

# D R A F T

## STATE WATER RESOURCES CONTROL BOARD 1001 I Street, Sacramento, California 95814

### WATER QUALITY ORDER NO. 2010-XXXX-DWQ NPDES PERMIT NO. CA0001368 WASTE DISCHARGE REQUIREMENTS FOR DYNEGY SOUTH BAY, LLC SOUTH BAY POWER PLANT SAN DIEGO COUNTY

**Note:** This Permit follows the standard NPDES template and the substantive changes from the existing Permit are **underlined and in bold.**

The following Discharger is subject to waste discharge requirements as set forth in this Order:

**Table 1. Discharger Information**

<b>Discharger</b>	Dynergy South Bay, LLC,
<b>Name of Facility</b>	South Bay Power Plant, Chula Vista
<b>Facility Address</b>	990 Bay Boulevard
	Chula Vista, CA 91911
	San Diego County
The U.S. Environmental Protection Agency (USEPA) and the <b>State Water Board</b> have classified this discharge as a <b>major</b> discharge.	

The discharge by Dynergy South Bay, LLC from the discharge points identified below is subject to waste discharge requirements as set forth in this Order:

**Table 2. Discharge Location**

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Once-Through Cooling Water, Traveling Screen Washwater, Pump Lubrication and Seal Water, Pre-treatment Backwash, and Storm Water Runoff	32 °, 36', 48" N	117 °, 5', 52" W	San Diego Bay

## DRAFT

**Table 3. Administrative Information**

This Order was adopted by the Regional Water Quality Control Board on:	<b>November 17, 2010</b>
This Order shall become effective on:	<b>January 1, 2011</b>
This Order shall expire on:	<b>December 31, 2011</b>
The Discharger shall file a Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	<b><u>180 days prior to the Order expiration date</u></b>

### CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a resolution duly and regularly adopted at a meeting of the State Water Board held on **November 17, 2010**.

---

Jeanine Townsend  
Clerk to the Board

# DRAFT

## TABLE OF CONTENTS

A. FINDINGS.....	1
B. PROHIBITIONS .....	9
C. EFFLUENT LIMITATIONS.....	10
D. COOLING WATER INTAKE STRUCTURE SYSTEM SPECIFICATIONS .....	12
E. RECEIVING WATER LIMITATIONS.....	12
F. PROVISIONS .....	15
G. REPORTING REQUIREMENTS.....	20
H. NOTIFICATIONS .....	25
I. ENDNOTE REFERENCES.....	27
Attachment 1 Basin Plan Waste Discharge Prohibitions .....	1
Attachment 2 Standard Provisions .....	1

# DRAFT

## A. FINDINGS

The State Water Resources Control Board (State Water Board) finds that:

### Facility Description

1. Dynegy South Bay, LLC, (Dynegy) operates the South Bay Power Plant (SBPP), a steam electric generating plant consisting of two units (Units 1 and 2) with a total combined generating capacity of 308 megawatts (MW). SBPP is located at 990 Bay Blvd., Chula Vista, California, in Section 9, T18S, R2W San Bernardino Base Meridian.
2. SBPP has been operating at its current location since 1960. Its discharges have been regulated under the San Diego Regional Water Quality Control Board (San Diego Water Board) Order Nos. R9-2004-0154, 96-05, 85-09, 76-10, 74-91 and 69-R3 (NPDES Permit No. CA0001368), issued to Dynegy and prior operators LS Power, Duke Energy, and San Diego Gas and Electric (SDG&E). The San Diego Unified Port District (Port) acquired SBPP from SDG&E in 1999 and currently leases the plant to Dynegy. Dynegy's lease of SBPP from the Port was scheduled to expire in 2009, but has been automatically extended until such time as the California Independent System Operator (California ISO) removes SBPP from reliability must run (RMR) status and all plant closure requirements are met. **Operation of the plant however is on a very intermittent emergency need basis only, and at times it only operates once a month.**
3. Prior to December 31, 2009, SBPP operated four electrical generating units with a total capacity of 723 MW and a total discharge flow of up to 601 million gallons per day (MGD). By letter dated January 11, 2010, Dynegy reported that Units 3 and 4 had been permanently shut down as of December 31, 2009.
4. The generation capacity and once-through cooling water volume for each unit is shown below:

Unit #	Gross Generation MW	Total Flow Per Unit GPM
Unit 1	152	78,000
Unit 2	156	78,000
Total	308	156,000

The shutdown of Units 3 and 4 resulted in the reduction of maximum flow rate from 601 MGD to 225 MGD (63 percent reduction). Unit 3 last operated on December 10, 2009, and Unit 4 last operated on November 3, 2009.

5. Currently, SBPP can discharge up to 225 MGD of heated once-through cooling water from Units 1 and 2 to San Diego Bay, a navigable water of the United States within the San Diego Region. In addition, Dynegy also discharges storm water runoff to San Diego Bay. The storm water discharge is regulated under waste discharge requirements contained in State Water Board Order No. 97-03-DWQ, NPDES

## DRAFT

General Permit No. CAS000001, *Waste Discharge Requirements for Discharges of Storm Water Associated With Industrial Activities Excluding Construction Activities*. The storm water runoff does not come into contact with industrial processes, material storage, or other sources of pollutants.

### Waste Discharges

6. SBPP uses San Diego Bay water to cool the steam condensers associated with its two units. The water is drawn into the power plant via one intake structure in San Diego Bay. The heated once-through cooling water is discharged via two outflow pipes to a tidal discharge basin on the plant property. Cooling water from the discharge basin is returned to San Diego Bay via a discharge channel. The temperature of the discharge may be as much as 23 to 25 degrees F higher than the ambient intake water when the plant is operating at peak load. This results in discharge temperatures as high as 100 degrees F for several hours of the day.
7. In addition to waste heat, the cooling water discharge contains trace amounts of copper that leaches from the copper-based condenser tubes of Unit 2. The tubing material in the Unit 1 condenser is high performance stainless steel, which does not leach copper. Thus, the Unit 2 condenser is now the only source of copper leaching remaining in SBPP. When all four units were in operation, it is estimated that SBPP could have added up to 710 pounds of copper per year to San Diego Bay from leaching of copper from its condensers. After termination of discharges from Units 3 and 4, the amount of copper that could potentially be discharged to San Diego Bay has been reduced by approximately 77 percent based on calculations using the maximum flow rates and operation of four units.
8. The once-through cooling water also contains residual chlorine from the intermittent chlorination of the cooling water system to minimize formation of algae and slime in the condenser tubing. The average concentration of total residual chlorine in the discharge ranges from 40 µg/l to 70 µg/l.
9. Since the combined effects of SBPP cooling water discharge may cause or contribute to a violation of the narrative toxicity objective in the Basin Plan of "no toxics in toxic amounts," this Order contains an effluent limitation for whole effluent toxicity.

### Water Quality Objectives

10. Water Quality Objectives [approved as State Water Quality Standards by the U.S. Environmental Protection Agency (USEPA)] applicable to South San Diego Bay are set forth in the *Water Quality Control Plan for the San Diego Basin (9)*(Basin Plan), and the *State Thermal Plan* and *Bays and Estuaries Policy* adopted by the State Water Board.
11. Additional Water Quality Criteria and Standards applicable to South San Diego Bay are set forth in the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy, SIP) adopted by the State Water Board and the provisions of the *California Toxics Rule* (CTR) promulgated by the USEPA.

## DRAFT

12. The State Water Board's Water Quality Control Plan for Enclosed Bays and Estuaries - Part 1, Sediment Quality (Sediment Quality Part 1) became effective on August 25, 2009. This plan supersedes other narrative sediment quality objectives, and establishes new sediment quality objectives and related implementation provisions for specifically defined sediments in most bays and estuaries. Sediment Quality Part 1 contains a narrative water quality objective (WQO): "Pollutants in sediments shall not be present in quantities that, alone or in combination, are toxic to benthic communities in bays and estuaries of California." Sediment Quality Part 1 Section VII.B.1 also states that if the Regional Water Board determines that a discharge has reasonable potential to cause or contribute to an exceedance of this WQO, it is to impose the WQO as a receiving water limit. This WQO is to be implemented by integrating three lines of evidence: sediment toxicity, benthic community condition, and sediment chemistry.

Portions of San Diego Bay are listed as impaired due to the presence of pollutants that alone or in combination, are toxic to benthic communities. To date, there is no evidence directly linking the toxic pollutants in SBPP's effluent to the degradation of the benthic community in South San Diego Bay. However, the State Water Board finds the following: 1) Copper is a toxic pollutant and is present in the effluent; 2) Copper and pollutants from other sources can accumulate in bay sediment at concentrations that could impact benthic communities; and 3) Degradation of the benthic community in and around the outfall is known to occur as a result of outfall flows and thermal and other stressors. and 4) This Order will be in effect for a limited duration prohibiting a detailed reasonable potential analysis based upon effluent and ambient conditions. Therefore, this Order does not include receiving water limitations for sediments. **However, it requires SBPP to participate in, support, or contribute to an ambient sediment quality monitoring survey or bay-wide regional monitoring program for the duration of this Order in accordance with Sediment Quality Part 1 Sections VII.B.3, E.**

13. Water Quality Objectives for ocean waters set forth in the *California Ocean Plan* (adopted by the State Water Board), while not directly applicable to waters of San Diego Bay, provide relevant information for development of waste discharge requirements for discharges affecting marine waters, including San Diego Bay.
14. South San Diego Bay, including the SBPP discharge channel, is a shallow estuarine habitat with low tidal flushing. The South San Diego Bay area supports a variety of aquatic habitats. These habitats include submerged lands, eelgrass beds, mudflats and salt marsh. Beneficial uses include estuarine habitat; marine habitat; wildlife habitat; rare, threatened, or endangered species; preservation of biological habitats of special significance; and shellfish harvesting.
15. The most restrictive objectives and criteria applicable to South San Diego Bay are summarized in the table below:

## DRAFT

### Summary of Water Quality Objectives for Waters of South San Diego Bay

Parameter	Most Restrictive Objective	Use Protected (most Sensitive)	Authority/Source	Note/Comment
Temperature	Elevated temperature waste shall comply with limitations necessary to protect beneficial uses.	EST, MAR, WILD, BIOL, RARE, SHELL	Thermal Plan	N/A
Dissolved Oxygen	Dissolved oxygen levels shall not be less than 5.0 mg/l in inland surface waters with designated MAR or WARM beneficial uses or less than 6.0 mg/l in waters with COLD beneficial uses. The annual mean dissolved oxygen concentration shall not be less than 7 mg/l more than 10% of the time.	EST, MAR, WILD, BIOL, RARE, SHELL	Basin Plan	Existing monitoring data for South San Diego Bay indicates that the DO objective is not being met in the receiving water itself. <b>However effluent monthly data since 2007 shows DO levels ranged between 5.2 mg/l and 8.6 mg/l, averaging to 6.9 mg/l of DO in the effluent for the past three years.</b>
Copper (dissolved)	3.1 µg/l	MAR, WILD, BIOL	CTR/SIP	<b>Receiving water at times has copper levels in exceedance of the water quality objective.</b>
Total Residual Chlorine (TRC)	85 µg/l – 144 µg/l	MAR, WILD, BIOL	Site-specific Water Quality Objective developed by discharger based on total uninterrupted chlorine discharge time of 20 to 80 minutes.	N/A

## D R A F T

Parameter	Most Restrictive Objective	Use Protected (most Sensitive)	Authority/Source	Note/Comment
Whole Effluent Toxicity	All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life.	MAR, WILD, BIOL	Basin Plan	N/A

### Waste Discharge Impacts

16. The biotic communities in the immediate vicinity of the discharge point and in the discharge channel have been altered by exposure to the once-through cooling water discharge from SBPP due to several factors, including elevated temperature, flow volume, and flow velocity.

The primary change to biotic communities includes a lower diversity of benthic invertebrates residing in the near field stations of the discharge channel compared to those in reference stations outside the discharge channel. Furthermore, certain invertebrate species (including polychaete worms and amphipods) are largely absent in near field stations of the discharge channel. These species were found in abundant quantities in reference stations outside the discharge channel. The absence of these species from the near field of the discharge channel demonstrates that these species cannot survive under the warm thermal regimes of the discharge channel.

In addition to a degradation of benthic invertebrates, it is possible that the SBPP discharge has contributed to the lack of up to 104 acres of critical eelgrass habitat has been precluded in from the discharge channel and other areas of south South San Diego Bay due to the redistribution of turbidity in the Bay from the SBPP discharge.

17. While the effects on the beneficial uses of South San Diego Bay due to the discharge of once-through cooling water cannot be completely eliminated except through termination of the discharge, the individual and combined effects of the elevated temperature and the volume and velocity of the discharge at the significantly reduced discharge volume are not unreasonable or significant enough to warrant termination until **(i) termination of the RMR status of Units 1 and 2, or (ii) the final compliance date in the State Water Board adopted Statewide Water Quality Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (OTC Policy), whichever occurs first.**

### Regulatory Requirements

18. On November 19, 1982, USEPA promulgated revised effluent guidelines and standards for the steam electric power generating point source category (hereinafter power plant regulations). These power plant regulations establish effluent limitation guidelines, pretreatment standards, and new source performance standards which



## DRAFT

are contained in 40 CFR Parts 125 and 423. The best practicable control technology currently available (BPT) and best available technology economically achievable (BAT) effluent limitations guidelines promulgated under 40 CFR Part 423 are applicable to discharges from SBPP.

19. Effluent limitations, national standards of performance, and toxic and pretreatment effluent standards established pursuant to Sections 301, 302, 303(d), 304, 306, 307, 316, and 403 of the Clean Water Act (CWA), as amended (33 U.S.C. 1251 et seq.), are applicable to the discharge.
20. The waste discharge requirements contained in this Order are consistent with state and federal antidegradation policies (40 CFR 131.12 and State Water Board Resolution No. 68-16, Statement of Policy with Respect to Maintaining High Quality of Waters in California) because this Order does not authorize any new or additional discharges of waste or pollutants from SBPP. Furthermore, effluent concentration and mass emission rate limitations in this Order are the same as those in Order No. R9-2004-0154.
21. The waste discharge requirements in this Order implement all necessary terms and conditions of an NPDES permit for the combined discharge of heated once-through cooling water and other waste discharges from SBPP to San Diego Bay. This Order is issued in lieu of an NPDES permit pursuant to Chapter 5.5, commencing with Section 13370, of the Porter Cologne Water Quality Control Act in Division 7 of the California Water Code and USEPA approval of the state's water quality control program under subdivision (b) and (c) of Section 402 of the CWA [33 U.S.C. 1342(b) and (c)].
22. The State Water Board, in establishing the requirements contained herein, considered factors including, but not limited to, the following:
  - a. Beneficial uses to be protected and the water quality objectives reasonably required for that purpose;
  - b. Other waste discharges;
  - c. The need to prevent nuisance;
  - d. Past, present, and probable future beneficial uses of San Diego Bay waters under consideration;
  - e. Environmental characteristics of San Diego Bay waters under consideration, including the quality of water available thereto;
  - f. Water quality conditions that could reasonably be achieved through the coordinated control of all factors which affect water quality in the area;
  - g. Economic considerations;
  - h. The need for developing housing within the region;
  - i. The need to develop and use recycled water; and
  - j. The regional power needs of the San Diego area as specified by the California ISO.

## DRAFT

23. The issuance of waste discharge requirements for this discharge is exempt from the requirement for preparation of environmental documents under the California Environmental Quality Act (Public Resources Code, Division 13, Chapter 3, Section 21000 et seq.) in accordance with the California Water Code, Section 13389.
24. Pursuant to CWA section 316(a), the existing thermal discharge limitations (average daily Delta T = 15 degrees F and instantaneous maximum Delta T = 25 degrees F) applicable to the SBPP discharge are not more stringent than necessary for protection and propagation of a “balanced indigenous community” (BIC) within the discharge channel. In order to determine whether the discharge from SBPP is in compliance with applicable effluent limitations for waste heat (average daily and instantaneous maximum Delta T), samples of the discharge are now taken at monitoring station S2, located in the discharge basin at or near the property line of the SBPP leasehold. These thermal limitations, when implemented at the property line, are adequate to ensure reasonable protection of water quality needed for attainment of the beneficial uses of South San Diego Bay as required by the *Basin Plan and State Thermal Plan*. **Recent evidence submitted by Dynegy in addition to the reduction of flow due to shutdown of units 3 and 4, demonstrates that the BIC standard is being achieved.**
25. CWA section 316(b) requires that the location, design, construction, and capacity of the existing cooling water intake structures at SBPP reflect the Best Technology Available (BTA) for minimizing adverse environmental impacts; permit writers are directed to implement BTA on a case-by-case basis using best professional judgment.
26. On May 4, 2010, the State Water Board adopted a Statewide Water Quality Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling (OTC Policy) to implement the requirements of Section 316(b). This policy establishes state BTA requirements for power plants in California and sets forth a schedule by which each plant must achieve compliance with the new standards, subject to certain extensions. The final compliance date specified for SBPP is December 31, 2011. Under the OTC Policy, the State Water Board assumed responsibility for issuance of NPDES permits to power plants that are subject to the policy.
27. In August 2004, Duke Energy submitted a technical study report titled “SBPP Cooling Water System Effects on San Diego Bay, Volume II: Compliance with Section 316(b) of the CWA for the South Bay Power Plant, August 2004.” This report reflected the operation of all four units at design flow (601 MGD), and concluded that approximately 27 percent of the goby complex and 50 percent of the longjawed mudsucker larval source water populations were lost annually due to entrainment in SBPP. Further, approximately 13 percent of equivalent adult anchovy and 15 percent equivalent adult silverside fish populations were lost annually due to larval entrainment losses. In March 2010, Dynegy updated this report to reflect the impingement and entrainment effects of SBPP based on the operation of Units 1 and 2 only. These losses of larval and adult fish populations due to entrainment in SBPP were found to have been reduced by 87percent from the levels reported in the 2004

## DRAFT

study. Impingement losses are not considered significant.

28. Pursuant to the *State Implementation Policy* and the provisions of the *California Toxics Rule* (CTR), the SBPP discharge does not have reasonable potential to cause or contribute to an excursion above the applicable priority pollutant criterion or objective for any of the 126 priority pollutants listed in the CTR, except for copper (total recoverable). Since copper in the SBPP discharge has the reasonable potential to cause or contribute to an excursion above the CTR criteria, this Order contains water-quality based effluent limitations total recoverable (4.44 µg/l – maximum daily and 3.53 µg/l – average monthly) for copper. **However, this effluent limitation is not applicable at times when the intake water source already exceeds the water quality objective, and in those instances an intake water credit plus an increment will be allowed instead.**
29. **By letter dated October , 2010 the California ISO informed Dynegy that the RMR agreement for Units 1 and 2 was extended through the 2011 contract year.** The California ISO will require RMR services for Units 1 and 2 until such time as replacement capacity within the SDG&E service area is available. The California ISO reports that it will continue to work with all stakeholders in finding a way to allow SBPP to close while maintaining the electrical system reliability needed in the San Diego local area.
30. Under the terms of the California ISO RMR agreement, Dynegy may not operate SBPP unless directed to do so by the California ISO. SBPP is a Condition 2 RMR facility. Section 3.1 (ii) of the contract allows the California ISO to operate RMR units only for selected purposes, namely to (1) meet local reliability needs; (2) prevent overloads or to manage congestion on non-competitive paths; (3) provide reserves if and only if such reserves are not provided through the ISO markets; and (4) conduct certain tests needed to keep the unit in operation. Thus, except for infrequent tests, SBPP units run only when the California ISO directs it to run when the circumstances described in the preceding sentence exist. As of the end of June 2010, Unit 1 has run 121 hours and Unit 2 has run 238 hours.
31. Dynegy reports that it does not intend to operate SBPP after (i) termination of the RMR status of Units 1 and 2 or (ii) the final compliance date in the OTC Policy (which may be suspended or extended per the OTC Policy), whichever occurs first. Accordingly, the cost of retrofitting SBPP with new cooling technology is not feasible given the imminent shutdown of the plant and would be wholly disproportionate to any environmental benefit that would be gained thereby. Based on these factors, the State Water Board finds that Dynegy meets the requirements of CWA section 316(b) and the OTC Policy as applied to SBPP. Furthermore, Dynegy is currently working with the Port and other stakeholders on a demolition plan for SBPP, the approval of which is subject to the requirements of the California Environmental Quality Act.
32. **On June 14, 2010, Dynegy submitted an application for renewal of Order No. R9-2004-0154. The San Diego Water Board staff has determined the application to be complete. The State Water Board concurs with this determination. Based on the uncertainties surrounding the duration of RMR status for Units 1 and 2 at SBPP, Dynegy's application requested authorization**

## DRAFT

**to continue operation of Units 1 and 2 at a maximum flow rate of 225 MGD until December 31, 2015. However this Permit will have an expiration date of December 31, 2011 to ensure compliance with the OTC Policy.**

33. The State Water Board has notified Dynegy and all known interested parties of its intent to renew NPDES permit requirements for the existing discharge of waste.
34. The State Water Board has, at a public meeting, heard and considered all comments pertaining to the discharge of once-through cooling water and other wastes from the SBPP to San Diego Bay.

**IT IS HEREBY ORDERED**, that Dynegy South Bay, LLC (hereinafter Discharger), in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder and the provisions of the CWA and the regulations adopted thereunder, shall comply with the following requirements for the discharge of once-through cooling water and other wastes from the SBPP to San Diego Bay:

### B. PROHIBITIONS

1. Compliance with the waste discharge prohibitions contained in the Basin Plan (Attachment 1) is required as a condition of this Order. Discharges of wastes in a manner or to a location which have not been specifically authorized by this Order and for which valid waste discharge requirements are not in force are prohibited.
2. Wastes shall not be discharged into or adjacent to areas where the protection of beneficial uses requires spatial separation from waste fields. [Enclosed Bays and Estuaries Policy (EBEP)]. **Operation of Units 3 and 4 are prohibited. In addition, operations of SBPP units 1 and 2 are prohibited, except for infrequent tests and only when the California ISO directs them to run.**
3. The discharge of municipal and industrial waste sludge and untreated sludge digester supernatant, centrate, or filtrate to San Diego Bay, or into a waste stream that discharges to San Diego Bay is prohibited. This prohibition does not apply to naturally occurring material removed from once-through cooling water system or from the San Diego Bay water drawn into the once-through cooling water system. [EBEP and Ocean Plan (OP)]
4. The deposition of rubbish or refuse into San Diego Bay or at any place where they would be eventually transported to San Diego Bay is prohibited. Rubbish and refuse include any cans, bottles, paper, plastic, vegetable matter, or dead animals or dead fish deposited or caused to be deposited by human activity. This prohibition does not apply to naturally occurring material removed from once-through cooling water system or from the San Diego Bay water drawn into the once-through cooling water system. [EBEP]
5. The discharge or by-passing of untreated waste, other than once-through (non-contact) cooling water, and fuel pump lube water to San Diego Bay, is prohibited. [EBEP]

## DRAFT

6. The combined discharge to San Diego Bay from the SBPP Units 1 and 2 in excess of 225 MGD is prohibited.
7. The discharge shall not cause pollutants in sediments to be present in quantities that, alone or in combination, are toxic to benthic communities in South San Diego Bay. [Sediment Quality Part 1]
8. The discharge of polychlorinated biphenyl compounds, such as those commonly used for transformer fluid, is prohibited. [40 CFR 423]
9. Total residual chlorine may not be discharged from any single generating unit for more than two hours per day. Simultaneous multi-unit chlorination is prohibited.
10. New discharges<sup>1/</sup> of municipal wastewaters and industrial process waters<sup>1/</sup> (exclusive of cooling water discharges) to San Diego Bay which are not consistently treated and discharged in a manner that would enhance the quality of receiving waters above that which would occur in the absence of the discharge, are prohibited. [EBEP]
11. Discharges from the SBPP service water system to San Diego Bay are prohibited.
12. The discharge of wastes to San Diego Bay containing concentrations of pollutants in excess of those identified in the *Effluent Limitations* of this Order is prohibited.
13. Odors, vectors, and other nuisances of waste origin beyond the property line are prohibited.

### C. EFFLUENT LIMITATIONS

1. Cooling Water Discharge
  - a. The temperature of the cooling water discharge shall not average more than 15°F (8.3°C) above that of the intake water during any calendar day. The cooling water discharge shall not at any time exceed 25°F (13.9°C) above that of the intake water.
  - b. The pH of the cooling water discharge shall be within the limits of 7.0 to 9.0 at all times.
  - c. For 96-hour static or continuous flow (acute toxicity)<sup>2/</sup> bioassay tests, using standard test species, the undiluted cooling water discharge shall not produce less than 90 percent survival, 50 percent of the time (based on all tests conducted during an individual calendar quarter), and shall not produce less than 70 percent survival, 10 percent of the time (based on all tests conducted during an individual calendar quarter).
  - d. The total chlorine residual in the cooling water discharge shall be the lower of the following:
    - i. The value calculated using the following equation:

$$\log y = (ax + b) - t_{0.90} S_y S_x \{1 + 1/n + (x - X)^2 / \Sigma(x_i - X)^2\}^{0.5}$$

Where:

y = residual chlorine limit (mg/l);

x = log (base 10) of the duration of uninterrupted

## DRAFT

chlorine/bromine discharges in minutes;

- a = slope of linear regression line = -0.404;
- b = intercept of linear regression line = 0.383;
- $t_{0.90}$  = "t" statistic (alpha = 0.10, n-2 degrees of freedom) = 1.685;
- $S_y S_x$  = standard deviation about regression line = 0.393;
- n = number of toxicity measurements available for regression = 41;
- X = mean log exposure time = 3.058;
- $\sum(x_i - X)^2$  = sum of squares about X = 33.947; or

ii. The USEPA, BAT effluent limitation of 0.20 mg/l (40 CFR 423).

e. Copper (total recoverable) - Effluent Limitations

The Discharger shall comply with the following effluent limitations for copper (total recoverable):

- (i) **When the Intake Water does not exceed the water quality objective of 3.7  $\mu\text{g/L}$  as total recoverable.**

The average monthly<sup>3/</sup> copper concentration in the cooling water discharge shall not exceed 3.53  $\mu\text{g/L}$ . The maximum daily<sup>4/</sup> copper concentration in the cooling water discharge shall not exceed 4.44  $\mu\text{g/L}$ .

- (ii) **When the Intake Water exceeds the water quality objective of 3.7  $\mu\text{g/L}$  as total recoverable.**

**The maximum daily copper concentration in the cooling water discharge shall not exceed a 20 percent increment of the intake water copper concentration.**

2. Waste discharged from the SBPP to San Diego Bay 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 which 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 bay surface.
3. 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.
4. All waste treatment, containment and disposal facilities shall be protected against

## DRAFT

erosion, overland runoff and other impacts resulting from a 100-year frequency 24-hour storm.

5. Collected screenings, sludges, and other solids removed from liquid wastes, shall be disposed of in accordance with all applicable requirements.
6. The SBPP discharge of elevated temperature wastes to San Diego Bay shall comply with limitations necessary to assure protection of beneficial uses. [Thermal Plan (TP)]
7. The discharge of any pollutant for which effluent limitations are not established by this Order is prohibited except in the following circumstances:
  - a. The pollutant has been identified in the application for this permit.
  - b. The pollutant has not been identified in the application for this permit, so long as the Discharger: (1) has complied with all applicable requirements for disclosure of information about its pollutant discharges, operations and sources of wastes; and (2) complies with all applicable requirements for notification of changes in its operations and discharges.

### D. COOLING WATER INTAKE STRUCTURE SYSTEM SPECIFICATIONS

1. The Discharger shall maintain velocities of water entering the intake structures at design levels and routinely clean the bar racks at SBPP. The Discharger shall rotate and clean intake screen assemblies for each unit, when operating, as needed for the purpose of maintaining intake water velocities as close as practical to design levels.
2. The Discharger shall minimize once-through cooling water flow where possible when units are at reduced load or out of service.
3. The Discharger shall avoid sudden increases in once-through cooling water flow whenever possible.

### E. RECEIVING WATER LIMITATIONS

1. The SBPP discharge to San Diego Bay shall not by itself or jointly with any other discharge(s) cause non-attainment of the following water quality objectives:
  - a. Physical Characteristics
    - i. Waters shall not contain oils, greases, waxes, or other materials in concentrations which result in a visible film or coating on the surface of the water or on objects in the water, or which cause nuisance or which otherwise adversely affect beneficial uses. [Basin Plan (BP)]
    - ii. The discharge of waste shall not cause aesthetically undesirable discoloration of the bay surface. [OP]
    - iii. Natural light shall not be significantly reduced as the result of the discharge of waste<sup>17</sup>. [OP]
    - iv. The rate of deposition of inert solids and the characteristics of inert solids in bay sediments shall not be changed such that benthic communities are degraded. [OP]

## DRAFT

- v. Waters shall not contain floating material, including solids, liquids, foams, and scum in concentrations which cause nuisance or adversely affect beneficial uses. [BP]
  - vi. The suspended sediment load and suspended sediment discharge rate of surface waters shall not be altered in such a manner as to cause nuisance or adversely affect beneficial uses. [BP]
  - vii. Waters shall not contain suspended and settleable solids in concentrations of solids that cause nuisance or adversely affect beneficial uses. [BP]
  - viii. Waters shall not contain taste or odor producing substances at concentrations which cause a nuisance or adversely affect beneficial uses. [BP]
  - ix. Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses. In addition, within San Diego Bay, the transparency of bay waters, insofar as it may be influenced by any controllable factor, either directly or through induced conditions, shall not be less than 8 feet in more than 20 percent of the readings in any zone, as measured by a standard Secchi disk. Wherever the water is less than 10 feet deep, the Secchi disk reading shall not be less than 80 percent of the depth in more than 20 percent of the readings in any zone. [BP]
- b. Chemical Characteristics
- i. The pH shall not be changed at any time more than 0.2 units from that which occurs naturally. The pH shall not be depressed below 7.0 nor raised above 9.0. [BP]
  - ii. The dissolved sulfide concentration of waters in and near sediments shall not be significantly increased above that present under natural conditions. [OP]
  - iii. The concentration of substances set forth in *Receiving Water Limitation D.2* in marine sediments shall not be increased to levels which would degrade indigenous biota. [OP]
  - iv. The concentration of organic materials in marine sediments shall not be increased to levels which would degrade marine life. [OP]
  - v. Nutrient materials shall not cause objectionable aquatic growth or degrade indigenous biota. [OP]
  - vi. San Diego Bay waters shall not contain biostimulatory substances in concentrations that promote aquatic growth to the extent that such growths cause nuisance or adversely affect beneficial uses. [BP]
  - vii. The discharge of wastes shall not cause concentrations of un-ionized ammonia ( $\text{NH}_3$ ) to exceed 0.025 mg/l (as N) in San Diego Bay. [BP]
  - viii. No individual pesticide or combination of pesticides shall be present in the



## DRAFT

water column, sediments or biota at concentration(s) that adversely affect beneficial uses. Pesticides shall not be present at levels which will bioaccumulate in aquatic organisms to levels which are harmful to human health, wildlife or aquatic organisms. [BP]

c. Biological Characteristics

- i. Marine communities, including vertebrate, invertebrate, and plant species, shall not be degraded. [OP]
- ii. The natural taste, odor, and color of fish, shellfish, or other marine resources used for human consumption shall not be altered. [OP]
- iii. 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. [OP]

d. Radioactivity

Radionuclides shall not be present in concentrations that are deleterious to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal or aquatic life. [BP]

e. Toxicity

All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods as specified by the Regional Board. [BP]

2. The following receiving water limits apply to all receiving waters including the discharge channel:

- a. For 96-hour static or continuous flow (acute toxicity)<sup>2/</sup> bioassay tests, using standard test species, the undiluted receiving waters shall not produce less than 90 percent survival, 50 percent of the time (based on all tests conducted during an individual calendar quarter), and shall not produce less than 70 percent survival, 10 percent of the time (based on all tests conducted during an individual calendar quarter).
- b. The receiving water limitation for total chlorine residual shall be calculated using the following equation:

$$\log y = (ax + b) - t_{0.90} S_y S_x \left\{ 1 + 1/n + (x - X)^2 / \sum (x_i - X)^2 \right\}^{0.5}, \text{ where:}$$

y = residual chlorine limit (mg/l);

x = log (base 10) of the duration of uninterrupted chlorine/bromine discharges in minutes;

## DRAFT

- a = slope of linear regression line = -0.404;  
b = intercept of linear regression line = 0.383;  
 $t_{0.90}$  = "t" statistic (alpha = 0.10, n-2 degrees of freedom) = 1.685;  
 $S_y S_x$  = standard deviation about regression line = 0.393;  
n = number of toxicity measurements available for regression = 41;  
X = mean log exposure time = 3.058;  
 $\sum(x_i - X)^2$  = sum of squares about X = 33.947

- c. The radioactivity in the receiving waters shall not exceed limits specified in Title 17, Division 5, Chapter 4, Group 3, Article 3, Section 32069 of the California Code of Regulations.

## F. PROVISIONS

1. Neither the treatment nor the discharge of waste shall create a pollution, contamination, or nuisance as defined by Section 13050 of the California Water Code.
2. The Discharger must comply with all conditions of this Order. Any permit noncompliance constitutes a violation of the CWA and the California Water Code and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a report of waste discharge submitted in application for permit modification or reissuance.
3. The Discharger may not operate SBPP unless directed to do so by the California ISO.
4. The Discharger shall operate SBPP only for the following purposes to: (1) meet local reliability needs in the San Diego area; (2) prevent overloads or to manage congestion on non-competitive paths; (3) provide reserves if and only if such reserves are not provided through the California ISO markets; and (4) conduct certain tests needed to keep the unit in operation. Thus, except for infrequent tests, SBPP units run only when the California ISO directs it to run when the circumstances described in the preceding sentence exist.
5. 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 noncompliant discharge.
6. This Order may be modified, revoked and reissued, or terminated for cause including, but not limited to, the following:
  - a. Violation of any terms or conditions of this Order;
  - b. Obtaining this Order by misrepresentation or failure to disclose fully all relevant facts; or

## DRAFT

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

The filing of a request by the Discharger for modification, revocation and reissuance, or termination of this Order, or a notification of planned change in or anticipated noncompliance with this Order does not stay any condition of this Order.

7. If any applicable toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the CWA for a toxic pollutant and that standard or prohibition is more stringent than any limitation on the pollutant in this Order, the Regional Board may institute proceedings under these regulations to modify or revoke and reissue the Order to conform to the toxic effluent standard or prohibition.
8. The Discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use and disposal established under Section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if this Order has not yet been modified to incorporate the requirement.
9. This Order does not convey any property rights of any sort or any exclusive privilege. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Discharger from liabilities under federal, state, or local laws, nor create a vested right for the Discharger to continue the waste discharge.
10. The Discharger shall allow the Regional Board, or any authorized Regional Board representative, or any authorized representative of the USEPA (including an authorized contractor acting as a representative of the Regional Board or USEPA), upon presentation of credentials and other documents as may be required by law, to:
  - a. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this Order;
  - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;
  - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
  - d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the CWA or California Water Code, any substances or parameters at any location.
11. The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order which has a reasonable likelihood of adversely affecting human health or the environment.
12. The Discharger shall at all times properly operate and maintain all facilities and

## DRAFT

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 back-up or auxiliary facilities or similar systems which are installed by the Discharger only when the operation is necessary to achieve compliance with the conditions of this Order.

13. It shall not be a defense for the 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. Upon reduction, loss, or failure of a treatment facility, the Discharger shall, to the extent necessary to maintain compliance with this Order, control production or all discharges, or both, until the facility is restored or an alternative method of treatment is provided. This provision applies, for example, when the primary source of power of a treatment facility fails, is reduced, or is lost.

#### 14. Bypass of Treatment Facilities

- a. Definition

"Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.

- b. Notice

The Discharger shall submit notice of any bypass as required in *Reporting Requirement F.6*.

#### 15. Upset

- a. Definition

"Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology based effluent limitations because of factors beyond the reasonable control of the Discharger. 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.

- b. 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 (c)* 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.

- c. Conditions Necessary for a Demonstration of Upset

If the Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other

## DRAFT

relevant evidence that:

- i. An upset occurred and that the Discharger can identify the cause(s) of the upset;
- ii. The permitted facility was at the time being properly operated;
- iii. The Discharger submitted notice of the upset as required in *Reporting Requirement F.6* of this Order; and
- iv. The Discharger complied with any remedial measures required under *Provision E.9* of this Order.

d. Burden of Proof

In any enforcement proceeding the discharger seeking to establish the occurrence of an upset has the burden of proof.

16. The provisions of this Order are severable, and if any provision 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 the remainder of this Order, shall not be affected thereby.
17. The Discharger shall comply with any interim effluent limitations as established by addendum, enforcement action or revised waste discharge requirements which have been or may be adopted by this Regional Board.
18. A copy of this Order shall be maintained in the central offices at the SBPP, and shall be available to operating personnel at all times.
19. If toxicity testing results show a violation of any acute toxicity limitation identified in *Effluent Limitation B.1.(c)* of this Order, the Discharger shall:
  - a. Take all reasonable measures necessary to immediately minimize toxicity; and
  - b. Increase the frequency of the toxicity test(s) that showed a violation or non-attainment to at least weekly until results of at least two consecutive toxicity tests do not show violations or non-attainment.

If the additional weekly tests indicate that toxicity effluent limitations, identified in *Effluent Limitation B.1.(c)*, were violated in any three of five consecutive tests, the Discharger shall conduct a *Toxicity Reduction Evaluation (TRE)* which includes all reasonable steps to identify the source of toxicity. Once the source of toxicity is identified, the Discharger shall take all reasonable steps to reduce the toxicity to meet the toxicity limitations identified in *Effluent Limitation B.1.(c)* of this Order.

Within fourteen days of completion 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 all the toxicity limitations of this Order and prevent recurrence of violations of those limitations and non-attainment of those performance goals, and a time schedule for implementation of such corrective actions. The corrective actions and time schedule shall be modified at the direction of the Regional Board.

20. If only one sample is collected during the time period associated with the effluent

## DRAFT

limitations (e.g., 30-day average), the single measurement shall be used to determine compliance with the effluent limitation for the entire time period.

21. 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.
22. Compliance for all non-CTR pollutants shall be determined as described below:
  - a. For purposes of determining compliance based on the average or median of the results of analysis of multiple samples, sample analysis results below the Practical Quantitation Level (PQL) shall be assumed to be zero.
  - b. For purposes of determining compliance with limitation which is below the PQL based on the results of a single sample, a sample analysis result below the PQL shall be assumed to indicate compliance.
  - c. When determining compliance based on a single sample, with a single effluent limitation which applies to a group of chemicals concentrations of individual members of the group may be considered to be zero if the analytical response for individual chemicals falls below the method detection limit (MDL) for that parameter.
23. Compliance for all CTR priority pollutants shall be determined using the procedures listed in Section 2.4.5 of the Implementation Policy.
24. **The Discharger, to the satisfaction of the State Water Board Executive Director, shall participate in, support, or contribute to an ambient sediment quality monitoring survey or bay-wide regional monitoring program for the duration of this Order in accordance with Sediment Quality Part 1 Sections VII.B.3. and VII.E.**
25. The requirements of this Order may be modified by the State Water Board after due notice to the Discharger and all other interested parties and after the State Water Board has, at a public meeting, heard and considered all comments pertaining to the proposed modifications, if the State Water Board finds that:
  - a. It is appropriate to allow a dilution factor and/or mixing zone for the cooling water discharge from the SBPP to San Diego Bay;
  - b. Site specific water quality objectives for one or more constituents have been established for south San Diego Bay;
  - c. It is appropriate to require implementation of best management practices to prevent or control the discharge of certain constituents to the cooling water in lieu of establishing cooling water effluent limitations for those constituents; or
  - d. The discharge of total residual chlorine from any single generating unit for more than two hours per day is required to minimize biofouling of condensers.

It is the responsibility of the Discharger to provide the information and/or to make the demonstration(s) necessary for State Water Board to make these findings.

## DRAFT

26. The discharges from Units 1 and 2 shall cease upon termination of the permit or within days after the date the ISO determines that Reliability Must Run (RMR) services from Units 1 and 2 are no longer needed, whichever is earlier.

### G. REPORTING REQUIREMENTS

1. The Discharger shall file a new Report of Waste Discharge not less than 180 days prior to any material change or proposed change in the character, location, or volume of the discharge including, but not limited to, the following:
  - a. Addition of a major industrial waste discharge to a discharge of essentially domestic sewage, or the addition of a new process or product by an industrial facility resulting in a change in the character of the waste.
  - b. Significant change in disposal method, e.g. change from a land disposal to a direct discharge to water, or change in the method of treatment which would significantly alter the characteristics of the waste.
  - c. Significant change in disposal area, e.g., moving the discharge to another drainage area, to a different water body, or to a disposal area significantly removed from the original area, potentially causing different water quality or nuisance problem.
  - d. Increase in flow beyond that specified in this Order.
2. The Discharger shall give notice to the Regional Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:
  - a. 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 Part 122.29(b);
  - b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are not subject to effluent limitations in this Order, or to notification requirements under *Reporting Requirement F.7*; or
  - c. 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 conditions in this Order that are different from or absent in the existing Order, 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.
3. The Discharger shall give advance notice to the Regional Board of any planned changes in the permitted facility or activity which may result in noncompliance with the requirements of this Order.
4. This Order is not transferable to any person except after notice to the Regional Board. The Regional Board may require modification or revocation and reissuance of this Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA or the California Water Code in

## DRAFT

accordance with the following:

a. Transfers by Modification

Except as provided in *paragraph (b)* of this reporting requirement, this Order may be transferred by the Discharger to a new owner or operator only if this Order has been modified or revoked and reissued, or a minor modification made to identify the new Discharger and incorporate such other requirements as may be necessary under the CWA or California Water Code.

b. Automatic Transfers

As an alternative to transfers under *paragraph (a)* of this reporting requirement, any NPDES permit may be automatically transferred to a new Discharger if:

- i. The current Discharger notifies the Regional Board at least 30 days in advance of the proposed transfer date in *paragraph (b)(2)* of this reporting requirement;
- ii. The notice includes a written agreement between the existing and new Dischargers containing a specific date for transfer of permit responsibility, coverage, and liability between them; and
- iii. The Regional Board does not notify the existing Discharger and the proposed new Discharger of its intent to modify or revoke and reissue the Order. A modification under this subparagraph may also be a minor modification under 40 CFR Part 122.63. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in *paragraph (b)(2)* of this reporting requirement.

5. The Discharger shall comply with Monitoring and Reporting Program No. 2010-XXXX-DWQ. Monitoring results shall be reported at the intervals specified in Monitoring and Reporting Program No. 2010-XXXX-DWQ.
6. The Discharger shall report any noncompliance which may endanger health or the environment. Any information shall be provided orally to the Regional Board within 24 hours from the time the Discharger becomes aware of the circumstances. A written description of any noncompliance shall be submitted to the Regional Board within 5 days of such an occurrence and 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 recurrence of the noncompliance. The following shall be included as information which must be reported within 24 hours under this reporting requirement:
  - a. Any bypass as defined in *Provision E.12* of this Order.
  - b. Any discharge of treated or untreated wastewater resulting from pipeline breaks, obstruction, surcharge or any other circumstance.
  - c. Any upset which exceeds any effluent limitation in this Order.
  - d. Violation of a daily maximum effluent limitation as specified in this Order.



## DRAFT

- e. Any spills of polychlorinated biphenyl compounds (PCB). The spill residue shall be drummed and disposed of in a manner which is compliance with all federal, state and local laws and regulations. Written notification shall include pertinent information explaining reasons for the spill and shall indicate what steps were taken to prevent the problem from recurring.
  - f. Any violation of the effluent limitations for acute toxicity as specified in this Order.
  - g. Any violation of the prohibitions specified in this Order.
7. The Discharger shall notify the Regional Board as soon as it knows or has reason to believe:
- a. That any activity of the Discharger has occurred or will occur which would result in the direct or indirect addition to the cooling water on a routine or frequent basis, of any pollutant which is not limited in this Order, if the discharge of that pollutant will exceed the highest of the following "notification levels":
    - i. One hundred micrograms per liter (100 ug/l);
    - ii. Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
    - iii. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge submitted in application for this Order; or
    - iv. The level established by the Regional Board in accordance with 40 CFR 122.44(f).
  - b. That any activity of the Discharger has occurred or will occur which would result in any direct or indirect addition to the cooling water, on a non-routine or infrequent basis, of a pollutant which is not limited in the permit, if the discharge of that pollutant will exceed the highest of the following "notification levels":
    - i. Five hundred micrograms per liter (500 ug/l);
    - ii. One milligram per liter (1 mg/l) for antimony;
    - iii. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge submitted in application for this Order; or
    - iv. The level established by the Regional Board in accordance with 40 CFR 122.44(f).
8. The Discharger shall furnish to the Regional Board, State Water Board, or USEPA, within a reasonable time, any information which the Regional Board, State Water Board, 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. The Discharger shall also furnish to the Regional Board, State Water Board, or USEPA, upon request, copies of records required to be kept by this Order.
9. 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

## DRAFT

10. The Discharger shall report all instances of noncompliance not reported under *Reporting Requirements F.5, F.6, and F.9* of this Order, at the time monitoring reports are submitted. The reports shall contain the information listed in *Reporting Requirement F.6* of this Order.
11. When the Discharger becomes aware that it failed to submit any relevant facts in a Report of Waste Discharge, or submitted incorrect information in a Report of Waste Discharge, or in any report to the Regional Board, it shall promptly submit such facts or information.
12. If the Discharger wishes to continue any activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain new waste discharge requirements. The Discharger must file a *Report of Waste Discharge* (ROWD) in accordance with Title 23, California Code of Regulations and NPDES regulations 40 CFR 122, not later than 180 days prior to the expiration date of this Order as application for issuance of new waste discharge requirements.
13. All applications, reports, or information submitted to the Regional Board shall be signed and certified.
  - a. All Reports of Waste Discharge shall be signed as follows:
    - i. **For a corporation:** by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means: (a) 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 (b) 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 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 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.
    - ii. **For a partnership or sole proprietorship:** by a general partner or the proprietor, respectively; or
    - iii. **For a municipality, State, Federal or other public agency:** by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes: (a) the chief executive officer of the agency, or (b) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA).
  - b. All reports required by this Order, and other information requested by the Regional Board shall be signed by a person described in *paragraph (a)* of this

## DRAFT

reporting requirement, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

- i. The authorization is made in writing by a person described in *paragraph (a)* of this reporting requirement;
  - ii. The authorization specifies 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).; and,
  - iii. The written authorization is submitted to the Regional Board.
- c. If an authorization under *paragraph (b)* of this reporting requirement 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 (b)* of this reporting requirement must be submitted to the Regional Board prior to or together with any reports, information, or applications to be signed by an authorized representative.
- d. Any person signing a document under *paragraph (a)* or *(b)* of this reporting requirement 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."

14. Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this Order shall be available for public inspection at the offices of the California Regional Water Quality Control Board, San Diego Region. As required by the CWA, Reports of Waste Discharge, this Order, and effluent data shall not be considered confidential.
15. The Discharger shall submit reports and provide notifications as required by this Order in accordance with the following:
- a. Reports required to be submitted to the Regional Board shall be sent to:  
California Regional Water Quality Control Board, San Diego Region  
Industrial Compliance Unit  
9174 Sky Park Court, Suite 100

## DRAFT

San Diego, California 92123

Notifications required to be provided to the Regional Board shall be made to:

Phone - (858) 467-2952 or

Fax - (858) 571-6972

- b. Reports required to be submitted to the USEPA shall be sent to:

U.S. Environmental Protection Agency, Region IX

Compliance Office (WTR-7)

75 Hawthorne Street

San Francisco, California 94105

### H. NOTIFICATIONS

1. California Water Code Section 13263(g) states:

No discharge of waste into the waters of the state, whether or not such discharge is made pursuant to waste discharge requirements, shall create a vested right to continue such discharge. All discharges of waste into waters of the state are privileges, not rights.

2. The CWA provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any condition or limitation of this Order, is subject to a civil penalty not to exceed \$25,000 per day for each violation. Any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation of this Order, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than one 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 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 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 6 years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any condition or limitation of this Order, and who knows at that time that he or she 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 CWA,

## DRAFT

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.

3. Except as provided in *Provision E.13*, nothing in this Order shall be construed to relieve the Discharger from civil or criminal penalties for noncompliance.
4. Nothing in this Order shall be construed to preclude the institution of any legal action or relieve the Discharger from any responsibilities, liabilities, or penalties to which the Discharger is or may be subject to under Section 311 of the CWA.
5. Nothing in this Order shall be construed to preclude institution of any legal action or relieve the Discharger from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation under authority preserved by Section 510 of the CWA.
6. This Order shall become effective 10 days after the date of its adoption, provided the USEPA Regional Administrator has no objection. If the Regional Administrator objects to its issuance, this Order shall not become effective until such objection is withdrawn. The Monitoring and Reporting Program No. R9-2010-XXXX shall become effective on January 1, 2011.
7. This Order supersedes Order No. R9-2004-0154 upon the effective date of this Order.

## DRAFT

### I. ENDNOTE REFERENCES

1. See Bays and Estuaries Policy for definition of terms.
2. Acute Toxicity - Receiving Water Limitations and Cooling Water Discharge Effluent Limitations

Acute toxicity tests measure lethal effects on organisms exposed to test waters (e.g. effluent) compared to that of organisms exposed to control waters.

- a. Test Species and Methods

The tests contained in Appendix III (*Standard Monitoring Procedures*), of the 2005 California Ocean Plan (effective July 13, 2005) are incorporated by reference and shall be used to measure toxicity of the intake water and combined discharge to San Diego Bay. According to Appendix III of the Ocean Plan, compliance with the acute toxicity limitations shall be determined using USEPA approved protocols and marine test species as provided in 40 CFR Part 136.

- b. Quality Assurance

Unless the test method specifies the use of lab water, dilution and control water shall be obtained from a location unaffected by the SBPP discharge and approved by the Regional Board. If the dilution water is different than the culture water, then culture water shall be used in a second control.

Concurrent testing with reference toxicants shall be conducted and the results shall be reported with the test results. If either the reference toxicant tests or the test water tests do not meet all the test acceptability criteria specified for the test method, the Discharger shall re-sample and re-test as soon as possible.

3. Average monthly effluent concentration is the arithmetic mean using the results of analysis of all samples collected during any 30 consecutive calendar day period.
4. Maximum daily effluent concentration shall apply to flow weighted 24-hour composite samples.

**Attachment 1 Basin Plan Waste Discharge Prohibitions  
ATTACHMENT 1**

**ORDER NO. R9-2004-0154**

**BASIN PLAN WASTE DISCHARGE PROHIBITIONS**

California Water Code Section 13243 provides that a Regional Board, in a water quality control plan, may specify certain conditions or areas where the discharge of waste, or certain types of waste is not permitted. The following discharge prohibitions are applicable to any person, as defined by Section 13050 of the California Water Code, who is a citizen, domiciliary, or political agency or entity of California whose activities in California could affect the quality of waters of the state within the boundaries of the San Diego Region.

1. The discharge of waste to waters of the state in a manner causing, or threatening to cause a condition of pollution, contamination, or nuisance as defined in California Water Code Section 13050, is prohibited.
2. The discharge of waste to land, except as authorized by waste discharge requirements of the terms described in California Water Code Section 13264 is prohibited.
3. The discharge of pollutants or dredged or fill material to waters of the United States except as authorized by an NPDES permit or a dredge or fill material permit (subject to the exemption described in California Water Code Section 13376) is prohibited.
4. The discharge of treated or untreated waste to lakes or reservoirs used for municipal water supply, or to inland surface water tributaries thereto, is prohibited.
5. The discharge of waste to inland surface waters, except in cases where the quality of the discharge complies with applicable receiving water quality objectives, is prohibited. Allowances for dilution may be made at the discretion of the Regional Board. Consideration would include streamflow data, the degree of treatment provided and safety measures to ensure reliability of facility performance. As an example, discharge of secondary effluent would probably be permitted if streamflow provided 100:1 dilution capability.
6. The discharge of waste in a manner causing flow, ponding, or surfacing on lands not owned or under the control of the discharger is prohibited unless the discharge is authorized by the Regional Board.

7. The dumping, deposition, or discharge of waste directly into waters of the state, or adjacent to such waters in any manner that may permit its being transported into the waters, is prohibited unless authorized by the Regional Board.
8. Any discharge to a storm water conveyance system that is not composed entirely of "storm water" is prohibited unless authorized by the Regional Board. [Federal Regulations 40 CFR 122.26 (b) defines storm water as storm water runoff, snow melt runoff, and surface runoff and drainage.]
9. The unauthorized discharge of treated or untreated sewage to waters of the state or to a storm water conveyance system is prohibited.
10. The discharge of industrial wastes to conventional septic tank/subsurface disposal systems, except as authorized by the terms described in California Water Code Section 13264, is prohibited.
11. The discharge of radioactive wastes amenable to alternative methods of disposal into the waters of the state is prohibited.
12. The discharge of any radiological, chemical, or biological warfare agent into waters of the state is prohibited.
13. The discharge of waste into a natural or excavated site below historic water levels is prohibited unless the discharge is authorized by the Regional Board.
14. The discharge of sand, silt, clay, or other earthen materials from any activity, including land grading and construction, in quantities that cause deleterious bottom deposits, turbidity or discoloration in waters of the state or that unreasonably affect, or threaten to affect, beneficial uses of such waters is prohibited.
15. The discharge of treated or untreated sewage from vessels to Mission Bay, Oceanside Harbor, Dana Point Harbor, or other small boat harbors is prohibited.
16. The discharge of untreated sewage from vessels to San Diego Bay is prohibited.
17. The discharge of treated sewage from vessels to portions of San Diego Bay that are less than 30 feet deep at mean lower low water (MLLW) is prohibited.
18. The discharge of treated sewage from vessels that do not have a properly functioning US Coast Guard certified Type I or Type II marine sanitation device to portions of San Diego Bay that are greater than 30 feet deep at MLLW is prohibited.



**Attachment 2 Standard Provisions**

**ATTACHMENT 2**

**STANDARD PROVISIONS**

1. The following sections of 40 CFR are incorporated into this permit by reference:
  - a. 122.5 *Effect of a permit*
  - b. 122.21 *Application for a permit*
    - c. 122.22 *Signatories to permit applications and reports*
  - d. 122.41 *Conditions applicable to all permits*
  - e. 122.61 *Transfer of permits*
  - f. 122.62 *Modification or revocation of permits*
  - g. 122.63 *Minor modifications of permits*
  - h. 122.64 *Termination of permits*
  
2. *Review and revision of permit.* Upon application by any affected person, or on its own motion, the Regional Board may review and revise this permit. [CWC §13263(e)]
  
3. *Termination or modification of permit.* This permit may be terminated or modified for causes, including, but not limited to, all of the following:
  - (a) Violation of any condition contained in this permit.
  - (b) Obtaining this permit by misrepresentation, or failure to disclose fully all relevant facts.
  - (c) A change in any condition that requires either a temporary or permanent reduction or elimination of the permitted discharge. [CWC §13381]
  
4. *Material change:* Not less than 180 days prior to any material change in the character, location, volume, or amount of waste discharge, the discharger shall submit a technical report describing such changes. Such changes include but are not limited to the following:
  - (a) Addition of a major industrial waste discharge to a discharge of essentially domestic sewage, or the addition of a new process or product by an industrial facility resulting in a change in the character of the waste.
  - (b) Significant change in disposal method, e.g., change from land disposal to a direct discharge to water, or change in the method of treatment which would significantly alter the characteristics of the waste.

- (c) Significant change in the disposal area, e.g., moving the discharge to another drainage area, to a different water body, or to a disposal area significantly removed from the original area potentially causing different water quality or nuisance problems.
  - (d) Increase in flow beyond that specified in the waste discharge requirements.
  - (e) Increase in area or depth to be used for solid waste disposal beyond that specified in the waste discharge requirements. [CWC 13372, 13376, 13264, 23 CCR 2210]
  - (f) Any substantial change in the amount or characteristics of pollutants used, handled, stored, or generated.
  - (g) Any new discharge of pollutants or new potential pollutant source.
  - (h) Other circumstances which could result in a material change in the character, amount, or location of discharges. [CWC 13372, 13264, 23 CCR 2210]
5. *Transfers*: When this permit is transferred to a new owner or operator, such requirements as may be necessary under the California Water Code may be incorporated into this permit.
6. *Conditions not stayed*: The filing of a request by the Discharger for modification, revocation and reissuance, or termination of this Order, or a notification of planned change in or anticipated noncompliance with this Order does not stay any condition of this Order.
7. *Monitoring and Reporting Program*: The Discharger shall conduct monitoring and submit reports in accordance with Monitoring and Reporting Program (MRP) No. R9-2004-0154. Monitoring results shall be reported at the intervals specified in MRP No. R9-2004-0154. [CWC 13267 & 13383, 23 CCR 2230, 40 CFR 122.43(a), 122.44(l)(4), 122.48]
8. *Availability*: A copy of this Order shall be kept at a readily accessible location and shall be available to on-site personnel at all times.
9. *Duty to minimize or correct adverse impacts*: 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 noncompliance.
10. *Responsibilities, liabilities, legal action, penalties*: The Porter-Cologne Water Quality Control Act provides for civil and criminal penalties comparable to, and in some cases greater than, those provided for under the Clean Water Act (CWA). [CWC §13385, 13387]

Nothing in this Order shall be construed to protect the discharger from its liabilities under federal, state, or local laws. Except as provided for in 40 CFR 122.41(m) and (n),

nothing in this Order shall be construed to relieve the discharger from civil or criminal penalties for noncompliance.

Nothing in this Order shall be construed to preclude the institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties to which the discharger is or may be subject to under Section 311 of the CWA.

Nothing in this Order shall be construed to preclude institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authoring preserved by Section 510 of the CWA

11. *Noncompliance*: Any noncompliance with this permit constitutes violation of the California Water Code and is grounds for denial of an application for permit modification. [40 CFR 122.41 (a)]
12. *Discharge is a privilege*: No discharge of waste into waters of the state, whether or not the discharge is made pursuant to waste discharge requirements, shall create a vested right to continue the discharge. All discharges of waste into waters of the state are privileges, not rights. [CWC §13263(g)]
13. *Permittee*: For the purposes of this permit, the term "permittee" used in parts of 40 CFR incorporated into this permit by reference and/or applicable to this permit shall have the same meaning as the term "discharger" used elsewhere in this permit.
14. *Director*: For the purposes of this permit, the term "Director" used in parts of 40 CFR incorporated into this permit by reference and/or applicable to this permit shall have the same meaning as the term "Regional Board" used elsewhere in this permit, except that in 40 CFR 122.41(h) & (i), "Director" shall mean "Regional Board, SWRCB, and USEPA."
15. *Effective date*: This Order shall become effective ten days after the date of its adoption provided the USEPA Regional Administrator has no objection. If the Regional Administrator objects to its issuance, this Order shall not become effective until such objection is withdrawn.
16. *Continuation of expired permit*: After this permit expires, the terms and conditions of this permit are automatically continued pending issuance of a new permit if all requirements of the federal NPDES regulations on the continuation of expired permits are complied with. [40 CFR 122.6, 23 CCR 2235.4]

17. *Applications*: Any application submitted by the discharger for reissuance or modification of this permit shall satisfy all applicable requirements specified in federal regulations as well as any additional requirements for submittal of a Report of Waste Discharge specified in the California Water Code and the California Code of Regulations.
18. *Confidentiality*: Except as provided for in 40 CFR 122.7, no information or documents submitted in accordance with or in application for this permit will be considered confidential, and all such information and documents shall be available for review by the public at the office of the Regional Board.
19. *Severability*: The provisions of this Order are severable, and if any provision of this Order, or the application of any provisions of this Order to any circumstance, is held invalid, the application of such provision to other circumstances and the remainder of this Order shall not be affected thereby.
20. *Discharge Monitoring Quality Assurance (DMQA) Program*: Then Discharger shall conduct appropriate analyses on any sample provided by EPA as part of the DMQA program. The results of such analyses shall be submitted to EPA's DMQA manager. [SWRCB/USEPA 106 MOA]
21. *Pollution, Contamination, Nuisance*: The handling, transport, treatment, or disposal of waste or the discharge of waste to waters of the state in a manner which causes or threatens to cause a condition of pollution, contamination, or nuisance, as those terms are defined in CWC 13050, is prohibited.
22. *Additional Reporting Requirements*: [40 CFR 122.42(a)] In addition to the reporting requirements under 40 CFR 122.41 (l), all existing manufacturing, commercial, mining, and silvicultural discharges must notify the Regional Board as soon as they know or have reason to believe:
  - (1) That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, If that discharge will exceed the highest of the following "notification levels":
    - (a) One hundred micrograms per liter (100 µg/l);
    - (b) Two hundred micrograms per liter (200 µg/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/l) for 2, 4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
    - (c) The level established by the Regional Board in accordance with 40 CFR 122.44(f).

- (2) That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels:"
- (a) Five hundred micrograms per liter (500 µg/l)
  - (b) One milligram per liter (1 mg/l) for antimony;
  - (c) Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7).
  - (d) The level established by the Regional Board in accordance with 40 CFR 122.44(f).

24. *Report Submittal:* The discharger shall submit reports and provide notifications as required by this Order in accordance with the following:

- a. Reports required to be submitted to this Regional Board shall be sent to:

Industrial Compliance Unit  
California Regional Water Quality Control Board  
San Diego Region  
9174 Sky Park Court, Suite 100  
San Diego, California 92123

Notifications required to be provided to this Regional Board shall be made to:

Telephone - (858) 467-2952 or  
Facsimile - (858) 571-6972

- b. Reports required to be submitted to the USEPA shall be sent to:

U.S. Environmental Protection Agency  
Region IX  
Compliance Office (WTR-7)  
75 Hawthorne Street  
San Francisco, California 94105

**STATE WATER RESOURCES CONTROL BOARD  
MONITORING AND REPORTING PROGRAM NO. 2010-XXXX-DWQ  
NPDES PERMIT NO. CA0001368  
WASTE DISCHARGE REQUIREMENTS  
FOR  
DYNEGY SOUTH BAY, LLC  
SOUTH BAY POWER PLANT  
SAN DIEGO COUNTY**

**TABLE OF CONTENTS**

A. MONITORING PROVISIONS.....	7
B. COOLING WATER INTAKE MONITORING <sup>8</sup> .....	11
C. COOLING WATER EFFLUENT MONITORING <sup>8/</sup> .....	12
D. RECEIVING WATER MONITORING.....	13
E. CHLORINATION LOG.....	15
F. ANNUAL SUMMARY OF MONITORING DATA.....	15
G. MONITORING REPORT SCHEDULE.....	15
H. ENDNOTE REFERENCES.....	15
Attachment 1 to Monitoring and Reporting Program No. 2010-XXXX-DWQ.....	20
Attachment 2 to Monitoring and Reporting Program No. 2010-XXXX-DWQ.....	21
Attachment 3 to Monitoring and Reporting Program No. 2010-XXXX-DWQ.....	1

This Monitoring and Reporting Program (MRP) shall become effective on January 1, 2011 and shall supersede MRP No. R9-2004-0154 in its entirety.

## PURPOSE

This monitoring program is intended to:

- Document short-term and long-term effects of the discharge on receiving waters, sediments, biota, and beneficial uses of the receiving water.
- Determine compliance with NPDES permit terms and conditions.
- Be used to determine compliance with effluent limitations and water quality objectives.

## A. MONITORING PROVISIONS

1. 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 in Water Quality Order No. 2010-XXXX-DWQ or in this monitoring and reporting program 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 Board or **State Water Board**.
2. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. The devices shall be installed, calibrated and maintained to ensure that the accuracy of the measurements are consistent with the accepted capability of that type of device. Devices selected shall be capable of measuring flows with a maximum deviation of less than  $\pm 10$  percent from true discharge rates throughout the range of expected discharge volumes. Guidance in selection, installation, calibration and operation of acceptable flow measurement devices can be obtained from the following references:
  - (a) "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, 96 pp. (Available from the U.S. Government Printing Office, Washington, D.C. 20402. Order by SD Catalog No. C13.10:421.)

- (b) "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 D.C. 20402. Order by Catalog No. 172.19/2:W29/2, Stock No. S/N 24003-0027.)
  - (c) "Flow Measurement in Open Channels and Closed Conduits," U.S. Department of Commerce, National Bureau of Standards, NBS Special Publication 484, October 1977, 982 pp. (Available in paper copy or microfiche from National Technical Information Services (NTIS) Springfield, VA 22151. Order by NTIS No. PB-273 535/5ST.)
  - (d) "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.)
3. Monitoring must be conducted according to United States Environmental Protection Agency (USEPA) test procedures approved under Title 40, United States Code of Federal Regulations (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. 2010-XXXX-DWQ and/or in this monitoring and reporting program and/or by the Regional Board **or State Water Board**.
4. Duplicate copies of the monitoring reports signed and certified as required by *Reporting Requirement F.13* of Order No. 2010-XXXX-DWQ must be submitted to the USEPA and Regional Board at the addresses listed in *Reporting Requirement F.15* of Order No. 2010-XXXX-DWQ.
5. If the discharger monitors **and analyzes** any pollutant more frequently than required by Order No. 2010-XXXX-DWQ or by this monitoring and



reporting program, using test procedures approved under 40 CFR Part 136, or as specified in Order No. 2010-XXXX-DWQ or this monitoring and reporting program or by the Regional 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 also be reported.

6. 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. 2010-XXXX-DWQ and this monitoring and reporting program, for a period of at least five years from the date of the sample, measurement, report, or application. This period may be extended by request of the Regional Board **or State Water Board** at any time.
7. Calculations for all limitations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in Order No. 2010-XXXX-DWQ or this Monitoring and Reporting Program.
8. 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 Board **or State Water Board**.
9. The discharger shall report all instances of noncompliance not reported under *Reporting Requirement F.5, F.6, and F.9* of Order No. 2010-XXXX-DWQ at the time monitoring reports are submitted. The reports shall contain the information listed in *Reporting Requirement F.6*.
10. Records of monitoring information shall include:
  - (a) The date, exact place, and time of sampling or measurements;
  - (b) The individual(s) who performed the sampling or measurements;
  - (c) The date(s) analyses were performed;
  - (d) The individual(s) who performed the analyses;
  - (e) The analytical techniques or methods used; and
  - (f) The results of such analyses.

In addition, records of all cooling water intake monitoring, effluent monitoring, and receiving water monitoring shall include:

- (g) The applicable tide table for the days on which sampling/monitoring was conducted; and
  - (h) The moon phase (in days after the new moon) for the days on which sampling/monitoring was conducted.
11. 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.
  12. The discharger shall have, and implement, an acceptable written quality assurance (QA) plan for laboratory analyses. An annual report shall be submitted by April 1 of each year which summarizes the QA activities for the previous year. Duplicate chemical analyses must be conducted on a minimum of ten percent of the samples or at least one sample per month, whichever is greater. A similar frequency shall be maintained for analyzing spiked samples. When requested by USEPA or the Regional Board, the discharger will participate in the NPDES discharge monitoring report QA performance study. The discharger should have a success rate equal or greater than 80 percent.
  13. Pursuant to Section 2.4 of the *Implementation Policy*, California Toxics Rule (CTR) priority pollutants shall comply with specific reporting and monitoring requirements, as listed in Attachment 3.
  14. Laboratory method detection limits (MDLs) and practical quantitation levels (PQLs) shall be identified for each non-CTR constituent in the matrix being analyzed with all reported analytical data. Acceptance of data shall be based on demonstrated laboratory performance.
  15. Monitoring results shall be reported at intervals and in a manner specified in Order No. 2010-XXXX-DWQ or in this Monitoring and Reporting Program.
  16. This monitoring program may be modified by the Regional Board, as appropriate.

## B. COOLING WATER INTAKE MONITORING<sup>8</sup>

### 1. Sampling/Monitoring Location

Cooling water intake sampling/monitoring shall be conducted at the west end of the intake basin, halfway across the intake channel, at Station I (see Attachment 1).

### 2. Cooling water intake monitoring shall be conducted as specified below:

<u>Parameter</u>	<u>Units</u>	<u>Sample Type</u> <sup>1,2</sup>	<u>Minimum Frequency</u>	<u>Reporting Frequency</u>
<u>Temperature</u>	<u>°F</u>	<u>Measurement</u>	<u>Continuous</u> <sup>3</sup>	<u>Monthly</u>
<u>Total Chlorine Residual</u> <sup>9</sup>	<u>ug/L,</u> <u>lbs/day</u>	<u>Measurement</u>	<u>Weekly</u> <sup>10</sup>	<u>Monthly</u>
<u>Total Suspended Solids (TSS)</u>	<u>mg/L,</u> <u>lbs/day</u>	<u>Grab</u>	<u>Monthly</u> <sup>4</sup>	<u>Monthly</u>
<u>Dissolved Oxygen (DO)</u>	<u>mg/L &amp;</u> <u>percent Saturation</u>	<u>Grab or</u> <u>Measurement</u> <sup>*</sup>	<u>Monthly</u> <sup>4,10,12</sup>	<u>Monthly</u>
<u>pH</u>	<u>ph units</u>	<u>Grab</u>	<u>Monthly</u> <sup>5</sup>	<u>Monthly</u>
<u>Salinity</u>	<u>ppt</u>	<u>Grab or</u> <u>Measurement</u> <sup>*</sup>	<u>Monthly</u>	<u>Monthly</u>
<u>Transparency</u>	<u>Inches</u> <u>(secchi disc)</u>	<u>Measurement</u>	<u>Monthly</u> <sup>4,10,12</sup>	<u>Monthly</u>
<u>Copper (total)</u> <sup>13</sup>	<u>ug/L,</u> <u>lbs/day</u>	<u>24hr</u> <u>composite/Grab</u> <sup>10,11</sup>	<u>Monthly</u>	<u>Monthly</u>
<u>Acute Toxicity</u> <sup>6</sup>	<u>%Survival</u>	<u>24hr</u> <u>composite/Grab</u> <sup>10,11</sup>	<u>Monthly</u>	<u>Monthly</u>
<u>Chronic Toxicity</u> <sup>7</sup>	<u>TU<sub>c</sub></u>	<u>24hr</u> <u>composite/Grab</u> <sup>10,11</sup>	<u>Monthly</u>	<u>Monthly</u>

\* Measurement to be taken within 2 feet of surface and just above the bottom

**C. COOLING WATER EFFLUENT MONITORING<sup>8/</sup>**

1. Sampling/Monitoring Location

Sampling/monitoring location for the cooling water discharge from the South Bay Power Plant shall be as follows (see Attachment 1):

Sampling/Monitoring Location Identification	Sampling/Monitoring Location	Comment
S2	At the west end of the discharge basin ( <b>at the property line</b> ), halfway across the discharge channel (at approximately Latitude 32° 36' 48", North; Longitude 117° 05' 52", West)	All parameters (specified in <i>Section C.2</i> of the MRP) shall be monitored at this location.

2. Cooling water effluent monitoring shall be conducted as specified below:

<u>Parameter</u>	<u>Units</u>	<u>Sample Type<sup>1,2</sup></u>	<u>Minimum Frequency</u>	<u>Reporting Frequency</u>
<u>Flow</u>	<u>MGD</u>	<u>_____</u>	<u>Continuous</u>	<u>Monthly</u>
<u>Temperature</u>	<u>°F</u>	<u>Measurement</u>	<u>Continuous<sup>3</sup></u>	<u>Monthly</u>
<u>Total Chlorine Residual<sup>9</sup></u>	<u>ug/L, lbs/day</u>	<u>Measurement</u>	<u>Weekly<sup>10</sup></u>	<u>Monthly</u>
<u>TSS</u>	<u>mg/L, lbs/day</u>	<u>Grab</u>	<u>Monthly<sup>4,10</sup></u>	<u>Monthly</u>
<u>Dissolved Oxygen (DO)</u>	<u>mg/L &amp; percent saturation</u>	<u>Grab or Measurement*</u>	<u>Monthly<sup>4,10</sup></u>	<u>Monthly</u>
<u>pH</u>	<u>ph units</u>	<u>Grab</u>	<u>Monthly<sup>5,10</sup></u>	<u>Monthly</u>
<u>Grease and Oil</u>	<u>mg/L, lbs/day</u>	<u>Grab</u>	<u>Monthly<sup>10</sup></u>	<u>Monthly</u>
<u>Copper (total)<sup>13</sup></u>	<u>ug/L, lbs/day</u>	<u>24hr composite/Grab<sup>10,11</sup></u>	<u>Monthly<sup>10</sup></u>	<u>Monthly</u>
<u>Acute Toxicity<sup>6</sup></u>	<u>%Survival</u>	<u>24hr composite/Grab<sup>10,11</sup></u>	<u>Monthly<sup>10</sup></u>	<u>Monthly</u>
<u>Chronic Toxicity<sup>7</sup></u>	<u>TU<sub>c</sub></u>	<u>24hr composite/Grab<sup>10,11</sup></u>	<u>Monthly<sup>10</sup></u>	<u>Monthly</u>

<b>Cadmium<sup>13</sup></b>	<b>ug/L, lbs/day</b>	<b>24hr composite/Grab<sup>10,11</sup></b>	<b>Monthly/Semiannually<sup>10,14</sup></b>	<b>Monthly</b>
<b>Lead<sup>13</sup></b>	<b>ug/L, lbs/day</b>	<b>24hr composite/Grab<sup>10,11</sup></b>	<b>Monthly/Semiannually<sup>10,14</sup></b>	<b>Monthly</b>
<b>Mercury<sup>13</sup></b>	<b>ug/L, lbs/day</b>	<b>24hr composite/Grab<sup>10,11</sup></b>	<b>Monthly/Semiannually<sup>10,14</sup></b>	<b>Monthly</b>
<b>Arsenic<sup>13</sup></b>	<b>ug/L, lbs/day</b>	<b>24hr composite/Grab<sup>10,11</sup></b>	<b>Monthly/Semiannually<sup>10,14</sup></b>	<b>Monthly</b>
<b>Silver<sup>13</sup></b>	<b>ug/L, lbs/day</b>	<b>24hr composite/Grab<sup>10,11</sup></b>	<b>Monthly/Semiannually<sup>10,14</sup></b>	<b>Monthly</b>
<b>Zinc<sup>13</sup></b>	<b>ug/L, lbs/day</b>	<b>24hr composite/Grab<sup>10,11</sup></b>	<b>Monthly/Semiannually<sup>10,14</sup></b>	<b>Monthly</b>
<b>Chromium total<sup>13</sup></b>	<b>ug/L, lbs/day</b>	<b>24hr composite/Grab<sup>10,11</sup></b>	<b>Monthly/Semiannually<sup>10,14</sup></b>	<b>Monthly</b>
<b>Chromium, hexavalent<sup>13</sup></b>	<b>ug/L, lbs/day</b>	<b>24hr composite/Grab<sup>10,11</sup></b>	<b>Monthly/Semiannually<sup>10,14</sup></b>	<b>Monthly</b>

#### D. RECEIVING WATER MONITORING

Receiving water monitoring shall be conducted as specified below. Sampling, preservation, and analysis shall be by methods described in the discharger's report titled "*SBPP Cooling Water System Effects on San Diego Bay, Volume 1: Compliance with Section 316(a) of the Clean Water Act for the South Bay Power Plant, August 2004*", unless other methods are specified in Order No. 2010-XXXX-DWQ, this monitoring and reporting program, or by the Regional Board. The receiving water monitoring requirements may be modified by the Regional Board at any time.

1. Station Locations

Receiving waters shall be monitored at the following designated stations (the approximate locations of the stations are shown on Attachment 2 to this monitoring program):

**S2**, E7, E5, F4, F3, F2, E4, E3, D4, C3, A3, N2

2. Receiving water monitoring shall be conducted in accordance with the following schedule:

Parameter	Units	Sample Type	Minimum Frequency	Reporting Frequency
Total Chlorine** Residual	µg/l	Grab	Weekly <sup>9/10/</sup>	Monthly
Temperature	°F	Measurement (at 2 foot depth intervals)	Monthly <sup>10/12</sup>	Monthly
Dissolved Oxygen	mg/l & percent saturation <sup>11/</sup>	Grab or Measurement*	Monthly <sup>4/10/12</sup>	Monthly
Transparency	Meters (Secchi Disk)	Measurement	Monthly <sup>4/10/12</sup>	Monthly
Salinity	ppt	Grab or Measurement*	Monthly	Monthly
Copper (total recoverable) <sup>11/</sup>	µg/l	Grab	Monthly <sup>10/</sup>	Monthly
Cadmium <sup>13/</sup>	µg/l	Grab	<b>Monthly/Semiannually</b> <u>10.14</u>	Monthly
Lead <sup>13/</sup>	µg/l	Grab	<b>Monthly/Semiannually</b> <u>10.14</u>	Monthly
Mercury <sup>13/</sup>	µg/l	Grab	<b>Monthly/Semiannually</b> <u>10.14</u>	Monthly
Arsenic <sup>13/</sup>	µg/l	Grab	<b>Monthly/Semiannually</b> <u>10.14</u>	Monthly
Chromium (total) <sup>13/</sup>	µg/l	Grab	<b>Monthly/Semiannually</b> <u>10.14</u>	Monthly
Chromium <sup>13/</sup> (hexavalent)	µg/l	Grab	<b>Monthly/Semiannually</b> <u>10.14</u>	Monthly
Silver <sup>13/</sup>	µg/l	Grab	<b>Monthly/Semiannually</b> <u>10.14</u>	Monthly
Zinc <sup>13/</sup>	µg/l	Grab	<b>Monthly/Semiannually</b> <u>10.14</u>	Monthly

\*within 2 feet of surface and just above the bottom.

\*\*Total chlorine residual receiving water monitoring shall be conducted at stations E7 and **S2** only.

## E. CHLORINATION LOG

The discharger shall maintain a chlorination log which records all chlorination dates, times, durations, rates (pounds per day), and dosages (ug/l) for each unit of the South Bay Power Plant and the times of chlorine and toxicity monitoring. A copy of the log shall be submitted monthly.

## F. ANNUAL SUMMARY OF MONITORING DATA

By March 1 of each year, the discharger shall submit an annual report to the Regional Board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous calendar year. In addition, the discharger shall discuss the compliance record and the corrective actions taken or planned, which may be needed to bring the discharger into full compliance with the requirements of Order No. 2010-XXXX-DWQ.

## G. MONITORING REPORT SCHEDULE

1. Monitoring reports shall be submitted to the Regional Board according to the dates in the following schedule:

Report Type	Report Period	Report Due
Monthly Discharge and Receiving Water Monitoring Reports	Each month	First day of the second month after the month of sampling
Annual Summary Reports	January - December	March 1 <sup>st</sup> of each year

## H. ENDNOTE REFERENCES

1. A grab sample is defined as an individual sample of at least 100 milliliters collected over a period not exceeding 15 minutes. Grab samples shall be collected over a shorter period if necessary to ensure that the constituent/parameter concentration in the sample is the same as that at the sampling location at the time the sample is collected.
2. A composite sample is defined as a combination of at least eight sample aliquots of at least 100 milliliters, collected at periodic intervals during the operating hours of a facility over a 24-hour period. For volatile pollutants,

aliquots must be combined in the laboratory immediately before analysis. The composite must be flow proportional; either the time interval between each aliquot or the volume of each aliquot must be proportional to either the stream flow at the time of sampling or the total stream flow since the collection of the previous aliquot. Aliquots may be collected manually or automatically.

3. Temperature shall be recorded at a minimum frequency of once every two hours. The average intake and discharge temperatures for each calendar day shall be reported. The average and maximum temperature difference between intake and discharge temperatures for each calendar day shall also be reported.
4. All applicable intake water, effluent, and receiving water monitoring for dissolved oxygen, total suspended solids, and transparency shall be conducted **during the power plant operation and unless infeasible** between 10:00 a.m. and 6:00 p.m.
5. pH shall be determined only when total chlorine residual is determined.
6. Acute toxicity tests measure lethal effects on organisms exposed to test waters (e.g. effluent) compared to that of organisms exposed to control waters.

(a) Test Species and Methods

The tests contained in Appendix III (*Standard Monitoring Procedures*), of the 2005 California Ocean Plan (effective July 13, 2005) are incorporated by reference and shall be used to measure toxicity of the intake water and combined discharge to San Diego Bay. According to Appendix III of the Ocean Plan, compliance with the acute toxicity limitations shall be determined using USEPA approved protocols and marine test species as provided in 40 CFR 136.

(b) Quality Assurance

Unless the test method specifies the use of lab water, dilution and control water shall be obtained from a location unaffected by the SBPP discharge and approved by the Regional Board. If the dilution water is different than the culture water, then culture water shall be used in a second control.

Concurrent testing with reference toxicants shall be conducted and the results shall be reported with the test results. If either the reference toxicant tests or the test water tests do not meet all the test acceptability criteria specified for the test method, the discharger shall re-sample and re-test as soon as possible.



7. Chronic toxicity tests measure sublethal effects (e.g., reduced growth or reproduction) on organisms exposed to test waters (e.g. effluent) compared to that of organisms exposed to control waters.

(a) Test Species and Methods

Chronic toxicity shall be determined using the approved tests listed in Table III-1 (*Approved Tests – Chronic Toxicity, TUc*), Appendix III (*Standard Monitoring Procedures*), of the 2005 California Ocean Plan (effective July 13, 2005). Chronic Toxicity (TUc) shall be expressed in Toxic Units Chronic (TUc), where:

$$TUc = 100/NOEL$$

and the NOEL (No Observed Effect Level) is expressed as the maximum percentage of test water that causes no observable effect on a test organism, as determined by the results of the approved critical life stage toxicity tests, listed in Table III-1.

The discharger shall conduct critical life stage toxicity testing using the most sensitive species. SBPP, based on many years of annual screen testing determine that the following species are the most sensitive. Therefore, SBPP will use these approved following species for toxicity testing.

Acute Tests: *Mysidopsis bahia*

Chronic Tests: *Macrocystis pyrifera* (Giant Kelp)

(b) Quality Assurance

Unless the test method specifies the use of lab water, dilution and control water shall be obtained from a location unaffected by the South Bay Power Plant discharge and approved by the Regional Board. If the dilution water is different than the culture water, then culture water shall be used in a second control.

Concurrent testing with reference toxicants shall be conducted and the results shall be reported with the test results. If either the reference toxicant tests or the test water tests do not meet all the test acceptability criteria specified for the test method, the discharger shall re-sample and re-test as soon as possible.

8. Effluent samples shall be collected and measurements shall be made after the corresponding intake water samples are collected and measurements are made. The time interval between intake water sample collection and measurement and the corresponding effluent sample collection and measurement shall closely approximate the cooling water transit time from

the intake water monitoring/sampling location to the effluent monitoring/sampling location.

9. Total chlorine residual concentrations for effluent and intake water shall be determined for a complete chlorination cycle that occurs **during the power plant operation and unless infeasible** between noon and 6:00 p.m. A good faith effort shall be made to determine total residual chlorine concentrations in the receiving water (Stations E7 and **S2**) and effluent associated with chlorination of each unit that is chlorinated during the chlorination cycle. As a minimum, such a good faith effort shall consist of determining total chlorine residual concentrations associated with chlorination of at least one unit when one or two units are chlorinated during the chlorination cycle.

Samples shall be collected and analyzed for total chlorine residual concentrations at times when concentrations are anticipated to be at or near their highest (i.e. when cooling water from the second half of the period in which a unit is chlorinated passes the sampling/monitoring location).

10. **Sampling shall be conducted on days the power plant is operational only. 24 hour composite samples shall be taken and analyzed as required if the power plant operates 24 hours or more, otherwise grab samples shall be adequate.**
11. Discharge and receiving water samples for copper shall be analyzed according to EPA Method 1638 or 1640. Method 1638 (ICP/MS) or 1640 (On-Line Chelation) will eliminate the sodium-argon complex before the sample is tested for copper.
12. Temperature and transparency of receiving water shall be determined whenever dissolved oxygen is determined. The dissolved oxygen and transparency values at the receiving water stations shall be compared to the corresponding values at the intake, for monthly monitoring results. The ratio of the two values shall be reported.
13. Pursuant to Section 2.4 of the Implementation Policy, CTR pollutants shall comply with specific reporting and monitoring requirements, as listed in Attachment 3 of this MRP.

14. **For these CTR pollutants, if the analyses result in non-detect for three (3) consecutive months, then the monitoring frequency can change to semiannually, and revert to monthly if it is detected.**

Ordered by:

---

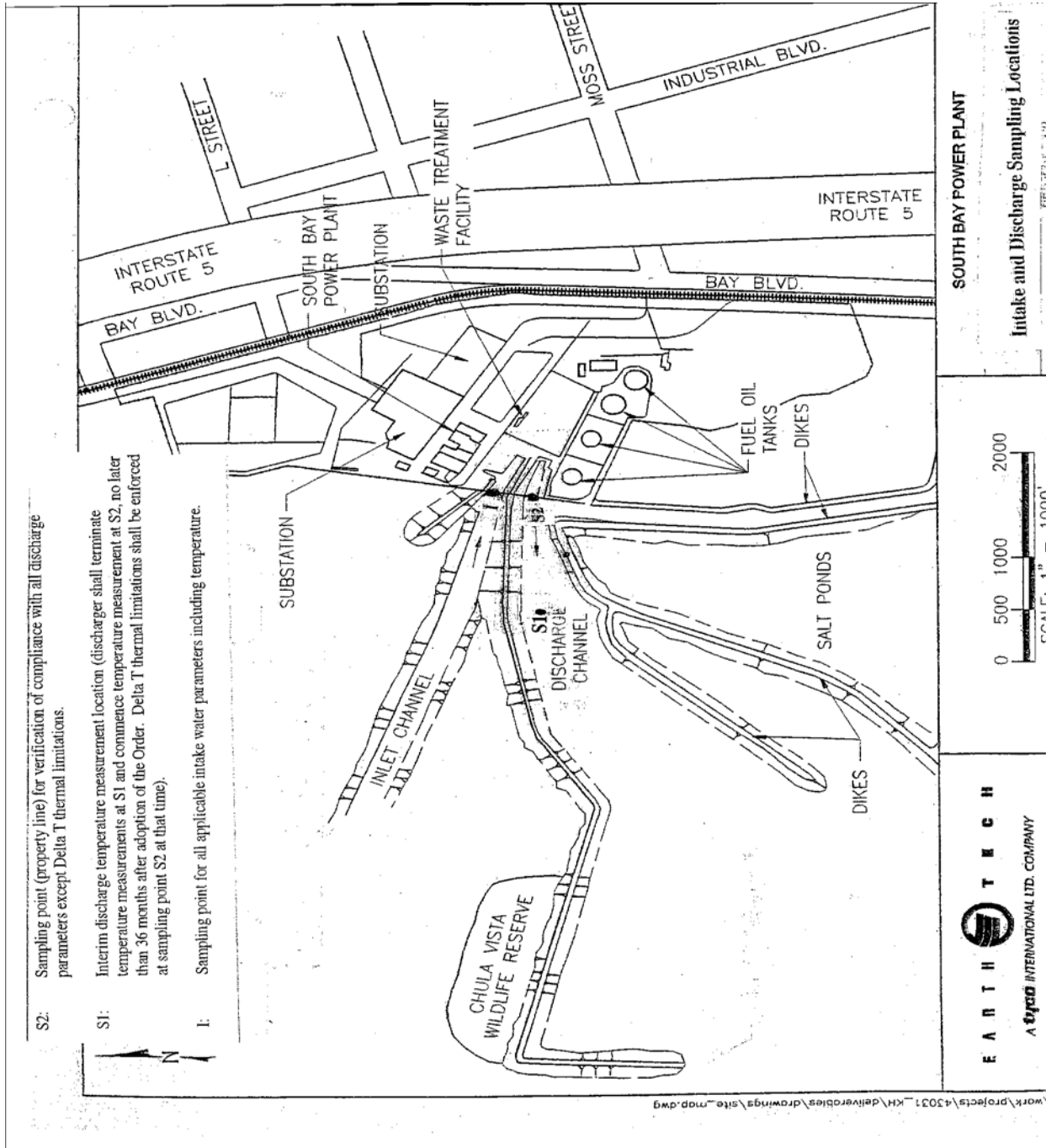
Date

---

[Name]  
Executive Officer

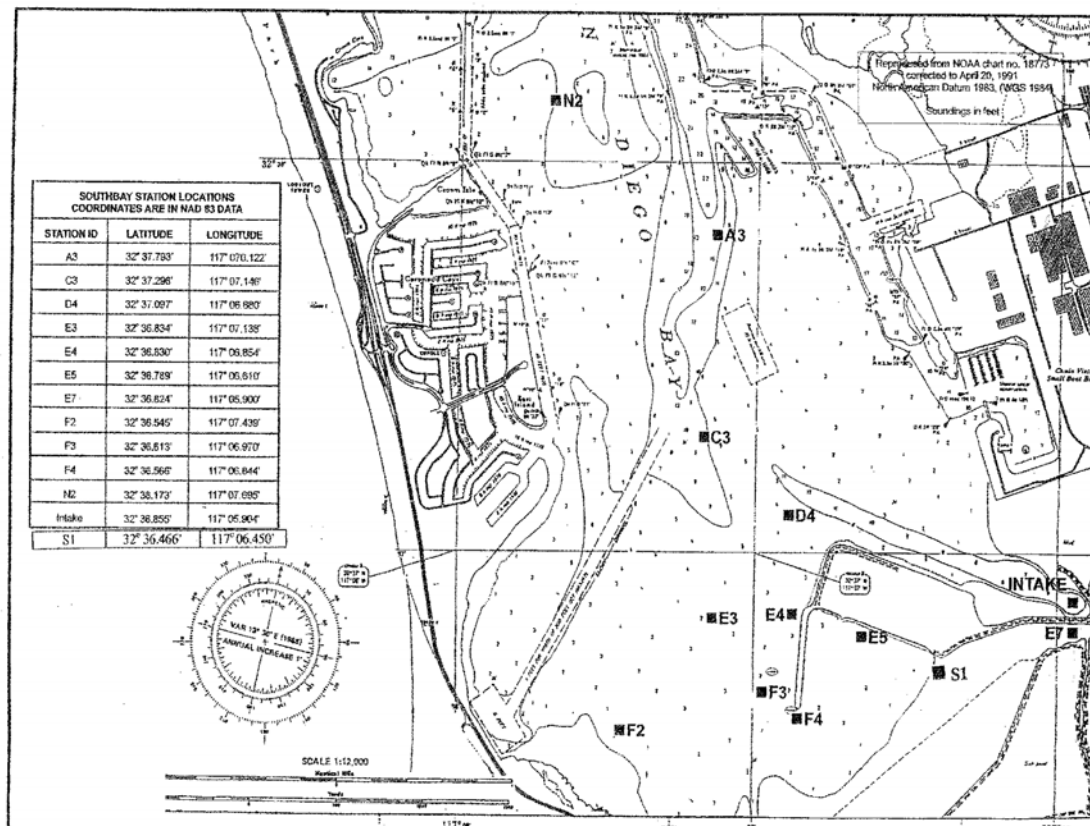
**Attachment 1 to Monitoring and Reporting Program No. 2010-XXXX-DWQ**

**South Bay Power Plant Intake and Effluent Sampling Locations**



**Attachment 2 to Monitoring and Reporting Program No. 2010-XXXX-DWQ**

**South Bay Power Plant Receiving Water Monitoring Stations**



**Sampling Station Locations for South Bay Monitoring Program.**  
 Receiving Water

## Attachment 3 to Monitoring and Reporting Program No. 2010-XXXX-DWQ

### Monitoring and Reporting Requirements for CTR Pollutants

The following information must be included in the monitoring reports for CTR pollutants:

1. Laboratory Requirements  
The laboratory analyzing the monitoring samples shall be certified by the Department of Health Services in accordance with the provisions of Water Code Section 13176 and must include quality assurance/quality control data with their reports.
2. Minimum Levels (ML)  
The minimum levels are in accordance with the values listed in Tables 2a through 2d of the Implementation Policy.
3. Method Detection Limit (MDL)  
The method detection limit for the laboratory shall be determined by the procedure found in 40 Code of Federal Regulations (CFR) Part 136 (revised as of May 14, 1999).
4. Reporting Protocols  
The results of analytical determinations for the presence of chemical constituents in a sample shall use the following reporting protocols (Implementation Policy §2.4.4):
  - (a) Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e. the measured chemical concentration in the sample).
  - (b) Sample results less than the reported ML, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.
  - (c) For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory, if such information is available, may include numerical estimates of the data quantity for the reported result. Numerical estimates of data quantity may be percent accuracy ( $\pm$  a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

- (d) Sample results that are less than the laboratory's MDL shall be reported as "Not Detected" or ND.

5. Data Format

The monitoring report shall contain the following information for each pollutant:

- (a) The name of the pollutant.
- (b) The analytical results of the effluent monitoring.
- (c) The applicable Minimum Level (ML) as specified in Tables 2a through 2d of the Implementation Policy.
- (d) The laboratory's current Method Detection Limit (MDL), as determined by the procedure found in 40 CFR Part 136 (revised as of May 14, 1999).

**STATE WATER RESOURCES CONTROL BOARD**  
1001 I Street, Sacramento, California 95814

**FACT SHEET**  
**WATER QUALITY ORDER NO. 2010-XXXX-DWQ**  
**NPDES PERMIT NO. CA0001368**  
**WASTE DISCHARGE REQUIREMENTS**  
**FOR DYNEGY SOUTH BAY, LLC**  
**SOUTH BAY POWER PLANT**  
**SAN DIEGO COUNTY**

**Table of Contents**

Summary of Changes Incorporated into Renewal NPDES Permit.....	F2
A. Contact Information.....	F5
B. Facility Description and Background.....	F5
C. Discharge Sources and Waste Characterization.....	F11
D. Waste Discharge Summary.....	F20
E. Summary of Waste Discharge Impacts.....	F21
F. Basis for Waste Discharge Requirements.....	F22
G. California Toxics Rule (CTR) Compliance.....	F48
H. Monitoring and Reporting Requirements.....	F50
I. NPDES Rating and Fees.....	F52
J. Effective and Expiration Dates of Order 2010-XXXX-DWQ.....	F52
K. Written Comments.....	F52
L. Public Hearing.....	F53
M. Additional Information.....	F53
N. References for Waste Discharge Requirements.....	F54



**SUMMARY OF SIGNIFICANT CHANGES AND NEW REQUIREMENTS INCORPORATED  
INTO  
RENEWAL NPDES PERMIT (ORDER NO. 2010-XXXX-DWQ)**

Order No. 2010-XXXX-DWQ (*Waste Discharge Requirements Dynegy South Bay, LLC, South Bay Power Plant, San Diego County*) renews and updates NPDES Permit No. CA0001368 and supersedes the current NPDES permit, Order No. R9-2004-0154, in its entirety.

Following is a summary of significant changes and new requirements that have been incorporated into Order No. **2010-XXXX-DWQ**, relative to the previous NPDES permit (Order No. R9-2004-0154). The subsequent sections of this Fact Sheet discuss in greater detail the rationale for these changes and the basis for the findings, effluent limitations, monitoring requirements, and other provisions contained in the Order:

1. EFFLUENT LIMITATIONS:

New Flow Restrictions

The allowable flow from the plant has been reduced by approximately 63%, from 601 MGD (Units, 1, 2, 3 and 4) to 225 MGD (Units 1 and 2 only). Units 3 and 4 have been permanently removed from service due to the termination of the Reliability Must Run ("RMR") designation for these units by the California Independent System Operator ("California ISO").

Effluent Limits for Copper

Interim effluent limits for copper, and related provisions requiring the discharger to develop and implement a work plan to achieve compliance with final effluent limits have been deleted. The final effluents for copper went into effect on November 10, 2007. Monitoring data submitted by the discharger since that time demonstrates that the plant is able to comply with the final copper limits. **However, there are times when the intake water exceeds the water quality objective and for those instances an effluent limitation considering intake water credits is appropriate.**

2. MONITORING REQUIREMENTS:

*Significant Changes:* The monitoring requirements in the former permit have been modified to reflect that fact that the plant operates only when dispatched by the California ISO. The annual capacity factor for the plant has declined steadily over the last several years and is less than 5 percent for 2010. **Special monitoring requirements have been developed to account for the fact that the plant discharges on an intermittent and infrequent basis.**

**In addition, monitoring requirements for heavy metals other than copper may be reduced to semiannually if three consecutive monthly results demonstrate that these compounds are not present in the discharge.**

### 3. THERMAL DISCHARGE

The prior Order contained findings that the SBPP's discharge of once-through cooling water to south San Diego Bay, at design flow (601 MGD), adversely impacted the Beneficial Uses (including Estuarine Habitat; Marine Habitat; Wildlife Habitat; Rare, Threatened or Endangered Species; Preservation of Biological Habitats of Special Significance; and Shellfish Harvesting) within the SBPP discharge channel, particularly in the area within 1000-1500 feet of the property line. Based on these findings, the prior Order required that by November 2007, compliance with the thermal limits be demonstrated at the property line. Following an evaluation of potential monitoring locations that would yield representative samples of the discharge, Duke Energy relocated the temperature compliance point to the property line (S2). Temperature monitoring conducted since that time confirms that the SBPP thermal limits are being achieved at the property line. Study requirements in the prior Order relating to the relocation of the thermal compliance monitoring point are no longer necessary and have therefore been deleted.

Under Section 316(a) of the Clean Water Act, effluent limitations must be imposed with respect to the thermal component of a discharge that will assure the protection and propagation of a balanced, indigenous population of shellfish, fish and wildlife in the receiving waters. This is known as the "balanced indigenous community ("BIC") standard. In March 2010, Dynegy submitted a technical memorandum updating the prior Section 316(a) Study based on the plant's significantly reduced flow. This analysis concluded that the plant's thermal plume is smaller in size, more buoyant, and cooler by several degrees than the plume associated with plant operations at design flow. The thermal effects associated with the plant's current discharge are confined to the area in the immediate vicinity of the discharge. These observed, but minor effects, do not unreasonably affect beneficial uses of south San Diego Bay. The reduced flow of the plant, combined with imposition of thermal limits at the property line, assures that the BIC standard is being achieved. The findings concerning the plant's thermal discharge have been modified in light of current discharge conditions. The thermal limits themselves have not been modified.

Other findings relating to effects of the discharge (e.g., possible effects on eelgrass and dissolved oxygen) have been similarly revised to reflect the plant's current operational status.

### 4. COOLING WATER INTAKE STRUCTURE

On May 4, 2010, the State Water Resources Control Board (State Water Board) adopted Resolution No. 2010-0020, Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling ("OTC Policy"). The OTC Policy is intended to implement the requirements of Section 316(b) of the federal Clean Water Act which provides that "the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact" ("BTA"). The BTA requirements address impingement and entrainment effects associated with intake of sea water for cooling. Impingement refers to the entrapment of larger forms of marine and estuarine life on the traveling screens, while entrainment refers to the process by which larvae and other small aquatic organisms are drawn into, and circulated through, the plant's cooling water system.

**The OTC Policy was approved by the Office of Administrative Law on September 2010.** The OTC Policy establishes technology-based standards that are applicable as a matter of state law and assigns the responsibility for permit issuance or reissuance to the State Board, rather than to the regional boards. The State Board has assumed responsibility for renewing the SBPP permit, in consultation with Regional Board staff.

Under the OTC Policy, all 19 coastal power plants in California are required to come into compliance with the new technology-based standards on a phased-in basis in order to maintain electric reliability. The compliance date for the South Bay Power Plant, as specified in the OTC Policy adopted on May 4, 2010, is December 31, 2011. This deadline may be suspended by the California ISO up to 90 days or extended for longer periods by the State Water Board based on updated information provided by the California Energy Commission, the California Independent System Operator, and the California Public Utilities Commission that the plant remains essential as a source of power generation and cannot be taken off-line without compromising the reliability of the grid.

**The term of this Order is consistent with the OTC Policy. The permit is being issued for a period of one year only. In fact, a new discharge prohibition has been added to the permit which provides that all cooling water discharges shall cease on December 31, 2011 or such earlier date as the California ISO terminates RMR status for Units 1 and 2.**

Federal BTA standards for existing power plants (the "Phase II regulations") are currently being developed by the U. S. Environmental Protection Agency. The Phase II regulations that were previously adopted by EPA in July 2004 provided the rationale for the Section 316(b) findings and related provisions that were contained in Order No. R9-2004-0154. At that time, based on the newly promulgated regulations, the Regional Board found that SBPP did not comply with the new federal BTA standards for existing facilities. However, these regulations were suspended by EPA in July 2007 as a result of litigation, and the Regional Board subsequently suspended the SBPP permit provisions that were based on those regulations. At the present time, EPA has instructed that BTA determinations under federal law are to be made on a case-by-case basis, based on the permit writer's best professional judgment. Pending promulgation of new regulations, the "wholly disproportionate" test that has been utilized by permit writers over the past 30 years remains applicable. Under this test, modifications to a cooling water intake structure are not required where the cost of the modifications would be wholly disproportionate to the environmental benefits that would be obtained. The Order contains new findings that the SBPP complies with CWA Section 316(b) as it currently applies to the plant.

## **A. CONTACT INFORMATION**

### ***State Water Resources Control Board Contact Person:***

Philip Isorena  
Chief, NPDES Unit  
(916) 341-5544  
1001 I Street, 15<sup>th</sup> Floor  
Sacramento, CA 95814  
Email: pisorena@waterboards.ca.gov

### ***Dynegy South Bay, LLC, Contact Person:***

Barbara Irwin  
Environmental Director  
Dynegy West Region Operations  
(925) 803-5121  
4041 Dublin Blvd.  
Dublin, CA 94568  
Email: barb.irwin@dynegy.com

Len Cigainero  
Plant Manager  
(619) 498-5384  
South Bay Power Plant  
990 Bay Blvd.  
Chula Vista, CA 91911

## **B. FACILITY DESCRIPTION AND BACKGROUND**

The Dynegy South Bay LLC, South Bay Power Plant (SBPP) is a fossil-fueled steam electric power generating station that began operation in 1960. The facility is located at 990 Bay Boulevard, Chula Vista, California, on the southeastern edge of San Diego Bay. This 150-acre facility is located in Section 9, T18S, R2W SBBM and has a current generating capacity of 308-gross megawatts (MW).

As originally constructed, the SBPP consisted of four natural gas-fired steam turbine electrical generating units and one gas turbine generator. Each unit had the option of burning fuel oil as economic conditions dictated. The gas turbine has never been regulated under this NPDES permit since there are no wastewater discharges associated with the unit. Each of the units generated electricity independently or in conjunction with one another and their ratings fluctuated over time. The table below summarizes each unit's gross megawatt (MW) rating, start-up date, and cooling water flow. As a result of the termination of Reliability Must Run (RMR) status by the California Independent System Operator (California ISO) effective December 31, 2009, Units 3 and 4 have been permanently removed from service and no longer discharge to south San Diego Bay.

<u>Unit</u>	<u>Date on Line</u>	<u>Capacity</u>	<u>Total Flow per Unit</u>
1	July 1960	152 MW	78,000 gpm
2	June 1962	156 MW	78,000 gpm
3	September 1964	183 MW	124,600 gpm (retired)
4	December 1971	232 MW	136,800 gpm (retired)
<u>Gas Turbine</u>	October 1966	<u>15 MW</u>	<u>N/A</u>
<u>Total Plant Capacity</u>		738 MW	417,400 gpm (historical)
		308 MW	156,000 gpm (current)*

\* A flow rate of 156,000 gpm is equivalent to 225 MGD.

In addition to the two generating units (Units 1 and 2), the SBPP industrial complex is composed of 1) five exhaust stacks; 2) three fuel oil storage tanks; 3) separate seawater (cooling water) intake and discharge channels including appurtenant structures; 4) an electrical switchyard; 5) various warehouses and office buildings; and 6) a number of access roads and one railroad siding.

### NPDES Permitting History

On January 25, 1985, the Regional Water Quality Control Board, San Diego Region, (San Diego Water Board) adopted Order No. 85-09, National Pollutant Discharge Elimination System (NPDES) Permit No. CA0001368, *Waste Discharge Requirements for San Diego Gas & Electric (SDG&E) Company's South Bay Power Plant, San Diego County*. The Order established waste discharge requirements for the combined discharge of up to 601.1 million gallons per day (MGD) of elevated temperature once-through cooling water and other waste discharges from SBPP to south San Diego Bay.

On June 29, 1989, SDG&E submitted an application for renewal of NPDES Permit No. CA0001368. SDG&E amended its application on June 1, 1993, and October 26, 1994. The Board adopted Order No. 96-05 on November 14, 1996, which renewed NPDES Permit No. CA0001368.

On April 23, 1999, SDG&E sold SBPP to the San Diego Unified Port District, which concurrently leased the plant to Duke Energy South Bay, LLC. Duke Energy assumed all responsibility, coverage, and liability under Order No. 96-05.

Order No. 96-05 was extended past its expiration date of November 14, 2001 in accordance with the rules applicable to administrative extension of NPDES permits. Tentative Order No. 2001-283, renewing the NPDES permit for SBPP, was considered by the Regional Board at a public hearing on December 12, 2001. During this public hearing the Regional Board heard oral public testimony, but decided to delay action on the tentative Order until a future meeting.

A revised tentative Order (No. R9-2004-0154) was issued for public review and comment on June 25, 2004. Tentative Order No. R9-2004-0154 incorporated, where appropriate, the comments and recommendations provided by the public on previously issued tentative Orders for the SBPP, including Order No. 2001-283.

Tentative Order No. R9-2004-0154 also addressed, where appropriate, written comments provided by the public on the technical reports provided by Duke Energy on updated studies conducted at SBPP during 2003. The updated studies were conducted pursuant to a CWC Section 13267 letter issued to the Duke Energy to assess the impact of the intake structures and the discharge from the SBPP on the biological resources and beneficial uses of south San Diego Bay and to verify compliance with CWA Sections 316(a) and 316(b). Duke Energy's consultants, *Tenera Environmental* and *Merkel & Associates*, conducted the studies. The Regional Board also provided copies of the technical study reports to USEPA's contractor Tetra Tech for its review and comment. Tetra Tech independently evaluated the results of the studies and provided recommendations to the San Diego Water Board to incorporate specific effluent limitations and monitoring requirements into the renewal NPDES permit.

On February 16, 2004 the U.S. Environmental Protection Agency published a final rule to implement Section 316(b) of the Clean Water Act. This rule, 40 CFR Part 125, Subpart J, *Requirements Applicable to Cooling Water Intake Structures for "Phase II Existing Facilities" Under Section 316(b) of the Act* (New 316(b) Rule), established location, design, construction and capacity standards, for cooling water intake structures at existing power plants that use the largest amounts of cooling water (i.e. greater than 50 MGD). The new rule went into effect on September 7, 2004, two months before adoption of Order No. R9-2004-0154.

During its regularly scheduled meeting on September 8, 2004, the Regional Board heard oral public testimony regarding tentative Order No. R9-2004-0154. Because staff was not able to fully address the large volume of written comments received on the tentative Order by the September 8, 2004 meeting date, the tentative Order was not considered for adoption by the Regional Board. During the meeting the Regional Board directed staff to make additional modifications to tentative Order No. R9-2004-0154 and bring the tentative Order back for the Regional Board's consideration at a future meeting. The modifications recommended by the Regional Board included changes to the compliance schedules for the power plant to comply with NPDES regulations (relocation of the compliance point for thermal limitations to a location that complies with the NPDES regulations), the new CWA Section 316(b) Phase II rule, and new copper limitations pursuant to the California Toxics Rule.

Order No. R9-2004-0154 incorporated the recommendations made by the Regional Board at its September 8, 2004 meeting. Order No. R9-2004-1054 also addressed, where appropriate, comments received by the public and resource agencies on the tentative Order. Specifically, based on the plant's then discharge design flow rate (601 MGD), the Board found that the South Bay Power Plant did not meet the new federal BTA requirements. The Order also identified impacts in San Diego Bay and impaired beneficial uses due to the intake of once-through cooling water and discharge of heated effluent at the South Bay Power Plant. To address these concerns, Order No. R9-2004-0154 incorporated (1) requirements to conduct an evaluation of modifications to the intake structure as necessary to achieve compliance with the new 316(b) Rule, and (2) a time schedule to change the compliance point for the thermal discharge limitations.

Order No. R9-2004-0154 was adopted on November 10, 2004 and renewed NPDES Permit No. CA0001368 for a period of five years.

On May 4, 2006, Duke Energy sold its lease of South Bay Power Plant to LS Power. LS Power assumed all responsibility, coverage, and liability under the South Bay Power Plant NPDES permit.

On April 2, 2007, LS Power sold its lease of South Bay Power Plant to Dynegy Inc. Dynegy South Bay, LLC, a wholly owned subsidiary of Dynegy Inc., assumed all responsibility, coverage, and liability under the permit.

As a result of challenges to the Phase II rules brought by Riverkeeper and various industry groups in federal court, the Phase II rules were suspended by USEPA on March 20, 2007. Shortly thereafter, by letter dated June 1, 2007, the San Diego Water Board suspended the requirement for a 316(b) evaluation and compliance plan for SBPP.

### Current Renewal Proceedings

On April 14, 2009 Dynegy submitted an application for renewal of NPDES Permit No. CA0001368. This application was determined to be complete on July 20, 2009.

On October 16, 2009, following notification by the CAISO that Units 3 and 4 would not be designated RMR after December 31, 2009, Dynegy updated its application to remove the discharge from Units 3 and 4 from the permit effective December 31, 2009. Removal of Units 3 and 4 reduced the discharge flow from 601 MGD to 225 MGD, based on the flows for the remaining Units 1 and 2.

In its October 2009 update, Dynegy also stated, based on information provided by the CAISO, that it did not expect the RMR status for Units 1 and 2 to be continued beyond December 31, 2010. On that basis, Dynegy stated that it did not intend to discharge to San Diego Bay after December 31, 2010.

Order No. R9-2004-0154 was modified by the San Diego Water Board Executive Officer on November 9, 2009, in accordance with the regulations applicable to minor modifications of NPDES permits (40 CFR § 122.63), to reflect the cessation of discharges from Units 3 and 4 effective December 31, 2009 and the cessation of discharges from Units 1 and 2 by December 31, 2010, or such earlier date as RMR status for these units terminated, absent further action by the Board.

These minor modifications were ratified by the San Diego Water Board on December 16, 2009. Based on Dynegy's timely submittal of a complete application for renewal of the permit, Order R9-2004-0154 continued in effect after its scheduled expiration date of November 9, 2009, under the rules applicable to administrative extension of NPDES permits.

In addition to ratifying the minor modifications to the permit, the San Diego Water Board decided at the December 16, 2009 hearing that it should conduct a subsequent evidentiary hearing on whether the permit should be allowed to remain on administrative extension or whether the permit should be terminated before December 31, 2010, irrespective of the RMR status of the units. A Notice of Public Hearing was issued on January 22, 2010 scheduling a

hearing and requesting testimony, technical evidence, and supporting documentation relevant to determining the following two questions:

- a) Whether South Bay Power Plant intake and discharge operations endanger human health or the environment and can only be regulated to acceptable levels by NPDES permit modification or termination [see 40 Code of Federal Regulations, section 122.64(a)(3)]; and
- b) Whether any effects identified in Item a above provide a sufficient basis for the Regional Water Board to require that South Bay Power Plant discharges be terminated earlier than December 31, 2010 and prior to California Independent System Operators (CAISO's) release of Units 1 and 2 from "Reliability Must Run" (RMR) status.

Written testimony, technical evidence and supporting documentation, and policy statements were submitted by the designated parties (Dynegy South Bay, LLC, the Coalition for No More South Bay Power Plant, and the City of Chula Vista) and other interested persons in response to the Notice of Public Hearing. All of this information, as well as information contained in the San Diego Water Board files and in Order No. R9-2004-0154 and Fact Sheet were considered in preparation of the *"STAFF REPORT, Dynegy South Bay, LLC, South Bay Power Plant, Evaluation of Water Intake and Wastewater Discharge Effects on San Diego Bay and Consideration of Termination of Discharge"* dated March 22, 2010 (Staff Report).

The Staff Report evaluated the impacts to San Diego Bay associated with operation of the plant. Staff did not identify any new or additional impacts beyond those already identified and considered in Order No. R9-2004-0154, and concurred with evidence submitted by Dynegy that the 63% reduction in intake and discharge flow results in a commensurate reduction of adverse impacts to beneficial uses. The Staff Report concluded that allowing the discharge to continue through December 31, 2010 would not, in the short term, pose an unacceptable risk to human health or the environment within the meaning of 40 CFR section 122.64(a)(3) and that there was insufficient cause to terminate the permit. These conclusions were embodied in tentative Order No. R9-2010-0062, which allowed discharge from Units 1 and 2 to continue until December 31, 2010 or such earlier date as the CAISO terminated the RMR status for Units 1 and 2.

On May 12, 2010, the Water Board conducted a public hearing to consider the tentative order. Following extensive testimony, the Board adopted Order No. R9-2010-0062 with certain errata recommended by staff. The Board also directed that the order be revised to state expressly that the discharges from Units 1 and 2 must terminate by December 31, 2010.<sup>1</sup> The Board determined that if Dynegy intended to operate after that date, a new report of waste discharge/NPDES permit application would need to be submitted to the San Diego Water Board or State Water Board, as appropriate under the new OTC Policy, and a new NPDES Order would need to be adopted which protects the beneficial uses of San Diego Bay and complies with all applicable requirements.

---

<sup>1</sup> [On June 11, 2010, the California ISO filed a Petition for Review with the State Water Board seeking review of the San Diego Water Board's determination that discharges could not occur after December 31, 2010. The California ISO's **petition will be rendered moot by the State Board's adoption of this permit.**]



Accordingly, on June 16, 2010, in anticipation of the California ISO's continued designation of SBPP Units 1 and 2 as RMR beyond December 31, 2009, Dynegy South Bay, LLC submitted to the Board an application for renewal of NPDES Permit No. CA0001368. The application was determined to be complete on August 13, 2010. Dynegy requested renewal for a term of five years to take into account the possibility that the compliance deadline for SBPP currently contained in the OTC Policy may be extended.

State Water Board has determined that the SBPP discharge complies with all laws and regulations that currently apply to the plant, including pertinent provisions of the Water Quality Control Plan for the San Diego Basin (9), the California Toxics Rule, recently adopted Sediment Quality Objectives, the OTC Policy, and CWA Sections 316(a) and 316(b). In order to deny Dynegy's application for renewal of the permit, the State Water Board would need to determine that the criteria for termination of a permit are met, as set forth in 40 CFR § 122.64(a)(3). This would require a finding that continued discharge after December 31, 2010, will endanger human health or the environment and that the discharge can only be regulated to acceptable levels by termination of the permit. **Available information considered by the State Water Board does not support such a finding.**

As discussed above, the OTC Policy establishes technology-based standards to implement federal Clean Water Act section 316(b) and reduce the harmful effects associated with cooling water intake structures on marine and estuarine life including impingement and entrainment. The OTC Policy applies to the 19 existing power plants (including South Bay Power Plant) that, on a collective basis, currently have the ability to withdraw over 15 billion gallons per day from the State's coastal and estuarine waters using a single-pass system, also known as once-through cooling.

Under the adopted OTC Policy, SBPP is required to develop and implement a compliance schedule to achieve additional reductions in entrainment and impingement by December 31, 2011 (or such later date as may be determined by the State Water Board, in consultation with the energy agencies). If the plant does not take steps to achieve compliance with the technology-based standards by the compliance date, it will be required to cease discharge. Dynegy has advised the State Water Board that it does not intend to retrofit the SBPP, given the age of the plant and the impending termination of the lease with the Port of San Diego. Upon termination of the lease, Dynegy is required to demolish the plant and is already far along in the planning and permitting process related to plant demolition.

While there are observable effects due to SBPP's elevated temperature discharge, and estimated entrainment and impingement losses based on the plant's design flow rate, these effects have been ongoing since 1960 when the SBPP first began discharging. Moreover, as of January 1, 2010, SBPP discharges 63 percent less cooling water than has been discharged in the past. According to Dynegy's 2010 Assessment, as of January 1, 2010, the entrainment intake effects have been reduced by at least 63 percent, and impingement effects have been reduced by 86 percent, compared to the levels previously calculated on the basis of the plant's operations at maximum generating capacity and cooling water flow rates.

In light of the plant’s substantially reduced flow and low capacity factor, it is reasonable to assume there are substantial corresponding reductions in the effects of impingement and entrainment, to the point where these ongoing effects do not unreasonably affect water quality. Based on these reductions, the plant’s declining and low capacity factor, and the limited number of remaining years of operation, these impacts do not pose an unacceptable risk to human health or the environment, and there is no basis for denial of Dynegy’s application for renewal of the permit. See 40 CFR section 122.64(a)(3).

**C. DISCHARGE SOURCES AND WASTE CHARACTERIZATION**

The primary wastewater discharges from SBPP to San Diego Bay are those associated with its once-through (non-contact) cooling water system. In addition to the waste streams associated with the cooling water system, stormwater runoff from SBPP is also routed to San Diego Bay. The SBPP has the following wastewater stream associated with its cooling water system:

<u>Wastewater Discharge</u>	<u>Maximum Flow (MGD)</u>
Once-Through (Non-Contact) Cooling Water System	225
1. Cooling water	
2. Cooling water pump lubrication and seal water and pretreatment backwash	
3. Traveling screen washwater	
4. Condenser pre-filter and ball recirculation system water	
5. Forebay cleaning washwater	
6. Manual cleaning of encrusting organisms from tunnels and condenser units	
7. Chlorination system	
8. Tube leak seals	
9. Corrosion protection	
10. Salt water heat exchanger cooling water	
11. Units 1 and 2 circulating water pump station sump water	

No wastes produced by or in conjunction with the gas turbine generator are discharged to San Diego Bay. Sanitary wastes produced at the SBPP are discharged to City of Chula Vista’s sanitary sewer system. Furthermore, starting December 31, 1997, SDG&E re-engineered the waste streams described in Order No. 96-05 as “Low Volume Wastes” and “Metal Cleaning Waste” to discharge these wastes to the City of Chula Vista sanitary sewer system. These operations are now regulated under an Industrial User Discharge Permit (No. 13-0279-01A) issued by the City of Chula Vista Department of Public Works and the San Diego Metropolitan Wastewater Department.

1. DESCRIPTION OF COOLING WATER SYSTEM AND ASSOCIATED DISCHARGES

The primary waste discharges from the SBPP are associated with the once-through (non-contact) cooling water system. The cooling water system is associated with Units 1 and 2, and utilizes San Diego Bay for cooling water. Each unit utilizes a closed cycle in which high

quality feed water is turned to steam in boilers, the steam is passed through turbines to generate electricity, the steam is condensed to water by the cooling water system, and the feed water is returned to the boilers. The elevated temperature once-through cooling water is discharged back to the bay via a discharge channel. The temperature of the discharge may be as much as 23 to 25 degrees F higher than the ambient intake water when the plant is operating at peak load. The power plant can transfer up to 1,322.7 million Btu/hr of heat to 225 MGD of cooling water when the plant is operating at full load. The power plant may be subject to peak load conditions for as much as eight to ten hours during hot summer days. Plant discharge temperatures may be as high as 100 degrees F for several hours of the day.

Higher temperatures may also reduce the levels of dissolved oxygen in the discharge. Elevated discharge temperatures may have some detrimental impact on species residing in the Bay. The existing Order No. R9-2004-0154 specifies an average daily delta T of 15 degrees F and an instantaneous delta T of 25 degrees F, and requires Dynegy to comply with its thermal limitations at Station S2, which is located at the property line. These provisions are retained in the renewed permit. The relocation of the temperature compliance point from Station S1 (located approximately 1,500 feet into the discharge channel) to Station S2 (at the property line) was necessary to comply fully with the NPDES regulations and to eliminate the benefits of a *de facto* mixing zone.

The flow diagram showing the waste streams from the components and sub-components associated with the once-through cooling water system can be found in Attachment 1. The cooling water components and associated waste streams are described below:

a. Intake Channel

Cooling water is withdrawn from San Diego Bay through a single intake channel that extends in a westerly direction about 5,735 feet from the SBPP property line on the west side of the plant. The intake channel has a bottom width of 200 feet at its widest point, tapers to 50 feet near the Unit 4 intake structure<sup>2</sup> and is about 15 feet deep. The channel was constructed by dredging and diking operations, and the sides of the channel are composed of natural earth and rock riprap. Variations in channel water surface elevation due to the tide are from a low of about -5.0 feet to a high +5.7 feet (elevation 0 being mean sea level, msl).

b. Intake Structures

The SBPP currently has one intake structure on the north side of the intake channel. As of December 31, 2009, Unit 3 and 4 intake structures are no longer in use. Units 1 and 2 share a common intake structure, which is composed of a forebay and a set of traveling screens. Water flowing in the intake channel (the amount depends on the number of units in operation) approaches the Units 1 and 2 structure (a distance of about 114 feet east from the property line to the structure). Floating booms are situated in the intake channel in front of each structure to retain large floating debris and material washed in from the bay. The debris and material from the bay in front of the booms is

---

<sup>2</sup> Note: Units 3 and 4 were shut down and taken out of service on December 31, 2009.

collected as needed and disposed in appropriate land disposal sites. The forebay extends from a trash rack at the intake channel end of the forebay to a set of circulating water pumps. Water entering the forebay supplying each cooling water pump first passes through a single metal trash rack that prevents the passage of large debris into the forebay. The trash racks are cleaned periodically using a trash rake. Debris removed from the trash rack is sent to an appropriate land disposal site.

#### Forebay Cleaning Washwater

Once or twice each year the forebay walls and inlet pipes are manually washed and scraped using only seawater pumped from the travelling screen wash water supply header. The washed and scraped growth from this process is pumped into the travelling screen washwater discharge trough and empties into the discharge channel. It is estimated that the amount of water pumped to the travelling screen trough for this process is about 730,000 gallons per year assuming each forebay is drained and cleaned twice each year.

#### Traveling Screen Washwater

Travelling screens are located at the back of the forebay to remove debris that is not collected and removed on the trash racks. The plant has a total of four traveling screens. The screens are conventional through-flow, vertically rotating, single entry, band-type screens, mounted in the screen wells of the intake structures. As the cooling water flows through the screen structure, it passes through a 0.5-inch wide stainless steel screen. Each screen starts-up and rotates automatically when debris buildup causes a predetermined level differential across the screen. As the screen revolves, the material is lifted from the water surface by the upward travel of the baskets. A screen wash system in the traveling screen structure provides seawater from the intake to wash the debris from the traveling screen. At the head of the screen, matter is removed from the baskets by the high-pressure spray of water that is evenly distributed over the entire basket width. The jet spray washes the material into the travelling screen washwater discharge trough that crosses over the intake channel and empties into the discharge channel. Based on the conservative assumption that the screens are washed continuously for 24 hours, 1.35 MGD of wastewater would be generated. About half of this (0.677 MGD) would be returned to the bay through the trough and discharge channel, and half (about 0.677 MGD) would be drained back into the intake in front of the screens and drawn into the cooling water system.

#### c. Circulating Water Pumps

Each unit has two circulating (cooling) water pumps, one for each condenser half, for a total of four pumps. Units 1 and 2 have vertical centrifugal pumps that rotate at 250 rpm.

#### Cooling Water

Each circulating water pump draws water in through the traveling screen and discharges it into a pipe that transports the water to a condenser. The pumps for Units 1 and 2 discharge into 48-inch diameter concrete pipes.

#### Lubrication and Seal Water and Pre-Treatment Backwash

The circulating water pumps for Unit 1 and 2 utilize freshwater (i.e., municipal water) for pump lubrication and seal water. This water is discharged into the pipes downstream of each pump. The maximum combined discharge flow rate from these lubrication and seal systems coupled with the lubrication and seal water pre-treatment backwash is 0.0635 MGD.

#### Chlorination System

The SBPP uses a chlorination system that injects liquid sodium hypochlorite into the pipes immediately upstream of the circulating water pumps for each Unit. This results in total residual chlorine in the discharge. This sodium hypochlorite solution is used intermittently in the cooling water system when the Unit is in operation to minimize formation of algae and slime that may collect in the tubes of the condenser. Each injection point is individually controlled. Sodium hypochlorite is injected upstream of each cooling water pump every four hours on a timed cycle each day. During a 24-hour period, each Unit is subject to up to 6 chlorination cycles a day. During the chlorination cycle, Unit is chlorinated for 20 minutes. The injection of chlorine is staggered so that only one Unit at a time is chlorinated. Order No. 2010-XXXX-DWQ prohibits simultaneous chlorination of multiple Units. The combined cycle time when both Units are operating does not exceed 40 minutes (for both units, combined). The intermittent nature of the chlorination process allows the total residual chlorine to dissipate and reduce impacts to the receiving waters of the Bay.

Approximately 2 to 3 pounds of sodium hypochlorite are added to each operating Unit during a chlorination injection cycle. The effluent limitation for total chlorine residual is not a fixed limitation. The limitation is a function of the duration of uninterrupted chlorine discharge in minutes (see Section F.5, *Federal Regulations for Steam Electric Power Generation, 40 CFR 423*, of Fact Sheet). A longer discharge time would render a lower (i.e. more stringent) effluent limitation for total residual chlorine. The effluent limitation for total residual chlorine when only one Unit is operating during a chlorination cycle (i.e., a 20 minute total discharge time) is 144 µg/l. The effluent limitation for total residual chlorine residual when two Units are operating during a chlorination cycle (i.e., a 40 minute total discharge time) is 111 µg/l. During the past five years, the average concentration of total residual chlorine in the combined discharge has ranged from 40 to 70 µg/l, depending on the number of Units in operation during the chlorination cycle in which the total residual chlorine was measured. The SBPP has not exceeded its total residual chlorine limitation in the last five years.

#### Units 1 and 2 Circulating Water Pump Station Sump

Units 1 and 2 circulating water pumps are located in a sump. At the northwest side of this sump are two sump pumps that are utilized for keeping the sump dry. The sump may contain rainwater or municipal water from circulating pump seal leaks. The water is pumped to the discharge channel via the travelling screen washwater discharge trough. The maximum discharge with both sump pumps running continuously during a 24-hour period is 4,320 gallons per day.

#### d. Condensers

Each unit has a single condenser that is a shell-and-tube arrangement in which heat is transferred from the turbine exhaust steam to the circulating (cooling) water. The tubing material used in the Unit 1 condenser is AL6X, a high performance stainless steel containing alloying elements of chromium, molybdenum and nickel. The Unit 2 condenser uses 90/10 copper-nickel tubing with a 70/30 copper nickel air removal section. The tubing length (exposed) in Units 1 and 2 is 30 feet. Condensers transfer approximately 1,322.7 million Btu/hr of heat to 225 MGD of cooling water when the plant is operating at full capacity (i.e. 308 MW).

The Unit 1 and 2 condensers both utilize impressed current (i.e. electrical) cathodic protection to inhibit the corrosion. Two shell and tube salt water heat exchangers and two shell and tube condensate coolers utilize both impressed current cathodic protection and zinc waste plates, which serves as an anode to protect heat exchanger water boxes and tubing. Although the facility uses impressed cathodic protection to reduce corrosion of its condenser tubing, corrosion cannot be completely eliminated. Corrosion of the copper condenser tubing can add minute amounts of copper to the cooling water discharge. Unit 2 is the only operating condenser that contains copper. The Unit 1 condenser has stainless steel tubes.

A special copper study was conducted at the SBPP in 1999 to estimate the overall annual loading of copper from the SBPP discharge to south San Diego Bay. The study estimated that the average copper concentration difference between the cooling water intake and discharge was found to be  $0.39 \pm 0.17 \mu\text{g/l}$ , indicating that the power plant adds an incremental load of copper to south San Diego Bay. The study estimated that, at maximum cooling water flow, the plant could add up to  $710 \pm 310$  pounds of copper annually to south San Diego Bay. Given the permanent shutdown of Units 3 and 4, and the fact that only Unit 2 has copper condenser tubing, the amount of copper that may be added to the bay is significantly reduced. Moreover, monitoring conducted by SBPP since the final copper limits went into effect in November 2007 demonstrate that the plant complies with the final effluent limits for copper **(based on monitoring conducted at times when the tides are low and no stirring of sediment occurs)**, which are based on the CTR. Further, a comparison of inlet and outlet data collected in the past several years also demonstrates that there is no statistical difference between the concentration of copper in the inlet and outlet (discharge). **However, now that the operation of the plant is intermittent and on an emergency basis, the monitoring can be conducted at times when the tides provide enough turbulence and the copper in the sediment is stirred causing the levels in the intake to exceed the water quality objective as shown in the latest monitoring of 2010. For these scenarios an intake water credit effluent limitation is being considered.**

Encrusting organisms are manually cleaned from the condensers on an as needed basis. Forebays and inlet conduits are manually cleaned once or twice per year and wastes are deposited into the discharge channel via the screen debris trough and this material is washed through the system with normal screen wash. No water is added to or removed from the cooling water flow for this process.

The following auxiliary components and processes associated with the condensers contribute to the cooling water discharges from SBPP to San Diego Bay:

Condensate Coolers

The SBPP uses flow from the circulating water inlet conduits for the purpose of cooling the closed loop (condensate) generator cooling systems on Units 1 and 2. Salt water from the inlet conduit flows or is pumped, depending on generator temperature, through the heat exchangers to the discharge channel via the once-through cooling water discharge conduit.

Condenser Pre-Filter and Ball Re-Circulation System Water

The Unit 1 condenser has a pre-filter and ball recirculation system that takes seawater from each of the circulating water pump pipes immediately before the condenser. This water is used to reduce fouling on the condenser tubes. The water and material collected on the filter is routed to the discharge channel via the once through cooling water discharge conduit.

Salt Water Heat Exchanger Cooling Water

The SBPP uses seawater from the circulating water inlet conduits for the purpose of cooling the closed loop service water system via shell and tube heat exchangers. There are two seawater heat exchangers on Units 1 and 2. The cooling water discharges from the heat exchanger to the discharge channel via the once through cooling water discharge conduit.

e. Discharge Pipes

The heated water from the condensers passes into two separate concrete discharge pipes, two of which are 72 inches in diameter for Units 1 and 2 pipes. All of the discharge pipes cross under the Intake Channel into a discharge basin (see Attachment 3). There are no structures such as booms, gates, or screens associated with the discharge pipes.

f. Discharge Channel

Cooling water from the discharge basin is returned to San Diego Bay through a single discharge channel, which runs parallel to and just south of the intake channel. The bottom width of the channel varies from 50 feet near the former Unit 4 discharge to approximately 1,200 feet at its widest point in the Bay. The depth also varies from 10-15 feet at the discharge structures and slopes up to meet the existing bottom of the Bay. The channel was constructed by dredging and diking operations. Over the years, some filling-in has occurred, although in the area near the discharge points it has been minimal.

As shown in Attachment 4, a jetty constructed by SDG&E extends from the northern side of the discharge basin into San Diego Bay. This jetty was constructed to prevent discharged cooling water from being drawn directly back into the intake structures. A narrow dredged channel, from which the material to construct the jetty was obtained,

parallels the jetty. This dredged channel terminates at approximately Latitude 32°36'33" N, Longitude 117°06'49" W, at the southwestern most end of the jetty.

For purposes of Order No. 2010-XXXX-DWQ, the "discharge channel" consists of the waters bounded by the jetty, a line extending from the southwestern most end of the jetty to the eastern side of the mouth of the Otay River, the southern shoreline of San Diego Bay, and the shoreline of the discharge basin (see Attachment 4). Therefore, the discharge channel includes, but is not limited to, the dredged channel referred to above. The discharge channel is a part of south San Diego Bay and waters in the discharge channel are considered waters of the United States.

The U.S. Fish and Wildlife Service (USFWS) obtained a long-term lease from the State of California to manage the salt ponds and marine water of south San Diego Bay in 1999. This area is designated as the South San Diego Bay Unit of the San Diego National Wildlife Refuge (Refuge) and is shown in Attachment 5A. The discharge channel is inside the boundary of this Refuge. Effluent from the SBPP can directly impact the biological resources in this Refuge. By letter dated May 5, 1998, the USFWS notified the discharger that the proposed Refuge would have no negative effect on the operations and maintenance of the SBPP (see Attachment 5B). This includes the use of San Diego Bay water for cooling purposes and any maintenance dredging of the intake and discharge channels of the power plant. The letter did not recommend any curtailment in power generation or modification to the volume or temperature of the SBPP discharge. The letter implied that the operations of the SBPP should not have detrimental impacts on goals and objectives of the Refuge.

## 2. STORMWATER DISCHARGES

In addition to the waste streams associated with cooling water, the SBPP also has a conveyance system that accommodates stormwater runoff. Storm water discharges from the SBPP are regulated pursuant to the *Statewide General Industrial Storm Water Permit (SWRCB Water Quality Order No. 97-03-DWQ NPDES General Permit No. CAS000001, Waste Discharge Requirements for Storm Water Associated with Industrial Activities Excluding Construction Activities, April 17, 1997)*. Attachment I of the *Statewide General Industrial Storm Water Permit* includes categories of facilities that must obtain coverage under this general permit. Steam Electric Power Generating Facilities such as the SBPP are included in the list of categories (i.e. category number 7) covered under this general permit. Additional stormwater provisions and monitoring requirements are therefore not included in Order No. 2010-XXXX-DWQ.

The discharger filed a Notice of Intent to comply with the Statewide General Industrial Storm Water Permit on March 17, 1999, with an updated NOI submitted on May 4, 2009. A Storm Water Pollution Prevention Plan (SWPPP) was prepared to minimize pollutants in storm water runoff from the site. The SWPPP was updated over the years with the most current version updated in January 2009. The overall objectives of the SWPPP are to identify sources of pollution that may effect the quality of industrial storm water discharges and authorized non-storm water discharges, and implement Best Management Practices (BMPs) to reduce or prevent pollutants in storm water discharges. BMPs implemented by the



SWPPP include preventive maintenance and inspections, good housekeeping, spill prevention and response, structural and nonstructural controls for minimizing storm water contamination, sediment and erosion control, and employee training.

The last three industrial stormwater compliance inspections conducted by the Port District for the Regional Board on 5/27/2008, 2/26/2009 and 10/12/2009 indicated no high risk or contaminated areas that would require diversion of stormwater and additional containment of runoff. The above ground fuel oil and jet oil tanks located at the plant are adequately bermed and served by a locked valve system that allows stormwater to be released only if visual inspections show no oil contamination. The rainwater contained within the berm is usually allowed to evaporate and not released to the storm drain. The secondary containment facilities serving the tanks provide enough capacity to hold 110 percent of the total tank volume plus accumulation of rainfall from a 25-year, 24-hour duration storm event. Most industrial activities at the plant are conducted indoors with no possibility of exposure to rainwater. The low-volume wastewater treatment plant is composed of fully enclosed unit process tanks (coalescer, etc.) with no exposed waste streams. All other storage tanks present in the facility yard (containing sodium hypochlorite, ammonium hydroxide, boiler water condensate) are fully enclosed tanks with secondary containment in event of spillage or leakage. Maintenance and repair activities such as painting, sand blasting, and turbine shaft overhaul work are done in fully enclosed booths with filters. Chemicals such as lubricants and biocides are stored in 55-gallon drums and placed in a covered storage room with a secondary sump for spill prevention.

The facility currently monitors stormwater for pH, conductivity, oil and grease, total suspended solids (TSS), and iron. Based on the last three stormwater compliance inspections conducted at the SBPP, the San Diego Water Board does not recommend additional monitoring of pollutants in stormwater.

### 3. DESCRIPTION OF WASTE DISCHARGE CONVEYANCE SYSTEM

Waste streams associated with the once-through cooling water from the SBPP are discharged to San Diego Bay, through the following conveyances (see Attachment 3):

#### a. Discharges to the Intake Basin

- (1) Separate discharge pipes each for Unit 1 condenser vacuum pump sealing water;
- (2) Separate discharge pipes each for Unit 1 condenser vacuum water; and,
- (3) A separate stormwater discharger pipe which is also used to convey Unit 2 condenser vacuum and condenser vacuum pump sealing water.

#### b. Discharges to the Discharge Basin

- (1) Two individual condenser outlet pipes through which cooling water is discharged (wastewaters discharged to the intake basin and drawn into the intake structures are also discharged through these pipes);

- (2) One traveling screen washwater discharge pipe which also functions as a conveyance for backwash water from the pre-filter on the cooling water pump lubrication water supply system, forebay cleaning washwater, and cooling water pump station sump discharge from Unit 1 and Unit 2; and,
- (3) One separate discharge pipe for fuel pump motor bearing cooling water.

c. Stormwater Conveyance

There are nine conduits that discharge stormwater into the intake channel. These include 1) six separate stormwater discharge pipes; 2) one discharge pipe for telephone and valve vault drain water ; 3) one stormwater discharge pipe that is also used to convey Unit 2 condenser vacuum and pump sealing water; and 4) one discharge pipe for fuel oil piping containment water. There are four conduits that are used to convey stormwater to the discharge channel, three of which function as a conveyance for fuel oil pump containment water.

**D. WASTE DISCHARGE SUMMARY**

A summary of monitoring data for pollutants contained in the effluent from the SBPP is shown below in Tables 1 and 2. The data covers the 2008-2010 period, which is the period associated with significantly lower capacity factors than has historically been the case for SBPP.

Table 1: Pollutant Ranges in Effluent (pollutants with effluent limitations in Order No. R9-2004-0154)

Year	Flow	pH	Total Chlorine Residual	Acute Toxicity	Delta T <sup>3</sup> (Daily)
Discharge Limit	601.13 MGD	6.0 - 9.0	ug/l <sup>1</sup>	% survival <sup>2</sup>	15° F
2008	144-388	7.9-8.1	ND-60	95-108	2.8-9.9
2009	85-288	7.9-8.1	ND-40	97.5-108	3.4-9.8
Limit	225 MGD	6.0-9.0			
2010 (Jan-Aug)	0.6-74	7.9-8.1	ND-40	95-103	3.3-4.9

<sup>1</sup>Total Chlorine Residual limit is a variable discharge limit based on a continuous uninterrupted chlorination cycle of zero to two hours.

<sup>2</sup>The acute toxicity in a 96-hour static bioassay test, using standard test species, shall not produce less than 90 percent survival, 50 percent of the time, and shall not produce less than 70 percent survival, 10 percent of the time.

<sup>3</sup>Average daily incremental temperature of effluent from SBPP above that of the intake water

Table 2: Pollutant Ranges in Effluent (pollutants with no effluent limitations, but requiring monitoring, in Order No. R9-2004-0154)

Year	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Silver	Zinc	Oil & Grease	TS S
Unit	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l	mg/l	mg/l
2008	ND-12.2	ND	ND-2.0	1.98-3.39	ND	ND	ND	ND	ND-12.0	
2009	ND-4.0	ND	ND-3.6	1.37-3.36	ND	ND	ND	ND	ND-3.4	
2010 (Jan-Aug)	ND-6.3	ND	ND-7.1	1.84-9.67	ND	ND	ND	ND	ND-2.5	

**E. SUMMARY OF WASTE DISCHARGE IMPACTS**

Industrial service supply is a designated Beneficial Use of San Diego Bay, and although use of bay water for power plant cooling is a designated beneficial use, the discharge of once-through cooling water to south San Diego Bay, at historical flow rates of up to 601 MGD, has had observable effects within the SBPP discharge channel, particularly in the area within 1000-1500 feet of the property line. The 2003 updated 316(a) study report, *SBPP Cooling Water System Effects on San Diego Bay, Volume 1: Compliance with Section 316(a) of the Clean Water Act for the South Bay Power Plant* confirmed that certain areas of the SBPP discharge channel have detrimental impacts that are attributable to the elevated temperatures and high volumetric flow rates associated with the SBPP discharge (see Section F.2.a of this Fact Sheet for a description of the report and its findings). The report

indicates that up to 104 acres of critical eelgrass habitat may have been lost because of the redistribution of turbidity in the Bay due to the SBPP discharge. Furthermore, the report indicates that the overall diversity of benthic invertebrates residing in the near field stations of the discharge channel is much lower than at reference stations outside the discharge channel. The studies also indicate that certain invertebrate species (including polychaete worms and amphipods) are largely absent in near field stations of the discharge channel. These species were found in abundant quantities in reference stations outside the discharge channel. The absence of these species from the discharge channel demonstrates that these species could not survive under warm thermal regimes and were being adversely impacted.

The observed effects, as reported in the 2003 316(a) Study and as summarized above, reflect the cumulative effect of long-term operation of the plant, at or near design capacity, over a period of many decades. With the 63% reduction in maximum flow rate, combined with the plant's declining capacity factor over the last several years (now less than 5%), the historical thermal effects associated with the plant's discharge will be very significantly reduced. While it is evident that the effects on water quality due to the discharge of once-through-cooling water cannot be entirely eliminated except through termination of the discharge, the individual and combined effects of the elevated temperature of the discharge and the high volume and velocity of the discharge (redistribution of turbidity) are now greatly reduced. At these reduced levels, the effects on south San Diego Bay are not considered significant and do not unreasonably affect water quality or degrade beneficial uses.<sup>3</sup> Further, the State Water Board finds that the balanced indigenous community standard under CWA Section 316(a) is satisfied at SBPP's present and anticipated level of operations over the life of the permit.

## **F. BASIS FOR WASTE DISCHARGE REQUIREMENTS**

The waste discharge requirements (including effluent and receiving water limitations, prohibitions, and monitoring requirements) contained in Order No. 2010-XXXX-DWQ are based on the federal NPDES regulations, the federal technology-based standards for steam electric power plant (40 CFR 123), the provisions of Clean Water Act (CWA) Section 316(a) (thermal discharge regulations) and Section 316(b) (power plant intake structure regulations), the state OTC Policy, the State Thermal Plan, the Basin Plan, the *Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy, SIP), and the California Toxics Rule (CTR). Order No. 2010-XXXX-DWQ also incorporates, where appropriate, the findings of the 2003 studies conducted at SBPP, as updated in March 2010. The March 2010 evaluation was conducted to assess the impact of the intake structures and the discharge from the South Bay Power Plant (SBPP) on the biological resources and beneficial uses of south San Diego Bay at a 63% reduction in maximum flow rate.

---

<sup>3</sup> The Beneficial Uses (as defined by the Basin Plan) that are potentially impaired due to the SBPP discharge include: Estuarine Habitat; Marine Habitat; Wildlife Habitat; Rare, Threatened or Endangered Species; Preservation of Biological Habitats of Special Significance; and Shellfish Harvesting.

The applicability and basis of the waste discharge requirements contained in Order No. 2010-XXXX-DWQ is discussed below:

## 1. FEDERAL NPDES REGULATIONS

Section 402 of the federal Clean Water Act (CWA) gives the U.S. EPA the authority to issue NPDES permits for discharges into navigable waters and to prescribe conditions for such permits necessary to carry out the provisions of the CWA. In California, the U.S. EPA has delegated this authority to the State of California. The primary regulations developed by the U.S. EPA to implement and administer the NPDES program are found in 40 CFR Part 122.

The SBPP is an existing industrial point source as defined in 40 CFR 122.2 and is subject to NPDES permitting requirements because it discharges to south San Diego Bay, a water of the United States. The discharge channel is considered part of San Diego Bay and also waters of the United States.

Pursuant to 40 CFR § 122.45 of the NPDES regulations, effluent limitations must be met at the point of discharge, prior to the effluent entering the receiving waters of the United States. Pursuant to 40 CFR § 122.41(j)(1) of the NPDES regulations, the samples and measurements taken for the purpose of monitoring shall also be representative of the monitored activity. Historically, the compliance monitoring point for SBPP was located near the end of the discharge channel, where the channel flows into greater south San Diego Bay. For most of the plant's operating history, the discharge channel was not considered waters of the United States, and the junction of the discharge channel and the bay was considered the point at which cooling water was discharged into waters of the United States.

To correct this situation, Order No. R9-2004-0154 required Duke Energy to conduct a study to identify a temperature sampling point as close to the end of the actual discharge pipes as possible, while still obtaining a sample that was representative of the combined discharge from each of the four units (at the time the study was conducted, all four SBPP were still operating). Each unit at SBPP has its own discharge pipe; the pipes are not manifolded together to form a single point of discharge. Further, because the units are dispatched at different times and different rates, the only feasible way to obtain a representative sample of the combined effluent is to collect the sample from the discharge basin, where the combined discharge can be characterized as adequately mixed and under steady state conditions. As indicated in Section C.3 of this Fact Sheet, the individual cooling water discharges from the four Units at SBPP are routed to a discharge basin (see Attachment 3) through condenser outlet pipes. The discharge basin is located east of the property line. The sheer volume and velocity of each discharge of 112 MGD appears to create turbulent mixing conditions. The combined, relatively mixed discharge, from two Units then makes it way across the SBPP property line into the discharge channel.

Duke Energy retained Tenera Environmental to develop a work plan and implement the study, both of which were subject to review and approval by the Regional Board Executive Officer. Ultimately, Tenera determined that Station S2, the compliance point for all other effluent parameters under the permit, was also the most appropriate sampling location for determining compliance with the thermal limits. S2 is located at the at the west end of the discharge basin (at

the SBPP property line), halfway across the discharge channel (at approximately Latitude 32° 36' 48", North; Longitude 117° 05' 52", West). Order No. 96-05 required location S1 (see Attachment 2) to be used for determining compliance with thermal limits only. S1 is located at the weather station location (Latitude 32° 36' 46.6", North; Longitude 117° 06' 04.5", West), approximately 1000 feet downstream of S2, inside the receiving waters of south San Diego Bay. Station S2 was approved by the Executive Officer, and temperature compliance sampling has been conducted at that location since 2007.

Furthermore, the area of discharge channel from Station S2 to Station S1 formerly constituted a *de facto* mixing zone. Due to the biologically sensitive nature of south San Diego Bay and the low circulatory conditions prevailing therein, the SBPP discharge is not a good candidate for a mixing zone or dilution credits for temperature. Furthermore, pursuant to Section 1.4.2.2 of the *Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy, SIP), a mixing zone shall not be granted if it has the potential of adversely impacting biologically sensitive or critical habitats, including, but not limited to, habitat of species listed under federal or State endangered species laws. As shown in Section F.2.a of this Fact Sheet, the SBPP thermal discharge historically impacted some of the critical habitats and species residing in south San Diego Bay (in particular the discharge channel). This reinforces the rationale for not granting a mixing zone or dilution credits for the SBPP discharge.

Accordingly, the SBPP permit complies fully with NPDES regulations 40 CFR § 122.45 and CFR § 122.41(j)(1). The State Board concurs that, even with the shutdown of Units 3 and 4, Station S2 remains an appropriate location to collect representative samples of the combined discharge from Units 1 and 2 and is the appropriate point of compliance for all effluent monitoring parameters, including temperature (see Section F.3, *Thermal Plan* of this Fact Sheet).

## 2. CLEAN WATER ACT (CWA) SECTION 316(a) & (b) REGULATIONS

### a. SECTION 316(a) REGULATIONS

#### (1) Section 316(a) Studies - Background:

Section 316(a) of the CWA requires that States impose an effluent limitation with respect to the thermal component of a discharge (taking into account the interaction of such thermal component with other pollutants) that will assure the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife in and on that body of receiving water.

In 1972-73 a thermal effects study (*Thermal Distribution and Biological Studies for the South Bay Power Plant, Ford and Chambers, May 1973*) was completed, to investigate compliance with the *Thermal Plan* and CWA Section 316(a). The study was undertaken to assess the effects of thermal effluent from SBPP on: 1) the physical and chemical environment of the bay, and 2) benthic, marine plants, and invertebrates that inhabit intertidal mudflats and subtidal mud bottom habitats of south San Diego Bay. Sampling was conducted quarterly on 18 subtidal and seven intertidal stations. Evidence regarding the effects of thermal discharge were assessed on the basis of: 1) difference in species composition; 2) number and diversity of species; 3) distribution,

abundance and biomass of species and major taxonomic groups; 4) size of individuals, and 5) the quantitative relationship of these to temperature and other environmental factors. Evidence from both intertidal and subtidal sampling for the 1972 study suggested that elevated water temperatures caused by the thermal discharge had adverse impacts to bay organisms that inhabited the cooling water discharge channel, particularly in late summer and early autumn. These effects were much reduced during the winter and spring periods when ambient water temperature dropped and the temperature of the thermal plume reduced. During all seasons, however, the adverse effects appeared to be confined primarily to the inner portions of the discharge channel. The overall finding was that the thermal effluent from the SBPP had no major adverse effects on the benthic communities beyond the end of the discharge channel.

Subsequent thermal effects studies and monitoring conducted by various environmental and research entities (including: *Lockheed 1977-81*, *Woodward-Clyde 1982-83*, *Westec 1984*, *CH2M Hill 1985*, and *Kinetic Labs 1986-89*) have confirmed the initial studies conducted by *Ford & Chambers*.

In 1995 the USEPA reviewed 18 years (1977-94) of annual summer benthic studies and concluded that although the benthic community in the discharge channel typically contains somewhat reduced diversity and abundance of species, the community present there is within the range observed at sampling stations outside the discharge channel, and there have been no appreciable long term upward or downward trends in species diversity or abundance. In 1996 the Regional Board concurred with USEPA's review of the benthic community study and findings of previous Section 316(a) compliance investigation studies. The Regional Board adopted Order No. 96-05 in November 19, 1996, renewing the NPDES permit for SBPP and finding the discharger to be in compliance with Section 316(a) at that time.

Additional studies related to Section 316(a) compliance were conducted in the 1997 – 2000 time period. These included the *SBPP Cooling Water Discharge Channel Fish Community Characterization Study (Merkel & Associates, 1997-2000)*, and the *Eelgrass Distribution Study (Merkel & Associates, 2000)*.

The *1997 - 2000 Fish Study* found that the discharge channel supported a diverse fish community that had a similar density of fish as other areas of San Diego Bay, and maintained, on average, a biomass approximately 270% higher than the Bay as a whole. The discharge channel was found to support an average of nearly ten times the density of slough anchovies than areas outside the channel, suggesting that this species is the principal year-round forage base for the large number of birds, including the California least tern and California brown pelican. No fish captured in the study exhibited abnormalities that can be attributed to either chemical damage or natural physical damage.

The *2000 Eelgrass Distribution Study* was conducted to determine the effects of temperature and turbidity on the distribution of eelgrass in south San Diego Bay. The study results indicated that there are significant and persistent differences between the

light environments found within eelgrass habitats and outside of eelgrass habitats in south San Diego Bay. These differences in light environments appear to control the distribution of eelgrass. Temperature was not found to be significant in determining the presence or absence of eelgrass. In fact, the highest temperatures recorded were found within eelgrass beds. Furthermore, the mean daily temperature profiles, for all stations combined, was higher within eelgrass beds than outside of eelgrass habitats. The study concluded that the thermal discharge from the SBPP did not have a significant effect on eelgrass distribution within south San Diego Bay.

Based on a review of current ambient water quality data for south San Diego Bay and further consultations with resource and regulatory agencies, including the USFWS, the DFG, the U.S. EPA, and the National Marine Fisheries Service (NMFS), the Regional Board concluded that that previous studies conducted by Duke Energy to assess the impact of the thermal discharge on water quality objectives and the designated beneficial uses of south San Diego Bay and verification of compliance with Sections 316 (a) of the CWA did not fully represent existing conditions in south San Diego Bay and operational parameters at SBPP and additional updated studies were needed.

(2) 2003 Section 316(a) Compliance Studies - Description:

Based on the need for updated studies, the Regional Board issued a CWC Section 13267 letter to Duke Energy on May 24, 2002 directing it to conduct six studies to assess the impact of the intake structures and the discharge from the South Bay Power Plant (SBPP) on the biological resources and beneficial uses of south San Diego Bay. The following three studies were directly related to the thermal discharge effects of the SBPP and compliance with CWA 316(a) requirements:

Study No. 1: *Updated Discharge Impact Assessment Study for Compliance with Section 316(a) of the Clean Water Act (CWA).*

Study No. 3: *Updated Eelgrass Study.*

Study No. 4: *Updated Dissolved Oxygen Assessment Study.*

These three studies were combined by Duke Energy and addressed under one technical study report titled "*SBPP Cooling Water System Effects on San Diego Bay, Volume 1: Compliance with Section 316(a) of the Clean Water Act for the South Bay Power Plant*". The final technical study report was submitted in August 2004.

Study No. 2 [Updated Section 316(b) study] was addressed separately under the technical study report titled "*SBPP Cooling Water System Effects on San Diego Bay, Volume II: Compliance with Section 316(b) of the Clean Water Act for the South Bay Power Plant.*" The final Section 316(b) technical study report was submitted in August 2004.

The studies were conducted by Duke Energy's contractors *Tenera Environmental and Merkel & Associates*. The contractors conducting the studies periodically received input



from a working group that included representatives of the Regional Board and other resources and regulatory agencies including the DFG, USEPA, USFWS, and NMFS.

The updated 316(a) studies commenced in July 2003 and continued through the summer of 2003. These studies investigated the impacts of SBPP's thermal discharge on the intertidal and subtidal biological communities of south San Diego Bay with an emphasis on the plant's discharge channel. These studies conducted in the summer months enabled monitoring of the impacts of the discharge at time of year when the water temperature in the discharge channel is the highest and conditions most stressful.

The purpose of Study No. 1 was to address the ability of the south San Diego Bay area impacted by the discharge from the SBPP to support a balanced indigenous population of fish, shellfish, and wildlife in that area and to verify compliance with Section 316(a). The purpose of Study No.1 was also to address the chemistry and toxicology of sediment and water column and benthic communities.

Study No. 3 investigated the geographical extent, density, and condition of eelgrass (*Zostera*) beds in south San Diego Bay impacted by the discharge from the SBPP. Study No. 3 also investigated the impact of the turbidity generated and redistributed by SBPP on the survivability and distribution of eelgrass in south San Diego Bay. The study was designed to supplement and update the information provided in 2000 by Duke Energy in the *Eelgrass Distribution Study (Merkel & Associates, 2000)*.

The purpose of Study No. 4 was to determine an appropriate numerical site-specific water quality objective for DO in the SBPP discharge channel and other areas of south San Diego Bay. The purpose of Study No. 4 was also to investigate the impact of the thermal plume from SBPP on naturally occurring DO levels in south San Diego Bay and the saturated DO levels associated with the elevated temperature discharges. Furthermore, the updated DO study was designed to investigate the ability of the south San Diego Bay area affected by the SBPP discharge to support a balanced indigenous population of fish, shellfish, and wildlife in that area.

The results of the studies and written comments provided by the public on the technical study report were considered in the Regional Board's development of Order No. R9-2004-0154.

The Regional Board also forwarded copies of the technical study report to its contractor, Tetra Tech, for its review and comment. Tetra Tech independently evaluated the results of the studies and provided feedback on their validity. Tetra Tech also provided recommendations to the Regional Board to incorporate specific discharge limitations and monitoring requirements into the Order.

(3) 2003 Section 316(a) Compliance Studies – Findings and Conclusions:

The updated Section 316(a) studies confirmed that certain areas of south San Diego Bay (in particular the discharge channel) experienced detrimental impacts due to elevated temperatures and high volumetric flow rates associated with the SBPP

discharge when the plant was operating at or near design flow (601 MGD) for sustained periods of time. These impacts included a potential loss of up to 104 acres of critical eelgrass habitat due to the redistribution of turbidity in the Bay due to the SBPP discharge. Furthermore, the studies showed that overall diversity of benthic invertebrates residing in the near field stations of the discharge channel is much lower than at reference stations outside the discharge channel. The studies also indicated that certain invertebrate species (including polychaete worms and amphipods) are largely absent in near field stations of the discharge channel. These species were found in abundant quantities in reference stations outside the discharge channel. The absence of these species from the discharge channel demonstrates that these species could not survive under warm thermal regimes and were being adversely impacted.

The significant findings on the impacts of the SBPP thermal discharge on the biological (eelgrass, benthic invertebrates, and fish) and physical/chemical (DO) characteristics of the discharge channel and south San Diego Bay are discussed in greater detail below:

### Eelgrass

An eelgrass mapping survey was completed in late May 2003 to obtain updated information on eelgrass in south San Diego Bay. A turbidity monitoring study was also conducted as part of the eelgrass investigation. As part of the study, the observed spatial trends in light attenuation and turbidity in south San Diego Bay were mapped. Furthermore, data was collected to support a modeling approach to evaluating the role of the SBPP on turbidity and subsequent impact on eelgrass survivability in south San Diego Bay.

Table 4.2-1 and Figure 4.2-7 of the technical study report identify the predicted turbidity effects and combined effects of turbidity and temperature of the SBPP cooling water flows on eelgrass within south San Diego Bay. The predicted turbidity effects of the SBPP cooling water flows suggests that the SBPP, operating at maximum cooling water circulation rates (i.e. 601.13 MGD) would preclude eelgrass from approximately 104 acres of south San Diego Bay. As shown in Figure 4.2-7 of the technical study report, the predicted 104 acres of south San Diego Bay that would lose eelgrass due to the power plant discharge includes the entire discharge channel and areas of south Bay immediately west and north of the Chula Vista Wildlife Island.

The study indicated that while natural turbidity plays a primary role in dictating the distribution of eelgrass in south San Diego Bay, the high flow rate of the SBPP discharge when the plant was operating at or near design flow (601 MGD) plays a role in distributing naturally generated turbidity and influencing the distribution and of eelgrass. The study also suggests that there are aggregate effects of turbidity and temperature within near-field portions of the thermal plume of the SBPP. These effects may result in either an absence of eelgrass, or seasonal die-off of eelgrass. In the area of the discharge channel nearest the SBPP, it is believed that summer season discharge temperatures alone may limit the occurrence of eelgrass, and turbidity may not be a significant factor in structuring eelgrass habitat within these areas.

At the significantly reduced flow rates and the very low capacity factor of the SBPP today, and the cooler temperature of the thermal plume, it is expected that adverse impacts on the presence and distribution of eelgrass in south San Diego Bay will be minimized.

#### Benthic Invertebrates

During the summer of 2003, core samples were collected at 21 subtidal stations and 10 intertidal stations in the SBPP discharge channel and receiving waters of south San Diego Bay. A high total abundance of invertebrates at Station E7 (the station closest to the discharge) was due to high numbers of nematodes and oligochaetes associated with high concentrations of organic debris in the samples. The source of organic debris in the core samples was probably due to marine debris routed to the discharge channel from the periodic rinsing of intake traveling screens at SBPP. Abundant subtidal species with distributions largely absent from the discharge channel included several species of polychaete worms and amphipods. There was trend toward higher biomass values of polychaete worms at stations further away from the discharge.

The mean diversity of benthic invertebrates was lowest at the two stations (SE7 and ST1) closest to the SBPP property line and highest at reference station SR4 near the Chula Vista Marina (Figure 2.3-1b of technical study report shows location of stations). There was trend of increasing diversity (for both subtidal and intertidal conditions) within the discharge channel as distance from the SBPP's property line increased (per Figure 3.3-3 of technical study report).

The study results also demonstrated that there was absence of certain species (including polychaete worms and amphipods) from the discharge channel. Figure 3.3-7 of the technical study report indicated that four taxa (*Leitoscoloplos pugettensis*, *Scoletoma sp. C*, *Mediomastus sp.*, and *Acuminodeutopus heteruropus*) were largely absent in the subtidal stations located in the near field region of the discharge channel. Figure 3.3-10 of technical study report indicated that four taxa (*Leptocheilia dubia*, *Scoloplos acmeceps*, *Euphilomedes carcarodonta*, and *Fabricinuda limnicola*) were largely absent in the intertidal stations located in the near field region of the discharge channel. The density of these taxa progressively increased at stations away from the near field discharge locations. The highest levels of these taxa were found at reference stations outside the SBPP discharge channel. The absence of these taxa from the near field regions of the discharge channel indicates that these species could not survive under warm thermal regime of the SBPP discharge.

A benthic response index (BRI) was calculated for each sample based on taxa and abundance and associated pollution tolerance indices ( $p_i$ ). The BRI test for southern California was developed by the *Southern California Coastal Water Research Project* and is used to estimate the chemical pollution tolerance of species found in bottom-dwelling communities. According to Duke Energy's study report, the BRI for the benthic communities residing in south San Diego Bay indicates that these communities are not degraded. Furthermore, the report states that the shifts in faunal composition due to the SBPP discharge are much less significant compared to shifts seen in polluted areas of other bays in southern California. According to *SCCWRP*,

the BRI test is designed to reflect toxicity to amphipod test animals based on toxicity gradients to chemicals and does not account for temperature effects. The BRI score should not be used to estimate the health of the benthic communities that are subject to elevated temperatures such as those residing in the SBPP discharge channel. The assertion by Duke Energy that the SBPP discharge is not degrading bottom-dwelling communities, based on the calculated BRI score, cannot be validated.

### Fish

The fish study was designed to more closely characterize the fish community in the discharge channel in comparison to a reference site during the warmest months of the year (July – September) with particular attention to their response to DO regimes. A reference site was selected in nearby Sweetwater River channel. To make additional comparisons, several past fish studies conducted in other back-bay environments (including Batiquitos Lagoon, Agua Hedionda Lagoon, and Seal Beach) were reviewed for diversity, density, and biomass data for comparison to the results of the 2003 study.

A total of 20 species, represented by a combined total of 26,672 fish, were captured during the 2003 study. The most abundant fishes were juvenile slough and deepbody anchovy, which represented 96 percent of the total individuals caught. Other commonly captured species included California halfbeak, round stingray, queenfish, barred pipefish, bay pipefish, arrow goby, cheekspot goby, and yellowfin goby.

The SBPP discharge channel had considerably higher fish densities than Sweetwater River during each sampling event, with a mean density over seven times that of Sweetwater River. The large numbers of juvenile anchovy captured in the discharge channel were most responsible for the difference. Nearly three times as many adult anchovy were found in Sweetwater River than in the discharge channel, suggesting anchovy may move out of the channel as they mature, resulting in the differences in demographics between areas.

The discharge channel showed some similarity to other back-bay environments, while also providing conditions that allowed for unusual fish species occurrences, atypical juvenile abundances, and seasonal use patterns. The unique temperature environment of the channel may provide warm water refuge area for several bay species during the winter, but may similarly preclude some species from full use of the area during the hottest portions of the summer months. The site was found to provide habitat for warm-water species not typically found elsewhere in California such as diamond stingray, California halfbeak, California needlefish, bonefish, and shortfin corvina.

### Dissolved Oxygen

The *Update Dissolved Oxygen Study* was designed to evaluate whether the SBPP causes a decrease in the concentration of DO in south San Diego Bay to levels below naturally occurring conditions and to determine if any observed declines in DO result in altering biological communities from what might be expected as a balanced indigenous community under natural environmental conditions.

To accomplish the above objectives, the study evaluated how the DO environment of the portions of south San Diego Bay that are influenced by the SBPP differ or are similar to reference stations in back-bay environments elsewhere in San Diego Bay and other bays in southern California. The mean hourly DO concentration for both the San Diego Bay open water stations and the SBPP discharge channel fell within  $\pm 1$  standard deviation of the mean hourly DO concentration of reference stations. In comparison to the mean condition of the combined reference stations, all south San Diego Bay stations had greater levels of DO in the morning and lower levels of DO in the afternoon. The mean daily DO concentrations of  $5.38 \pm 1.01$  mg/l (reference sites),  $5.52 \pm 0.35$  mg/l (open San Diego Bay), and  $4.99 \pm 0.32$  mg/l (SBPP discharge channel) do not substantially differ. Duke Energy's study report claims that these ambient DO levels appear to support fish populations in the SBPP discharge channel and do not appear to limit their distribution or species composition. The study did not recommend a numerical, site-specific, water quality objective for DO for south San Diego Bay.

The report states that the conditions observed within both the San Diego Bay open water and discharge channel stations were generally reflective of systems with lower primary productivity, larger water volumes, and greater aeration or water turnover. The study also notes that for reference stations as well as both San Diego Bay open water and SBPP discharge channel stations the mean daily DO curves were consistently below the saturation levels for mean temperatures experienced at the stations. This suggests that DO consumption was typically higher than DO production at all locations throughout the study.

**Although the San Diego Water Board believes that beneficial uses of San Diego Bay would be better protected if a site specific numerical objective for DO were developed, the San Diego Water Board has not yet undertaken to amend the Basin Plan for this purpose.** Dynegy (and Duke Energy) have conducted monthly monitoring for DO in the effluent and for 12 receiving water stations throughout San Diego Bay since Order No. R9-2004-0154 was adopted in November 2004. The DO data from the effluent is compared to DO levels in the receiving water stations to determine the extent of impact of the thermal effluent from SBPP to DO levels in south San Diego Bay. To date, no definitive adverse effect on DO levels from SBPP discharges has been observed.

*b. SECTION 316(b) REGULATIONS*

Federal BTA standards for existing power plants (the "Phase II regulations") are currently being developed by the U. S. Environmental Protection Agency. The Phase II regulations that were previously adopted by EPA in July 2004 provided the rationale for the Section 316(b) findings and related provisions that were contained in Order No. R9-2004-0154. Specifically, the Regional Board found that SBPP did not comply with the new federal BTA standards that had just been adopted for existing facilities. However, these regulations were suspended by EPA in July 2007 as a result of

litigation, and the Regional Board subsequently suspended the SBPP permit provisions that were based on those regulations.

At the present time, EPA has instructed that BTA determinations under federal law are to be made on a case-by-case basis, based on the permit writer's best professional judgment. Pending promulgation of new regulations, the "wholly disproportionate" test that has been utilized by permit writers over the past 30 years remains applicable. Under this test, modifications to a cooling water intake structure are not required where the cost of the modifications would be wholly disproportionate to the environmental benefits that would be obtained.

**Consistent with all NPDES permits issued to SBPP prior to the adoption of the now-suspended Phase II 316(b) rules, this Order contains new findings that the SBPP complies with CWA Section 316(b) as it currently applies to the plant since it is expected to shutdown by the compliance date of the OTC Policy.**

(1) Section 316(b) Studies - Background:

Section 316(b) of the CWA requires that the location, design, construction and capacity of cooling water intake structures reflect the Best Technology Available (BTA) for minimizing adverse environmental impact. By letter dated October 30, 1977, the Regional Board requested SDG&E to initiate studies to demonstrate conformance with the requirements of Section 316(b) of the CWA.

Studies pursuant to Section 316(b) to assess the effects of impingement and entrainment were conducted in 1979-80 (cooling water intake system demonstration project). The studies evaluated both impingement and entrainment effects by quantifying the species, number of organisms, and life stages impacted. Entrainment of invertebrate zooplankton and ichthyoplankton were evaluated for different periods of the daily cycle. Impingement and trapping of fishes and larger invertebrates within the intake structure of the power plant were also evaluated. Both entrainment and impingement were evaluated in relation to tidal cycle and season.

In December, 1980, SDG&E submitted the final results of a cooling water intake system demonstration project for the SBPP intended to comply with Section 316(b) of the CWA. SDG&E concluded that "the low and insignificant level of impact demonstrates that the existing SBPP's intake system represents the BTA for this specific site to minimize adverse environmental impacts."

In September, 1993, the USEPA reviewed and concurred with the 1980 SBPP 316(b) demonstration project results which indicated that marine receiving waters in the vicinity of the SBPP contain viable, self-sustaining populations or communities of organisms and that the plant incorporates BTA intake technologies. In 1996 the Regional Board adopted Order No. 96-05 and accepted the 1980 demonstration project for compliance with Section 316(b).

Although the intake structure at SBPP had not been changed since the demonstration project was completed in 1980, the Regional Board, after consulting with the USEPA,

concluded that the demonstration study was outdated and needed to be updated. By letter dated March 12, 2002, the California Department of Fish and Game (DFG) also recommended that the Section 316(b) demonstration study be updated. DFG indicated that the 1980 demonstration study was conducted under much different circumstances than currently existed. DFG identified the following reasons why the 1980 demonstration study may no longer be applicable to the SBPP and why a new study is warranted: 1) the intake water flow rates through SBPP during the 1980 studies were below the current permitted level of 601.13 MGD, 2) the discharge channel was not evaluated as a part of San Diego Bay, 3) the re-circulation of the elevated temperature discharge plume from the discharge channel back into the intake channel was not considered, and 4) The BTA from 1980 to 2002 has changed. By letter dated February 26, 2002, the U.S. Fish and Wildlife Service (USFWS) also recommended that Duke Energy be required to demonstrate that the current intake structure technologies meet the requirements of Section 316(b) and minimize biological organisms lost by impingement and entrainment.

(2) 2003 Section 316(b) Compliance Studies - Description:

Based on the need for an updated Section 316(b) study, Duke Energy was directed to develop and implement an updated comprehensive demonstration study to show compliance with Section 316(b) regulations (that were in effect in 2002). The requirement to initiate the updated study (Study No. 2) was included in the May 24, 2002, Section 13267 letter to Duke Energy. The letter directed Duke Energy to conduct a comprehensive demonstration study to characterize impingement and entrainment mortality, the operation of cooling water intake structures, and to confirm that the technologies, operational measures, and/or restoration measures selected and/or implemented at the cooling water intake structure meet the requirement for Best Technology Available (BTA).

The 2003 Section 316(b) study was addressed under the technical study report titled "*SBPP Cooling Water System Effects on San Diego Bay, Volume II: Compliance with Section 316(b) of the Clean Water Act for the South Bay Power Plant.*" The final technical study report was submitted in August 2004.

As with the updated Section 316(a) studies, the progress of the updated Section 316(b) study was reviewed by a working group that included representatives of the Regional Board and other resources and regulatory agencies including the DFG, USEPA, USFWS, and NMFS.

The fish impingement and entrainment sampling associated with the updated 316(b) study was conducted over one complete annual cycle, commencing in December 2002 and concluding in December 2003.

Entrainment effects were assessed using three independent models. Two of the models, *Fecundity Hindcasting (FH)* and *Adult Equivalent Loss (AEL)*, used species life history information to estimate potential numbers of adult fish represented by the entrainment of larval fish losses. The third approach, *Emperical Transport Modeling*

(ETM), compared entrainment larval densities to source water larval densities to calculate effects of larval removal on the standing stock of larvae in south San Diego Bay.

Impingement was studied weekly over a 24-hour period by recording the numbers and weights of all fishes and selected macroinvertebrates that were rinsed from the screens of Units 1 and 2 and Units 3 and 4 of the SBPP.

Alternate technologies, designs, and operational and maintenance features of the intake structures at the SBPP were evaluated in accordance with the USEPA's draft guidance document: *Draft Guidance for Evaluation the Adverse Impact of Cooling Water Intake Structures on the Aquatic Environment: 316(b) P.L. 92-500, 05/1977.*

(3) *Findings and Conclusion of 2003 Section 316(b) Compliance Studies*

The entrainment sampling conducted as part of the 2003 Section 316(b) compliance study revealed the following results:

The Section 316(b) technical study report indicates that larval forms of five taxa make up 99 percent of the entrainment impacts. These include a CIQ goby complex (complex made up shadow, arrow and cheekspot gobies), anchovies, silversides, blennies and longjawed mudsuckers. The report indicates that a number of models [fecundity hindcasting (FH), adult equivalent loss (AEL) and empirical transport model (ETM)] were used to determine adult losses as it corresponds to larval entrainment losses. Table 5.4.1 of the report identifies that 13 percent of the anchovies adult population and 15.1 percent of the silverside adult population in the source water would be lost annually due to larval entrainment losses. Table ES-1 of the report indicates that in 2003 approximately 27 percent of the goby complex larval from the source water population was lost and 50 percent of the longjawed mudsucker larval population was lost due to entrainment.

The Regional Board considers the larval and equivalent adult fish losses based on maximum design flow of 601 MGD to be significant. The Department of Fish Game and the National Marine Fisheries Service also indicated that these larval and equivalent adult fish losses are significant and would have an adverse impact on source water populations in south San Diego Bay. However, these same conclusions cannot be drawn with respect to rate of entrainment associated with the significantly reduced flows from Units 1 and 2 that are expected to occur over the life of the renewed permit.

The impingement sampling conducted as part of the 2003 Section 316(b) compliance study revealed the following results:

The total annual impingement of fish under full operating flow rates was estimated to be 385,588 individuals weighing 556 kg. The 1980 SDG&E study estimated an annual impingement rate of 28,174 fish, with a total biomass of 4,459 kg.



The most abundant taxon both numerically and by weight impinged was anchovies, comprising 93 percent by number and 40 percent by weight of all fishes impinged. Most of the fish impinged, over 96 percent of the total abundance and 87 percent of the total biomass, were not commercially or recreationally fished species. The report claims that estimated impingement effects, under peak operation conditions, are minimal and indicates that SBPP operation represents a low potential risk to taxa populations. The 1980 316(b) demonstration by SDG&E also concluded that impingement effects were not significant. It follows that levels of impingement associated with SBPP's current and anticipated flow rates over the next five years, which are at least 63 percent less than the flow rate that was modeled in the 2003 316(b) study, is insignificant.

The alternate technologies, designs, and operational and maintenance features evaluated in the 2003 316(b) study are discussed below:

The following discussion of alternative technologies, designs and operational and maintenance features was included in the Fact Sheet for Order No. R9-2004-0154. As discussed above, the new OTC Policy establishes a compliance date of December 31, 2011 for SBPP, **which may be suspended by the State Water Board if determined and agreed as it currently operates that the plant is still needed for grid reliability**. Accordingly, it is unreasonable to expect Dynegy to retrofit the plant to comply with the new technology-based standards, and Dynegy has advised the State Water Board that it has no plans to make further investment in SBPP. This following discussion supports the conclusion that the cost of retrofitting SBPP would be wholly disproportionate to the environmental benefits to be obtained. This is even more true today than five years ago, as the levels of impingement and entrainment are a small percentage of what they were previously.

The alternate technology evaluation conducted in 2003 analyzed closed-cycle cooling water systems, behavioral barriers, and physical barriers. Wet/dry hybrid cooling towers using untreated wastewater or desalinated water was the only viable closed-cycle cooling system for use at the SBPP. This option was eliminated because of the short-term nature of Duke Energy's SBPP lease with the Port of San Diego, which expires in 2009.<sup>4</sup> There would not be enough time to design, permit, and construct the cooling towers and other water treatment facilities. Furthermore, the report claimed that a cost/benefit analysis conducted for the wet/dry hybrid cooling towers indicated that the costs (amortized over the 5-year, expected, remaining life of the plant) were wholly disproportionate to the environmental benefits gained based on the entrainment/impingement data collected in 2003.

The analyses evaluated eight different behavioral technologies. Of these only sound has been recently proven for a number of similar locations for impinged species. The study indicated that a properly designed ultrasound technology system, although experimental in nature, could reduce SBPP's potential to impinge some pelagic fish species.

---

<sup>4</sup> The expiration date of the SBPP lease from the Port of San Diego is automatically extended as long as Units 1 and 2 remain designated RMR by the CAISO. The lease will expire when the RMR designation is terminated.

Thirteen different physical barrier screen technologies and two different fish diversion systems were evaluated for their potential to reduce entrainment and impingement. Of these, four of the screen technologies and the two fish diversion systems were determined to be proven and available. Once again, a cost/benefit analysis conducted for these systems indicated that the costs (amortized over the 5-year, expected, remaining life of the plant) were wholly disproportionate to the environmental benefits gained based on the entrainment/impingement data collected in 2003. Furthermore, the study concluded that these technologies traded decreases in impingement of larger organisms for increased environmental impacts on other life stages, sizes, or types of organisms and therefore do not represent BTA for the SBPP intake.

The study recommended that the existing fish return system be upgraded to reduce bird predation and that the trough be extended so that it returns impinged organisms into deeper water. The study concluded that the existing shoreline vertical traveling screen represents the BTA. This conclusion is based on the finding of relative insignificant entrainment and impingement effects (including no population-level effects) and consideration of various demonstrated alternative technologies, including potential biological effectiveness for further reducing entrainment and impingement losses, engineering feasibility, and cost-effectiveness, as outlined in the guidance manual (USEPA 1977).

(4) New Section 316(b) Rule

As discussed above, the Phase II rules promulgated by USEPA on February 16, 2004 to implement Section 316(b) of the Clean Water Act have been suspended as a result of litigation. USEPA is in the process of re-writing the rules, but no date for re-publication has been announced. The new state OTC Policy is likely to require SBPP to cease operation before any new federal rules are adopted.

(5) OTC Policy

On May 4, 2010, the State Water Resources Control Board adopted Resolution No. 2010-0020, Statewide Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling ("OTC Policy"). The OTC Policy is intended to implement the requirements of Section 316(b) of the federal Clean Water Act which provides that "the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact" ("BTA"). The BTA requirements address impingement and entrainment effects associated with intake of sea water for cooling. Impingement refers to the entrapment of larger forms of marine and estuarine life on the traveling screens, while entrainment refers to the process by which larvae and other small aquatic organisms are drawn into, and circulated through, the plant's cooling water system.

**[The OTC Policy was approved by the Office of Administrative Law on September 2, 2010.]** The OTC Policy establishes technology-based standards that are applicable as a matter of state law and assigns the responsibility for permit issuance or reissuance to the State Board, rather than to the regional boards.

Under the OTC Policy, all 19 coastal power plants in California are required to come into compliance with the new technology-based standards on a phased-in basis in order to maintain electric reliability. The compliance date for the South Bay Power Plant, as specified in the OTC Policy adopted on May 4, 2010, is December 31, 2011. This deadline may be suspended by the CAISO up to 90 days or otherwise extended by the State Board based on updated information provided by the California Energy Commission, the California Independent System Operator, and the California Public Utilities Commission that the plant remains essential as a source of power generation and cannot be taken off-line without compromising the reliability of the grid.

**The term of this Order is consistent with the OTC Policy. The permit is being issued for a period of one year only. A new discharge prohibition has been added to the permit which provides that all cooling water discharges shall cease on December 31, 2011 or such earlier date as the California ISO terminates RMR status for Units 1 and 2.**

### 3. THERMAL PLAN

According to *Section 4.A(1) (Existing Discharges)* of the State Water Quality Control Plan for Control of Temperature in Coastal and Interstate Waters and Enclosed Bays and Estuaries of California (*Thermal Plan*), elevated temperature waste discharges shall comply with limitations necessary to assure protection of beneficial uses. The SBPP is an existing discharger and must comply with *Section 4.A(1)* of the *Thermal Plan*.

Order No. R9-2004-0154 limited the average incremental temperature of cooling water discharge from SBPP above that of the intake water to 15 degrees F, during any 24-hour period (daily Delta T). In addition, the current permit also limits the instantaneous Delta T to 25 degrees F. The daily and instantaneous Delta T limits of 15 degrees and 25 degrees F respectively, will continue to be enforced in Order No. 2010-XXXX-DWQ.

As discussed in *Section F.1 (Federal NPDES Regulations)* of this Fact Sheet, in November 2007, the point of compliance for temperature was moved to the property line instead of Station S1 (1,000 feet downstream of property line), in order for Dynegy to fully comply with NPDES regulations 40 CFR 122.45 and CFR 122.41(j)(1).

### 4. WATER QUALITY CONTROL PLAN FOR THE SAN DIEGO BASIN (9)

The Water Quality Control Plan for the San Diego Basin (9) (Basin Plan) was adopted by the Regional Board on September 8, 1994 and approved by the State Board. Subsequent revisions to the Basin Plan have also been adopted by the Regional Board and approved by the State Board. The Basin Plan identifies the following beneficial uses of the waters of San Diego Bay to be protected:

- a. Industrial service supply;
- b. Navigation;
- c. Contact water recreation;
- d. Non-contact water recreation;
- e. Commercial and sport fishing;

- f. Preservation of biological habitats of special significance
- g. Estuarine habitat;
- h. Wildlife habitat;
- i. Rare, threatened, or endangered species;
- j. Marine habitat;
- k. Migration of aquatic organisms; and
- l. Shellfish harvesting.

Use of San Diego Bay water for cooling of the SBPP is itself a designated beneficial use. However, the discharge of once-through cooling water to south San Diego Bay, at the plant's design flow (601 MGD) over a sustained period of over 40 years, has had effects on the Beneficial Uses within the SBPP discharge channel, particularly in the area within 1000-1500 feet of the property line. These effects are described above in detail. The 2003 updated 316(a) study, *SBPP Cooling Water System Effects on San Diego Bay, Volume 1: Compliance with Section 316(a) of the Clean Water Act for the South Bay Power Plant*, confirmed that certain areas of the SBPP discharge channel have impacts due to the individual and combined effects of elevated temperatures and high volume and velocity of the discharge (redistribution of turbidity). The impacts include a loss of eelgrass habitat and a lower density of benthic invertebrates residing within the discharge channel. The potentially impacted Beneficial Uses include Estuarine Habitat; Marine Habitat; Wildlife Habitat; Rare, Threatened or Endangered Species; Preservation of Biological Habitats of Special Significance; and Shellfish Harvesting. These effects were determined by the San Diego Water Board not to be at a significant level to require termination of the discharge and conditions and requirements contained in Order No. R9-2004-0154 addressed these effects.

Furthermore, at the plant's current discharge rate (maximum of 225 MGD) and low capacity factor (less than 5 percent), these effects are further reduced and not considered significant.

The Basin Plan water quality objectives applicable to the SBPP discharge, including toxicity and dissolved oxygen, are discussed below:

(1) Toxicity Objectives

The Basin Plan includes the following narrative water quality objective for toxicity:

*All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods as specified by the Regional Board.*

*The survival of aquatic life in surface waters subjected to a waste discharge or other controllable water quality factors, shall not be less than that for the same water body in areas unaffected by the waste discharge or, when necessary, for other control water that is consistent with requirements specified in U.S. EPA, State Water Resources Control Board or other protocol authorized by the*

*Regional Board. As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour acute bioassay*

*In addition, effluent limits based upon acute bioassays of effluents will be prescribed where appropriate, additional numerical receiving water objectives for specific toxicants will be established as sufficient data become available, and source control of toxic substances will be encouraged.*

The SBPP discharge may cause or has the reasonable potential to cause or contribute to an excursion above the narrative objective of toxicity stated in the Basin Plan. Therefore, in accordance with 40 CFR 122.44(d)(1)(v), Order No. 96-05 contained effluent limitations for whole effluent toxicity (acute toxicity).

Order No. R9-2004-0154 specifies that in a 96-hour static or continuous flow (acute toxicity) bioassay test, using standard test species, the undiluted discharge from the SBPP shall not produce less than 90 percent survival, 50 percent of the time, and shall not produce less than 70 percent survival, 10 percent of the time. Order No. 2010-XXXX-DWQ requires compliance with this acute toxicity limitation. No intake credits are allowed for acute toxicity tests, since previous studies have demonstrated that the location of the discharge point and thermal nature of the SBPP discharge generates a thermal plume that wraps around the dike (that separates the intake/discharge channels) and may entrain pollutants back into the plant's intake. This potential entrainment makes SBPP an undesirable candidate for intake credits for toxicity.

Over the last five years, the discharger conducted over 60 acute toxicity tests each at the intake and discharge locations at SBPP. There were no violations noted. The survival rate of species was in the 90 – 100 percent range for all tests conducted for intake water and effluent.

**Order No. 2010-XXXX**-DWQ requires that compliance with the acute toxicity limitation be based on bioassay tests conducted during each individual quarter.

(2) *Dissolved Oxygen Objective*

The Basin Plan specifies the following water quality objective for dissolved oxygen (DO) in inland surface waters:

*DO levels shall not be less than 5.0 mg/l in inland surface waters with designated MARINE or WARM beneficial uses. The annual mean DO concentration shall not be less than 7 mg/l more than 10% of the time.*

**Enclosed bays such as San Diego Bay are not classified as inland surface waters, and the Basin Plan does not explicitly designate a DO objective for San Diego Bay. However, San Diego Bay does have marine habitat as a beneficial use.**

A review of DO sampling data for the year 2001, compiled by the San Diego Unified Port District (*Port of San Diego, Bay-Wide Water Quality Monitoring Program, 2001*), for five stations dispersed around San Diego Bay shows that the ambient DO levels in San Diego Bay do not meet the above objective. The annual mean DO at only one station, that was close to the open ocean waters and the mouth of north San Diego Bay, exceed 7.0 mg/l (i.e. 7.02 mg/l at Station 1, Shelter Island). The annual mean DO values at the other four stations, in the inner Bay locations, were in the 5.57-6.32 mg/l range.

An analysis of the 2001 weekly mean DO sampling data, obtained from the Port of San Diego, for the station located in south San Diego Bay (i.e. Station 5, at the mouth of Chula Vista Marina; to the north of the SBPP intake channel) showed that 20.5 percent of ambient DO values were less than 5.0 mg/l and 94.8 percent of ambient DO values were less than 7.0 mg/l. An analysis of DO sampling data taken at half hour intervals during the summer of 2001 (May through October) at Station 5, showed that 28.5 percent of ambient DO values were less than 5.0 mg/l and 98.2 percent of ambient DO values were less than 7.0 mg/l.

Order No. 96-05 required the discharger to prepare a proposed Basin Plan amendment for DO water quality objectives in south San Diego Bay (*Reporting Requirement F.18*). The 1998 study submitted by *Applied Science Associates*, on behalf of the discharger, proposed the following narrative water quality objective for DO in south San Diego Bay:

*The DO concentrations of south San Diego Bay shall not be depressed to levels that adversely affect beneficial uses as a result of controllable water quality objectives.*

This proposed DO objective appears to be vague and unenforceable. The Regional Board has not adopted an amendment to the Basin Plan to clarify the water quality objectives for DO in San Diego Bay.

Staff, in consultation with the UFWS and the DFG, concluded that a DO receiving water limitation for south San Diego Bay is desirable since DO is a good indicator of the overall health and viability of fish species and other marine communities. Historic temperatures up to 95 or 96 degrees F have been measured at the eastern end of the SBPP discharge channel during summer months. Under extreme conditions of elevated temperature and lowered DO, fish and other mobile organisms could lose the ability to find cooler waters and could become trapped in the cooling water discharge channel. Recent fish surveys indicate a diverse community of certain species of fish now resides in the cooling water channel during winter months; however, the effects of additional discharges of heat on south Bay's beneficial uses are unknown.

In the absence of a specific representative numerical Basin Plan objective for DO in south San Diego Bay, staff reviewed the following DO objective applicable to Ocean Waters as listed in *Section D.1 (Chemical Characteristic)* of the 2001 Ocean Plan:

*The dissolved oxygen concentration shall not at any time be depressed more than 10 percent from that what occurs naturally, as the result of the discharge of oxygen demanding waste materials*

This objective was developed for well-mixed ocean waters where DO levels are spatially uniform and typically near saturation levels. The waters of south San Diego Bay are shallow and DO levels are impacted greatly by minor changes in temperature, biological respiration and oxidation, and tidal inflow. There is a great deal of natural spatial and temporal variability of DO in south San Diego Bay. It is, therefore, difficult to accurately define the naturally occurring or ambient DO levels in south San Diego Bay. For this reason, the Ocean Plan objective for DO is not applicable to south San Diego Bay.

Historical studies and monitoring data have concluded that the receiving waters in SBPP's discharge channel have the highest temperatures and lowest DO concentrations relative to other areas of south San Diego Bay. Currently there is no reliable numeric DO water quality objective applicable to south San Diego Bay. It is clear that the thermal discharge from SBPP does influence the DO levels in the discharge channel and other locations in south San Diego Bay that are in close proximity to the plant. The 1998 proposed Basin Plan amendment DO study by *Applied Science Associates* did not address the impacts of thermal discharges from SBPP on the ambient levels of DO in south San Diego Bay. The 1998 study also did not consider the impact of elevated thermal discharges on the saturated DO levels in the discharge channel. Although studies have been conducted to investigate SBPP's impact on ambient DO levels in the past, these studies were conducted in the early 1970s (*Thermal Distribution and Biological Studies for the South Bay Power Plant, Ford and Chambers, May 1973*) and are probably obsolete because the operating conditions at the plant in the 1970s were quite different from current conditions. These include power generating capacity, volume of cooling water discharged, and configuration of the discharge channel. The DO studies in the 1970s also did not consider the discharge channel to be part of south San Diego Bay.

As discussed in Section F.2(a)(3) of this Fact Sheet [*2003 Section 316(a) Compliance Studies – Findings and Conclusions*] the *Updated DO Study* indicated that the mean hourly DO concentration for both the San Diego Bay open water stations and the SBPP discharge channel fell within a  $\pm 1$  standard deviation of the mean hourly DO concentration of other comparable back-bay reference stations in southern California. The mean daily DO concentrations of  $5.38 \pm 1.01$  mg/l (reference sites),  $5.52 \pm 0.35$  mg/l (open San Diego Bay), and  $4.99 \pm 0.32$  mg/l (SBPP discharge channel) do not substantially differ. The study concluded that these ambient DO levels appear to support source water fish populations in the SBPP discharge channel and do appear to limit their distribution or species composition. The *Updated DO Study*, however, did



not recommend a numerical DO limitation for south San Diego Bay that would ensure protection of its biological resources.

The existing thermal discharge limitations compliance point is at monitoring station S2, which has reduced the need for additional potential mixing or dilution zones for temperature and ensures that less heat is dispensed to the discharge channel. Since there is direct correlation between DO levels in the discharge channel and temperature, less heat dispensed to the discharge channel will provide for higher DO levels. It is clear that the relocation of the discharge temperature monitoring compliance point will ensure that the mean DO in the discharge channel exceeds the existing level of  $4.99 \pm 0.32$  mg/l. Higher DO levels may positively impact the health and survivability of fish, benthic invertebrates, and eelgrass in the discharge channel.

Although there is currently no discharge effluent limitation for DO, Dynegy is required to conduct monthly monitoring for DO in the effluent and for 12 receiving water stations throughout San Diego Bay. The DO data from the effluent will be compared to DO levels in the receiving water stations to determine the extent of impact of the thermal effluent from SBPP to DO levels in south San Diego Bay.

#### 5. FEDERAL REGULATIONS FOR STEAM ELECTRIC POWER GENERATION (40 CFR PART 423)

The federal regulations contain technological limits for steam electric power generation. These limits are found in 40 CFR Part 423. Effluent limitations exist for best practicable control technology currently available (BPT), best available technology economically achievable (BAT), and best conventional pollutant control technology (BCT). The Clean Water Act (CWA) requires compliance with all levels of technological limits. Order No. 96-05 applied the most stringent limits to the cooling water, low-volume, and metal cleaning wastes discharged to San Diego Bay. Order No. **2010-XXXX**-DWQ updates the effluent limitation from these processes, subject to 40 CFR 423, as follows:

The SBPP eliminated its low-volume and metal cleaning discharges to San Diego Bay, starting December 31, 1997. These wastes were routed to the City of Chula Vista sewer system from that date. Therefore, Order No. 2010-XXXX-DWQ does not include 40 CFR 423 pollutant effluent limitations applicable to the low-volume and metal cleaning discharges and associated in-plant waste streams.

##### Total Chlorine Residual in Cooling Water

Pursuant to 40 CFR 423.12, the BAT limit for total chlorine residual for once-through cooling water is 0.20 mg/l. Order No. 96-05 also has a water quality based limit for total chlorine residual in the discharge. This limit was developed on behalf of the discharger using data on the effects of chlorine on marine organism species and genera which occur in San Diego Bay using statistical regression techniques. Such analysis provides a scientifically sound means of relating chlorine toxicity to the concentration of chlorine and time of exposure. The federal BAT limit was compared to the water quality based limit and the lowest value was selected. Order No. 2010-XXXX-DWQ continues to use this approach in selecting the most stringent



total chlorine residual limit in the combined discharge. Order No. 2010-XXXX-DWQ, also uses the same approach for setting a receiving water limitation for total residual chlorine for south San Diego Bay and the SBPP discharge channel.

The following linear regression derived equation is used in determining the water quality based total chlorine residual limit in the combined discharge and receiving water:

$$\log y = (ax + b) - t_{0.90} S_y \cdot S_x \{1 + 1/n + (x - X)^2 / \Sigma(x_i - X)^2\}^{0.5}$$

Where:

y	=	residual chlorine limit (mg/l);
x	=	log (base 10) of the duration of uninterrupted chlorine/bromine discharges in minutes;
a	=	slope of linear regression line = -0.404;
b	=	intercept of linear regression line = 0.383;
$t_{0.90}$	=	“t” statistic (alpha = 0.10, n-2 degrees of freedom) = 1.685;
$S_y S_x$	=	standard deviation about regression line = 0.393;
n	=	number of toxicity measurements available for regression = 41;
X	=	mean log exposure time = 3.058; and
$\Sigma(x_i - X)^2$	=	sum of squares about X = 33.947

As shown in the above equation, the effluent limitation for total chlorine residual is not a fixed limitation. The limitation is a function of the duration of uninterrupted chlorine discharge in minutes. A longer discharge time would render a lower (i.e. more stringent) effluent limitation for total residual chlorine.

The maximum duration of uninterrupted chlorine discharge at the SBPP is 40 minutes (i.e. 20 minutes per unit). Based on the above equation, the total chlorine residual effluent limitation associated with the maximum chlorine discharge time when only one Unit is operating is 144 µg/l. The effluent limitation when two Units are operating is 111 µg/l.

## 6. BAYS AND ESTUARIES POLICY

The State Board adopted the *Water Quality Control Policy for Enclosed Bays and Estuaries of California (Bays and Estuaries Policy)* on May 16, 1974. The *Bays and Estuary Policy* establishes principles for management of water quality, quality requirements for waste discharges, discharge prohibitions, and general provisions to prevent water quality degradation and to protect the beneficial uses of waters of enclosed bays and estuaries. These principles, requirements, prohibitions, and provisions have been incorporated into this Order.

The Bays and Estuaries Policy contains the following principle for management of water quality in enclosed bays and estuaries, which includes San Diego Bay:

*The discharge of municipal wastewaters and industrial process waters (exclusive of cooling water discharges) to enclosed bays and estuaries shall be phased out at the earliest practicable date. Exceptions to this provision may be granted by a Regional*

*Board only when the Regional Board finds that the wastewater in question would consistently be treated and discharged in such a manner that it would enhance the quality of receiving waters above that which would occur in the absence of the discharge. For the purpose of this policy, treated ballast waters and innocuous nonmunicipal wastewater such as clear brines, washwater, and pool drains are not necessarily considered industrial process wastes, and may be allowed by Regional Boards under discharge requirements that provide protection to the beneficial uses of the receiving water.*

The Bays and Estuaries Policy also prohibits the discharge or by-passing of untreated wastes. This Order prohibits the discharge and by-passing of untreated waste except for non-contact cooling water.

The Bays and Estuaries Policy also contains the following principles for management of water quality in enclosed bays and estuaries, which includes San Diego Bay:

- a. Persistent or cumulative toxic substances shall be removed from the waste to the maximum extent practicable through source control or adequate treatment prior to discharge.
- b. Bay or estuarine outfall and diffuser systems shall be designed to achieve the most rapid initial dilution practicable to minimize concentrations of substances not removed by source control or treatment.
- c. Wastes shall not be discharged into or adjacent to areas where the protection of beneficial uses requires spatial separation from waste fields.
- d. Waste discharges shall not cause a blockage of zones of passage required for the migration of anadromous fish.
- e. Nonpoint sources of pollutants shall be controlled to the maximum extent practicable.

The terms and conditions of Order No. 2010-XXXX-DWQ are consistent with the above policies.

## 7. OCEAN PLAN

The SWRCB adopted a revised Water Quality Control Plan for Ocean Waters of California (2005 Ocean Plan) on April 21, 2005.

In order to protect the above beneficial uses, the Ocean Plan establishes water quality objectives (for bacteriological, physical, chemical, and biological characteristics, and for radioactivity), general requirements for management of waste discharged to the ocean, quality requirements for waste discharges (effluent quality requirements), discharge prohibitions, and general provisions. The Ocean Plan is not applicable to discharges to enclosed bays (including San Diego Bay), estuaries or inland waters.

Although the Ocean Plan is not applicable to enclosed bays such as San Diego Bay, the salinity and beneficial uses of San Diego Bay are similar to those of the ocean waters of the State. Since the *Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (Implementation Policy) had not been yet been adopted in 1996, Order No. 96-05 established discharge limitations for selected pollutants by utilizing the calculations and procedures found in the 1990 Ocean Plan. These discharge limitations were incorporated into Order No. 96-05 on an interim basis. The pollutants included: arsenic, cadmium, chromium (hexavalent), copper, lead, mercury, nickel, silver, zinc, cyanide, ammonia (as N), phenolic compounds (non-chlorinated) and chlorinated phenolics, bis(2-chloroethoxy) methane, bis(2-ethylhexyl) phthalate, chloroform, chromium (III), di-n-butyl phthalate, halomethanes, and PAHs. All discharges of these pollutants were attributed to the in-plant waste streams generated from low-volume wastes and metal cleaning operations. Order No. 96-05 authorized the elimination of these discharge limitations once all metal cleaning and low-volume wastes were routed to the City of Chula Vista sanitary sewer system effective December 31, 1997.

Order No. 96-05 continued to maintain final receiving water limitations for: arsenic, cadmium, chromium (hexavalent), copper, lead, mercury, nickel, silver, zinc, cyanide, total chlorine residual, ammonia (as N), acute toxicity, phenolic compounds (non-chlorinated) and chlorinated phenolics, and radioactivity, even after the cessation of metal cleaning and low-volume wastes to San Diego Bay. These receiving water limits were later deleted by Order No. R9-2004-0154. Order No. 2010-XXXX-DWQ requires receiving water limitations for only those parameters attributable to once-through cooling water discharges, such as acute toxicity and total residual chlorine.

**The Ocean Plan also contains technology based effluent limitations (TBELs) as shown in Table A of the Ocean Plan. Although the Ocean Plan Table A limits are not directly applicable to enclosed bays such as San Diego Bay, the effluent limitations also provide a level of treatment that, if implemented, will also ensure protection of beneficial uses of San Diego Bay.**

On March 2, 2000, the SWRCB adopted a *Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Policy or SIP)*. The SIP sets specific requirements and numerical limitations for metals and priority pollutant discharges to enclosed bays such as San Diego Bay, as required by the California Toxic Rule (CTR). Order No. 2010-XXXX-DWQ utilizes the SIP, rather than the Ocean Plan, for establishment of discharge and receiving water limitations for constituents that have been determined to have a reasonable potential to cause or contribute to an excursion above an applicable water quality objective (“RPA”). Copper is the only metal for which RP has been established. The incorporation of the provisions of the SIP into Order No. 2010-XXXX-DWQ is discussed in Section G (*California Toxics Rule Compliance*) of this Fact Sheet.

## 8. ANTIDEGRADATION POLICIES

Pursuant to 40 CFR § 131.12 and State Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California" (collectively referred as "antidegradation policies"), the Regional Board shall ensure that any increase in pollutant loading to a receiving water is consistent with antidegradation policies. Order No. 2010-XXXX-DWQ does not authorize any new discharges. Furthermore, effluent concentration and mass emission rate limitations in this Order are the same as those in Order No. R9-2004-0154. Therefore, the requirements of Order No. 2010-XXXX-DWQ are consistent with antidegradation policies.

## **G. CALIFORNIA TOXIC RULE (CTR) COMPLIANCE**

The U.S. EPA promulgated the final California Toxic Rule (CTR) on May 18, 2000, as required by Section 303(c)(2)(B) of the federal Clean Water Act. The CTR regulations, codified in 40 CFR 131, establish water quality standards for inland surface waters. The water quality criteria established in the CTR is legally applicable in the State of California for inland surface waters, and enclosed bays and estuaries for all purposes and programs under the Clean Water Act.

On March 2, 2000, the State Board, in Resolution No. 2000-15, adopted a *Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy, SIP). The SIP implements the provisions promulgated by the U.S. EPA in the CTR and establishes the following:

1. Implementation provisions for 126 priority pollutant criteria promulgated by the U.S. EPA through the National Toxic Rule (NTR) and the CTR, and for priority pollutant objectives established in the Basin Plan.
2. Monitoring requirements for 2,3,7,8-TCDD (tetrachlorodibenzo-p-dioxin) equivalents.
3. Chronic toxicity control provisions.

On May 4, 2001, Duke Energy submitted concentration data for the CTR priority pollutants contained in the intake and effluent cooling water from the South Bay Power Plant (SBPP), as part of its NPDES permit renewal application. This data was submitted pursuant to Section 1.2 of the Implementation Policy. The data for all priority pollutants except dioxins, polychlorinated biphenyls (PCBs), and pesticides, was based on effluent and intake sampling conducted on December 12 and 13, 2000. Supplemental data for dioxins, PCBs, and pesticides was submitted in August 2001, based on sampling conducted on June 27 and 28, 2001. All priority pollutants except arsenic, selenium, copper, nickel, chromium (total), lead, and silver were found to be in non-detectable levels in both effluent and intake.

Pursuant to Section 1.3 of the SIP, a reasonable potential analysis (RPA) of data is required to determine which priority pollutants would require effluent limitations. Duke Energy indicated in its NPDES renewal application (EPA Form 2C introduction) that it is likely that choppy water conditions and runoff from various storm drain channels, during sampling conducted on December 12 and 13, 2000, caused the bottom of the discharge channel to be

disturbed and contribute to unusually high results for metals such as copper and nickel. Duke Energy also indicated that historical sampling for these metals has revealed much lower or non-detectable results. Based on this assertion by Duke, the results for the copper and nickel sampled on December 12 and 13, 2000 were considered inadequate in conducting a complete and conclusive RPA.

An RPA for all pollutants, except copper, nickel, and chromium (hexavalent) and chromium (trivalent), was conducted using the SWRCB's California Permit Writer and Training Tool (CPWTT) computer model. Based on the results of this analysis (see Attachment 6) in conjunction with the use of Best Professional Judgement (BPJ), staff concluded that effluent limitation will not be required for any of the applicable metals, volatiles, semi-volatiles, pesticides, polychlorinated biphenyls (PCBs), and 2,3,7,8-TCDD (dioxin), listed in the CTR. Since the data submitted by Duke Energy for copper and nickel was found to be inadequate in conducting an RPA, additional sampling for these pollutants was required. Additional monitoring was also required for chromium (hexavalent and total), since results were only submitted for chromium (total).

Pursuant to Section 13267 of the Clean Water Code (CWC) and in accordance with Section 2.2.2 (Interim Requirements for Providing Data) of the SIP, the Executive Officer issued a letter to Duke Energy on February 28, 2003 directing it to conduct additional discharge, intake, and background CTR monitoring at the SBPP for copper, nickel, chromium (hexavalent and total) and 17 chlorinated dibenzodioxins and chlorinated dibenzofurans congeners.

Pursuant to the Section 13267 letter, Duke Energy conducted 24-hour composite intake and discharge sampling for copper and nickel over a two-week period in April 2003. Monthly grab sampling for copper and nickel was also conducted during April, May, and June of 2003 at 12 receiving water stations dispersed around San Diego Bay. A total of 51 ambient and 15 discharge and intake samples for copper and nickel were collected. As required by the Section 13267 letter, Duke Energy also conducted one-time intake and discharge sampling for total and hexavalent chromium in April 2003. Duke Energy submitted the additional CTR monitoring data for copper, nickel, and chromium (hexavalent and total) on July 22, 2003.

An RPA was conducted for copper and chromium (hexavalent and total) using the CPWTT model. An RPA was not needed for nickel since the concentrations of nickel in the discharge, intake, and ambient samples were all found to be in non-detectable levels. The RPA indicated that copper in cooling water discharges from the SBPP has a reasonable potential to cause or contribute to the exceedance of the CTR water quality criteria of 3.1 µg/l (dissolved) and is therefore subject to effluent limitations (see Attachment 6).

The SIP requires that discharge effluent limitations for copper be specified as total recoverable concentrations. The SIP (p. 12, Section 1.4.1, *Translators for Metals and Selenium*) specifies the use of a conversion factor to adjust a criterion expressed as a dissolved form to a total recoverable form. The CTR specifies the use of a default conversion factor of 0.83 for saltwater (in the absence of a site-specific translator for copper in south San Diego Bay). To calculate the total recoverable concentration the dissolved criterion is divide by the conversion factor.

Dissolved concentration criterion/0.83 = Total recoverable concentration.

Based on the algorithms contained in Section 1.4 (Calculation of Effluent Limitations) of the SIP and a default conversion factor for copper of 0.83, the CPWTT model calculated the Maximum Daily Emission Limit (MDEL) and Average Monthly Emission Limit (AMEL) for total recoverable copper concentrations. The calculated MDEL value of 4.44 µg/l and AMEL value of 3.53 µg/l for total recoverable copper are specified in Order No. 2010-XXXX-DWQ (see Attachment 6 for sample calculations). Monitoring data collected over the last three years demonstrates that the plant complies with the effluent limitations for copper. **However, there are times when the intake water exceeds the water quality objective and for those instances an effluent limitation considering intake water credits and allowing a conservative 20 percent increment due to sample and analysis variability is appropriate.**

## **H. MONITORING AND REPORTING REQUIREMENTS**

In an effort to standardize the monitoring and reporting requirements and to support the electronic data submittal of the discharger's self-monitoring reports, the reporting units, definitions, and deadlines specified in the MRP for Order No. 2010-XXXX-DWQ have been written in accordance with the State Water Resource Control Board's *Water Quality Permit Standards Team Final Report*.

Monitoring frequency and constituent analysis for the discharge is comparable or more stringent than Order No. R9-2004-0154 and other power plant permits. Constituents monitored in effluent samples are derived from *Development Document for Effluent Limitations Guidelines and Standards and Pretreatment Standards for the Steam Electric Point Source Category, EPA-440/1-82/029*. This document contains extensive data on the frequency at which certain chemicals were detected in power plant waste streams. This information, an assessment of the plant's self-monitoring reports, and best professional judgment were used to determine the monitoring requirements.

Order No. 96-05 requires total chlorine residual in the effluent to be monitored twice a month. Although monitoring data from prior years of sampling did not indicate any violations in the total chlorine residual discharge limitation, the Monitoring and Reporting Program (MRP) was found to be insufficient due to the intermittent nature of chlorination cycles (i.e. 6 cycles per day, 20 minutes per Unit per cycle). The MRP No. 2010-XXXX-DWQ has, therefore, increased the monitoring frequency for total residual chlorine to weekly. The MRP will also require the discharger to conduct total chlorine residual monitoring between noon and 6:00 p.m. This time period will enable monitoring to be conducted when the power plant is operating at peak load conditions. The discharger will also be required to specify the number of Units that were operating (and total cycle time) when total chlorine residual monitoring was conducted. Furthermore, the MRP also requires the discharger to maintain and provide logs on the daily amounts of chlorine injected into the system and the duration of the injections.

Although Order No. 96-05 has a receiving water limitation for total residual chlorine (see Section F.5 of Fact Sheet), it does not require any receiving water monitoring. MRP No. R9-

2004-0154 required Duke Energy to start monitoring for receiving water levels of total residual chlorine monitoring at two stations in the SBPP discharge channel, that are closest to the property line. Since chlorine dissipates very quickly as the cooling water from the SBPP travels further away from the property line, the two stations closest to the property line will exhibit the highest levels of total residual chlorine in the receiving water. Intake water monitoring for total chlorine residual has also been included in the MRP.

Order No. 96-05 required bioassay tests for acute and chronic toxicity in the effluent and intake to be conducted on a quarterly basis. Although monitoring data for the last two years has not indicated any violations in effluent limitations, the quarterly tests may be inadequate in assessing possible seasonal variations in discharge water toxicity. MRP No. R9-2004-0154 has therefore increased the monitoring frequency for acute and chronic toxicity from a quarterly to monthly basis.

Order No. 96-05 does not require dissolved oxygen (DO) to be monitored in the discharge. Order No. 96-05 only required DO to be monitored for 12 receiving water stations around the vicinity of the plant. Although there is currently no discharge limit for DO, MRP No. R9-2009-0154 requires a monthly DO monitoring requirement for discharges from the SBPP. The DO data from the discharge, at station S2 (i.e. property line), will be compared to DO levels in the receiving water stations to determine the real extent of impact of the thermal effluent from SBPP to DO levels in south San Diego Bay.

The effluent monitoring requirements in MRP No. 2010-XXXX-DWQ for other constituents with limitations, including flow, temperature, and pH are the same or more stringent than those contained in Order No. 96-05 and R9-2004-0154. Flow and temperature will be monitored continuously and pH will be monitored on a monthly basis. Monitoring will be required concurrently for intake and discharge for temperature, DO, pH, total chlorine residual, copper, and acute and chronic toxicity.

Monitoring of metals and other priority pollutants will be conducted in accordance with the SWRCB's SIP, as discussed in Section 9 (CTR Compliance) of this Fact Sheet.

Pursuant to Section B of MRP No. 96-05, the discharger was required to annually measure bar rack approach velocity and sediment accumulation at the intake structure and submit an annual summary describing any operational difficulties at the intake structure or the bar rack. Order No. 96-05 indicated that this monitoring requirement may be deleted if the discharger demonstrates to the satisfaction of the Regional Board that no substantive changes in bar rack approach velocity and sediment accumulation have occurred since monitoring was initiated and the likelihood of future changes is remote.

Bar rack approach velocity and sediment accumulation data for 1996 to 1999 were evaluated for significant changes over the four-year period using regression analysis. Three out of the four intake structures showed no significant changes in sediment accumulation or approach velocity for the four-year period. One structure showed a decreasing trend in accumulation and approach velocity. Based on these results the bar rack approach velocity and sediment accumulation monitoring requirements were not included in MRP No. R9-2004-0154 and therefore are not included in Order No. 2010-XXXX-DWQ.

The receiving water monitoring requirements in MRP No. 2010-XXXX-DWQ includes monitoring for temperature, salinity, DO, and transparency monitoring, on a monthly basis, at 12 stations dispersed throughout San Diego Bay. This is consistent with the receiving water monitoring requirements of Order No. 96-05. MRP No. 2010-XXXX-DWQ requires no additional monthly receiving water monitoring for copper and other selected CTR metals including cadmium, lead, mercury, arsenic, chromium, silver, and zinc.

#### **I. NPDES RATING AND FEES**

Pursuant to the *NPDES Permit Rating Worksheet*, the discharge from the SBPP site was found to have a point score of 600. Pursuant to U.S. EPA guidance, facilities with a point score greater than 80 are designated as NPDES *Major* dischargers. The SBPP has been classified as an NPDES *Major* discharger.

Pursuant to *Title 23, Section 2200* of the California Code of Regulations, the discharger has been identified as having a *Threat to Water Quality and Complexity (TTWQ/CPLX)* rating of 1/A. Furthermore, pursuant to *Subdivision (b)(6) of Section 2200*, the discharger will be subject to an annual fee that will be determined by the State Water Board.

#### **J. EFFECTIVE AND EXPIRATION DATES OF ORDER NO. 2010-XXXX-DWQ**

Order No. **2010-XXXX**-DWQ becomes effective on the date of its adoption by the Regional Administrator or State Water Board, provided the USEPA has no objection. If the Regional Administrator objects to its issuance, this Order shall not become effective until such objection is withdrawn.

**The term of this Order is consistent with the OTC Policy. The permit is being issued for a period of one year only. A new discharge prohibition has been added to the permit which provides that all cooling water discharges shall cease on December 31, 2011.**

#### **K. WRITTEN COMMENTS**

Interested persons are invited to submit written comments upon these draft waste discharge requirements. Comments should be submitted either in person or by mail, during business hours, to:

Philip Isorena  
Chief, NPDES Unit  
(916) 341-5544  
1001 I Street, 15<sup>th</sup> Floor  
Sacramento, CA 95814

David Gibson, Executive Officer  
Regional Water Quality Control Board, Region 9



9174 Sky Park Court, Suite 100  
San Diego, California 92123  
Attn: Industrial Compliance Unit

Written comments regarding tentative Order No. 2010-XXXX-DWQ must be submitted no later than 12:00 **noon on October 18, 2010**. Oral comments will be received during the hearing on November 17, 2010.

#### **L. PUBLIC HEARING**

In accordance with 40 CFR 124.10, the RWQCB must issue a public notice whenever NPDES permits have been prepared, and that the tentative permits will be brought before the RWQCB at a public hearing. The public notice has been **published in The San Diego Transcript newspaper no less than 30 days** prior to the scheduled public hearing.

Dynegy, and all known interested persons and parties were notified directly by mail at least 30 days prior to the meeting.

The State Water Board will hear oral testimony and consider written comments associated with tentative Order No. **2010-XXXX**-DWQ, at a public hearing beginning at 9:00 am on November 17, 2010. The location of this meeting is as follows:

Regional Water Quality Control Board  
Regional Board Meeting Room  
9174 Sky Park Court, Suite 100  
San Diego, California 92123

The written comment period regarding the tentative Order will end on **12:00 noon October 18, 2010**.

#### **M. ADDITIONAL INFORMATION**

For additional information, interested persons may contact the following staff:

**Mr. Renan Jauregui of the State Water Board staff at (916) 341-5505 or by email at [rjauregui@waterboards.ca.gov](mailto:rjauregui@waterboards.ca.gov) or**

**Mr. Brian Kelley of the Regional Board staff at (858) 467-4254 or by email at [bkelly@waterboards.com](mailto:bkelly@waterboards.com).**

Copies of the applications, tentative NPDES waste discharge requirements, and other documents (other than those that the Executive Officer maintains as confidential) are available at the San Diego Water Board office for inspection and copying according to the following schedule (excluding holidays):

Monday and Thursday: 1:30 pm to 4:30 pm

Dynegy South Bay, LLC  
South Bay Power Plant

Fact Sheet Order No. 2010-XXXX-DWQ  
NPDES Permit No. CA0001368

Tuesday and Wednesday:	8:30 am to 11:30 am 1:30 pm to 4:30 pm
Friday:	8:30 am to 11:30 am

An electronic copy of the Fact Sheet and tentative Order can be accessed on the State Water Board's website: [http://www.waterboards.ca.gov/water\\_issues/programs/npdes/cwa316.shtml](http://www.waterboards.ca.gov/water_issues/programs/npdes/cwa316.shtml)

## **N. REFERENCES FOR WASTE DISCHARGE REQUIREMENTS**

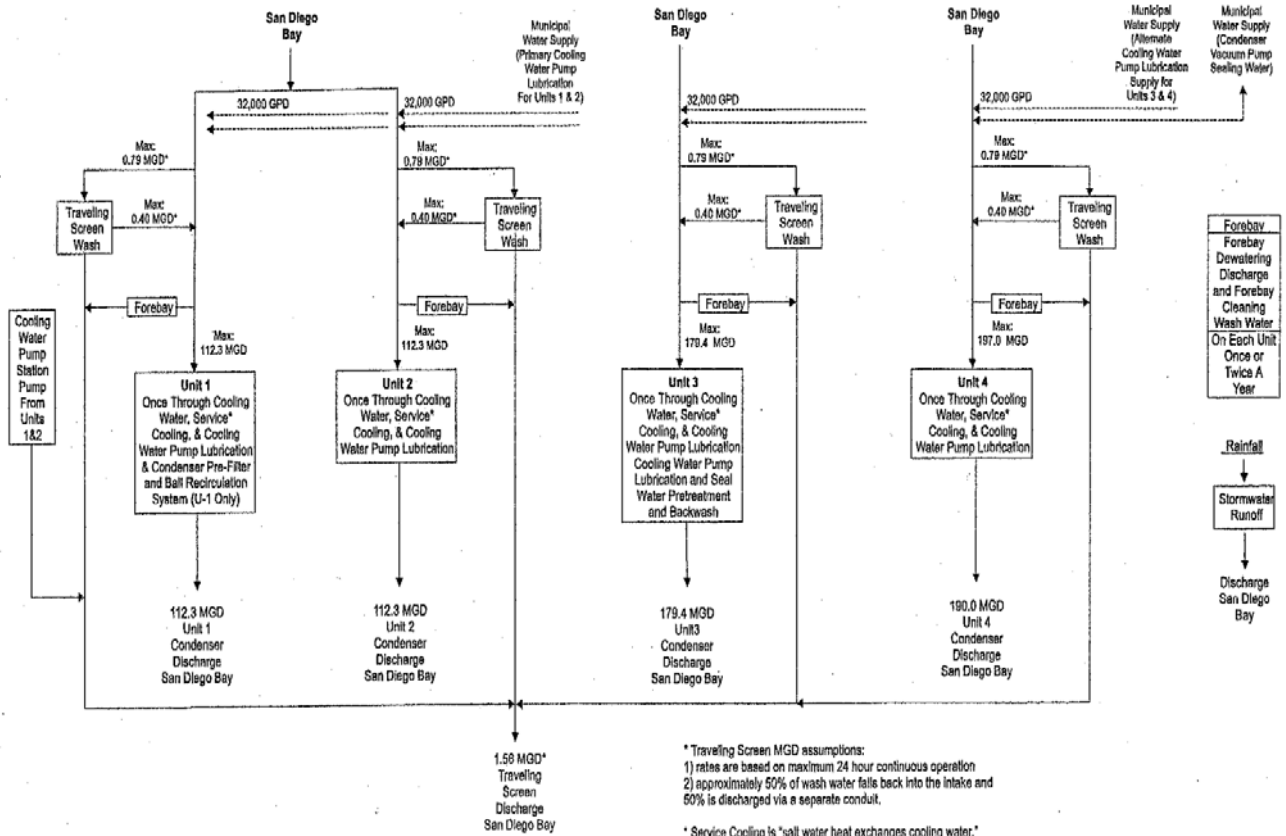
The following documents provide the necessary references for the basis of this NPDES permit:

1. *State Water Quality Control Plan for Control of Temperature in Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan).
2. Order No. 96-05, Waste Discharge Requirements for San Diego Gas and Electric Company, South Bay Power Plant, San Diego County.
3. The Water Quality Control Plan for the San Diego Basin (9) (Basin Plan), 1994.
4. Water Quality Control Plan, Ocean Waters of California, California Ocean Plan (Ocean Plan), 2005.
5. The Code of Federal Regulations Part 40, Section 122, 136, and 423.
6. The Clean Water Act; Sections 208, 301, 302, 303, 304, 306, 307, 402, 403, and 405.
7. The California Code of Regulations, Title 23, Division 3 and 4.
8. Application for the Renewal of the NPDES Permit for the Dynegy, LLC, South Bay Power Plant, June 16, 2010.
9. *SWRCB Policy for Implementation of Toxic Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (Implementation Policy, 2000)
10. California Toxics Rule, Federal Register Section 31682-31719, 40 CFR 131.38, May 18, 2000.
11. *Thermal Distribution and Biological Studies for the South Bay Power Plant*, Ford and Chambers, May 1973.
12. *SBPP Cooling Water System Effects on San Diego Bay, Volume 1: Compliance with Section 316(a) of the Clean Water Act for the South Bay Power Plant*, Tenera Environmental and Merkel & Associates, 2004.
13. *SBPP Cooling Water System Effects on San Diego Bay, Volume II: Compliance with Section 316(b) of the Clean Water Act for the South Bay Power Plant*, Tenera Environmental and Merkel & Associates, 2004.

ATTACHMENT 1

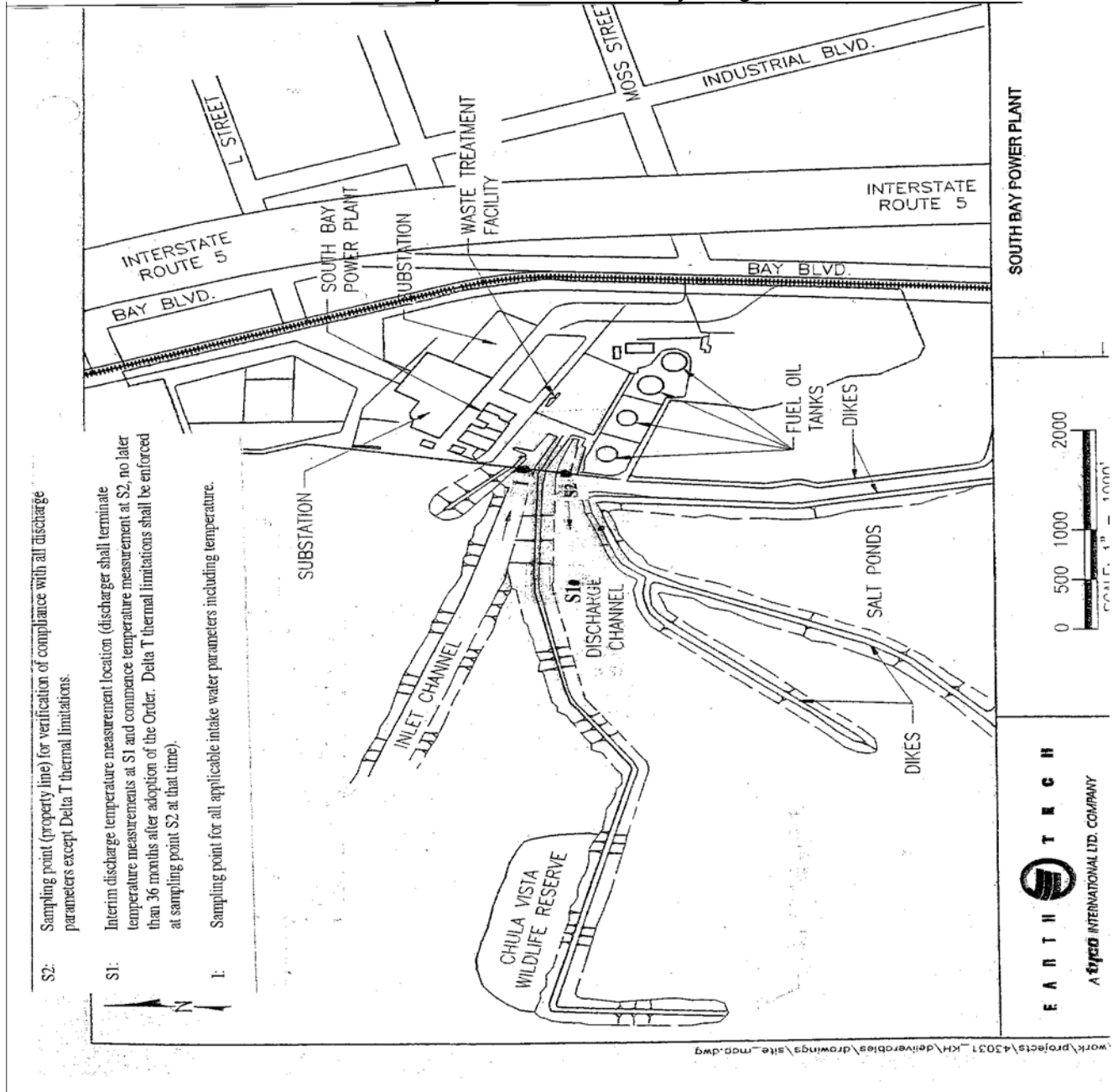
Once-through Cooling Water System Components and Associated Waste Streams

**South Bay Power Plant  
 (NPDES Permit No. CA0001368)**



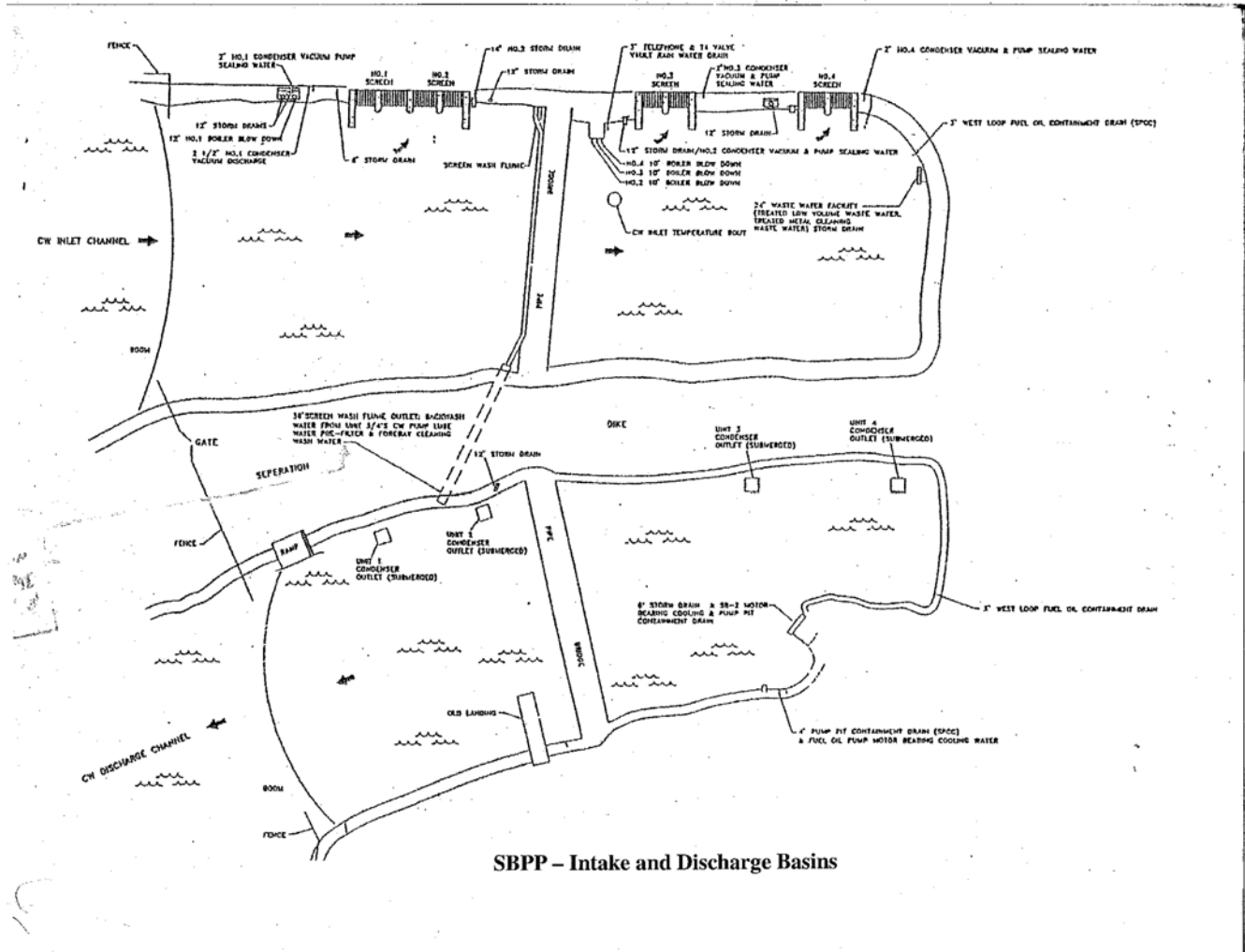
ATTACHMENT 2

South Bay Power Plant Facility Diagram



ATTACHMENT 3

South Bay Power Plant Intake and Discharge Basins



### ATTACHMENT 4

### Discharge Channel of the South Bay Power Plant



ATTACHMENT 5A

South San Diego Bay National Wildlife Refuge  
Boundary





ATTACHMENT 5B  
USFWS Letter to Discharger Regarding the  
South San Diego Bay National Wildlife Refuge

HN



IN REPLY REFER TO:

United States Department of the Interior

FISH AND WILDLIFE SERVICE  
911 N.E. 11th Avenue  
Portland, Oregon 97232-4181

May 5, 1998

Ms. Kathryn Frost  
Division Manager  
Administrative Services  
San Diego Gas & Electric Company  
101 Ash Street  
San Diego, CA 92101

RE: SOUTH BAY GENERATING STATION

Dear Ms. Frost:

Thank you for meeting with Dean Rundle, Refuge Manager for the San Diego National Wildlife Refuge Complex, on April 27, 1998 regarding the U.S. Fish and Wildlife Service's (Service) proposal for the South San Diego Bay Unit of the San Diego National Wildlife Refuge.

Mr. Rundle relayed to me San Diego Gas & Electric Company's (SDG&E) concerns about the potential impact of the proposed South San Diego Bay Unit on SDG&E's South Bay Generating Station. I understand that the plant is a "must-run" facility that is needed to ensure system reliability pursuant to a directive from the California Independent System Operator. As such, your concern lies in the perception that once approved and established, the proposed Refuge might affect the ability of SDG&E or a successor to operate the power plant in the future.

I want to assure you that the proposed Refuge would have no negative effect on the ability of SDG&E to operate and maintain its South Bay Generating Station now or in the future. The existing use of San Diego Bay water for cooling and the maintenance dredging of the existing intake and discharge channels would not be affected by the proposed Refuge.

Please note the following:

- The selection and approval of the proposed Refuge acquisition boundary, as described in the January 1998 draft environmental assessment, would not establish or create the South San Diego Bay Unit. The approved acquisition boundary would only provide the Service with the authority to acquire land for the Refuge from landowners that are willing sellers.


2000 SEP -9 P 1:58  
SAN DIEGO COUNTY  
WATER QUALITY  
CONTROL BOARD

- The South San Diego Bay Unit would be established once land is acquired by the Service. No new or additional regulatory or land use controls are created on lands that are within the approved Refuge acquisition boundary or on lands that are adjacent to an established National Wildlife Refuge.
- Approving the acquisition boundary would not obligate the Port of San Diego to enter into any agreements with the Service that could extinguish easements or other leaseholds currently possessed by SDG&E. Any land acquired by the Service would be subject to existing easements and leaseholds.
- Once the Refuge is established, Refuge management plans would be prepared in a public process involving landowners, local jurisdictions, community groups, user groups, and citizens. We would welcome the participation of SDG&E in the Refuge management planning process.

The South Bay Generating Station, including its appurtenant support facilities such as the intake and discharge channels and the dike separating the two channels, would not be impacted by the proposed South San Diego Bay Unit. Those existing uses and facilities would continue to operate within the Refuge under the jurisdiction and authority of the primary trustee of State of California tidelands and existing regulations.

I hope this letter addresses your concerns regarding the potential impact of the proposed South San Diego Bay Unit on the operation of the South Bay Generating Plant. If you have any questions, please call me at 503/231-6118 or Dean Rundle at 760/930-0168.

Sincerely,



Michael J. Spear  
Regional Director

ATTACHMENT 6

California Toxics Rule - Priority Pollutants

- a. Reasonable Potential Analysis Results
- b. Summary of Effluent Limitations Calculations for Copper (total recoverable)

Carbon Tetrachloride	4.4	ND	ND	BPJ
Chlordane	0.00059	ND	ND	BPJ
Chlorobenzene	21000	ND	ND	BPJ
Chlorodibromomethane	34	ND	ND	BPJ
Chloroethane	None	ND	ND	NO Criteria
Chloroform	None	ND	ND	NO Criteria
Chromium-III (Cr-III)	None	1.7	1.2	NO Criteria
Chromium-VI (Cr-VI)	50	ND	ND	BPJ
Chrysene	0.049	ND	ND	BPJ
<b>Copper (Cu)</b>	<b>3.1</b>	<b>4.37</b>	<b>35.2</b>	<b>YES</b>
Cyanide (CN)	1	ND	ND	BPJ
delta-BHC	None	ND	ND	NO Criteria
Di-n-Butyl Phthalate	12000	ND	ND	BPJ
Di-n-Octyl Phthalate	None	ND	ND	NO Criteria
Dibenzo (a,h) Anthracene	0.049	ND	ND	BPJ
Dichlorobromomethane	46	ND	ND	BPJ
Dieldrin	0.00014	ND	ND	BPJ
Diethyl Phthalate	120000	ND	ND	BPJ
Dimethyl Phthalate	None	ND	ND	NO Criteria
Endosulfan Sulfate	240	ND	ND	BPJ
Endrin	0.0023	ND	ND	BPJ
Endrin Aldehyde	0.81	ND	ND	BPJ
Ethylbenzene	29000	ND	ND	BPJ
Fluoranthene	370	ND	ND	BPJ
Fluorene	14000	ND	ND	BPJ
gamma-BHC	0.063	ND	ND	BPJ
Heptachlor	0.00021	ND	ND	BPJ
Heptachlor Epoxide	0.00011	ND	ND	BPJ
Hexachlorobenzene	0.00077	ND	ND	BPJ
Hexachlorobutadiene	50	ND	ND	BPJ
Hexachlorocyclopentadiene	17000	ND	ND	BPJ
Hexachloroethane	8.9	ND	ND	BPJ
Indeno (1,2,3-cd) Pyrene	0.049	ND	ND	BPJ
Isophorone	600	ND	ND	BPJ
Lead (Pb)	8.1	1.25	1.02	BPJ
Mercury (Hg)	0.051	ND	ND	BPJ
Methyl Bromide	4000	ND	ND	BPJ
Methyl Chloride	None	ND	ND	NO Criteria
Methylene Chloride	1600	ND	ND	BPJ
N-Nitrosodi-n-Propylamine	1.4	ND	ND	BPJ
N-Nitrosodimethylamine	8.1	ND	ND	BPJ
N-Nitrosodiphenylamine	16	ND	ND	BPJ
Napthalene	None	ND	ND	NO Criteria
Nickel (Ni)	8.2	2.8	2.8	BPJ
Nitrobenzene	1900	ND	ND	BPJ
PCBs	0.00017	ND	ND	BPJ
Pentachlorophenol	7.9	ND	ND	BPJ
Phenanthrene	None	ND	ND	NO Criteria
Phenol	None	ND	ND	NO Criteria
Pyrene	11000	ND	ND	BPJ
Selenium (Se)	71	7.65	8.02	BPJ
Silver (Ag)	1.9	1.48	1.54	BPJ
TCDD	1.4E-08	ND	ND	BPJ
Tetrachloroethylene	8.85	ND	ND	BPJ
Thallium (Tl)	6.3	ND	ND	BPJ
Toluene	200000	ND	ND	BPJ
Toxaphene	0.0002	ND	ND	BPJ
Trichloroethylene	81	ND	ND	BPJ
Vinyl Chloride	525	ND	ND	BPJ
Zinc (Zn)	81	ND	ND	BPJ

\*BPJ = Best Professional Judgement (may be used to establish RP)

b. COPPER EFFLUENT LIMITATIONS CALCULATIONS:

Summary of calculations for copper (total recoverable) effluent limitations to comply with the *California Toxics Rule* (pursuant to equations contained in the *State Implementation Policy*, SIP, and ambient and discharge data for copper, based on CTR monitoring conducted at SBPP in March 2003):

Reasonable Potential Analysis

Per Section 1.3 (*Determination of Priority Pollutants Requiring Water Quality-Based Effluent Limitations*) of the SIP, effluent limitations for copper from the SBPP discharge are required, since both the maximum observed background ( $B = 35.2 \mu\text{g/l}$ ) and effluent ( $\text{MEC} = 4.37 \mu\text{g/l}$ ) exceed the most stringent total recoverable water quality criteria for copper in seawater ( $C = 3.73 \mu\text{g/l}$ ).

Effluent concentration allowance (ECA)

Per Section 1.4, page 6 of the SIP, the ECA is set to the criteria since  $C \leq B$ .

$\text{ECA}_{\text{acute}} = 5.783 \mu\text{g/l}$  ( $4.8 \mu\text{g/l}$  dissolved acute criteria converted to total recoverable using EPA default conversion factor of 0.83 for seawater)

$\text{ECA}_{\text{chronic}} = 3.73 \mu\text{g/l}$  ( $3.1 \mu\text{g/l}$  dissolved chronic criteria converted to total recoverable using EPA default conversion factor of 0.83 for seawater per Appendix 3 of SIP)

ECA multipliers (see page 6 and 7 (Table 1))

CV = coefficient of variation =  $\sigma/\text{mean} = 0.16$  ( $\sigma$  is 0.52 and mean for 15 data points is  $3.30 \mu\text{g/l}$ )

$\text{ECA}_{\text{acute multiplier99}} = 0.7$  (Interpolating data in Table 1 for a CV of 0.16)

$\text{ECA}_{\text{chronic multiplier99}} = 0.833$  (Interpolating data in Table 1 for a CV of 0.16)

Long Term Averages (see page 8)

$\text{LTA}_{\text{acute}} = \text{ECA}_{\text{acute}} \times \text{ECA}_{\text{acute multiplier99}} = 5.783 \times 0.7 = 4.04 \mu\text{g/l}$

$\text{LTA}_{\text{chronic}} = \text{ECA}_{\text{chronic}} \times \text{ECA}_{\text{chronic multiplier99}} = 3.73 \times 0.833 = 3.11 \mu\text{g/l} \Rightarrow$  most stringent

AMEL and MDEL Multipliers (see page 8 and 9 (Table 2))

$\text{AMEL}_{\text{multiplier95}} = 1.137$  (Interpolating data in Table 2 for a CV of 0.16, and  $n = 4$  (i.e. minimum default sampling frequency))

$\text{MDEL}_{\text{multiplier99}} = 1.428$  (Interpolating data in Table 2 for a CV of 0.16)

$\text{AMEL}_{\text{aquatic life}} = \text{AMEL}_{\text{multiplier95}} \times \text{LTA}_{\text{most stringent}} = 1.137 \times 3.11 = 3.53 \mu\text{g/l}$

$\text{MDEL}_{\text{aquatic life}} = \text{MDEL}_{\text{multiplier99}} \times \text{LTA}_{\text{most stringent}} = 1.428 \times 3.11 = 4.44 \mu\text{g/l}$