans.

After determining the general categories of storm water requirements that apply to the project in Step 1 (e.g., construction BMPs, standard permanent BMPs, and/or priority project permanent BMPs), refer to the instructions in this step (see below) to determine what analysis and/or specific BMP requirements in Sections III and IV of the Storm Water Standards manual must be provided and/or incorporated into the project[1].

A. Permanent Storm Water BMPs

Section III, "Permanent Best Management Practices Selection Procedure," contains a process for reviewing the project site's location and preliminary project design before progressively identifying and incorporating site design BMPs, source control BMPs, requirements for individual priority project types, and treatment control BMPs into the project design. The procedure is organized so that the level of analysis required is commensurate with the potential pollutant type and quantity, the location of the project relative to sensitive receiving waters, and with the type of storm water requirements that apply to a particular project.

i. Standard Requirements. Projects (requiring either discretionary actions or construction permits), subject to only standard permanent BMP requirements need only to complete the "Identify Pollutants from the Project Area" procedure (Section III.1.A), and then incorporate the requirements in Section III.2.A, "Site Design BMPs" and Section III.2.B, "Source Control BMPs" (requirements 1-15). Applicants must incorporate all necessary permanent BMPs into the project plans prior to submittal, regardless of project type. Analysis of the project's anticipated pollutants of concern must also be included with the project submittal.

[1] Projects are only required to provide applicable BMPs. For example, an attached residential development project subject to the priority project requirements would not have to meet the "private road" requirements in this manual if no private roads were proposed. In addition, the City Engineer may approve proposed alternatives to the BMP requirements in this manual if they are determined to be applicable and equally effective.

ii. Priority Project Requirements. Projects (requiring either discretionary actions or construction permits), subject to the priority project permanent BMP requirements must complete all of the analyses required in Section III.1, "Identify Pollutants and Conditions of Concern," and incorporate all of the applicable BMP requirements in Section III.2, "Establish Storm Water BMP Requirements" (requirements 1-33). Applicants must incorporate all necessary permanent BMPs into the project plans prior to submittal, regardless of project type. In addition, projects subject to priority project requirements must prepare and submit a Water Quality Technical Report in accordance with Appendix D. Analysis of the project's anticipated pollutants of concern, anticipated pollutants of concern in downstream receiving waters, and conditions of concern, must also be included in the Water Quality Technical Report as part of the project submittal.

B. Construction Storm Water BMPs

Section IV, "Construction Storm Water BMP Performance Standards," describes the construction site management requirements that contractors must comply with. In addition, Section IV lists the performance standards that construction sites must meet, and provides a list of erosion control, sediment control, and materials management BMPs for reference. Additionally, each project must be given a priority of high, medium or low (see Appendix A). (Note: Prioritization of construction projects will determine the inspection frequency by City staff and may be changed during the construction process based on the potential for pollutants to be discharged from the site.)

i. Those projects that have been determined to require construction BMPs in Step 1 must identify the construction BMPs to be implemented in accordance with the performance standards in Section IV, "Construction Storm Water BMP Performance Standards." The applicant must provide a Storm Water Pollution Prevention Plan (SWPPP), which identifies all construction BMP requirements required by Section IV, in accordance with Order No. 99-08-DWQ of the State General Permit for Storm Water Discharges Associated with Construction Activity (State General Construction Permit). For projects that disturb 1-acre or more, and are determined to have a potential to impact water quality during construction, the applicant must provide a Water Pollution Control Plan (WPCP), which identifies all construction BMP requirements required by Section IV, with the project submittal. The WPCP shall depict the BMP's to be implemented during construction to reduce/eliminate discharges of pollutants to the storm drain conveyance system. The WPCP shall include but not be limited to erosion and sediment control BMP's, good housekeeping measures and site and materials management.

Consistent with the State General Construction Permit, the City will require that both erosion and sediment control BMPs be installed and maintained for all applicable projects in addition to good housekeeping and site and materials management. Appendix E provides general guidelines for preparation of a SWPPP as well as a more detailed checklist to meet the requirements.

After preparing plans and supporting documents according to the requirements in this manual, submit plans to the Development Services Division of the Engineering Department for review (See Step 3).

Step 3 – Determine Adequacy of Proposed Plans.

The City Engineer will review submitted plans for compliance with the applicable storm water requirements contained in this manual. The City Engineer may approve proposed alternatives to the BMP requirements in this manual if they are determined to be applicable and equally effective. Additional analysis or information may be required to enable staff to determine the adequacy of proposed BMPs, and will be requested through a project issues report following the conclusion of a staff review cycle. After all storm water requirements have been approved by the City Engineer, proceed to Step 4 to assure implementation and maintenance of the approved BMPs through permit conditions, plan notes, and if necessary, maintenance agreements.

Step 4 -- Assure Implementation & Maintenance of Requirements.

Applicants must provide assurances that required permanent storm water BMPs will be constructed and permanently maintained throughout the use of a developed site, and that construction BMPs will be implemented and maintained until construction is complete. The summaries below describe how construction and permanent BMP requirements must be assured during both discretionary actions and construction permit review processes. After the City Engineer has approved all construction and/or permanent BMPs, refer to Section V, “Implementation & Maintenance of Requirements” to determine how construction and permanent BMP implementation and maintenance will be assured.

A. Discretionary Action

For any discretionary action, required permanent storm water requirements shall be incorporated into the project design and be shown on the plans. If the project will be required to provide construction BMPs, the permit/approval shall include the “Standard Construction BMP Implementation And Maintenance Condition” listed in Section V, “Implementation & Maintenance of Requirements”.

B. Construction Permits

For projects requiring construction permits, construction and required permanent BMP requirements shall be incorporated into the project design and shown on the plans prior to the issuance of any permits. Construction and permanent BMP requirements shall also be noted on the plans. Any construction BMP requirements that cannot be shown graphically must be noted on the plans.

C. Public Projects

For public projects, required permanent, as well as construction, BMP requirements must be incorporated into the project design and shown on the plans prior to bidding for construction contracts, or equivalent. Public project contracts must also add the requirement for the project to implement and maintain construction BMP requirements in accordance with this manual.

III. PERMANENT BEST MANAGEMENT PRACTICES SELECTION PROCEDURE

When referred to this Section, by Step 2 of Section II, complete the analysis required for your project in the subsections of Section III.1 below.

1. IDENTIFY POLLUTANTS & CONDITIONS OF CONCERN

A. Identify Pollutants from the Project Area

Using Table 1, identify the project's anticipated pollutants. Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern. Projects meeting the definition of more than one project category shall identify all general pollutant categories that apply.

Table 2. Anticipated and Potential Pollutants Generated by Land Use Type.

	General Pollutant Categories								
Project Categories	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P(1)	P(2)	P(1)	X
Commercial Development >100,000 ft^2	P(1)	P(1)		P(2)	X	P(5)	X	P(3)	P(5)
Automotive Repair			X	X(4)(5)	X		X		
Restaurants					X	X	X	X	
Hillside Development >5,000 ft^2	X	X			X	X	X		X
Parking Lots	P(1)	P(1)	X		X	P(1)	X		P(1)
Streets, Highways & Freeways	X	P(1) X	X	X(4)	X	P(5)	X		

X = anticipated
P = potential
(1) A potential pollutant if landscaping exists on-site.
(2) A potential pollutant if the project includes uncovered parking areas.
(3) A potential pollutant if land use involves food or animal waste products.
(4) Including petroleum hydrocarbons.
(5) Including solvents.

B. Identify Pollutants of Concern in Receiving Waters

For priority projects, the following analysis shall be conducted and reported in the project's Water Quality Technical Report:

1. For each of the proposed projects discharge points, identify the receiving water(s) that each discharge point proposes to discharge to, including hydrologic unit basin number(s), as identified in the most recent version of the *Water Quality Control Plan for the San Diego Basin*[2], prepared by the San Diego Regional Water Quality Control Board.
2. Identify any receiving waters, into which the developed area would discharge to, listed on the most recent list of Clean Water Act Section 303(d) impaired water bodies[3]. List any and all pollutants for which the receiving waters are impaired.

Sites tributary to Clean Water Act section 303(d) water bodies impaired for sediment and sites discharging directly into environmentally sensitive areas (ESA) require additional BMP implementation. These sites are by definition classified as posing a high threat to water quality. In the 1998 303(d) listing, the Agua Hedionda Lagoon is impaired for sediment and siltation. Buena Vista Lagoon also has impaired beneficial uses (aquatic life) due to high sedimentation/siltation. Portions of Carlsbad where construction sites have the potential to discharge into a tributary of a 303(d) or directly into a 303(d) water body or sites located within 200 feet of an ESA require additional BMP implementation. These water bodies include the Pacific Ocean, Buena Vista Lagoon, Encinas Creek, Agua Hedionda Lagoon, and Batiquitos Lagoon.

C. Identify Conditions of Concern

For priority projects, the following analysis shall be conducted and reported in the project's Water Quality Technical Report:

1. Evaluate the project's conditions of concern in a drainage study report prepared by a registered civil engineer in the State of California, with experience in the science of stream and river generated surface features (i.e., fluvial geomorphology) and water resources management. The report shall consider the project area's location (from the larger watershed perspective), topography, soil and vegetation conditions, percent impervious area, natural and infrastructure drainage features, and any other relevant hydrologic and environmental factors to be protected specific to the project area's watershed.
2. As part of the drainage study, the applicant's civil engineer shall conduct a field reconnaissance to observe and report on downstream conditions, including undercutting erosion, slope stability, vegetative stress (due to flooding, erosion, water quality degradation, or loss of water supplies) and the area's susceptibility to erosion or habitat alteration as a result of any future upstream development.

2. Go to: http://www.swrcb.ca.gov/~rwqcb9/Programs/Basin_PLanning/Basin_PLan/basin_plan.html
3. Go to: http://www.swrcb.ca.gov/tmdl/303d_lists.html. San Diego is in Region 9 (a link is provided).

3. The drainage study shall utilize the most recent edition of the San Diego County Hydrology Manual, compute rainfall runoff characteristics from the project area including, at a minimum, runoff volume, time of concentration, and retention volume. These characteristics shall be developed for the two-year and 10-year frequency, Type I storm, of six-hour or 24-hour duration (whichever is the closer approximation of the site's time of concentration), during critical hydrologic conditions for soil and vegetative cover[4]. The drainage study shall also report the project's conditions of concern based on the hydrologic and downstream conditions discussed above. Where downstream conditions of concern have been identified, the drainage study shall establish that pre-project hydrologic conditions that minimize impacts on those downstream conditions of concern would be either improved or maintained by the proposed project, satisfactory to the City Engineer, by incorporating the permanent BMP requirements identified in Section III.2, below.

2. ESTABLISH PERMANENT STORM WATER BEST MANAGEMENT PRACTICES

After identifying the project's pollutants of concern, and conditions of concern (for priority projects), in Section III.1, projects subject to standard or priority project requirements shall implement all applicable site design, source control BMPs listed below. Projects subject to priority project requirements must also implement the BMPs applicable to individual priority project categories and structural treatment control BMPs. Applicants may employ alternative comparable and equally effective site design and source control BMPs (including requirements applicable to individual priority project categories), satisfactory to the City Engineer.

Projects are encouraged to address these objectives through the creation of a hydrologically functional project design that attempts to mimic the natural hydrologic regime. Mimicking a site's natural hydrologic regime may be pursued by:

- Reducing imperviousness, conserving natural resources and areas, maintaining and using natural drainage courses in the storm water conveyance system, and minimizing clearing and grading that is necessary for the project.
- Providing runoff storage measures dispersed uniformly throughout a site's landscape with the appropriate use of a variety of detention, retention, and runoff practices.
- Implementing on-lot hydrologically functional landscape design and management practices.

4. Design storms can be found at http://www.wrcc.dri.edu/pcpnfreq.html.

These design principles offer an innovative approach to urban storm water management, one that does not rely on the conventional end-of-pipe or in-the-pipe structural methods but instead uniformly or strategically integrates storm water controls throughout the urban landscape. Useful resources for applying these principles are referenced in Appendix G. Effective source controls offer another strategy to reduce a project's need for treatment. Therefore, projects shall incorporate, where applicable, storm water BMPs into the project design, in the following progression:

- Site Design BMPs
- Source Control BMPs
- BMPs for Individual Priority Project Categories (these are site design and source control BMPs)
- Treatment Control BMPs

The series of best management practices listed in Section III.2 have been organized sequentially to allow the applicant and design professional to incorporate the site design, source control BMPs, and where necessary, requirements applicable to individual priority project categories and treatment control BMPs in this progression.

A. Site Design BMPs

Maintain Pre-Development Rainfall Runoff Characteristics

Control post-development peak storm water runoff discharge rates and velocities to maintain or reduce pre-development development downstream erosion by applying the following or similar concepts:

1. Minimize impervious footprint to the maximum extent practicable consistent with the General Plan, Municipal Code, and other City standards by utilization of measures of the following types: (1) Increase building density (number of stories above or below ground); (2) construct walkways, trails, patios, overflow parking lots and alleys and other low-traffic areas with permeable surfaces, such as pervious concrete, porous asphalt, unit pavers, and granular materials; (3) construct streets, sidewalks and parking lot aisles to the minimum widths required, provided that public safety and a walkable environment for pedestrians are not compromised; and (4) minimize the use of impervious surfaces, such as decorative concrete, in the landscape design.
2. Conserve natural areas. (1) Concentrate or clustering development on the least environmentally sensitive portions of a site while leaving the remaining land in a natural, undisturbed condition; and (2) Use natural drainage systems to the maximum extent practicable.
3. Minimize Directly Connected Impervious Areas. (1) Where landscaping is proposed, drain rooftops into adjacent landscaping prior to discharging to the storm water conveyance system; and (2) where landscaping is proposed, drain impervious parking lots, sidewalks, walkways, trails, and patios into adjacent landscaping.
4. Maximize canopy interception and water conservation consistent with the Carlsbad Landscape Manual. (1) Preserve existing native trees and shrubs; and (2) plant additional native or drought tolerant trees and large shrubs in place of non-drought tolerant exotics.

Protect Slopes and Channels

5. Convey runoff safely from the tops of slopes.
6. Vegetate slopes with native or drought tolerant vegetation where practicable consistent with the Carlsbad Landscape Manual.
7. Stabilize permanent channel crossings.
8. Install energy dissipaters, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable standards and specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.

B. Source Control BMPs

Design Outdoor Material Storage Areas to Reduce Pollution Introduction

9. Hazardous materials with the potential to contaminate urban runoff shall be: (1) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with rain, runoff or spillage to the storm water conveyance system; and (2) protected by secondary containment structures such as berms, dikes, or curbs. The storage area shall be paved and sufficiently impervious to contain leaks and spills, and have a roof or awning to minimize direct precipitation within the secondary containment area.

Design Trash Storage Areas to Reduce Pollution Introduction

10. Trash storage areas shall be: (1) paved with an impervious surface, designed not to allow run-on from adjoining areas, screened or walled to prevent off-site transport of trash; and) contain attached lids on all trash containers that exclude rain; or contain a roof or awning to minimize direct precipitation.

Limited exclusion: detached residential homes.

Use Efficient Irrigation Systems & Landscape Design

11. Employ rain shutoff devices to prevent irrigation during precipitation consistent with the Carlsbad Landscape Manual.
12. Design irrigation systems to each landscape area's specific water requirements consistent with the Carlsbad Landscape Manual.

Limited exclusion: detached residential homes.

Provide Storm Water conveyance System Stenciling and Signage

13. Provide concrete stamping, porcelain tile, inset permanent marking or equivalent as approved by the City of Carlsbad, of all storm water conveyance system inlets and catch basins within the project area with prohibitive language (e.g., “No Dumping – I Live Downstream”), satisfactory to the City Engineer.
14. Post signs and prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area, trailheads and parks.

C. BMPs Applicable to Individual Priority Project Categories

Where identified in Table 1, the following requirements shall be incorporated into applicable priority projects. Projects shall adhere to each of the individual priority project category requirements that apply to the project (e.g., a restaurant with more than 15 parking spaces would be required to incorporate the requirements for "h. Parking Areas" into the project design).

a. Private Roads

15. The design of private roadway drainage where appropriate, shall incorporate, to the extent practicable, (1) rural swale system- street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings; (2) urban curb/swale system- street slopes to curb, periodic swale inlets drain to vegetated swale/biofilter; or (3) dual drainage system- first flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, (4) other treatment control BMP methods approved by the City Engineer to reduce storm water runoff pollution.

b. Residential Driveways & Guest Parking

16. Driveways shall have, to the extent practicable, one of the following: (1) shared access; (2) flared entrance (single lane at street); (3) wheelstrips (paving only under tires); or (4) designed to drain into landscaping prior to discharging to the storm water conveyance system.

17. Uncovered temporary or guest parking on private residential lots shall be, to the extent practicable,: (1) paved with a permeable surface; or (2) designed to drain into landscaping prior to discharging to the storm water conveyance system.

c. Dock Areas

18. Loading/unloading dock areas shall include the following: (1) cover loading dock areas, or design drainage to preclude urban run-on and runoff; and (2) Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.

d. Maintenance Bays

19. Maintenance bays shall include at least one of the following: (1) repair/ maintenance bays shall be indoors; or, (2) designed to preclude urban run-on and runoff.

20. Maintenance bays shall include a repair/maintenance bay drainage system to capture all wash water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm water conveyance system is prohibited. Where areas are allowed to connect to the sanitary sewer system, an Industrial Waste Permit from the Encina Water Pollution Control Facility may be required.

e. & f. Vehicle & Equipment Wash Areas

21. Areas for washing/steam cleaning of vehicles and areas for outdoor equipment/accessory washing and steam cleaning shall be: (1) self-contained to preclude run-on and run-off, covered with a roof or overhang, and equipped with a clarifier or other pretreatment facility; and (2) properly connected to a sanitary sewer if appropriate. Where areas are connected to a sanitary sewer, an Industrial Waste Permit may be required from the Encina Water Pollution Control Facility.

g. Outdoor Processing Areas

22. Outdoor processing areas shall: (1) cover or enclose areas that would be the most significant source of pollutants; or, (2) slope the area toward a dead-end sump or, (3) discharge to the sanitary sewer system
23. Grade or berm processing area to prevent run-on from surrounding areas.
24. Installation of storm drains in areas of equipment repair is prohibited.

h. Surface Parking Areas

25. Where landscaping is proposed in surface parking areas (both covered and uncovered), incorporate landscape areas into the drainage design.
26. Overflow parking (parking in excess of the project's minimum parking requirements) may be constructed with permeable paving subject to the City Engineer’s approval.

i. Non-Retail Fueling Areas

Non-Retail fueling areas shall be designed with the following:

27. Fuel dispensing area that is: (1) paved with Portland cement concrete or equivalent smooth impervious surface (asphalt concrete is prohibited); (2) designed to extend 6.5 feet from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot, whichever is greater; (3) sloped to prevent ponding; (4) separated from the rest of the site by a grade break that prevents run-on of urban runoff; and (5) designed to drain to the project's treatment control BMP(s) prior to discharging to the storm water conveyance system.
28. Overhanging roof structure or canopy that is: (1) equal to or greater than the area within the fuel dispensing area's grade break; and (2) designed not to drain onto or across the fuel dispensing area.

j. Hillside Landscaping

29. Hillside areas disturbed by project development shall be landscaped with deep-rooted, drought tolerant plant species selected for erosion control, in accordance with the with the Carlsbad Landscape Manual.

D. Treatment Control BMPs

30. Where identified in Table 1, and after site design and source control BMPs have been incorporated into the project, applicants of priority projects shall design a single or combination of treatment control BMPs designed to infiltrate, filter, and/or treat runoff from the project footprint to one of the "Numeric Sizing Treatment Standards" listed in Table 3, below. Applicants must use the Structural Treatment BMP Selection Procedure outlined in Section III.2.D.i, below to select appropriate treatment control BMPs. Applicants are encouraged to design projects so that runoff is treated by site design BMPs, such as rooftop runoff treated in landscaping, so that it may be applied towards the numeric sizing treatment standards, satisfactory to the City Engineer. In addition, applicants are encouraged to apply a "drainage basin approach" in meeting the treatment requirements. Treating entire hydrologic sub-drainages, which often extend off-site, is an equitable, environmentally sound regional solution that applies treatment requirements to hydrologically defined areas, rather than legally defined parcels. When integrated with other projects, this approach can provide a more efficient and cost effective method of treatment by locating fewer, more effective BMPs to treat entire sub-drainages once. In all instances, structural treatment BMP(s) may be located on- or off-site, used singly or in combination, or shared by multiple new developments, pursuant to the following criteria:

    (a) All structural treatment control BMPs shall infiltrate, filter, and/or treat the required runoff volume or flow prior to discharging to any receiving water body supporting beneficial uses;

    (b) Multiple post-construction structural treatment control BMPs for a single priority project shall collectively be designed to comply with the numeric sizing treatment standards;

    (c) Shared BMPs shall be operational prior to the use of any dependent development or phase of development. The shared BMPs shall only be required to treat the dependent developments or phases of development that are in use;

    (d) Interim storm water BMPs that provide equivalent or greater treatment than is required may be implemented by a dependent development until each shared BMP is operational. If interim BMPs are selected, the BMPs shall remain in use until permanent BMPs are operational.

Table 3. Numeric Sizing Treatment Standards.

Volume

1. Volume-based BMPs shall be designed to mitigate (infiltrate, filter, or treat) the volume of runoff produced from a 24-hour 85th percentile storm event, as determined from isopluvial maps contained in the County of San Diego Hydrology Manual.

OR

Flow

2. Flow-based BMPs shall be designed to mitigate (infiltrate, filter, or treat) the maximum flow rate of runoff produced from a rainfall intensity of 0.2 inch of rainfall per hour for each hour of a storm event.

i. Structural Treatment BMP Selection Procedure

Priority projects shall select a single or combination of treatment BMPs from the categories in Table 4 that maximize pollutant removal for the particular pollutant(s) of concern. Any pollutants the project is expected to generate that are also causing a Clean Water Act section 303(d) impairment of the downstream receiving waters of the project should be given top priority in selecting treatment BMPs.

To select a structural treatment BMP using the Structural Treatment Control BMP Selection Matrix (Table 4), each priority project shall compare the list of pollutants for which the downstream receiving waters are impaired (if any). According to the 1998 303(d) listing, the Agua Hedionda Lagoon is impaired for sediment and siltation. Buena Vista Lagoon also has impaired beneficial uses (aquatic life) due to high sedimentation/siltation. Portions of Carlsbad where construction sites have the potential to discharge into a tributary of a 303(d) or directly into a 303(d) water body or sites located within 200 feet of an ESA require additional BMP implementation. These water bodies include the Pacific Ocean, Buena Vista Lagoon, Encinas Creek, Agua Hedionda Lagoon, and Batiquitos Lagoon.

Priority projects that are not anticipated to generate a pollutant for which the receiving water is Clean Water Act Section 303(d) impaired shall select a single or combination of structural treatment BMPs from Table 4 that are effective for pollutant removal of the identified pollutants of concern determined to be most significant for the project. Selected BMPs must be effective for the widest range of pollutants of concern anticipated to be generated by a priority project (as identified in Table 1).

Alternative storm water BMPs not identified in Table 4 may be approved at the discretion of the City Engineer, provided the alternative BMP is as effective in removal of pollutants of concern as other feasible BMPs listed in Table 4.

Table 4. Structural Treatment Control BMP Selection Matrix.

Pollutant of Concern	*Treatment Control BMP Categories*						
	Biofilters	Detention Basins	Infiltration Basins(1)	Wet Ponds or Wetlands	Drainage Inserts	Filtration	Hydrodynamic Separator Systems(2)
Sediment	M	H	H	H	L	H	M
Nutrients	L	M	M	M	L	M	L
Heavy Metals	M	M	M	H	L	H	L
Organic Compounds	U	U	U	U	L	M	L
Trash & Debris	L	H	U	U	M	H	M
Oxygen Demanding Substances	L	M	M	M	L	M	L
Bacteria	U	U	H	U	L	M	L
Oil & Grease	M	M	U	U	L	H	L
Pesticides	U	U	U	U	L	U	L

(1) Including trenches and porous pavement.
(2) Also known as hydrodynamic devices and baffle boxes.

L: Low removal efficiency
M: Medium removal efficiency
H: High removal efficiency
U: Unknown removal efficiency

Sources: *Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters* (1993), *National Stormwater Best Management Practices Database* (2001), and *Guide for BMP Selection in Urban Developed Areas* (2001).

ii. Restrictions on the Use of Infiltration Treatment BMPs

31. Treatment control BMPs that are designed to primarily function as infiltration devices shall meet the following conditions (these conditions do not apply to treatment BMPs which allow incidental infiltration and are not designed to primarily function as infiltration devices, such as grassy swales, detention basins, vegetated buffer strips, constructed wetlands, etc.): (1) urban runoff from commercial developments shall undergo pretreatment to remove both physical and chemical contaminants, such as sedimentation or filtration, prior to infiltration; (2) all dry weather flows shall be diverted from infiltration devices except for those non-storm water discharges authorized pursuant to 40 CFR 122.26(d)(2)(iv)(B)(1): diverted stream flows, rising ground waters, uncontaminated ground water infiltration [as defined at 40 CFR 35.2005(20)] to storm water conveyance systems, uncontaminated pumped ground water, foundation drains, springs, water from crawl space pumps, footing drains, air conditioning condensation, flow from riparian habitats and wetlands, water line flushing, landscape irrigation, discharges from potable water sources other than water main breaks, irrigation water, individual residential car washing, and dechlorinated swimming pool discharges; (3) pollution prevention and source control BMPs shall be implemented at a level appropriate to protect groundwater quality at sites where infiltration structural treatment BMPs are to be used; (4) the vertical distance from the base of any infiltration structural treatment BMP to the seasonal high groundwater mark shall be at least 10 feet. Where groundwater does not support beneficial uses, this vertical distance criterion may be reduced, provided groundwater quality is maintained; (5) the soil through which infiltration is to occur shall have physical and

chemical characteristics that are adequate for proper infiltration durations and treatment of urban runoff for the protection of groundwater beneficial uses; (6) the horizontal distance between the base of any infiltration structural BMP and any water supply wells shall be 100 feet or as determined appropriate by the City Engineer.

32. Notification to neighboring jurisdictions may be required where staff determines the infiltration BMP(s) may impact the groundwater in a neighboring jurisdiction.

Structural Treatment Limited Exclusions

(a.) Proposed restaurants, where the land area for development or redevelopment is less than 5,000 square feet, are excluded from the numerical sizing criteria requirements listed in Table 3.

(b.) Where significant redevelopment results in an increase of less than 50 percent of the impervious surfaces of a previously existing development, and the existing development was not subject to priority project requirements, the numeric sizing criteria apply only to the addition, and not to the entire development.

IV. CONSTRUCTION STORM WATER BMP PERFORMANCE STANDARDS

Those projects that have been determined to require construction BMPs in Steps 1 and 2 of Section II, must identify the construction BMPs to be implemented in accordance with the performance standards in this section. The construction BMPs must be identified in a Storm Water Pollution Prevention Plan or Water Pollution Control Plan for projects disturbing more than 1-acre. These plans must be prepared in accordance with the guidelines in Appendix E.

It is the responsibility of the property owner and/or contractor to select, install and maintain appropriate BMPs. A list of construction BMPs is provided for reference in Appendix F. BMPs must be installed in accordance with an industry recommended standard or in accordance with the requirements of the State General Construction Permit. More information about BMPs is provided in the Model Construction Program for San Diego Copermittees, the City of Los Angeles "Reference Guide for Stormwater Best Management Practices," State Storm Water BMP Manuals, and Caltrans Standard BMP handbook.

BMP requirements differ between the rainy season(Oct. 1 – Apr. 30) and the dry season (May 1 – Sept. 30), the type of the project and topography of the site, as described below.

1. Site Management Requirements

Construction is a dynamic operation where changes are expected. Storm water BMPs for construction sites are usually temporary measures that require frequent maintenance to maintain their effectiveness and may require relocation, revision and re-installation, particularly as project grading progresses. Therefore, owner/contractor self-inspections are required. They shall be performed by the owner's/contractor's Qualified Contact Person specifically trained in storm water pollution prevention site management and storm water BMPs, including the installation and maintenance of sediment and erosion control measures. Additional qualified persons may assist with the inspection activities under the direction of the Qualified Contact Person. A Qualified Contact Person is required for all sites during both wet and dry weather conditions.

There are four primary purposes of the self-inspections conducted by owners and contractors:

- To ensure that the owners/contractors take full responsibility for managing storm water pollution caused by their activities.
- To ensure that storm water BMPs are properly documented and implemented and are functioning effectively.
- To identify maintenance (e.g., sediment removal) and repair needs.
- To ensure that the project proponents implement their storm water management plans.

A self-inspection checklist, noting date, time, conditions and inspection date, must be kept on-site and made available for inspection, if requested. Self-inspections must be performed by a Qualified Contact Person according to the following schedule:

- Daily weather forecasting at all times
- At 24-hour intervals during extended rainfall events
- Daily evaluations as earth moving/grading is being conducted during the wet season
- Weekly (every 7 days) in the dry season as earth moving/grading is progressing
- Self inspection checklists shall be submitted to the project inspector on a weekly basis during the rainy season.

Storm water pollution prevention site management requirements include:

A. A qualified person who is trained and competent in the use of BMPs shall be on site daily, although not necessarily full time, to evaluate the conditions of the site with respect to storm water pollution prevention. This qualified contact person shall represent the contractor/ owner on storm water issues.
B. The qualified person shall implement the conditions of the Storm Water Pollution Prevention Plan, contract documents and/or local ordinances with respect to erosion and sediment control and other waste management regulations.
C. The qualified person is responsible for monitoring the weather and implementation of any emergency plans as needed. The weather shall be monitored on a 5-day forecast plan and a full BMP protection plan shall be activated when there is a 40% chance of rain.
D. The qualified person is responsible for overseeing any site grading and operations and evaluating the effectiveness of the BMPs. This person shall modify the BMPs as necessary to keep the dynamics of the site in compliance. This person or other qualified persons are responsible for checking the BMPs routinely for maintenance and documenting the BMPs being implemented.

2. Performance Standards

The City of Carlsbad will evaluate the adequacy of the owner's/contractor's site management for storm water pollution prevention, inclusive of BMP implementation, on construction sites based on performance standards for storm water BMPs. Poor BMP practices shall be challenged. Performance standards shall include:

A. Prevent increase in pollution to the maximum extent practicable.
B. Minimize slope erosion.
C. Control discharge velocities moving offsite to limit down stream erosion potential to the pre-construction levels. .

A site will be considered inactive if construction activities have ceased for a period of 7 or more consecutive calendar days. At any time of year, an inactive site must be fully protected from erosion and discharges of sediment. It is also the owner's/contractor's responsibility at both active and inactive sites to implement a plan to address all potential non-storm water discharges.

Regardless of any inspections conducted by the City, property owners or contractors are required to prevent any construction-related materials, trash, wastes, spills or residues from entering a storm water conveyance system.

3. Seasonal Requirements

A. Dry Season Requirements (May 1 through September 30):

1. Perimeter protection BMPs must be installed and maintained to comply with performance standards (above).
2. Sediment control BMPs must be installed and maintained to comply with performance standards (above).
3. BMPs to control sediment tracking must be installed and maintained at entrances/exits to comply with performance standards (above).
4. Material needed to install standby BMP's necessary to completely protect the exposed portions of the site from erosion, and to prevent sediment discharges, must be stored on site Areas that have already been protected from erosion using physical stabilization or established vegetation stabilization BMP's as described below are not considered to be "exposed" for purposes of this requirement.
5. The owner/contractor must have an approved "weather triggered" action plan and have the ability to deploy standby BMPs as needed to completely protect the exposed portions of the site within 24 hours of prediction of a storm event (a predicted storm event is defined as a forecasted, 40% chance of rain). On request, the owner/contractor must provide proof of this capability that is acceptable to the City of Carlsbad.
6. Deployment of physical or vegetation erosion control BMP's must commence as soon as grading and/or excavation is completed for any portion of the site. The project proponent may not continue to rely on the ability to deploy standby BMP materials to prevent erosion of graded areas that have been completed.
7. The area that can be cleared or graded and left exposed at one time is limited to the amount of acreage that the owner/contractor can adequately protect prior to a predicted rainstorm.

Requirement "7" will require grading to be phased at larger sites. For example, it may be necessary to deploy erosion and sediment control BMPs in areas that are not completed but are not actively being worked before additional grading is done.

B. Rainy Season Requirements (October 1 through April 30):

1. Perimeter protection BMPs must be installed and maintained to comply with performance standards (above).
2. Sediment control BMPs must be installed and maintained to comply with performance standards (above).
3. BMPs to control sediment tracking must be installed and maintained at site entrances/exits to comply with performance standards (above).
4. Material needed to install standby BMPs necessary to completely protect the exposed portions of the site from erosion, and to prevent sediment discharges, must be stored on site. Areas that have already been protected from erosion using physical stabilization or established vegetation stabilization BMPs as described below are not considered to be "exposed" for purposes of this requirement.
5. The owner/contractor must have an approved "weather triggered" action plan and have the ability to deploy standby BMPs as needed to completely protect the exposed portions of the site within 24 hours of prediction of a storm event (a predicted storm event is defined as a forecasted, 40% chance of rain). On request, the owner/contractor must provide proof of this capability that is acceptable to the City of Carlsbad.
6. Deployment of physical or vegetation erosion control BMPs must commence as soon as grading and/or excavation is completed for any portion of the site. The owner/contractor may not continue to rely on the ability to deploy standby BMP materials to prevent erosion of graded areas that have been completed.
7. The area that can be cleared or graded and left exposed at one time is limited to the amount of acreage that the owner/contractor can adequately protect prior to a predicted rainstorm.
8. Erosion control BMPs must be upgraded if necessary to provide sufficient protection for storms likely to occur during the rainy season.
9. Perimeter protection and sediment control BMPs must be upgraded if necessary to provide sufficient protection for storms likely to occur during the rainy season.
10. Adequate physical or vegetation erosion control BMPs must be installed and established for all graded areas prior to the start of the rainy season. These BMPs must be maintained throughout the rainy season. If a selected BMP fails, it must be repaired and improved, or replaced with an acceptable alternate as soon as it is safe to do so. The failure of a BMP shows that the BMP, as installed, was not adequate for the circumstances in which it was used and shall be corrected or modified as necessary. Repairs or replacements must therefore put a more effective BMP in place.
11. All vegetation erosion control must be established prior to the rainy season to be considered as a BMP.

V. IMPLEMENTATION & MAINTENANCE OF REQUIREMENTS

After all project BMPs have been approved by the City Engineer, applicants and City project managers must ensure implementation and maintenance of the BMPs according to the processes outlined in the applicable sections for projects requesting discretionary actions, construction permits, or for public projects. In addition, any project that will require a "General NPDES Permit for Storm Water Discharges Associated with Industrial Activities," shall include the following note on the plans and condition in the permit/approval:

Industrial NPDES Permit Requirement

"The Permittee or designee (or contractor for public projects) shall provide evidence of coverage under the General Industrial National Pollutant Discharge Elimination System Permit, in the form of a Notice of Intent (NOI) filed with the State Water Resources Control Board, prior to the issuance of any construction permits."

1. Discretionary Actions

A. *Permanent BMP Requirements.* Applicants proposing projects that include permanent BMPs shall enter into a maintenance agreement, satisfactory to the City, following the program outlined in the "Permanent Storm Water BMP Maintenance Agreement Requirements" below, prior to the issuance of any permits or approvals. The permanent BMPs shall be graphically shown on the plans, where possible, and made a condition of the project's permit/approval. The permanent BMP's operation and maintenance requirements (O & M plan discussed below) shall also be noted on the plans and made a condition of the project's permit/approval.

B. *Construction BMP Requirements.* Projects seeking discretionary approvals are not required to graphically demonstrate any construction BMP requirements on the project plans. Instead, the discretionary action shall be conditioned to provide BMP's in accordance with the City's Storm Water Standards.

2. Construction Permits

A. *Construction Permits for Projects Under 1 Acre*. Projects proposing to disturb less than 1 acre during construction shall include construction requirements, where possible, on the plans. Any remaining construction BMPs that cannot be shown graphically on the plans shall be either noted on, or stapled to, the plans (Water Pollution Control Plan) and made a condition of the permit. The project's construction priority ranking (see Appendix E) must also be noted on the construction plans. Applicants proposing projects that include permanent BMPs must prepare (if not already prepared as part of a previous permit or approval), and execute a maintenance agreement, prepared satisfactory to the City, following the program outlined below prior to the issuance of any construction permits. The permanent BMPs shall be graphically shown on the plans, where

possible, and made a condition of the project's permit/approval. The permanent BMP's operation and maintenance requirements (O & M plan discussed below) shall also be noted on the plans and made a condition of the project's permit/approval.

B. *Construction Permits for Projects Over 1 Acre*. Projects proposing to disturb more than 1 acre during construction shall include all construction BMPs in a Storm Water Pollution Prevention Plan, prepared in accordance with Appendix E, "Storm Water Pollution Prevention Plan Guidelines." The construction BMPs shall also be shown on the plans, where possible. Any remaining construction BMPs that cannot be shown graphically on the plans shall be either noted or stapled to the plans and made a condition of the permit. The project's construction priority ranking (see Appendix A) must also be noted on the construction plans. Applicants proposing projects that include permanent BMPs must prepare (if not already prepared as part of a previous permit or approval), and execute a maintenance agreement, prepared satisfactory to the City, following the program outlined below prior to the issuance of any construction permits. The permanent BMPs shall be graphically shown on the plans, where possible, and made a condition of the project's permit/approval. The permanent BMP's operation and maintenance requirements (O & M plan discussed below) shall also be noted on the plans and made a condition of the project's permit/approval.

3. Public Projects

Construction and Permanent storm water requirements must be incorporated into the project design and described in the contract documents (plans and specifications) prior to bidding for construction contracts, or equivalent. In addition, the permanent BMP's maintenance requirements shall also be noted on the plans and/or specifications and made a condition of the project's permit/approval. Project Managers should utilize the standard boiler specification and expound upon any project specific requirements.

For projects disturbing over 1 acre, City project managers must include the requirement for the preparation of a Storm Water Pollution Prevention Plan in the contract documents to be sent out to bid. The contract documents must also include the requirement for the contractor to periodically update the Storm Water Pollution Prevention Plan throughout the construction phase of the project.

For projects disturbing less than 1 acre, City projects shall have a specific Water Pollution Control Plan developed to identify construction BMP requirements prior to sending the public project contracts out to bid. The contract documents shall include a requirement for the contractor to update the Water Pollution Control Plan throughout the construction phase of the project.

4. Permanent BMP Maintenance Agreement Requirements

Applicants shall propose a maintenance agreement assuring all permanent BMPs will be maintained throughout the “use” of a project site, satisfactory to the City Engineer (see Appendix H for a list of potential mechanisms). The City-approved method of permanent BMP maintenance shall be incorporated into the project's construction permit, and shall be consistent with permits issued by resource agencies, before City approval of the permit.

City project managers carrying out public projects that are not required to obtain permits shall be responsible for ensuring that a client department-approved method of storm water BMP maintenance, repair and replacement is executed prior to the commencement of construction.

For all properties, the verification mechanism will include the project proponent's signed statement, as part of the project application, accepting responsibility for all permanent BMP maintenance, repair and replacement.

The maintenance agreement shall include the following:

1. Operation & Maintenance (O&M) Plan: The applicant shall include an Operation & Maintenance (O&M) plan, prepared satisfactory to the City, with the approved maintenance agreement, which describes the designated responsible party to manage the storm water BMP(s), employee's training program and duties, operating schedule, maintenance frequency, routine service schedule, specific maintenance activities (including maintenance of storm water conveyance system stamps), copies of resource agency permits, and any other necessary activities. At a minimum, maintenance agreements shall require the applicant to provide inspection and servicing of all permanent treatment BMPs on an annual basis. The project proponent or City-approved maintenance entity shall complete and maintain O&M forms to document all maintenance requirements. Parties responsible for the O&M plan shall retain records for at least 5 years. These documents shall be made available to the City for inspection upon request at any time.

2. Access Easement/Agreement: If a permanent BMP requires access for maintenance, as part of the O&M plan , the applicant shall execute and record an access easement or agreement that shall be binding on the under lying land throughout the life of the project in favor of the party responsible for maintenance, until such time that the permanent treatment BMP requiring access for maintenance is removed or replaced. The City shall approve any changes to permanent BMP’s, O&M Plans or access agreements. The agreement shall include a provision that gives the City the right, but not the obligation to perform the maintenance. The party responsible for BMP maintenance will pay the City for any and all costs incurred by the City for maintaining any BMP’s. The agreement will provide a cost recovery provision in favor of the City satisfactory to the City Attorney.

VI. RESOURCES & REFERENCES

APPENDIX A

STORM WATER REQUIREMENTS APPLICABILITY CHECKLIST

Complete Sections 1 and 2 of the following checklist to determine your project's permanent and construction storm water best management practices requirements. This form must be completed and submitted with your permit application.

Section 1. Permanent Storm Water BMP Requirements:
If any answers to Part A are answered "Yes," your project is subject to the "Priority Project Permanent Storm Water BMP Requirements," and "Standard Permanent Storm Water BMP Requirements" in Section III, "Permanent Storm Water BMP Selection Procedure" in the *Storm Water Standards* manual.

If all answers to Part A are "No," and any answers to Part B are "Yes," your project is only subject to the "Standard Permanent Storm Water BMP Requirements". If every question in Part A and B is answered "No," your project is exempt from permanent storm water requirements.

Part A: Determine Priority Project Permanent Storm Water BMP Requirements.

Does the project meet the definition of one or more of the priority project categories?*	**Yes**	**No**
1. Detached residential development of 10 or more units		
2. Attached residential development of 10 or more units		
3. Commercial development greater than 100,000 square feet		
4. Automotive repair shop		
5. Restaurant		
6. Steep hillside development greater than 5,000 square feet		
7. Project discharging to receiving waters within Environmentally Sensitive Areas		
8. Parking lots greater than or equal to 5,000 ft^2 or with at least 15 parking spaces, and potentially exposed to urban runoff		
9. Streets, roads, highways, and freeways which would create a new paved surface that is 5,000 square feet or greater		
* Refer to the definitions section in the *Storm Water Standards* for expanded definitions of the priority project categories.		
Limited Exclusion: Trenching and resurfacing work associated with utility projects are not considered priority projects. Parking lots, buildings and other structures associated with utility projects are priority projects if one or more of the criteria in Part A is met. If all answers to Part A are "No", continue to Part B.		

Part B: Determine Standard Permanent Storm Water Requirements.

Does the project propose:	Yes	No
1. New impervious areas, such as rooftops, roads, parking lots, driveways, paths and sidewalks?		
2. New pervious landscape areas and irrigation systems?		
3. Permanent structures within 100 feet of any natural water body?		
4. Trash storage areas?		
5. Liquid or solid material loading and unloading areas?		
6. Vehicle or equipment fueling, washing, or maintenance areas?		
7. Require a General NPDES Permit for Storm Water Discharges Associated with Industrial Activities (Except construction)?*		
8. Commercial or industrial waste handling or storage, excluding typical office or household waste?		
9. Any grading or ground disturbance during construction?		
10. Any new storm drains, or alteration to existing storm drains?		
*To find out if your project is required to obtain an individual General NPDES Permit for Storm Water Discharges Associated with Industrial Activities, visit the State Water Resources Control Board web site at, www.swrcb.ca.gov/stormwtr/industrial.html		

Section 2. Construction Storm Water BMP Requirements:

If the answer to question 1 of Part C is answered "Yes," your project is subject to Section IV, "Construction Storm Water BMP Performance Standards," and must prepare a Storm Water Pollution Prevention Plan (SWPPP). If the answer to question 1 is "No," but the answer to any of the remaining questions is "Yes," your project is subject to Section IV, "Construction Storm Water BMP Performance Standards," and must prepare a Water Pollution Control Plan (WPCP). If every question in Part C is answered "No," your project is exempt from any construction storm water BMP requirements. If any of the answers to the questions in Part C are "Yes," complete the construction site prioritization in Part D, below.

Part C: Determine Construction Phase Storm Water Requirements.

Would the project meet any of these criteria during construction?	Yes	No
1. Is the project subject to California's statewide General NPDES Permit for Storm Water Discharges Associated With Construction Activities?		
2. Does the project propose grading or soil disturbance?		
3. Would storm water or urban runoff have the potential to contact any portion of the construction area, including washing and staging areas?		
4. Would the project use any construction materials that could negatively affect water quality if discharged from the site (such as, paints, solvents, concrete, and stucco)?		

Part D: Determine Construction Site Priority

In accordance with the Municipal Permit, each construction site with construction storm water BMP requirements must be designated with a priority: high, medium or low. This prioritization must be completed with this form, noted on the plans, and included in the SWPPP or WPCP. Indicate the project's priority in one of the check boxes using the criteria below, and existing and surrounding conditions of the project, the type of activities necessary to complete the construction and any other extenuating circumstances that may pose a threat to water quality. The City reserves the right to adjust the priority of the projects both before and during construction. [Note: The construction priority does NOT change construction BMP requirements that apply to projects; all construction BMP requirements must be identified on a case-by-case basis. The construction priority does affect the frequency of inspections that will be conducted by City staff. See Section IV.1 for more details on construction BMP requirements.]

❑ *A) High Priority*

1) Projects where the site is 50 acres or more and grading will occur during the rainy season
2) Projects 5 acres or more. 3) Projects 5 acres or more within or directly adjacent to or discharging directly to a coastal lagoon or other receiving water within an environmentally sensitive area

   Projects, active or inactive, adjacent or tributary to sensitive water bodies

❑ *B) Medium Priority*

1) Capital Improvement Projects where grading occurs, however a Storm Water Pollution Prevention Plan (SWPPP) is not required under the State General Construction Permit (i.e., water and sewer replacement projects, intersection and street re-alignments, widening, comfort stations, etc.)
2) Permit projects in the public right-of-way where grading occurs, such as installation of sidewalk, substantial retaining walls, curb and gutter for an entire street frontage, etc. , however SWPPPs are not required.
3) Permit projects on private property where grading permits are required, however, Notice Of Intents (NOIs) and SWPPPs are not required.

❑ *C) Low Priority*

1) Capital Projects where minimal to no grading occurs, such as signal light and loop installations, street light installations, etc.
2) Permit projects in the public right-of-way where minimal to no grading occurs, such as pedestrian ramps, driveway additions, small retaining walls, etc.
3) Permit projects on private property where grading permits are not required, such as small retaining walls, single-family homes, small tenant improvements, etc.

APPENDIX B

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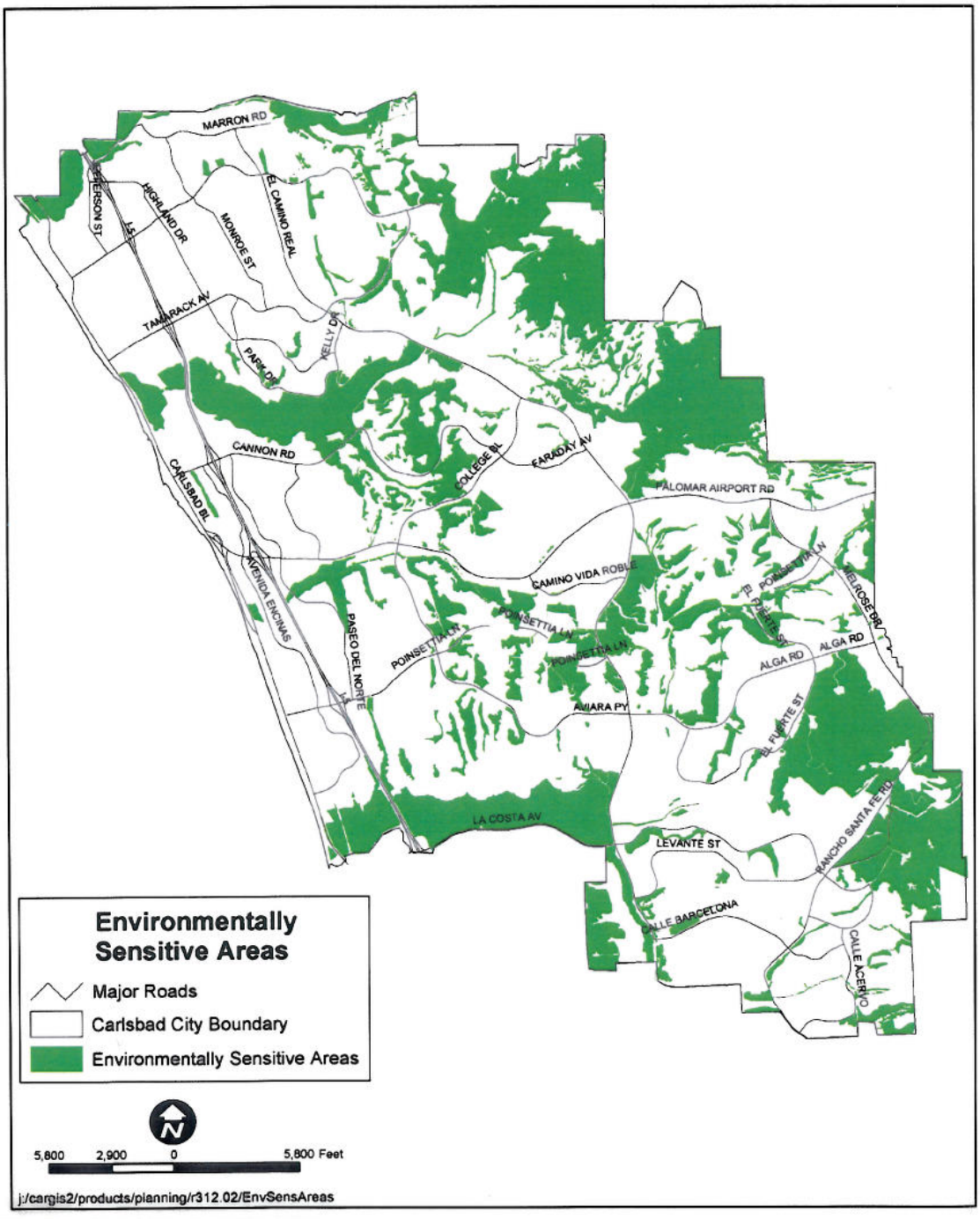
ENVIRONMENTALLY SENSITIVE AREAS WITHIN THE CITY OF CARLSBAD



APPENDIX C

EXAMPLE PERMANENT STORM WATER BEST MANAGEMENT PRACTICES

The following are a list of BMPs that may be used to minimize the introduction of pollutants of concern that may result in significant impacts to receiving waters. Other BMPs approved by the Development Services Division as being equal or more effective in pollutant reduction than comparable BMPs identified below are acceptable. All BMPs must comply with local zoning and building codes and other applicable regulations.

Site Design BMPs

Minimizing Impervious Areas Consistent With City Standards, Ordinances and Policies

- Incorporate landscaped buffer areas between sidewalks and streets.
- Design residential streets for the required pavement widths
- Minimize the number of residential street cul-de-sacs and incorporate landscaped areas to reduce their impervious cover.
- Use open space development that incorporates smaller lot sizes
- Increase building density while decreasing the building footprint
- Reduce overall lot imperviousness by promoting alternative driveway surfaces and shared driveways that connect two or more homes together
- Reduce overall imperviousness associated with parking lots by providing compact car spaces, minimizing stall dimensions, incorporating efficient parking lanes, and using pervious materials in spillover parking areas

Increase Rainfall Infiltration

- Use permeable materials for private sidewalks, driveways, parking lots, and interior roadway surfaces (examples: hybrid lots, parking groves, permeable overflow parking, etc.) to the extent practicable consistent with City standards.
- Direct rooftop runoff to pervious areas such as yards, open channels, or vegetated areas, and avoid routing rooftop runoff to the roadway or the urban runoff conveyance system to the extent practicable consistent with City standards.

Maximize Rainfall Interception

- Maximizing canopy interception and water conservation by preserving existing native trees and shrubs, and planting additional native or drought tolerant trees and large shrubs. to the extent practicable consistent with City Landscape Manual.

Minimize Directly Connected Impervious Areas (DCIAs)

- Draining rooftops into adjacent landscaping prior to discharging to the storm water conveyance system to the extent practicable consistent with City standards
- Draining parking lots into landscape areas co-designed as biofiltration areas to the extent practicable consistent with City standards
- Draining roads, sidewalks, and impervious trails into adjacent landscaping to the extent practicable consistent with City standards

Use of natural drainage systems to the maximum extent practicable

- Stabilized permanent channel crossings
- Planting native or drought tolerant vegetation on slopes to the extent practicable consistent with City Landscape Manual.

Maximize Rainfall Interception

- Cisterns
- Foundation planting

Increase Rainfall Infiltration

- Dry wells

Source Control BMPs

- Storm water conveyance system stenciling and signage
- Outdoor material and trash storage area designed to reduce or control rainfall runoff
- Efficient irrigation system

Treatment Control BMPs

Biofilters

- Grass swale
- Grass strip
- Wetland vegetation swale
- Bioretention

Detention Basins

- Extended/dry detention basin with vegetated lining
- Extended/dry detention basin with impervious lining

Infiltration

- Infiltration basin
- Infiltration trench

Pervious Paving

- Porous asphalt
- Porous concrete
- Porous modular concrete block

Wet Ponds and Wetlands

- Wet pond (permanent pool)
- Constructed wetland

Drainage Inserts

- Catch basin/storm drain inserts
- Catch basin screens

Filtration Systems

- Media filtration
- Sand filtration

Hydrodynamic Separation Systems

- Swirl concentrator
- Cyclone separator
- Baffle boxes

APPENDIX D

WATER QUALITY TECHNICAL REPORT GUIDELINES

Purpose

To describe the permanent storm water Best Management Practices (BMPs) that will be incorporated in the project to mitigate the impacts of urban runoff due to the development.

Minimum Requirements

- Prepared by Registered Civil Engineer

Organization & Content

Table of Contents
Vicinity Map
Project Description
- Narrative of project activities

Site Map
- Entire property included on one map (use key map if multi-sheets)
- Drainage areas and direction of flow
- Private storm drain system(s)
- Nearby water bodies and municipal storm drain inlets
- Location of storm water conveyance systems (ditches, inlets, storm drains, etc.)
- Location of existing and proposed storm water controls
- Location of "impervious" areas- paved areas, buildings, covered areas
- Locations where materials would be directly exposed to storm water
- Location of building and activity areas (e.g. fueling islands, garages, waste container area, wash racks, hazardous material storage areas, etc.)
- Areas of potential soil erosion (including areas downstream of project)

Pollutants and Conditions of Concern
- Name and number of Carlsbad Watershed Hydrological UnitImpaired water bodies downstream of the project and impairment
- Impacts to hydrologic regime
- Pollutants based upon land use

Types of BMPs:

Site Design BMPs
- Reduce impervious surfaces
- Conserve natural areas
- Minimize directly connected impervious areas
- Protect slopes and channels

Source Control BMPs

- Inlet stenciling and signage
- Materials Storage
- Trash storage
- Efficient irrigation
- Other controls (as applicable)

Structural Treatment BMPs

- Basis for selection (include targeted pollutants, justification, and alternative analysis)
- Design criteria (include calculations)
- Pollutant removal information (other than vendor specifications)
- Literature References

Maintenance (i.e. identify the responsible parties who will implement the Best Management Practices)

- Maintenance schedule
- Maintenance Costs
- Qualifications of maintenance personnel

Drainage Study

APPENDIX E

STORM WATER POLLUTION PREVENTION PLAN/WATER POLLUTION CONTROL PLAN GUIDELINES

At a minimum, the Storm Water Pollution Prevention Plan (SWPPP) or Water Pollution Control Plan (WPCP), whichever is required, must cover the areas listed below. The SWPPP must be kept on site and made available upon request of a representative of the City of Carlsbad. Projects that are also required to obtain a general construction National Pollutant Discharge Elimination System (NPDES) Permit are encouraged to visit the State Water Resource Control Board's website for permit application instructions, NOI and NOT forms and guidance in preparing a Storm Water Pollution Prevention Plan (go to: www.swrcb.ca.gov/stormwtr/docs/constpermit).

Planning and Organization

- Identify the pollution prevention team members who will maintain and implement the SWPPP.
- If applicable, incorporate or reference the appropriate elements of other regulatory requirements.

Site Map

Features displayed on the map must include:

- An outline of the entire property
- Drainage areas on the property and direction of flow
- Areas of soil erosion
- Nearby water bodies and municipal storm drain inlets
- Location of storm water conveyance systems (ditches, inlets, storm drains, etc.)
- Location of existing storm water controls (oil/ water separators, sumps, etc.)
- Location of "impervious" areas- paved areas, buildings, covered areas
- Locations where materials are directly exposed to storm water
- Locations where toxic or hazardous materials have spilled in the past
- Location of building and activity areas (e.g. fueling islands, garages, waste container area, wash racks, hazardous material storage areas, etc.)

List of Significant Materials

List materials stored and handled at the site. Include the location and typical quantities.

Description of Potential Pollutant Sources

- Provide a narrative description of the site's activities and list the potential pollutant sources and the potential pollutants that could be discharged in storm water discharges from each activity.
- List non-storm water discharges including the source, quantity, frequency, and characteristics of the discharges and drainage area.

Assessment of Potential Sources

Describe which activities are likely to be sources of pollution in storm water and which pollutants are likely to be present in storm water discharges.

Best Management Practices

Describe the BMPs that will be implemented at the site for each potential pollutant and its source.

APPENDIX F

EXAMPLE CONSTRUCTION BEST MANAGEMENT PRACTICES

A. Erosion Control

Physical stabilization BMPs, vegetation stabilization BMPs, or both, will be required to prevent erosion and sediment runoff from exposed graded areas. BMPs for physical and vegetation stabilization include:

1) Physical Stabilization
    a) Geotextiles
    b) Mats
    c) Fiber rolls
    d) Sprayed on binders
    e) Mulch on flat areas
    f) Other material approved by the City for use in specific circumstances

If physical stabilization is selected, materials must be appropriate to the circumstances in which they are deployed, and sufficient material must be deployed.

2) Vegetation Stabilization
    a) Preservation of existing vegetation
    b) Established interim vegetation (via Hydroseed, seeded mats, etc.)
    c) Established permanent landscaping

If vegetation stabilization is selected, the stabilizing vegetation must be installed, irrigated and established (uniform vegetative coverage with 70% coverage established) prior to October 1. In the event stabilizing vegetation has not been established by October 1, other forms of physical stabilization must be employed to prevent erosion until the stabilizing vegetation is established.

B. Sediment Control

2) Perimeter protection. Protect the perimeter of the site or exposed area from sediment ingress/discharge in sheet flows using:
    a) Silt fencing
    b) Gravel bag barriers
    c) Fiber rolls

3) Resource protection. Protect environmentally sensitive areas, and watercourses from sediment in sheet flows by using:
    a) Silt fencing
    b) Gravel bag barriers
    c) Fiber rolls

4) Sediment Capture. Capture sediments in channeled storm water by using:
    a) Storm-drain inlet protection measures
    b) De-silting basins (Designed in accordance with an industry standard such as Caltrans, California Storm water BMP manual etc. If the project is 5 acres or greater the desilting basin(s) must be designed in accordance with the State General Construction Permit, Order DWQ 99-08.)

5) Velocity Reduction. Reduce the velocity of storm water by using:
    a) Outlet protection (energy dissipater)
    b) Equalization basins
    c) Check dams

6) Off-site Sediment Tracking. Prevent sediment from being tracked off-site by using:
    a) Stabilized construction entrances/exits
    b) Construction road stabilization
    c) Tracking control (i.e., corrugated steel panels, wheel washes)
    d) Dust control

C. Materials Management

7) Prevent the contamination of storm water by wastes through proper management of the following types of wastes:
    a) Solid
    b) Sanitary
    c) Concrete
    d) Hazardous
    e) Equipment – related wastes
    f) Stock piles (protection from wind and rain)

8) Prevent the contamination of storm water by construction materials by:
    a) Covering and/or providing secondary containment of storage areas
    b) Taking adequate precautions when handling materials.

APPENDIX G

SUGGESTED RESOURCES	HOW TO GET A COPY
Better Site Design: A Handbook for Changing Development Rules in Your Community (1998) Presents guidance for different model development alternatives.	Center for Watershed Protection 8391 Main Street Ellicott City, MD 21043 410-461-8323 www.cwp.org
California Urban runoff Best Management Practices Handbooks (1993) for Construction Activity, Municipal, and Industrial/Commercial Presents a description of a large variety of Structural BMPs, Treatment Control, BMPs and Source Control BMPs	Los Angeles County Department of Public Works Cashiers Office 900 S. Fremont Avenue Alhambra, CA 91803 626-458-6959
Caltrans Urban runoff Quality Handbook: Planning and Design Staff Guide (Best Management Practices Handbooks (1998) Presents guidance for design of urban runoff BMPs	California Department of Transportation P.O. Box 942874 Sacramento, CA 94274-0001 916-653-2975
Design Manual for Use of Bioretention in Stormwater Management (1993) Presents guidance for designing bioretention facilities.	Prince George's County Watershed Protection Branch 9400 Peppercorn Place, Suite 600 Landover, MD 20785
Design of Stormwater Filtering Systems (1996) by Richard A. Claytor and Thomas R. Schuler Presents detailed engineering guidance on ten different urban runoff-filtering systems.	Center for Watershed Protection 8391 Main Street Ellicott City, MD 21043 410-461-8323
Development Planning for Stormwater Management, A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), (May 2000)	Los Angeles County Department of Public Works http://dpw.co.la.ca.us/epd/ or http://www.888cleanLA.com
Florida Development Manual: A Guide to Sound Land and Water Management (1988) Presents detailed guidance for designing BMPs	Florida Department of the Environment 2600 Blairstone Road, Mail Station 3570 Tallahassee, FL 32399 850-921-9472
Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters (1993) Report No. EPA–840-B-92-002. Provides an overview of, planning and design considerations, programmatic and regulatory aspects, maintenance considerations, and costs.	National Technical Information Service U.S. Department of Commerce Springfield, VA 22161 800-553-6847
Guide for BMP Selection in Urban Developed Areas (2001)	ASCE Envir. and Water Res. Inst. 1801 Alexander Bell Dr. Reston, VA 20191-4400 (800) 548-2723

SUGGESTED RESOURCES	HOW TO GET A COPY
Low-Impact Development Design Strategies - An Integrated Design Approach (June 1999)	Prince George's County, Maryland Department of Environmental Resource Programs and Planning Division 9400 Peppercorn Place Largo, Maryland 20774 *http://www.co.pg.md.us/Government/DER/PPD/pgcounty/lidmain.htm*
Maryland Stormwater Design Manual (1999) Presents guidance for designing urban runoff BMPs	Maryland Department of the Environment 2500 Broening Highway Baltimore, MD 21224 410-631-3000
National Stormwater Best Management Practices (BMP) Database, Version 1.0 Provides data on performance and evaluation of urban runoff BMPs	American Society of Civil Engineers 1801 Alexander Bell Drive Reston, VA 20191 703-296-6000
National Stormwater Best Management Practices Database (2001)	Urban Water Resources Research Council of ASCE Wright Water Engineers, Inc. (303) 480-1700
Operation, Maintenance and Management of Stormwater Management (1997) Provides a thorough look at storm water practices including, planning and design considerations, programmatic and regulatory aspects, maintenance considerations, and costs.	Watershed Management Institute, Inc. 410 White Oak Drive Crawfordville, FL 32327 850-926-5310
Potential Groundwater Contamination from Intentional and Non-Intentional Stormwater Infiltration	Report No. EPA/600/R-94/051, USEPA (1994).
Preliminary Data Summary of Urban runoff Best Management Practices (August 1999) EPA-821-R-99-012	*http://www.epa.gov/ost/stormwater/*
Reference Guide for Stormwater Best Management Practices (July 2000)	City of Los Angeles Urban runoff Management Division 650 South Spring Street, 7th Floor Los Angeles, California 90014 *http://www.lacity.org/san/swmd/*
Second Nature: Adapting LA's Landscape for Sustainable Living (1999) by Tree People Detailed discussion of BMP designs presented to conserve water, improve water quality, and achieve flood protection.	Tree People 12601 Mullholland Drive Beverly Hills, CA 90210 (818) 623-4848 Fax (818) 753-4625
Start at the Source (1999) Detailed discussion of permeable pavements and alternative driveway designs presented.	Bay Area Stormwater Management Agencies Association 2101 Webster Street Suite 500 Oakland, CA 510-286-1255

Storm Water Standards
4/03/03

SUGGESTED RESOURCES	HOW TO GET A COPY
Stormwater Management in Washington State (1999) Vols. 1-5 Presents detailed guidance on BMP design for new development and construction.	Department of Printing State of Washington Department of Ecology P.O. Box 798 Olympia, WA 98507-0798 360-407-7529
Stormwater, Grading and Drainage Control Code, Seattle Municipal Code Section 22.800-22.808, and Director's Rules, Volumes 1-4. (Ordinance 119965, effective July 5, 2000)	City of Seattle Department of Design, Construction & Land Use 700 5th Avenue, Suite 1900 Seattle, WA 98104-5070 (206) 684-8880 *http://www.ci.seattle.wa.us/dclu/Codes/sgdccode.htm*
Texas Nonpoint Source Book – Online Module (1998)www.txnpsbook.org Presents BMP design and guidance information on-line	Texas Statewide Urban runoff Quality Task Force North Central Texas Council of Governments 616 Six Flags Drive Arlington, TX 76005 817-695-9150
The Practice of Watershed Protection by Thomas R. Shchuler and Heather K. Holland	Center for Watershed Protection 8391 Main Street Ellicott City, MD 21043 410-461-8323 www.cwp.org
Urban Storm Drainage, Criteria Manual – Volume 3, Best Management Practices (1999) Presents guidance for designing BMPs	Urban Drainage and Flood Control District 2480 West 26th Avenue, Suite 156-B Denver, CO 80211 303-455-6277

APPENDIX H

POTENTIAL PERMANENT TREATMENT BMP MAINTENANCE MECHANISMS

1. Project proponent agreement to maintain storm water BMPs: The City may enter into a contract with the project proponent obliging the project proponent to maintain, repair and replace the storm water BMP as necessary into perpetuity. Security may be required.
2. Assessment districts: The City may approve an Assessment District or other funding mechanism created by the project proponent to provide funds for storm water BMP maintenance, repair and replacement on an ongoing basis. Any agreement with such a District shall be subject to the Public Entity Maintenance Provisions above.
3. Lease provisions: In those cases where the City holds title to the land in question, and the land is being leased to another party for private or public use, the City may assure storm water BMP maintenance, repair and replacement through conditions in the lease.
4. Public entity maintenance: The City may approve a public or acceptable quasi-public entity (e.g., the County Flood Control District, or annex to an existing assessment district, an existing utility district, a state or federal resource agency, or a conservation conservancy) to assume responsibility for maintenance, repair and replacement of the permanent treatment BMP. Unless acceptable to the City, public entity maintenance agreements shall ensure estimated costs are front-funded or reliably guaranteed, (e.g., through a trust fund, assessment district fees, bond, letter of credit or similar means). In addition, the City may seek protection from liability by appropriate releases and indemnities. The City shall have the authority to approve storm water BMPs proposed for transfer to any other public entity within its jurisdiction before installation. The City shall be involved in the negotiation of maintenance requirements with any other public entities accepting maintenance responsibilities within their respective jurisdictions; and in negotiations with the resource agencies responsible for issuing permits for the construction and/or maintenance of the facilities. The City must be identified as a third party beneficiary empowered to enforce any such maintenance agreement within their respective jurisdictions.

The City may accept alternative maintenance mechanisms if such mechanisms are as protective as those listed above.

APPENDIX I

DEFINITIONS

"Attached Residential Development" means any development that provides 10 or more residential units that share an interior/exterior wall. This category includes, but is not limited to: dormitories, condominiums and apartments.

"Automotive Repair Shop" means a facility that is categorized in any one of the following Standard Industrial Classification (SIC) codes: 5013, 5014, 5541, 7532-7534, or 7536-7539.

“Best Management Practices” see: “storm water best management practices”.

"Commercial Development" means any development on private land that is not exclusively heavy industrial or residential uses. The category includes, but is not limited to: automotive dealerships, commercial airfields, mini-malls and other business complexes, shopping malls, hotels, office buildings, public warehouses, hospitals, laboratories and other medical facilities, educational institutions, recreational facilities, plant nurseries, car wash facilities, and other light industrial complexes.

"Commercial Development greater than 100,000 square feet" means any commercial development that with a project footprint of at least 100,000 square feet.

“Construction Permits” means any ministerial, building, demolition/removal, grading and public right-of-way permits

"Detached Residential Development" means any development that provides 10 or more freestanding residential units. This category includes, but is not limited to: detached homes, such as single-family homes and detached condominiums.

"Directly Connected Impervious Area (DCIA)" means the area covered by a building, impermeable pavement, and/ or other impervious surfaces, which drains directly into the storm water conveyance system without first flowing across permeable vegetated land area (e.g., lawns).

“Discretionary Actions” means any adoption or amendment of a land use plan, zoning or rezoning action, development agreement, subdivision of land in accordance with the Subdivision Map Act, or development permits

"Environmentally Sensitive Areas" (ESA) means areas that include, but are not limited to, all Clean Water Act 303(d) impaired water bodies ("303[d] water bodies"); areas designated as an "Area of Special Biological Significance" (ASBS) by the State Water Resources Control Board (Water Quality Control Plan for the San Diego Basin (1994) and amendments); water bodies designated as having a RARE beneficial use by the State Water Resources Control Board (Water Quality Control Plan for the San Diego

Basin (1994) and amendments), or areas designated as preserves or their equivalent under the Multiple Species Conservation Program (MSCP) within the Cities and County of San Diego. The limits of Areas of Special Biological Significance are those defined in the Water Quality Control Plan for the San Diego Basin (1994 and amendments).

Environmentally sensitive area is defined for the purposes of implementing SUSMP requirements, and does not replace or supplement other environmental resource-based terms, such as "Environmentally Sensitive Lands," employed by the City in their land development review processes.

"Hillside" means lands that have a natural gradient of 25 percent (4 feet of horizontal distance for every 1 foot of vertical distance) or greater and a minimum elevation differential of 50 feet, or a natural gradient of 200 percent (1 foot of horizontal distance for every 2 feet of vertical distance) or greater and a minimum elevation differential of 10 feet.

"Hillside development greater than 5,000 square feet" means any development that would create more than 5,000 square feet of impervious surfaces in hillsides with known erosive soil conditions.

"Infiltration" means the downward entry of water into the surface of the soil.

"Maximum Extent Practicable (MEP)" means the technology-based standard established by Congress in the Clean Water Act 402(p)(3)(B)(iii) that municipal dischargers of urban runoff must meet. MEP generally emphasizes pollution prevention and source control BMPs primarily (as the first line of defense) in combination with treatment methods serving as a backup (additional lines of defense).

"New Development" means land disturbing activities; structural development, including construction or installation of a building or structure, the creation of impervious surfaces; and land subdivision.

"Parking Lot" means land area or facility for the temporary parking or storage of motor vehicles used personally, or for business or commerce.

"Projects Discharging to Receiving Waters within Environmentally Sensitive Areas" means all development and significant redevelopment that would create 2,500 square feet of impervious surfaces or increase the area of imperviousness of a project site to 10% or more of its naturally occurring condition, and either discharge urban runoff to a receiving water within an environmentally sensitive area (where any portion of the project footprint is located within 200 feet of the environmentally sensitive area), or discharge to a receiving water within an environmentally sensitive area without mixing with flows from adjacent lands (where the project footprint is located more than 200 feet from the environmentally sensitive area).

"Project Footprint" means the limits of all grading and ground disturbance, including landscaping, associated with a project.

"Receiving Waters" means surface bodies of water, which directly or indirectly receive discharges from urban runoff conveyance systems, including naturally occurring wetlands, streams (perennial, intermittent, and ephemeral (exhibiting bed, bank, and ordinary high water mark)), creeks, rivers, reservoirs, lakes, lagoons, estuaries, harbors, bays and the Pacific Ocean. The City shall determine the definition for wetlands and the limits thereof for the purposes of this definition, provided the City definition is as protective as the Federal definition utilized by the United States Army Corps of Engineers and the United States Environmental Protection Agency. Constructed wetlands are not considered wetlands under this definition, unless the wetlands were constructed as mitigation for habitat loss. Other constructed BMP's are not considered receiving waters under this definition, unless the BMP was originally constructed in receiving waters.

"Residential Development" means any development on private land that provides living accommodations for one or more persons. This category includes, but is not limited to: single-family homes, multi-family homes, condominiums, and apartments.

"Restaurant" means a stand-alone facility that sells prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812).

"Significant Redevelopment" means development that would create or add at least 5,000 square feet of impervious surfaces on an already developed site. Significant redevelopment includes, but is not limited to: the expansion of a building footprint; addition to or replacement of a structure; replacement of an impervious surface that is not part of a routine maintenance activity; and land disturbing activities related with structural or impervious surfaces. Replacement of impervious surfaces includes any activity that is not part of a routine maintenance activity where impervious material(s) are removed, exposing underlying soil during construction. Significant redevelopment does not include trenching and resurfacing associated with utility work; resurfacing and reconfiguring surface parking lots; new sidewalk construction, pedestrian ramps, or bikelane on existing roads; and replacement of damaged pavement.

"Site Design BMP" means any project design feature that reduces the creation or severity of potential pollutant sources or reduces the alteration of the project site's natural flow regime. Redevelopment projects that are undertaken to remove pollutant sources (such as existing surface parking lots and other impervious surfaces) or to reduce the need for new roads and other impervious surfaces (as compared to conventional or low-density new development) by incorporating higher densities and/or mixed land uses into the project design, are also considered site design BMPs.

"Source Control BMP (both structural and non-structural)" means land use or site planning practices, or structures that aim to prevent urban runoff pollution by reducing the potential for contamination at the source of pollution. Source control BMPs minimize the contact between pollutants and urban runoff. Examples include roof structures over trash or material storage areas, and berms around fuel dispensing areas.

"Storm Water Best Management Practice (BMP)" means any schedules of activities, prohibitions of practices, general good house keeping practices, pollution prevention and educational practices, maintenance procedures, structural treatment BMPs, and other management practices to prevent or reduce to the maximum extent practicable the discharge of pollutants directly or indirectly to receiving waters. Storm Water BMPs also include treatment requirements, operating procedures and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. This manual groups development-related storm water BMPs into two categories: (1) *construction BMPs*, which are practices, procedures, devices or materials used to prevent the transport and introduction of pollutants both on and from a project site during construction; and (2) *permanent BMPs*, which are the site design features, source control features, and treatment control BMPs that become a permanent part of a project's design and remain functioning throughout the "use" phase of a project site. (See the definitions for site design, source control and treatment control BMPs in this appendix).

"Storm Water Conveyance System" means private and public drainage facilities by which storm water may be conveyed to Receiving Waters, such as: ditches, natural drainages, roads, streets, constructed channels, aqueducts, storm drains, pipes, street gutters, or catch basins.

"Streets, Roads, Highways, and Freeways" means any project that is not part of a routine maintenance activity, and would create a new paved surface that is 5,000 square feet or greater used for the transportation of automobiles, trucks, motorcycles and other vehicles. For the purposes of SUSMP requirements, Streets, Roads, Highways and Freeways do not include trenching and resurfacing associated with utility work; applying asphalt overlay to existing pavement; new sidewalk, pedestrian ramps, or bikelane construction on existing roads; and replacement of damaged pavement.

"Treatment Control (Structural) BMP" means any engineered system designed and constructed to remove pollutants from urban runoff. Pollutant removal is achieved by simple gravity settling of particulate pollutants, filtration, biological uptake, media adsorption or any other physical, biological, or chemical process.

ATTACHMENT WR-6A

Section 15.12 of the City of Carlsbad Municipal Code

Title 15 GRADING AND DRAINAGE

Chapter 15.12 STORM WATER MANAGEMENT AND DISCHARGE CONTROL

15.12.010 Purpose and intent.

The purpose of this chapter is to ensure the environmental and public health, safety, and general welfare of the residential, commercial, and industrial sectors of the city of Carlsbad by:
A. Prohibiting non-storm water discharges to the storm water conveyance system.
B. Eliminating discharges to the storm water conveyance system from spills, dumping or disposal of materials other than storm water or permitted or exempted discharges.
C. Reducing pollutants in storm water discharges, including those pollutants taken up by storm water as it flows over urban areas (urban runoff), to the maximum extent practicable.

D. Reducing pollutants in storm water discharges in order to achieve applicable water quality objectives for receiving waters within the city of Carlsbad.
The intent of this chapter is to protect and enhance the water quality of the city of Carlsbad receiving waters and wetlands in a manner pursuant to and consistent with the Clean Water Act and California Regional Water Quality Control Board NPDES Permit No. CAS0108758, Order No. 2001-01 and any amendment, revision or reissuance thereof. (Ord. NS-624 § 1 2002: Ord. NS-394 § 2 (part), 1997)

15.12.020 Definitions.

When used in this chapter, the following terms shall have the meanings ascribed to them in this section:
A. “Basin plan” means the Water Quality Control Plan for the San Diego Region (July 1975) and approved by the State Water Resources Control Board, together with subsequent amendments.
B. “Best management practices (BMP)” means schedules of activities, prohibitions of practices, general good housekeeping practices, pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce to the maximum extent practicable the discharge of pollutants directly or indirectly to storm water conveyance system and/or receiving waters. Best management practices also include treatment requirements, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw materials storage.
C. “Building permit” means a permit issued pursuant to Chapter 18.04.
D. “California ocean plan” means the California Ocean Plan: Water Quality Control Plan for Ocean Waters of California adopted by the State Water Resources Control Board effective July 23, 1997, and any subsequent amendments.
E. “Clean Water Act” means the Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, and 95-117 (33 USCA Section 1251 et seq.), and any subsequent amendments.
F. “County health officer” means the health officer of the county of San Diego department of public health or designee.
G. “Development” means:
1. The placement or erection of any solid material or structure on land, in water, or under water;
2. The discharge or disposal of any dredged material or of any gaseous, liquid, solid, or thermal waste;
3. The grading, removing, dredging, mining, or extraction of any materials;
4. A change in the density or intensity of the use of land, including, but not limited to, a subdivision pursuant to the Subdivision Map Act (Government Code Section 66410, et seq.) and any other division of land, including lot splits, except where the division of land is brought about in connection with the purchase of such land by a public agency for public recreational use;
5. A change in the intensity of the use of water, or of access to water.
6. The construction, reconstruction, demolition, or alteration of the size of any structure, including any facility of any private, public, or municipal entity; and
7. The removal or harvesting of major vegetation other than for agricultural purposes. As used in this definition, “structure” includes, but is not limited to, any building, road, pipe, flume, conduit, siphon, aqueduct, telephone line, and electrical power transmission and distribution line. (Source: Government Code Section 65927).
H. “Employee training program” means a documented employee training program for all persons responsible for implementing a storm water pollution prevention plan. The employee training program shall include, but is not limited to, the following topics:
1. Laws, regulations, and local ordinances associated with storm water pollution prevention, and an overview of the potential impacts of polluted storm water on the receiving waters of the San Diego region;
2. Proper handling of all materials and wastes to prevent spillage;
3. Mitigation of spills including spill response, containment and cleanup procedures;
4. Visual monitoring of all effluent streams to ensure that no illicit discharges enter the storm water conveyance system;
5. Discussion of the differences between the storm water conveyance system and the sanitary sewer system;
6. Identification of all on-site connections to the storm water conveyance system;
7. Preventive maintenance and good housekeeping procedures;
8. Material management practices employed by the facility to reduce or eliminate pollutant contact with storm water discharge.
I. “Enforcement agency” means the city of Carlsbad or its authorized agents charged with ensuring compliance with this chapter.
J. “Enforcement official” means the city manager or his or her designee.
K. “Hazardous materials” means any substance or mixture of substances which is toxic, corrosive, flammable, an irritant, a strong sensitizer, or generates pressure through decomposition, heat or other

means, if such a substance or mixture of substances may cause, or contribute to, substantial injury, serious illness or harm to humans, domestic livestock, wildlife, or deterioration of receiving water quality or the environment.

L. “Illicit connection” means any physical connection (pipe, facility, or other device) to the storm water conveyance system permitted or unpermitted by the city of Carlsbad, which drains illegal discharges either directly or indirectly into a storm water conveyance system.

M. “Illegal discharge” means any discharge to the storm water conveyance system that is not composed entirely of storm water, or is expressly prohibited by federal, state, or local regulations, laws, codes, or ordinances, or degrades the quality of receiving waters in violation of California Regional Water Quality Control Board NPDES Permit No. CAS0108758, Order No. 2001-01 and any amendment, the San Diego basin plan and California ocean plan standards.

N. “Maximum extent practicable (MEP)” means, with respect to best management practices (BMPs), an individual BMP or group of BMPs which reduces or eliminates the discharge of a pollutant of concern, which have a cost of implementation reasonably related to the pollution control benefits achieved, and which are technologically feasible.

O. “National Pollution Discharge Elimination System (NPDES) Permit” means a permit issued by the Regional Water Quality Control Board or the State Water Resources Control Board pursuant to Chapter 5.5, Division 7 of the California Water Code, to control discharges from point sources to waters of the United States, including, but not limited to:

1. California Regional Water Quality Control Board NPDES Permit No. CASO108758, Order 2001-01 and any amendment, revision or reissuance to it;
2. General Permit for Storm Water Discharges Associated with Industrial Activities (NPDES No. CAS 000001, Order No. 97-03-DWQ);
3. NPDES General Permit for Storm Water Discharges Associated with Construction Activity (Permit No. 99-08-DWQ, NPDES General Order No. CAS000002); and
4. California Regional Water Quality Control Board, San Diego Region, General De-Watering Permits (Order Numbers 91-10 and 90-31).

P. “Non-storm water discharge” means any discharge to the storm water conveyance system that is not entirely composed of storm water.

Q. “NPDES General Permit” means a permit issued by the State Water Resources Control Board, including, but not limited to:

1. NPDES General Permit for Storm Water Discharges Associated with Industrial Activities; and
2. NPDES General Permit for Storm Water Discharges Associated with Construction Activity (Permit No. 99-08-DWQ, NPDES General Order No. CAS000002).

R. “Parking lot” means an open area, other than a street or other public way, used for the parking of motorized vehicles, whether for a fee or free, to accommodate clients or customers or to accommodate residents of multi-family dwellings (i.e., apartments, condominiums, townhomes, mobile homes, dormitories, group quarters, etc.).

S. “Person” means any individual, organization, business trust, company, partnership, entity, firm, association, corporation, or public agency, including the State of California and the United States of America.

T. “Pollutant” means and includes, but is not limited to, solid waste, sewage, garbage, medical waste, wrecked or discarded equipment, radioactive materials, dredged spoil, rock, sand, sediment, silt, industrial waste, and any organic or inorganic substance defined as a pollutant under 40 C.F.R. 122.2 whose presence degrades the quality of the receiving waters in violation of basin plan and California ocean plan standards such as fecal coliform, fecal streptococcus, enterococcus, volatile organic carbon, surfactants, oil and grease, petroleum hydrocarbons, total organic carbon, lead, copper, chromium, cadmium, silver, nickel, zinc, cyanides, phenols, fertilizers, pesticides, herbicides and other biocides. A pollutant also includes any contaminant which degrades the quality of the receiving waters in violation of basin plan and California ocean plan standards by altering any of the following parameters: pH, total suspended and settleable solids, biochemical oxygen demand (BOD), chemical oxygen demand (COD), nutrients, temperature and other narrative standards of the basin plan.

U. “Premises” means any building, lot parcel, real estate, land or portion of land whether improved or unimproved.

V. “Receiving waters” means surface bodies of water which serve as receiving points for discharges from the storm water conveyance system, including Encinas Creek, Batiquitos Lagoon, Agua Hedionda Lagoon and Buena Vista Lagoon and their tributary creeks, reservoirs, lakes, estuaries, and the Pacific Ocean.

W. “Storm water” means surface runoff and drainage associated with storm events and snow melt that flows across a surface to the storm water conveyance system or receiving waters.

For the purposes of this chapter, storm water runoff and drainage from areas that are in a natural state, have not been significantly disturbed or altered, either directly or indirectly, as a result of human activity, and the character and type of pollutants naturally appearing in the runoff have not been significantly altered, either directly or indirectly, as a result of human activity, shall be considered “unpolluted” and

shall satisfy the definition of “storm water” in this chapter.
X. “Storm water conveyance system” means private, natural and publicly owned facilities within the city of Carlsbad by which storm water may be conveyed to receiving waters of the United States, including any roads with drainage systems, streets, catch basins, curbs, gutters, ditches, pipes, natural and man-made channels or storm drains.
Y. “Storm water pollution prevention plan” means a document which describes the on-site program activities to eliminate or reduce to the maximum extent practicable, pollutant discharges to the storm water conveyance system primarily through the application and use of BMPs.
A storm water pollution prevention plan prepared and implemented pursuant to any NPDES Storm Water Permit shall meet the definition of a storm water pollution prevention plan for the purposes of this chapter.
Z. “System” means “storm water conveyance system,” as defined herein.
AA. “Wet season” means the period of time between October 1 through April 30.
BB. “Wetlands” means areas that are inundated or saturated by surface or ground waters at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. (Ord. NS-624 § 2, 2002: Ord. NS-468 §§ 1--3, 1999; Ord. NS-394 § 2 (part), 1997)

15.12.030 Administration.

The enforcement official shall administer, implement, and enforce the provisions of this chapter. Any powers granted to, or duties imposed upon, the enforcement official may be delegated by the enforcement official to persons in the employ of the city, or pursuant to contract. When deemed necessary by the enforcement official, the enforcement official shall prepare and present to the city council for approval regulations consistent with the general policies established herein by the city council. The enforcement official shall enforce council approved regulations necessary to the administration of this chapter, and may recommend that the council amend such regulations from time to time as conditions require. (Ord. NS-394 § 2 (part), 1997)

15.12.040 Applicability.

This chapter shall be interpreted to assure consistency with the requirements of the federal Clean Water Act and acts amendatory thereof or supplementary thereto, applicable implementing regulations, and California Regional Water Quality Control Board NPDES Permit No. CAS0108758, Order 2001-01 and any amendment, revision or reissuance thereof. (Ord. NS-624 § 2, 2002: Ord. NS-394 § 2 (part), 1997)

15.12.050 Prohibited discharges.

The discharge of non-storm water discharges to the storm water conveyance system or to any other conveyance system which discharges into receiving water is prohibited, except as specified in Section 15.12.055. (Ord. NS-624 § 4, 2002: Ord. NS-468 §§ 4, 5, 1999; Ord. NS-394 § 2 (part), 1997)

15.12.055 Exemptions from discharge prohibitions.

A. The prohibition on discharges shall not apply to any discharge regulated under a NPDES permit issued to the discharger and administered by the state of California pursuant to Chapter 5.5, Division 7, of the California Water Code, provided that the discharger is in compliance with all requirements of the permit and other applicable laws and regulations. Proof of compliance with such permit may be required in a form acceptable to the city prior to or as a condition of a subdivision map, site plan, building permit, or development improvement plan; upon inspection of the facility; during any enforcement proceeding or action; or for any other reasonable cause.
B. Discharges from the following activities will not be considered a source of pollutants to the storm water conveyance system or receiving waters and are exempt from the definition of non-storm water discharge when properly managed as required by applicable federal, state and local laws, regulations or codes:
1. Water line flushing;
2. Landscape irrigation and lawn watering;
3. Diverted stream flows;
4. Rising ground waters or springs;

5. Uncontaminated pumped ground water not subject to any applicable NPDES permit;
6. Discharges from potable water sources other than water main breaks;
7. Foundation and footing drains;
8. Air conditioning condensation;
9. Natural springs;
10. Water from crawl space pumps;
11. Individual residential car washing;
12. Flows from riparian habitats and wetlands;
13. Dechlorinated swimming pool discharges;
14. Firefighting.

C. The prohibition of discharges shall not apply to any discharge which the enforcement official, the county health officer, the Regional Water Quality Control Board, or U.S. Environmental Protection Agency determines in writing are necessary for the protection of the environment, water quality, and public health and safety. (Ord. NS-624 § 5, 2002)

15.12.060 Discharge in violation of permit.

Any discharge that would result in or contribute to a violation of California Regional Water Quality Control Board NPDES Permit No. CAS0108758, Order 2001-01 and any amendment, revision or reissuance to it, either separately considered or when combined with other discharges, is prohibited. Liability for any such discharge shall be the responsibility of the person(s) causing or responsible for the discharge. (Ord. NS-624 § 6, 2002: Ord. NS-394 § 2 (part), 1997)

15.12.070 Illicit connections.

It is prohibited to establish, use, maintain, or continue illicit connections to the storm water conveyance system, regardless of whether such connections were made under a permit or other authorization or whether permissible under the law or practices applicable or prevailing at the time of the connection except as authorized in Section 15.12.050. (Ord. NS-394 § 2 (part), 1997)

15.12.080 Reduction of pollutants contacting or entering storm water required.

A. It is unlawful for any person not to utilize best management practices to the maximum extent practicable to eliminate or reduce pollutants entering the city's storm water conveyance system.

B. In order to reduce the risk of contamination of storm water and the discharge of non-storm water or pollutants to the city's storm water conveyance system, the enforcement official may require the person conducting the following activities to implement best management practices to the maximum extent practicable:

1. Automobile, airplane, boat, and/or vehicle repair, service, fueling, maintenance, washing, storage, and/or parking;
2. Landscape and garden care activities including application of related products, such as pesticides, herbicides, and fertilizers;
3. Building repair and maintenance, including, but not limited to: cement mixing, repair or cutting, masonry, painting and/or coating;
4. Impervious surface or building washing or cleaning, including power washing or steam cleaning;
5. Storage and disposal of household hazardous waste (e.g. paints, cleaning products, pesticides, herbicides);
6. Disposal of pet waste;
7. Storage and disposal of green waste;
8. Mobile carpet, drape or furniture cleaning;
9. Pool, spa, jacuzzi, or fountain cleaning, servicing, or repair;
10. Pest control;
11. Plant growing including: farmland, fields, nurseries, greenhouses, and/or botanical gardens.

C. Persons conducting an activity or activities that the enforcement official determines may contribute a significant amount of pollutant load to the storm water conveyance system, and/or is tributary to a Clean Water Act Section 303(d) impaired water body, where the site or source generates pollutants for which the water body is impaired; and/or any person within or directly adjacent to or discharging directly to a coastal lagoon or other receiving water may also be subject to subsection B.

D. Storm water Pollution Prevention Plan. When the enforcement official determines that a person in the course of conducting a business-related activity causes, has the potential to cause, or contributes to a violation of the water quality standards set forth in the San Diego basin plan or California ocean waters

plan, or conveys pollutants to receiving waters that may cause or contribute to the deterioration of water quality, then the enforcement official may require the person to develop and implement a storm water pollution prevention plan (SWPPP) that includes the implementation and use of best management practices, and an employee training program. This section applies, but is not limited to:
1. Persons conducting maintenance, storage, manufacturing, assembly, equipment operations, vehicle loading, and/or cleanup activities partially or wholly out of doors;
2. Persons conducting automobile, airplane, boat, and/or equipment mechanical service, repair, maintenance, fueling, cleaning and/or parking; marinas; mobile automobile or other vehicle washing and/or parking; retail or wholesale fueling; mobile carpet, drape or furniture cleaning; pest control services; eating and drinking establishments; cement mixing, repair or cutting; masonry; painting and coating; surface or building washing or cleaning services, including power washing or steam cleaning; botanical or zoological gardens and exhibits; landscaping; nurseries and greenhouses; golf courses, parks and other recreational areas/facilities; cemeteries; pool and fountain cleaning; port-a-potty servicing;
3. Persons owning or operating a parking lot or an impervious surface (including, but not limited to, service station pavements or paved private streets and roads) used for automobile-related or similar purposes shall clean those surfaces as frequently and as thoroughly as is necessary, in accordance with best management practices, to prevent the discharge of pollutants to the city's storm water conveyance system. Sweepings or cleaning residue from parking lots or impervious surfaces shall not be swept or otherwise made or allowed to go into any storm water conveyance, gutter, or roadway, but must be disposed of in accordance with regional solid waste procedures and regulations.
Persons owning or operating a parking lot or impervious surfaces used for similar purposes shall clean those structures thoroughly as is necessary to prevent the discharge of pollutants to the storm water conveyance system to the maximum extent practicable, but not less than once prior to each wet season. Sweepings or cleaning residue from parking lots or said impervious surfaces shall not be swept or otherwise made or allowed to go into the gutter or roadway.
E. Development, Grading or Construction Activities. Any person engaged in development, grading or construction in the city of Carlsbad shall utilize best management practices to prevent pollutants from entering the storm water conveyance system by complying with all applicable local ordinances, including the Grading and Erosion Control Chapter 15.16 of the Carlsbad Municipal Code, the standard specifications for public works construction when performing public work, and applicable provisions of the NPDES General Permit for Storm water Discharges Associated with Construction Activity issued by the State Water Resources Control Board (Permit No. 99-08-DWQ, NPDES General Order No. CAS000002), and California Regional Water Quality Control Board NPDES No. CAS0108758, Order No. 2001-01, and any subsequent amendments.
In order to reduce the risk of contamination of storm water and the discharge of non-storm water or pollutants to the city's storm water conveyance system, the enforcement official may require the person conducting the development, grading or construction activities to implement a pollution prevention plan and/or best management practices to the maximum extent practicable.
F. No person shall stand or park any vehicle on any street for the purpose of washing, greasing, repairing, and/or maintaining the vehicle, except for repairs necessitated by an emergency.
G. No person shall stand or park any vehicle on any street, if such vehicle is determined by the enforcement official to be leaking fluids such as oils or other fluids that contribute or have the potential to contribute a significant amount of pollutants to the storm water conveyance system and/or the receiving waters.
H. Other activity not covered by sections B, C, D, E and F of this section.
In order to reduce the risk of contamination of storm water and the discharge of non-storm water or pollutants to the city's storm water conveyance system, the enforcement official may require the person conducting other activities not listed in sections B, C and D above, to implement best management practices to the maximum extent practicable, if the enforcement official determines that the activity has the potential to discharge pollutants or is known to discharge pollutants to the storm water conveyance system or receiving waters. (Ord. NS-624 § 7, 2002: Ord. NS-394 § 2 (part), 1997)

15.12.090 Storm water conveyance system protection.

Every person owning property through which a storm water conveyance system passes, and such person's lessee or tenant, shall keep and maintain that part of the system within the property free of trash, debris, excessive vegetation, and other obstacles which would pollute, contaminate or significantly retard the flow of water through the system.
Every person shall maintain existing privately owned storm water conveyance structures within or adjacent to a system, so that such structures will not become a hazard to the use, function or physical integrity of the system.
Every person shall not remove healthy bank vegetation beyond that actually necessary for such

maintenance which shall be accomplished in a manner that minimizes the vulnerability of the system to erosion; and shall be responsible for maintaining that portion of the system that is within their property lines in order to protect against erosion and degradation of the system originating or contributed from their property.
No person shall commit or cause to be committed any of the following acts, unless a written permit has first been obtained from the enforcement official, and the appropriate state or federal agencies, if applicable:
A. Discharge pollutants into or connect any pipe or channel to the system;
B. Modify the natural flow of water in a system;
C. Carry out developments within thirty feet of the center line of any system or twenty feet of the edge of a system, whichever is the greater distance;
D. Deposit in, plant in, or remove any material from a system including its banks except as required for necessary maintenance;
E. Construct, alter, enlarge, connect to, change or remove any structure in a system; or
F. Place any loose or unconsolidated material along the side of or within a system or so close to the side as to cause a diversion of the flow, or to cause a probability of such material being carried away by storm waters passing through such a system.
G. The above requirements do not supersede any requirements set forth by the California Department of Fish and Game Stream Alteration Permit process. (Ord. NS-624 § 8, 2002: Ord. NS-468 § 6, 1999: Ord. NS-394 § 2 (part), 1997)

15.12.100 Authority to inspect.

A. During normal and reasonable hours of operation, the enforcement official shall have the authority to conduct an inspection to enforce the provisions of this chapter, and to ascertain whether the purposes of this chapter are being met. An inspection may be made after the designated representative of the city of Carlsbad has presented proper credentials and the owner, occupant, and or facility operator authorizes entry. If the city of Carlsbad representative is unable to locate the owner or other persons having charge or control of the premises, or the owner, occupant, and/or facility operator refuses the request for entry, the city of Carlsbad is empowered to seek assistance from any court of competent jurisdiction in obtaining entry.
During the inspection, the enforcement official shall comply with all reasonable security, safety, and sanitation measures. In addition, the enforcement official shall comply with reasonable precautionary measures specified by the owner, occupant and/or facility operator.
After obtaining legal entry, the representative of the city of Carlsbad may:
1. Inspect the premises at all reasonable times.
2. Carry out any sampling activities or install devices to conduct sampling or metering operations necessary to enforce this chapter, including taking samples from the property of any person which any authorized representative of the city of Carlsbad reasonably believes is currently, or has in the past, caused or contributed to causing an illegal storm water discharge to the storm water conveyance system. Upon request by the property owner or his or her authorized representative, split samples shall be given to the person from whose property the samples were obtained.
3. Conduct tests, analyses and evaluations to determine whether a discharge of storm water is an illegal discharge or whether the requirements of this chapter are met.
4. Photograph any effluent stream, material or waste, material or waste container, container label, vehicle, waste treatment process, waste disposal site connection, or condition believed to contribute to storm water pollution or constitute a violation of this chapter.
5. Review and obtain a copy of the storm water pollution prevention plan, the hazardous materials release response plan and inventory, and/or any other documents, permits, manifests, logs or records that may be required of the facility from local, state or federal laws, regulations or codes in order to conduct operations or business on the premises.
6. Require the facility operator to retain evidence, as instructed by the inspector, for a period not to exceed thirty days.
7. Review and obtain copies of all storm water monitoring data compiled by the facility, if such monitoring is required of the facility. (Ord. NS-624 § 9, 2002: Ord. NS-394 § 2 (part), 1997)

15.12.110 Inspection procedures--Additional requirements.

During the inspection, the enforcement official shall comply with all reasonable security, safety, and sanitation measures. In addition, the enforcement official shall comply with reasonable precautionary measures specified by the owner and/or occupant or facility operator.
At the conclusion of the inspection, and prior to leaving the site, the enforcement official shall make

every reasonable effort to review with the owner and/or occupant or the facility operator each of the violations noted by the enforcement official and any corrective actions that may be necessary. A report listing any violation found by the enforcement official during the inspection shall be kept on file by the enforcement agency. A copy of the report shall be provided to the owner and/or occupant or facility operator, or left at the premises if no person is available. If corrective action is required, then the occupant, facility owner, and/or facility operator shall implement a plan of corrective action based upon a written plan of correction, submitted to the enforcement agency, which states the corrective actions to be taken and the expected dates of completion. Failure to implement a plan of correction constitutes a violation of this chapter.

All enforcement officials shall have adequate identification. Enforcement officials and other authorized personnel shall identify themselves when entering any property for inspection purposes or when inspecting the work of any contractor.

With the consent of the property owner or occupant or pursuant to a search warrant, the enforcement official is authorized to establish on any property that discharges directly or indirectly to the municipal storm water conveyance system such devices as are necessary to conduct sampling or metering operations. During all inspections as provided herein, the official may take samples of materials, wastes, and/or effluent as deemed necessary to aid in the pursuit of the inquiry or in the recordation of the activities onsite. (Ord. NS-394 § 2 (part), 1997)

15.12.120 Containment, cleanup, and notification of spills.

Any person owning or occupying any premises who has knowledge of any release of significant quantities of materials, pollutants, or waste which may result in pollutants or non-storm water discharges entering the city's storm water conveyance system shall immediately take all reasonable action to contain, minimize, and clean up such release. Such person shall notify the city of Carlsbad of the occurrence and any other appropriate agency of the occurrence as soon as possible, but no later than twenty-four hours from the time of the incident's occurrence. (Ord. NS-624 § 10, 2002: Ord. NS-394 § 2 (part), 1997)

15.12.130 Testing, monitoring or mitigation requirements.

A. The enforcement official may require that any person engaged in any activity and/or owning or operating any facility which causes or contributes to storm water pollution or contamination, illegal discharges, prohibited discharges and/or discharge of non-storm water to the storm water conveyance system perform monitoring, including physical and chemical monitoring and/or analyses and furnish reports as the enforcement official may specify if:

1. The person, or facility owner or operator, fails to eliminate illegal or prohibited discharges within a specified time after receiving a written notice to do so by the enforcement official;
2. The enforcement official has documented repeated violations of this chapter by the person or facility owner or operator which has caused or contributed to storm water pollution.

It is unlawful for such person or facility owner or operator to fail or refuse to undertake and provide the monitoring, analyses, and/or reports specified. Specific monitoring criteria shall bear a relationship to the types of pollutants which may be generated by the person's activities or the facility's operations. If the enforcement agency has evidence that a pollutant is originating from a specific premises, then the enforcement agency may require monitoring for that pollutant regardless of whether said pollutant may be generated by routine activities or operations. The person or facility owner or operator shall be responsible for all costs of these activities, analyses and reports.

B. Any persons required to monitor pursuant to subsection A of this section, shall implement a storm water monitoring program including, but not limited to, the following:

1. Routine visual monitoring for dry weather flows;
2. Routine visual monitoring for spills which may pollute storm water runoff;
3. A monitoring log including monitoring date, potential pollution sources, as noted in parts 1 and 2 of this section B, and a description of the mitigation measures taken to eliminate any potential pollution sources.

C. The enforcement official may require a person, or facility owner or operator, to install or implement storm water pollution reduction or control measures, including, but not limited to, process modification to reduce the generation of pollutants if:

1. The person, or facility owner or operator fails to eliminate illegal or prohibited discharges after receiving a written notice from the enforcement official;
2. The person, or facility owner or operator, fails to implement a storm water pollution prevention plan, as required by the enforcement official;
3. The enforcement official has documented repeated violations of this chapter any such person or

facility owner or operator which has caused or contributed to storm water pollution.
D. If testing, monitoring or mitigation required pursuant to this chapter are deemed no longer necessary by the enforcement official, then any or all of the requirements contained in subsections A, B, and C of this section may be discontinued.
E. A storm water monitoring program prepared and implemented pursuant to any state-issued NPDES General Permit shall be deemed to meet the requirements of a monitoring program for the purposes of this chapter. (Ord. NS-624 § 11, 2002: Ord. NS-394 § 2 (part), 1997)

15.12.140 Concealment.

Causing, permitting, aiding, abetting or concealing a violation of any provision of this chapter is unlawful and shall constitute a separate violation of this chapter. (Ord. NS-394 § 2 (part), 1997)

15.12.150 Administrative code enforcement powers and procedures.

The enforcement agency and enforcement official can exercise any code enforcement powers and procedures as provided in Title 1 of this code. In addition to the general enforcement powers and procedures provided in Title 1 of this code, the enforcement agency and enforcement official have the authority to utilize the following administrative remedies as may be necessary to enforce this chapter:
A. Cease and Desist Orders. When the enforcement official finds that a discharge has taken place or is likely to take place in violation of this chapter, the enforcement official may issue an order to cease and desist such discharge, practice, or operation likely to cause such discharge and direct that those persons not complying shall:
1. Comply with the applicable provisions and policies of this chapter;
2. Comply with a time schedule for compliance;
3. Take appropriate remedial or preventive action to prevent the violation from recurring.
B. Notice to Clean, Test and/or Abate. Whenever the enforcement official finds any oil, earth, dirt, grass, weeds, dead trees, tin cans, rubbish, refuse, waste or any other material of any kind, in or upon the sidewalk abutting or adjoining any parcel of land, or upon any parcel of land or grounds, which may result in an increase in pollutants entering the city's storm water conveyance system or a non-storm water discharge to the city's storm water conveyance system, the enforcement official may issue orders and give written notice to remove same in any reasonable manner. The recipient of such notice shall undertake the activities as described in the notice.
C. Stop Work Orders. Whenever any work is being done contrary to the provisions of this chapter, the enforcement official may order the work stopped by notice in writing served on any person engaged in performing or causing such work to be done, and any such person shall immediately stop such work until authorized by the enforcement official to proceed with the work.
D. Permit or License Suspension, Denial or Revocation. Violations of this chapter may be grounds for permit or license suspension or revocation.
E. Civil Penalties. Any person who violates any of the provisions of this chapter or who fails to implement a storm water monitoring plan, violates any cease and desist order or notice to clean and abate, or fails to adopt or implement a storm water pollution prevention plan as directed by the enforcement official shall be liable for a civil penalty not to exceed two thousand five hundred dollars for each day such a violation exists. The violator shall be charged for the full costs of any investigation, inspection, or monitoring survey which led to the detection of any such violation, for abatement costs, and for the reasonable costs of preparing and bringing legal action under this subsection. In addition to any other applicable procedures, the enforcement agency may utilize the lien procedures listed in Section 15.12.150(F) to enforce the violator's liability. The violator may also be liable for compensatory damages for impairment, loss or destruction to water quality, wildlife, fish and aquatic life.
F. The enforcement official shall take all appropriate legal steps to collect these obligations, including referral to the city attorney for commencement of a civil action to recover said funds. If collected as a lien, the enforcement official shall cause a notice of lien to be filed with the county recorder, inform the county auditor and county recorder of the amount of the obligation, a description of the real property upon which the lien is to be recovered, and the name of the agency to which the obligation is to be paid. Upon payment in full, the enforcement official shall file a release of lien with the county recorder.
G. Environmental Code Enforcement Civil Penalties Fund. Civil penalties collected pursuant to this chapter shall be deposited in the Environmental Code Enforcement Civil Penalties Fund as established by the city manager for the enhancement of the city's code enforcement efforts, environmental public outreach or education, environmental improvement grants, and/or to reimburse city departments for investigative costs and costs associated with the hearing process that are not paid by the responsible person or violator. Civil penalties deposited in this fund shall be appropriated and allocated in a manner determined by the city manager. The city auditor shall establish accounting procedures to ensure proper

account identification, credit and collection. (Ord. NS-624 § 12, 2002: Ord. NS-394 § 2 (part), 1997)

15.12.160 Administrative notice, hearing, and appeal procedures.

A. Unless otherwise provided herein, any notice required to be given by the enforcement official under this chapter shall be in writing and served in person or by registered or certified mail. If served by mail, the notice shall be sent to the last address known to the enforcement official. Where the address is unknown, service may be made upon the owner of record of the property involved. Such notice shall be deemed to have been given at the time of deposit, postage prepaid, in a facility regularly serviced by the United States Postal Service whether or not the registered or certified mail is accepted.
B. When the enforcement official determines that a violation of one or more provisions of this chapter exists or has occurred, any violator(s) or property owner(s) of record shall be served by the enforcement official with a written notice and order. The notice and order shall state the municipal code section violated, describe how violated, the location and date(s) of the violation(s), and describe the corrective action required. The notice and order shall require immediate corrective action by the violator(s) or property owner(s) and explain which method(s) of administrative enforcement are being utilized by the enforcement official: cease and desist order, notice to clean and abate, establishment of a storm water pollution prevention plan, and/or establishment of an employee training program. The notice and order shall also explain the consequences of failure to comply, including that civil penalties shall begin to immediately accrue if compliance is not achieved within ten days from the date the notice and order is issued. The notice and order shall identify all hearing rights. The enforcement official may propose any enforcement action reasonably necessary to abate the violation.
C. If the violation(s) is not corrected within ten days from the date the notice and order is issued, the enforcement official shall request the city manager to appoint a hearing officer and fix a date, time, and place for hearing. The enforcement official shall give written notice thereof to the violator(s) or owner(s) of record, at least ten days prior to the date for hearing.
1. The hearing officer shall consider any written or oral evidence presented to determine whether the violation(s) exists, a cease and desist order should be required, a notice to clean and abate should be required, a storm water pollution prevention plan should be required, an employee training program should be required, and/or civil penalties should be imposed, consistent with rules and procedures for the conduct of hearings and rendering of decisions established and promulgated by the city manager.
2. In determining whether action should be taken or the amount of a civil penalty to be imposed, the hearing officer may consider any of the following factors:
a. Duration of the violation(s).
b. Frequency or recurrence.
c. Seriousness.
d. History.
e. Violator's conduct after notice and order.
f. Good faith effort to comply.
g. Economic impact of the penalty on the violator(s).
h. Impact of the violation on the community.
i. Any other factor which justice may require.
3. If the violator(s) or owner(s) of record fail to attend the hearing, it shall constitute a waiver of the right to a hearing and adjudication of all or any portion of the notice and order.
4. The hearing officer shall render a written decision within ten days of the close of the hearing, including findings of fact and conclusions of law, identifying the time frame involved and the factors considered in assessing civil penalties, if any. The decision shall be effective immediately unless otherwise stated in the decision. The hearing officer shall cause the decision to be served on the enforcement official and all participating violators or owners of record.
5. If the persons assessed civil penalties fail to pay them within the time specified in the hearing officer's decision, the unpaid amount constitutes either a personal obligation of the person assessed or a lien upon the real property on which the violation occurred, in the discretion of the enforcement official. If the violation(s) is not corrected as directed the civil penalty continues to accrue on a daily basis. Civil penalties may not exceed one hundred thousand dollars in the aggregate. When the violation is subsequently corrected, the enforcement official shall notify the violator(s) and/or owner(s) of record of the outstanding civil penalties and provide an opportunity for hearing if the amount(s) is disputed within ten days from such notice.
6. The enforcement official shall take all appropriate legal steps to collect these obligations, including referral to the city attorney for commencement of a civil action to recover said funds. If collected as a lien, the enforcement official shall cause a notice of lien to be filed with the county recorder, inform the county auditor and county recorder of the amount of the obligation, a description of the real property upon which the lien is to be recovered, and the name of the agency to which the obligation is to be paid. Upon payment in full, the enforcement official shall file a release of lien with the county recorder. (Ord.

NS-394 § 2 (part), 1997)

15.12.170 Judicial enforcement.

A. Criminal Penalties. Any person who violates any provision of this chapter or who fails to implement a storm water monitoring plan, violates any cease and desist order or notice to clean and abate, or fails to adopt or implement storm water pollution prevention plans or employee training programs as directed by the enforcement official shall be punished, upon conviction, by a fine not to exceed one thousand dollars for each day in which such violation occurs, or imprisonment in the San Diego County jail for a period not to exceed six months, or both.
B. Injunction/Abatement of Public Nuisance. Whenever a discharge into the storm water conveyance system is in violation of the provisions of this chapter or otherwise threatens to cause a condition of contamination, pollution, or nuisance, the enforcement official may also cause the city to seek a petition to the Superior Court for the issuance of a preliminary or permanent injunction, or both, or an action to abate a public nuisance, as may be appropriate in restraining the continuance of such discharge.
C. Other Civil Action. Whenever a notice and order or hearing officer's decision is not complied with, the city attorney may, at the request of the enforcement official, initiate any appropriate civil action in a court of competent jurisdiction to enforce such notice and order and decision, including the recovery of any unpaid storm drain fees and/or civil penalties provided herein. (Ord. NS-624 § 13, 2002: Ord. NS-394 § 2 (part), 1997)

15.12.180 Violations deemed a public nuisance.

In addition to the other civil and criminal penalties provided herein, any condition caused or permitted to exist in violation of any of the provisions of this chapter is a threat to the public health, safety, and welfare and is declared and deemed a public nuisance, which may be summarily abated and/or restored as directed by the enforcement official in accordance with the procedures identified in Chapter 6.16. A civil action to abate, enjoin or otherwise compel the cessation of such nuisance may also be taken by the city, if necessary.
The full cost of such abatement and restoration shall be borne by the owner of the property and shall be a lien upon and against the property in accordance with the procedures set forth in Section 15.12.150 (F). (Ord. NS-624 § 14, 2002: Ord. NS-394 § 2 (part), 1997)

15.12.190 Remedies not exclusive.

Remedies set forth in this chapter are not exclusive but are cumulative to all other civil and criminal penalties provided by law, including, but not limited to, penalty provisions of the Federal Clean Water Act and/or the state Porter-Cologne Water Quality Control Act. The Porter-Cologne Water Quality Control Act is California Water Code Section 13000 et seq., and any future amendments. The seeking of such federal and/or state remedies shall not preclude the simultaneous commencement of proceedings pursuant to this chapter. (Ord. NS-468 § 7, 1999: Ord. NS-394 § 2 (part), 1997)

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