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

NPDES NOS. CA0108073 and CA0108181
ORDER NOS. R9-2005-0005 and R9-2005-0006

SOUTHERN CALIFORNIA EDISON
SAN ONOFRE NUCLEAR GENERATING STATION
UNITS 2 AND 3

TABLE OF CONTENTS
ATTACHMENT E - FACT SHEET

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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
REGION 9, SAN DIEGO REGION
9174 Sky Park Court, San Diego, CA 92123-4340

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM PERMIT
NPDES NOS. CA0108073 and CA0108181
ORDER NOS. R9-2005-0005 and R9-2005-0006

INTRODUCTION:

This Fact Sheet includes the specific legal requirements and detailed rationale that serve as the basis for the requirements of Order Nos. R9-2005-0005 and R9-2005-0006.

San Onofre Nuclear Generating Station (SONGS) is a nuclear-fueled electrical power generating facility located in San Diego County immediately adjacent to the Pacific Ocean, approximately two and one-half miles southeast of San Mateo Point, within the boundaries of the United States Marine Corps Base, Camp Pendleton. SONGS is located in Section 24, T9S, R7W, SBBM, approximately two and one-half miles southeast of the City of San Clemente and approximately 12 miles northwest of the City of Oceanside. The two currently operational Units (Units 2 and 3) are owned by Southern California Edison (SCE), San Diego Gas and Electric Company (SDG&E) and the Cities of Anaheim and Riverside. However, SCE is solely responsible for the operation of SONGS Units 2 and 3. Consequently these permits are issued to SCE, pursuant to the United States Environmental Protection Agency (USEPA) Consolidated Permit Regulations, 40 CFR Part 122.4(b). Unit 1, located adjacent to Units 2 and 3, is no longer operational. Unit 1, like Units 2 and 3, was a nuclear-fueled electrical power generating facility. Unit 1 began commercial operation in 1968 and terminated power generation in November of 1992. SCE began formal decommissioning of the plant in September 1999.

Unit 2 has an electrical output of 1087 MW and began operation in 1983. Unit 3 is virtually identical to Unit 2; it too has an electrical output of 1087 MW and began operation on April 1, 1984. However, the two Units do have separate discharge conduits. A series of large pumps pass 1,219 MGD seawater through the condenser of each plant. Upon passage through the condenser, the temperature of seawater increases approximately 20ºF. During this circuit, a number of in-plant waste streams are co-mingled with the cooling water flow. These include wastewaters from the following operations/processes:

- Blowdown Processing
- Makeup Demineralizer
- Radwaste System
- Polishing Demineralizer System
- Steam Generator Blowdown
- Hotwell Overboard
- Plant Drains
- Intake Structure Sump
- Concrete Cutting Water

However, many of the low volume waste discharges are periodic and only occur during unusual conditions such as maintenance outages. SCE has indicated that it is no longer contemplating construction of a thermophilic digester which was originally proposed during the 1990s. Waste

discharge and monitoring requirements (previously included in Order Nos. 99-47 and 99-49) regarding a thermophilic digester have not been included in Order Nos. R9-2005-0005 and R9-2005-0006.

The effluent from Units 2 and 3 is discharged to the Pacific Ocean via individual ocean outfalls (i.e. Outfalls 002 and 003). The point of discharge from Unit 2 is latitude 33° 20' 55.84" North, longitude 117° 34' 13.5" West. The point of discharge from Unit 3 is latitude 33° 21' 11.74" North, longitude 117° 33' 51.61" West. Effluent from both Units consists primarily of once-through cooling water, with small volumes of other waste streams. The outfalls use extensive diffuser structures several thousand feet in length, thereby maximizing mixing upon release to the ocean. The maximum cooling water flow rate of each Unit is approximately 1,287 million gallons per day (MGD). Discharges from the SONGS Units 2 and 3 fish return system for the cooling water intake structure and across-the beach discharges are also regulated by these permits.

Although Unit 1 is currently being decommissioned and does not generate electricity, up to 37 MGD of seawater is utilized at Unit 1 to remove waste heat from the spent fuel pool and to dilute various low-volume waste streams still generated by the plant. SCE also operates a domestic wastewater treatment plant inside the Unit 1 premises. Up to 0.1 mgd of secondarily treated effluent is discharged from the treatment plant. The combined effluent from Unit 1 is currently discharged via an ocean outfall (i.e. Outfall 001) to the Pacific Ocean at latitude 33° 21' 49" North, longitude 117° 33' 45" West.

SONGS Unit 1 is subject to waste discharge requirements established by Order No. 2000-04 (NPDES Permit No. CA0001228, adopted on February 16, 2000), which was preceded by Order No. 95-02 (adopted on February 9, 1995) and Order No. 88-001 (adopted on February 8, 1988). Order No. 2000-04 will expire on February 16, 2005. Currently SCE is permitted to discharge the effluent from Unit 1 to Outfall 001 or route the effluent to Outfalls 002 or 003. SCE has indicated that it plans to terminate the use of the Outfall 001 sometime in 2005. At that time all effluent from Unit 1 will be routed exclusively to Outfalls 002 or 003. The Regional Board has determined that it would be appropriate not to renew the NPDES permit for Unit 1 when it expires on February 2005. Order No. 2000-04 will instead continue to be enforced administratively until such time that the Discharger notifies the Regional Board that it has terminated the use of Outfall 001. The Regional Board will consider rescinding Order No. 2000-04 at that time.

SONGS Unit 2 is currently subject to waste discharge requirements established by Order No. 99-47 (NPDES Permit No. CA0108073, adopted on August 11, 1999), which was preceded by Order No. 94-49 (adopted on August 11, 1994) and Order No. 85-11 (adopted March 4, 1985).

SONGS Unit 3 is currently subject to waste discharge requirements established by Order No. 99-48 (NPDES Permit No. CA0108181, adopted on August 11, 1999), which was preceded by Order No. 94-50 (adopted on August 11, 1994) and Order No. 85-12 (adopted March 4, 1985).

The existing Orders (Nos. 99-47 and 99-48) for Units 2 and 3 expired on August 11, 2004. Pursuant to 40 CFR Part 122.46, Order Nos. R9-2005-0005 and R9-2005-0006, if adopted, will renew the NPDES permits for Units 2 and 3 for another five years and update the waste discharge requirements. Pursuant to 40 CFR 122.6, Order Nos. 99-47 and 99-48 will continue to be administratively enforced until the Regional Board adopts Order Nos. R9-2005-0005 and R9-2005-0006.

On February 17, 2004, the Regional Board received an NPDES Permit Renewal Application from the Discharger for SONGS Units 2 and 3. In response to a letter of March 1, 2004 from the Regional Board requesting clarifications and/or additional information, the Discharger provided supplemental application renewal information that was received by the Regional Board on March 30, 2004. And, in response to a letter of April 22, 2004 requesting further clarifications and/or additional information, the Discharger provided supplemental information, received by the Regional Board on June 8, 2004, to complete the NPDES permit renewal application for SONGS Units 2 and 3. A site visit was conducted on March 30, 2004 to observe operations and collect additional data to develop permit limits and conditions.

Order Nos. R9-2005-0005 and R9-2005-0006 acknowledge the impending termination of flows from Unit 1 to Outfall 001 and the routing of flows from Unit 1 to Outfalls 002 or 003. Both Orders are structured to account for effluent limitations and monitoring requirements as a result of the potential routing of Unit 1 flows to Outfalls 002 or 003.

I. FACILITY DESCRIPTION

A. Cooling Water Intake Structures

UNITS 1, 2, AND 3

Cooling water for SONGS Unit 2 is withdrawn 3,183 feet offshore from the Pacific Ocean via a submerged intake structure at a depth of approximately 32 feet. Cooling water for SONGS Unit 3 is also withdrawn 3,183 feet offshore from the Pacific Ocean via a submerged intake structure at a depth of approximately 32 feet.

The submerged structures for both Units 2 and 3 are fitted with velocity caps to reduce entrainment of motile fishes through the conduit to the on-shore screen wells (a schematic showing intake velocity cap design can be found in Attachment H-1 to the Orders). At the intake structures located near shore, vertical traveling screen assemblies are angled approximately 30º to the incoming flow. These screen assemblies, together with a series of vertical louvers in the screen forebay, serve to direct entrapped motile organisms to a quiescent zone located at the far end of the forebay. Fish elevators periodically empty entrapped organisms into a four-foot diameter conduit that transports fish to a submerged discharge point approximately 1,900 feet offshore. Organisms impinged on the traveling screens are removed during periodic rotations and cleanings for disposal at a landfill.

The fish return conduit is common to both the Unit 2 and Unit 3 intake structures and is referred to as the SONGS Units 2 and 3 Fish Return System Outfall, or Outfall 004.

Cooling water for SONGS Unit 1 is withdrawn 2,980 feet offshore from the Pacific Ocean at a depth of approximately 27 feet. The submerged structure is fitted with a velocity cap to reduce entrainment of motile fishes through the conduit to the circulating pumps. Velocity caps function by altering the direction of the incoming flow, thereby triggering a flight response in many types of fishes. When Unit 1 was in operation, the average flow rate of water in the intake conduit was 460.8 mgd with a velocity of approximately 7 feet per second. Currently, cooling water withdrawn at Unit 1 is used to remove waste heat generated by the spent fuel pond and to dilute the various low-volume waste streams still generated at the facility. SCE reports a maximum intake of approximately 35 mgd via Unit 1 and does not anticipate the need for significantly greater flows during the remainder of the decommissioning process.

B. Discharge Points and Receiving Waters

UNITS 2 AND 3

Once-though cooling water and other waste streams are discharged from SONGS Unit 2 to the Pacific Ocean through Outfall 002. Outfall 002 is equipped with a 2,462 feet long diffuser pipe that starts at 5,888 feet offshore and extends to 8,350 feet offshore. The Unit 2 diffuser pipe ranges in depth from 39 feet to 49 feet. The offshore end of the Unit 2 diffuser pipe is

located at latitude 33º 20' 55.84" North and longitude 117º 34' 13.5" West. The diffuser was designed by the California Institute of Technology in 1974. The diffuser is equipped with 63 jet nozzles. The nozzles are alternated in the direction of 25 degrees upcoast and 25 degrees downcoast along the diffuser pipe. Further, the nozzles are directed at an angle of 20 degrees off of the bottom and the nozzle openings are only two feet off the seafloor. The initial offshore momentum of the effluent from the jet nozzles coupled with buoyant momentum of the heated plume (as it travels to the surface) dramatically promotes the mixing of the effluent with the receiving seawater.

Once-though cooling water and other waste streams are discharged from SONGS Unit 3 to the Pacific Ocean through Outfall 003. Outfall 003 is equipped with a 2,500 feet long diffuser pipe that starts at 3,400 feet offshore and extends to 5,900 feet offshore (at a depth of approximately 39 feet). The offshore end of the Unit 3 diffuser pipe is located at latitude 33º 21' 11.74" North and longitude 117º 33' 51.61" West. The Unit 3 diffuser was also designed by the California Institute of Technology in 1974 and like the Unit 2 diffuser is equipped with 63 jet nozzles. The design, operation, and function of the jet nozzles in the Unit 3 diffuser are identical to the Unit 2 diffuser.

The Unit 3 diffuser is located closest to the Unit 2 and 3 intakes. The nearest shoreward discharge jet nozzle of the Unit 3 diffuser is located approximately 990 feet and 330 feet from the Unit 2 and 3 intakes respectively (in the lateral direction). The nearest Unit 2 diffuser jet nozzle is located a very large distance (approximately 2,700 feet) away from either of the two intakes (in the longitudinal direction). The design of the Unit 2 and 3 diffusers ensures that heated effluent actively travels away from the diffusers and shoreline in a longitudinal direction. This also ensures that the discharge from the diffusers does not move in the lateral direction and get entrained in the Unit 2 and 3 intake structures. A schematic showing the diffuser design can be found in Attachment H-1 to the Orders.

The Discharger's Report of Waste Discharge indicates that Unit 2 and 3 each discharge approximately 1,287 mgd of wastewater to their respective ocean outfalls. The discharges from Units 2 and 3 are made up of the following cooling water and inplant low-volume waste streams:

Outfall Numbers Associated with Unit 2	Outfall Numbers Associated with Unit 3	Wastewater Discharge	Maximum Flow (mgd)
002*	003*	Once Through Condenser Cooling	1,219.0
002*	003*	Saltwater Cooling (serving Component Cooling Water System and Turbine Plant Cooling Water System)	49.0
002*	003*	Pump Bearing Flush	0.17
002*	003*	Yard Drains	0.17
002*	003*	Screen Wash	7.2
002-A**	003-A**	Chemical Metal Cleaning Wastes (Steam Generator)	0.2
002-B**	003-B**	Non-Chemical Metal Cleaning Wastes (Steam Generator and Feedwater Piping Sludge Lancing)	0.040
002-C**	003-C**	Blowdown Processing	0.085
002-D**	003-D**	Make-up Demineralizer	0.670
002-E**	003-E**	Radwaste System	0.432
002-F**	003-F**	Polishing Demineralizer System	1.4
002-G**	003-G**	Steam Generator Blowdown	0.720
002-H**	003-H**	Hotwell Overboard	7.20
002-I**	003-I**	Plant Drains (Building Sump)	0.8
002-J**	002-J**	Intake Structure Sump	0.288
002-K**	003-K**	Concrete Cutting Water	0.2
		Total Discharge	1,287 mgd

*wastestreams associated with the components of the condenser cooling water system and seawater cooling.
**In-plant wastestreams are routed to the condenser cooling water system prior to discharge to the ocean outfalls.

A portion of the main condenser cooling intake water is periodically discharged via Outfall 004 to aid in the return of fish and other organisms that become entrapped in the screen forebay. Water discharged via Outfall 004 is untreated (no chlorine or bromine treatment). Discharge is intermittent depending on the need to return entrapped fish. Outfall 004 is located in the Pacific Ocean at latitude 33º 21' 50" North and longitude 117º 33' 31" West. The Discharger's Report of Waste Discharge indicates that total wastewater discharged to the Pacific Ocean through Outfall 004 is 43 mgd. Approximately half of this flow (21.6 mgd) originates from the Unit 3 intake structure with the remaining portion originating from the Unit 2 intake structure.

During emergency shutdowns, when the discharge conduit to Outfalls 002 and 003 is unavailable, or during maintenance of underwater equipment within the Unit 2 and 3 intake structures, cooling water from the once through salt water cooling system must be discharged across San Onofre Beach through Outfall 005 to the Pacific Ocean. The end-of-pipe location for Outfall 005 is at latitude 33º 22' 0" North and longitude 117º 33' 21" West. The Discharger's Report of Waste Discharge indicates that total wastewater discharged to the Pacific Ocean through Outfall 005, when necessary, is approximately 49 mgd. Half of this flow (24.5 mgd) would originate from Unit 2 and half from Unit 3.

In its permit renewal application materials, the Discharger provided the following information regarding the individual wastewater streams that are generated from Units 2 and 3 and routed to their respective outfalls:

Once Through Condenser Cooling (Outfalls 002 and 003). Once through ocean water removes heat from the main steam condensers and the closed loop, turbine plant cooling water system. Discharges of 1,219 mgd can contain waste heat, residual chlorine and bromine (used to prevent microbiological fouling on heat exchange surfaces), and trace levels of metals removed by corrosion/leaching from system metallurgy. The main condenser cooling water systems associated with Units 2 and 3 are automatically chlorinated four times per day for 25-minute durations using a 12 percent sodium hypochlorite solution.

Saltwater Cooling (Outfalls 002 and 003). The salt water cooling system for each of the two Units uses 49 mgd of once through ocean water to remove heat from a closed loop component cooling water system (CCWS) that serves various auxiliary reactor systems and from the turbine plant cooling water (TPCW) system. The salt water cooling water is withdrawn from and returned to the main condenser cooling water system. It is chlorinated or brominated to control microbiological fouling and is discharged through Outfall 005 (across-the-beach) during periods of intake and discharge structure maintenance or emergencies.

Screen Wash (Outfalls 002 and 003). Two 2500 gpm screen wash pumps are used for washing the traveling screens, bar screens, and the fish elevator system serving the cooling water intake structures of each of the two Units. A maximum flow of 7.2 mgd is discharged from the screen wash system to the condenser cooling water system serving each Unit.

Pump Bearing Flush (Outfalls 002 and 003). Seawater pump bearings are lubricated with a once through flow of domestic (potable) water. Up to 0.17 mgd of this water is discharged to the intake structure sump or directly to the condenser cooling water system.

Yard Drains (Outfalls 002 and 003). Yard drains, which collect rainfall runoff, auxiliary boiler drain down, and hose down water from outside areas of SONGS Units 2 and 3 are discharged directly to their respective condenser cooling water systems.

Steam Generator Chemical Cleaning (Outfalls 002-A and 003-A). During scheduled outages, the Unit 2 steam generator and feedwater piping is sometimes chemically cleaned. Resultant wastewater is treated by reverse osmosis and/or an evaporator and discharged at a rate of 0.20 mgd through the condensate polishing demineralizer regenerant system.

Steam Generator and Feedwater Piping Sludge Lancing (Outfalls 002-B and 003-B). During scheduled outages, high-pressure water is used to remove sludges from steam generator tubes, tube sheets, and feedwater piping. The Discharger reports that this wastewater is treated through diatomaceous earth filters and discharged at a rate of 0.04 mgd through the condensate polishing regenerant system.

Blowdown Processing (Outfalls 002-C and 003-C). Steam generator blowdown is demineralized and returned to the steam cycle. Spent regenerant wastes are pH neutralized and discharged to the condenser cooling water system for discharge. The maximum discharge flowrate from the system is 0.085 mgd.

Make-up Demineraillzer System (Outfalls 002-D and 003-D). The make-up demineralizer system produces deionized water for various in-plant systems. Potable water purchased from municipal suppliers is passed through ion exchange resins, with regenerants discharged to a neutralization sump. After pH neutralization, wastewater is pumped to the condenser cooling system for discharge. The maximum discharge flowrate from this system is 0.0670 mgd.

Radwaste System (Outfalls 002-E and 003-E). Wastewater from the radwaste system originates from the reactor coolant system, the chemical and volume control system, and minor flows from equipment leaks and drains, laboratory drains, personnel decontamination showers, and floor drains. Treatment to Nuclear Regulatory Commission (NRC) standards for radioactivity is accomplished via holding tanks, demineralizers, filters, flash tanks, and gas strippers. The maximum discharge flowrate from this system is 0.432 mgd.

Polishing Demineralizer (Outfalls 002-F and 003-F). Condensed steam goes through a full flow polishing demineralizer before being returned to the steam generator. The system removes ionic impurities that may enter through small leaks in the main condenser or associated piping. Resin regenerants are discharged to the condenser cooling system following pH neutralization. The maximum discharge flowrate from this system is 1.40 mgd.

Steam Generator Blowdown (Outfalls 002-G and 003-G). The steam generator provides steam to the turbine by utilizing heat from the Reactor Coolant System. Various chemicals added to the system to maintain proper water chemistry and prevent corrosion at different stages may include: hydrazine, ethanolamine, ammonia, titanium dioxide, boric acid, diethanolamine, carbohydrazide, and morphaline. The steam generators are "blown down" periodically to maintain a proper chemical balance. The maximum discharge flowrate from this system is 0.720 mgd.

Hotwell Overboard (Outfalls 002-H and 003-H). A condenser hotwell overboard discharge occurs during plant start-up or shutdown, or if leaks are detected in the condenser. The maximum discharge flowrate from this system is 7.20 mgd.

Plant Drains (Outfalls 002-I and 003-I). "Non-radioactive" plant drains flow, or are pumped, to building sumps, which are pumped to the SONGS Units 2 and 3 common oil removal system. The maximum discharge flowrate from this system is 0.80 mgd. The "Non-radioactive" plant drains refer to drains from systems that do not normally contain radioactivity, but on occasion may contain trace amounts. Non-radioactive plant drains are routed through a radiation monitor. Radioactive plant drains are routed to the radwaste processing system where the water is purified and radioactivity removed through filters and ion exchangers. The purified water is sampled and analyzed for radioactivity prior to release through an additional radiation monitor. All radioactivity sampling, reporting, and regulatory oversight fall under the jurisdiction of the Nuclear Regulatory Commission in accordance with the federal Atomic Energy Act.

Intake Structure Sump (Outfalls 002-J and 003-J). The Unit 2 intake water sump collects a portion of the bearing flush water from the unit's seawater pumps and flows from seawater drains and is then pumped to the condenser cooling system. The maximum discharge flowrate from this system is 0.288 mgd.

Concrete Cutting Cooling Water (Outfalls 002-K and 003-K). Concrete cutting may be needed to support future activities at the facility. If needed, concrete cutting is estimated to produce a maximum discharge flowrate of 0.200 mgd.

Flows from Unit 1. Currently all cooling water discharges, treated sewage, and other low-volume waste streams from SONGS Unit 1 are discharged to the Pacific Ocean primarily through an underwater discharge conduit approximately 2,460 feet from shore at a depth of approximately 25 feet. The offshore end of the combined Unit 1 outfall (Outfall 001) is located at latitude 33º 21' 49" North and longitude 117º 33' 45" West. The discharges from Unit 1 (total volume of 37 mgd) are currently covered under Order No. 2000-04. Pursuant to Order Nos. 99-48 and 99-49, SCE currently also has the option and the ability to route all wastewater flows from Unit 1 to the Unit 2 or Unit 3 outfalls (i.e. Outfalls 002 or 003). SCE has indicated that it will completely terminate the use of the Outfall 001 sometime in 2005 and request a rescission of Order No. 2000-04 at that time. Once the use of Outfall 001 is terminated, the combined effluent from Unit 1 will be routed exclusively to Outfalls 002 or 003.

Order Nos. R9-2005-0005 and R9-2005-0006 acknowledge the impending termination of flows from Unit 1 to Outfall 001 and the routing of up to 36.6 mgd of combined discharge flows from Unit 1 to Outfalls 002 or 003. Both Orders are structured to account for effluent limitations and monitoring requirements as a result of the potential routing of Unit 1 flows to Outfalls 002 and 003. The total permitted flow through the Outfalls 002 and 003 each shall, however, remain unchanged at 1,287 mgd. Furthermore, the concentration-based

effluent limitations for the combined discharge through Outfalls 002 and 003 shall also not be impacted by the routing of flows from Unit 1.

The Discharger's Report of Waste Discharge indicates that a total wastewater generated from Unit 1 is approximately 36.6 mgd and consists of the following individual wastestreams:

Wastewater Discharge	Maximum Flow (mgd)
Main Circulating Water	35.00
Unit 1 Sewage Effluent	0.10
Mesa Complex Sewage Effluent	0.045
Metal Cleaning Waste (Chemical and Non-chemical)*	0.08
Radwaste System*	0.144
Yard Drains*	0.360
Dewatering*	0.864
Total Discharge	36.6 mgd

*In-plant wastestreams

In its permit renewal application materials, the Discharger provided the following information regarding the individual wastewater streams which are discharged from SONGS Unit 1:

Main Circulating Water System. Following the decommissioning of the Unit 1 reactor, the principal function of the main circulating water system is to remove waste heat from the spent fuel storage pond and provide dilution for low volume waste streams generated at Unit 1 and the Mesa Sewage Plant. Discharges of up to 35 mgd can contain waste heat, residual chlorine (used to balance pH in sewage treatment process), and trace levels of metals removed by corrosion/leaching from system metallurgy.

Unit 1/Mesa Domestic Waste . Domestic wastewater generated at SONGS receives secondary treatment at either the SONGS Unit 1 sewage treatment plant or at the Mesa Facility Complex sewage treatment plant. Maximum discharge rates from the SONGS Unit 1 and the Mesa Facility Complex sewage treatment plants are 0.10 and 0.045 mgd, respectively.

Chemical Metal Cleaning. Chemical metal cleaning may be periodically performed on some plant systems in support of the ongoing decommissioning activities at Unit 1. Wastewater from this process will be treated and filtered to within NPDES effluent limitations prior to discharge. The Discharger reported an average discharge of 0.04 mgd of treated wastewater from this process.

Non-Chemical Metal Cleaning. Non-chemical metal cleaning may be periodically performed on some plant systems in support of the ongoing decommissioning activities at Unit 1. The Discharger reported an average discharge of 0.04 mgd of treated wastewater from this process.

Radwaste System. Wastewater from the radwaste system originates from the reactor coolant system, the chemical and volume control system, and minor flows from equipment leaks and drains, laboratory drains, personnel decontamination showers, and floor drains. Treatment to Nuclear Regulatory Commission (NRC) standards is accomplished via holding tanks, demineralizers, filters, flash tanks, and gas strippers. The Discharger reported an average discharge of 0.144 mgd from this process.

Yard Drains. All yard drains gravity feed to various sumps located on the facility grounds and are subsequently routed to Outfall 001 without treatment. Discharger reported an average flow of approximately 0.36 mgd from the yard drains. The plant drain wastestream and associated oily waste separator, previously regulated at Unit 1, have been permanently removed from service.

Dewatering. Dewatering in support of the removal of several facility structures may be required in concert with the ongoing decommissioning activities at Unit 1. Wastewater from this process will be treated and filtered to within NPDES effluent limitations prior to discharge. If dewatering is required, the Discharger will submit an application to the Board to enroll in the *General Waste Discharge Requirements for Groundwater Extraction Waste Discharge from Construction, Remediation, and Permanent Groundwater Extraction Projects to Surface Waters Within the San Diego Region Except for San Diego Bay* (Order No. 2001-96) prior to commencement of any dewatering activities. The Discharger reported a potential discharge of 0.864 mgd of wastewater from this process.

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

UNIT 1

Discharge Monitoring Reports for Unit 1 discharges (Outfall 001) submitted to the Regional Board indicate that the Discharger consistently fulfills the monitoring requirements of Order No. 2000-04 and consistently meets the discharge limitations and conditions imposed by that Order. Monthly Discharge Monitoring Reports from April 2001 through February 2004 were examined to compile the following characterization of discharges from SONGS Unit 1 through Outfall 001:

Flow

The combined discharge through Outfall 001 did not exceed 9.281 mgd. Main Circulating Water flow consistently accounts for greater than 98.5 percent of the combined discharge through Outfall 001.

The average monthly flow of low volume wastewaters was 0.01 mgd, with a daily maximum flow of 0.01 mgd during this period.

Temperature

The monthly average temperature differential (ΔT) in cooling water through the main condenser was 0.75º F, and the maximum observed daily ΔT was 4º F during this period. Order No. 2000-04 included a maximum permissible ΔT of 5º F.

Combined discharge

Monthly average turbidity was 3.39 NTUs in the combined discharge, with a high of 27.3 NTUs occurring in May 2003. Order No. 2000-04 included the following turbidity limitations for the combined discharge through Outfall 001:

Monthly Avg	Weekly Avg	Inst. Max
75 NTU	100 NTU	225 NTU

Monthly average pH of the combined discharge ranged from 7.8 – 8.2 and averaged 7.06. Order No. 2000-04 included a pH limitation of 6.0 – 9.0 for all discharges from SONGS Unit 1.

Average monthly total chlorine residuals were consistently measured to be less than 20 µg/L (daily and instantaneous maximum). Order No. 2000-04 included the following chlorine limitations for the combined discharge through Outfall 001:

Monthly Avg	Daily Max
7 µg/L	27 µg/L

Between April 2001 and February 2004, the combined discharge has been sampled and analyzed once for all toxic pollutants from Table B of the Ocean Plan. In that time period, the combined discharge has been sampled four additional times and analyzed for the inorganic constituents from Table B. Analytical results, expressed as µg/L, are presented in the following table:

Parameter	Units	Sample Date				
		11-04-03	02-11-03	11-12-02	03-22-02	08-15-01
Arsenic	µg/L	6	50	10	20	20
Cadmium	µg/L	6	12	25	5	5
Chromium (Hexavalent)	µg/L	15	25	50	10	10
Copper	µg/L	15	75	15	30	30
Lead	µg/L	6	50	10	20	20
Mercury	µg/L	0.1	0.3	0.3	1.0	1.0
Nickel	µg/L	**36**	50	10	20	20
Selenium	µg/L	**100**	50	10	20	20
Silver	µg/L	6	50	10	20	20
Zinc	µg/L	110	50	10	20	20
Cyanide	µg/L	**20**	**20**	20	20	20
Ammonia	µg/L	**1300**	**4700**	100	**5000**	**1940**
Phenolic Compounds (Non-chlorinated)	µg/L	50	50	50	1	1

Parameter	Units	Sample Date				
		11-04-03	02-11-03	11-12-02	03-22-02	08-15-01
Phenolic Compounds (Chlorinated)	µg/L	1	50	20	1	1
Endosulfan	ng/L	20	20	20	20	20
Endrin	ng/L	60	60	100	60	60
HCH	ng/L	10	10	10	10	10
Chronic Toxicity[2]	TUc	3.10	**1.0**	3.10	1	3.1

Note: Figures that appear in **bold** in the table, above, are measured concentrations. Other figures are the analytical method detection limits reported by the lab; i.e., the lab result was reported as ND (not detected).

All Table B pollutants in the combined discharge from SONGS Unit 1, analyzed by the Discharger from April 2001 through February 2004, were below applicable effluent limitations derived from water quality criteria of the Ocean Plan, when taking into consideration a minimum probable initial dilution of 2.4 to 1.

Low Volume Wastes

Discharge Monitoring Reports included monitoring data for the following low volume wastewaters: plant drains, radwaste system and steam generator draindown. No discharge of metal cleaning wastes occurred during the review period.

In this 35-month time period, Discharge Monitoring Reports indicate that there was very limited low-volume wastewater flow in comparison to the combined flow.

Results of low volume waste stream monitoring for total suspended solids (TSS) and oil and grease (O&G) during the review period are summarized below:

Waste Stream	Units	Average Monthly TSS		Average Monthly O&G	
		Range	Maximum	Range	Maximum
Plant Drains	mg/L	< 5.0 – 26.2	26.2	< 5.0 – 14.6	14.6
Radwaste System	mg/L	< 5.0 – 10	10	< 5.0 – 12.6	12.6
Steam Generator Draindown	mg/L	-	-	-	-

Order No. 2000-04 included the following limitations for TSS and O&G in low volume wastewaters:

Parameter	Units	6-Month Median	Daily Maximum	Instantaneous Maximum
TSS	mg/L	30	100	100
O&G	mg/L	15	20	20

Monitoring results from April 2001 through February 2004 indicated that low-volume wastewaters consistently met the effluent limitations for TSS and O&G.

Between April 2001 and February 2004, the combined low volume waste discharge from Unit 1 was sampled five times and analyzed for the toxic pollutants from Table B of the Ocean Plan. Analytical results, expressed as µg/L, unless otherwise noted, are presented in the following table:

Parameter	Units	Sample Date				
		11-04-03	**02-11-03**	**11-12-02**	**03-22-02**	**08-15-01**
Arsenic	µg/L	25	20	20	20	20
Cadmium	µg/L	2	5	5	5	5
Chromium VI	µg/L	6	10	10	10	10
Copper	µg/L	**32**	30	**49**	30	30
Lead	µg/L	19	20	20	20	20
Mercury	µg/L	0.1	0.3	0.3	1	1
Nickel	µg/L	10	20	20	20	20
Selenium	µg/L	26	20	20	20	20
Silver	µg/L	3	20	20	20	20
Zinc	µg/L	**160**	**300**	**20**	**60**	**50**
Cyanide	µg/L	20	20	20	100	20
Ammonia (as N)	µg/L	**7850**	**4350**	**1250**	**48500**	**2930**
Phenolic Compounds (non – chlorinated)	µg/L	50	50	10	1	1
Chlorinated Phenolics	µg/L	1	50	10	1	1
Endosulfan[1]	ng/L	20	20	20	20	20
Endrin[1]	ng/L	100	60	100	60	60
HCH[1]	ng/L	10	10	100	10	10
Ethylbenzene	--	0.1[2]	1[3]	0.1[2]	0.1[2]	0.01[3]
Nitrobenzene	--	0.1[2]	10	0.1[2]	0.1[2]	10
Toluene	--	0.1[2]	1.2[3]	0.1[2]	0.1[2]	0.01[3]
Benzene	--	0.1[2]	1	0.1[2]	0.1[2]	10

[1]Parameter expressed in nanograms per liter (ng/l), [2]Parameter expressed in lbs/Day, [3]Parameter expressed in mg/L
Note: Figures that appear in **bold** in the table, above, are measured concentrations. Other figures are the analytical method detection limits reported by the lab; i.e., the lab result was reported as ND (not detected).

All Table B pollutants in the combined low volume wastewater flow from SONGS Unit 1, analyzed by the Discharger from April 2001 through February 2004, were below applicable effluent limitations derived from water quality criteria of the Ocean Plan, when taking into consideration a minimum probable initial dilution of 2.4 to 1.

Sewage Treatment Plants

During the 35-month review period, Discharge Monitoring Reports indicate that all wastewater from the Mesa Complex was treated at the Unit 1 sewage treatment plant. And, in this period, the Unit 1 sewage treatment plant discharged only through Outfall 001. The average monthly discharge from the Unit 1 sewage treatment plant was 0.026 mgd, and the daily maximum discharge was 0.067 mgd. Results of Unit 1 sewage treatment plant monitoring are summarized below:

Parameter	Units	Monthly Average	Maximum Monthly Average
TSS (effluent)	mg/L	15.63	48
TSS Removal	percent	96.69	99.8
Oil and Grease	mg/L	5.45	10
Settleable Solids	mg/L	0.13	0.5
PH	S.U.	7.14	7.7
Turbidity	NTUs	6.76	25.6

All parameters were consistently within effluent limitations for the Unit 1 sewage treatment plant established by Order No. 2000-04.

UNIT 2

Discharge Monitoring Reports submitted to the Regional Board indicate that the Discharger consistently complies with the monitoring requirements of Order No. 99-47 and consistently complies with the discharge limitations and conditions imposed by that Order. Monthly Discharge Monitoring Reports from October 2000 through December 2003 were examined to compile the following characterization of discharges from SONGS Unit 2 through Outfall 002:

Flow
The combined discharge through Outfall 002 did not exceed 1286.9 mgd. The average monthly discharge was 1219 mgd. Main condenser cooling water flow consistently accounts for greater than 98.5 percent of the combined discharge through Outfall 002. Order No. 99-47 included a maximum flow limitation for discharges through Outfall 002 of 1286.9 mgd.

The average monthly flow of low volume wastewaters was 0.202 mgd, with a daily maximum flow of 0.553 mgd during this period.

Temperature
The monthly average temperature differential (ΔT) in cooling water through the main condenser was 17.8º F, and the maximum observed daily ΔT was 21º F during this period. Order No. 99-47 includes a maximum permissible ΔT of 25º F.
Heat treatments are conducted periodically to control Bay Mussel growth on the condenser tubes and tunnels. During a heat treatment, intake water temperature is elevated to 125º F for a period of not more than two hours. The frequency of heat treatments is determined, in part, by a growth model for the Bay Mussel. The average number of heat treatments at Unit 2 has been 7.33 per year.

Combined Discharge
Monthly average turbidity was 3.8 NTUs in the combined discharge, with a maximum of 18 NTUs. Order No. 99-47 did not include a numeric turbidity limitation for the combined discharge through Outfall 002.

Monthly average pH of the combined discharge ranged from 8.0 – 8.2 and averaged 8.1. Order No. 99-47 included a pH limitation of 6.0 – 9.0 for all discharges from SONGS Unit 2.

The instantaneous maximum total chlorine residuals did not exceed 81.9 µg/L. Order No. 99-47 included the following chlorine limitations for the combined discharge through Outfall 002:

Monthly Avg	Weekly Avg	Instantaneous Max.
22 µg/L	88 µg/L	176 µg/L

Between October 2000 and December 2003, the combined discharge from Unit 2 has been sampled seven times and analyzed for the metals and selected inorganic pollutants from Table B of the Ocean Plan. Analytical results, expressed as µg/L, unless otherwise noted, are presented in the following table:

Parameter	Units	Sample Date						
		11-24-03	03-07-03	11-05-02	05-14-02	10-30-01	06-13-01	09-13-00
Arsenic	µg/L	6	20	10	20	2	**91**	20
Cadmium	µg/L	6	5	25	5	2	5	5
Chromium VI	µg/L	15	10	5	10	5	10	10
Copper	µg/L	15	30	15	30	5	30	30
Lead	µg/L	6	20	10	20	2	20	20
Mercury	µg/L	0.1	0.3	0.3	0.5	1.0	1.0	1.0
Nickel	µg/L	**29**	20	10	20	**13**	20	20
Selenium	µg/L	**200**	20	10	20	2	20	20
Silver	µg/L	6	20	10	20	2	20	20
Zinc	µg/L	**110**	20	10	20	20	20	**24**
Chronic Toxicity	TUc	**5.6**	3.1	3.10	3.1	**5.6**	3.1	**17.9**

Note: Figures that appear in **bold** in the table, above, are measured concentrations. Other figures are the analytical method detection limits reported by the lab; i.e., the lab result was reported as ND (not detected). No analytical data is available for ammonia and cyanide, which are inorganic pollutants also in Table B of the Ocean Plan.

All Table B pollutants in the combined discharge from SONGS Unit 2, analyzed by the Discharger from October 2000 and December 2003, were below applicable effluent limitations derived from water quality criteria of the Ocean Plan, when taking into consideration a minimum probable initial dilution of 10 to 1.

Between October 2001 and November 2003, chronic toxicity was monitored five times in the combined discharge through Outfall 002. In 4 of 5 monitoring events chronic toxicity was below the analytical method detection limit. On November 24, 2003, chronic toxicity in the discharge was measured at 10 TUc, which equal to the effluent limitation of Order No. 99-47 of 10 TUc. Because simultaneous chronic toxicity monitoring of the receiving water showed the same result, chronic toxicity, if present, was likely attributable to the intake water before it passed through SONGS Unit 2.

Low Volume Wastes

Discharge Monitoring Reports included monitoring data for the following low volume wastewaters from Unit 2: thermophilic digester, condenser hotwell, blowdown processing, full flow condenser, makeup demineralizer, radwaste system, intake sump, building sumps, and metal cleaning wastewater. No flow from the thermophilic digester, steam generator, blowdown processing, or metal cleaning wastewater was recorded during the review period.

In this 39-month time period, Discharge Monitoring Reports indicate that there was very limited wastewater flow in comparison to the combined flow.

Results of low volume waste stream monitoring from Unit 2 for total suspended solids (TSS) and oil and grease (O&G) is summarized below:

Waste Stream	Units	Average Monthly TSS		Average Monthly O&G	
		Range	Maximum	Range	Maximum
Condenser Hotwell	mg/L	< 5.0	< 5.0	< 5.0	< 5.0
Steam Generator	mg/L	< 5.0	< 5.0	< 2.0 - < 5.0	< 5.0
Blowdown Processing	mg/L	14.5	14.5	27.5	27.5
Full Flow Cond.	mg/L	4.9 – 26	26	5 – 6.8	6.8
Makeup Demineralizer	mg/L	5 – 18.3	18.3	2 – 8.2	8.2
Radwaste System	mg/L	5 – 5.9	5.9	2 – 6.3	6.3
Intake Sump	mg/L	5 – 17	17	5 – 15	15
Building Sumps	mg/L	5 – 10.2	10.2	5 – 12.6	12.6

Order No. 99-47 included the following limitations for TSS and O&G in low volume wastewaters:

Parameter	Units	6-Month	Daily	Instantaneous

		Median	Maximum	Maximum
TSS	mg/L	30	100	100
O&G	mg/L	15	20	20

Monitoring results from October 2000 through December 2003 show that low volume wastewaters consistently meet effluent limitations for TSS and O&G.

Between October 2000 and December 2003, the combined low volume waste discharge from Unit 2 has been sampled four times and analyzed for the toxic pollutants from Table B of the Ocean Plan as shown the following table:

Parameter	Units	Sample Date			
		12-17-03	12-11-02	11-29-01	03-22-02
Arsenic	µg/L	20	140	20	20
Cadmium	µg/L	20	110	5	5
Chromium VI	µg/L	50	110	5	10
Copper	µg/L	50	**120**	**31**	30
Lead	µg/L	20	120	20	20
Mercury	µg/L	0.1	**0.6**	1	1
Nickel	µg/L	**23**	**190**	20	20
Selenium	µg/L	20	**14**	20	20
Silver	µg/L	20	110	20	20
Zinc	µg/L	100	**170**	**33**	**57.8**
Cyanide	µg/L	20	10	20	20
Ammonia (as N)	µg/L	**8600**	**4400**	**3700**	**9000**

Note: Figures that appear in **bold** in the table, above, are measured concentrations. Other figures are the analytical method detection limits reported by the lab; i.e., the lab result was reported as ND (not detected). In each of the three monitoring events, all other Table B toxic pollutants were not detected

All Table B pollutants in the combined low volume wastewater flow from SONGS Unit 2, analyzed by the Discharger from October 2000 through December 2003, were below applicable effluent limitations derived from water quality criteria of the Ocean Plan, when taking into consideration a minimum probable initial dilution of 10 to 1.

UNIT 3

Discharge Monitoring Reports submitted to the Regional Board indicate that the Discharger consistently complies with the monitoring requirements of Order No. 99-48 and consistently complies with the discharge limitations and conditions imposed by that Order. Monthly Discharge Monitoring Reports from October 2001 through December 2003 were examined to compile the following characterization of discharges from SONGS Unit 3 through Outfall 003.

Flow

The combined discharge through Outfall 003 did not exceed 1,219 mgd. Main condenser cooling water flow consistently accounts for greater than 99.5 percent of the combined

discharge through Outfall 003. Order No. 99-48 included a maximum flow limitation for discharges through Outfall 003 of 1,286.9 mgd.

The average monthly flow of low volume wastewaters was 0.165 mgd, with a daily maximum flow of 0.548 mgd during this period.

Temperature

The monthly average temperature differential (ΔT) in cooling water through the main condenser was 20º F, and the maximum observed daily ΔT was 22º F during this period. Order No. 99-48 includes a maximum permissible ΔT of 25º F.

Heat treatments are conducted periodically to control Bay Mussel growth within the condenser and cooling water lines. During a heat treatment, intake water temperature is elevated to 125º F for a period of not more than two hours. The frequency of heat treatments is determined, in part, by a growth model for the Bay Mussel. The average number of heat treatments at Unit 3 has been 7.33 per year.

Combined Discharge

Monthly average turbidity was 3.0 NTUs in the combined discharge, with a high of 8.1 NTUs occurring in August 2002. Order No. 99-48 did not include a numeric turbidity limitation for the combined discharge through Outfall 003.

Monthly average pH of the combined discharge ranged from 7.8 – 8.2 and averaged 8.1. Order No. 99-48 included a pH limitation of 6.0 – 9.0 for all discharges from SONGS Unit 3.

Instantaneous maximum total residual chlorine levels ranges from 20 to 140 µg/L. Order No. 99-48 included the following total residual chlorine limitations for the combined discharge through Outfall 003:

Monthly Avg	Weekly Avg	Instantaneous Max.
22 µg/L	88 µg/L	176 µg/L

Between October 2001 and December 2003, the combined discharge from Unit 3 has been sampled six times and analyzed for the metals and selected inorganic pollutants from Table B of the Ocean Plan. Analytical results, expressed as µg/L, unless otherwise noted, are presented in the following table:

Parameter	Units	Sample Date					
		2-6-04	11-24-03	3-7-03	11-5-02	5-14-02	10-30-01
Arsenic	µg/L	10	6	20	10	20	2
Cadmium	µg/L	10	6	5	25	5	2
Chromium VI	µg/L	-	**16**	10	5	10	5
Copper	µg/L	25	15	30	15	30	5
Lead	µg/L	10	6	20	10	20	2

Mercury	µg/L	0.1	0.1	0.3	0.3	0.5	1
Nickel	µg/L	**13**	**40**	20	10	20	**14**
Selenium	µg/L	**41**	**190**	20	10	20	2
Silver	µg/L	10	6	20	10	20	2
Zinc	µg/L	50	140	20	10	20	20

Note: Figures that appear in **bold** in the table, above, are measured concentrations. Other figures are the analytical method detection limits reported by the lab; i.e., the lab result was reported as ND (not detected). No analytical data is available for ammonia and cyanide, which are inorganic pollutants also in Table B of the Ocean Plan. Combined discharge samples collected on February 6, 2004 were analyzed for all Table B pollutants; however, no Table B pollutants, except nickel and selenium, were detected above the reported method detection limits.

All Table B pollutants in the combined discharge from SONGS Unit 3, analyzed by the Discharger between October 2001 and December 2003, were below applicable effluent limitations.

Between October 2001 and November 2003, chronic toxicity was monitored five times in the combined discharge through Outfall 003. In 4 of 5 monitoring events chronic toxicity was below the analytical method detection limit. On November 24, 2003, chronic toxicity in the discharge was measured at 10 TUc, which is at the effluent limitation of Order No. 99-48 of 10 TUc. Because simultaneous chronic toxicity monitoring of the receiving water showed the same result, chronic toxicity, if present, was likely attributable to the intake water before it passed through SONGS Unit 3.

Low Volume Wastes

Discharge Monitoring Reports included monitoring data for the following low volume wastewaters: thermophilic digester, condenser hotwell, steam generator, blowdown processing, full flow condensate polishing demineralizer, rad waste, building sumps, intake sump, makeup demineralizer, and metal cleaning waste

In the 27-month time period from October 2001 through December 2003, Discharge Monitoring Reports indicate that there were no wastewaters generated by thermophilic digestion, blowdown processing, and metal cleaning; and there was very limited wastewater flow from the condenser hotwell, steam generator, and building sumps.

Results of low volume waste stream monitoring for total suspended solids (TSS) and oil and grease (O&G) is summarized below.

Parameter	**Units**	**Average Monthly TSS**		**Average Monthly O&G**	
		Range	**Maximum**	**Range**	**Maximum**
Thermophilic Digester	mg/L	No flow (NF)	NF	NF	NF
Condenser Hotwell	mg/L	< 5.0	< 5.0	< 5.0	< 5.0
Steam Generator	mg/L	< 5.0	< 5.0	< 5.0	< 5.0
Blowdown Processing	mg/L	NF	NF	NF	NF

Condensate Polishing Demineralizer	mg/L	< 5.0 - 18	18	< 5.0 – 9.7	9.7
Rad Waste	mg/L	< 5.0	< 5.0	< 5.0 – 8.6	8.6
Building Sumps	mg/L	< 5.0	< 5.0	< 5.0 - 21	21
Intake Sump	mg/L	< 5.0 – 9.1	9.1	< 5.0 – 9.1	9.1
Makeup Demineralizer	mg/L	< 5.0 - 31	31	< 5.0 – 8.2	8.2
Metal Cleaning Waste	mg/L	NF	NF	NF	NF

Order No. 99-48 included the following limitations for TSS and O&G in low volume wastewaters:

Parameter	Units	6-Month Median	Daily Maximum	Instantaneous Maximum
TSS	mg/L	30	100	100
O&G	mg/L	15	20	20

Monitoring results from October 2001 through December 2003 show that low volume wastewaters consistently met effluent limitations for TSS and O&G; however, oil and grease in discharges from the building sumps did exceed, at least one time, the daily maximum limitation of 20 mg/L (because monitoring was required monthly, the monthly result equals the daily maximum and instantaneous maximum reported concentrations).

Between October 2001 and December 2003, the combined low volume waste discharge from Unit 3 was sampled three times and analyzed for the toxic pollutants from Table B of the Ocean Plan. The results of Table B metals are show in the following table (in each of the three monitoring events, all other Table B toxic pollutants were not detected, except chloroform, which was measured at concentrations of 5.8 µg/L and 2.6 µg/L on December 11, 2002 and November 29, 2001 respectively):

Parameter	Units	Sample Dates		
		12-17-03	12-11-02	11-29-01
Arsenic	µg/L	20	140	20
Cadmium	µg/L	20	110	5
Chromium VI	µg/L	50	110	10
Copper	µg/L	50	110	**32**
Lead	µg/L	20	120	20
Mercury	µg/L	0.1	**0.04**	1
Nickel	µg/L	**13**	**190**	20
Selenium	µg/L	20	10	20
Silver	µg/L	20	110	20
Zinc	µg/L	100	**120**	**31**

Note: Figures that appear in **bold** in the table, above, are measured concentrations. Other figures are the analytical method detection limits reported by the lab; i.e., the lab result was reported as ND (not detected).

No analytical data are available for ammonia and cyanide, which are inorganic pollutants also in Table B of the Ocean Plan.

All Table B pollutants in the combined low volume wastewater flow from SONGS Unit 3, analyzed by the Discharger between October 2001 and December 2003, were below applicable effluent limitations.

II. APPLICABLE PLANS, POLICIES, AND REGULATIONS

In addition to the regulatory framework established in the Findings section of Order Nos. R9-2005-0005 and R9-2005-0006, the requirements contained in the Orders are based on the requirements and authorities described in this section.

A. Water Quality Control Plans

The *Water Quality Control Plan for the San Diego Basin (9)*, the Basin Plan, was adopted by the Regional Board on September 8, 1994 and approved by the State Board on December 13, 1994. The Basin Plan includes beneficial uses, water quality objectives, implementation plans for point source and nonpoint source discharges, prohibitions, and statewide plans and policies. For the protection and enhancement of ocean water quality, the Basin Plan incorporates by reference, the provisions of the State Board's *Water Quality Control Plan for Ocean Waters of California* (Ocean Plan) and the *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (Thermal Plan).

Although the Ocean Plan establishes most water quality objectives and procedures for implementing those objectives for ocean discharges, the Basin Plan identifies the following beneficial uses of the coastal waters of the Pacific Ocean. In addition to incorporating by reference the Ocean Plan and the Thermal Plan, the Basin Plan establishes specific water quality objectives for pH and dissolved oxygen that are applicable to the SONGS facility.

a. Industrial service supply
b. Navigation
c. Contact and non-contact water recreation
d. Commercial and sport fishing
e. Preservation of Areas of Special Biological Significance (ASBS)
f. Preservation of rare, threatened, and endangered species
g. Marine habitat
h. Migration of aquatic organisms
i. Shellfish harvesting
j. Wildlife habitat
k. Spawning, reproduction, and/or early development
l. Aquaculture

B. Other Applicable Water Quality Plans, Policies and Regulations

CALIFORNIA OCEAN PLAN

The SWRCB adopted a revised Water Quality Control Plan for Ocean Waters of California (2001 Ocean Plan) on December 3, 2001. The Ocean Plan identifies for protection the following beneficial uses of ocean waters of the State. The Basin Plan defines ocean waters as the territorial marine waters of the State as defined by California law to the extent that these waters are outside of enclosed bays, estuaries, and coastal lagoons.

a. Industrial water supply
b. Water contact and non-contact recreation, including aesthetic enjoyment
c. Navigation
d. Commercial and sport fishing
e. Mariculture
f. Preservation and enhancement of Areas of Special Biological Significance
g. Protection of rare, and endangered species
h. Marine habitat
i. Fish migration
j. Fish spawning
k. Shellfish harvesting

To protect the beneficial uses of State ocean waters, the Ocean Plan establishes water quality objectives, general requirements for management of waste discharges to the ocean, effluent limitations for conventional pollutants (oil and grease, suspended and settleable solids, turbidity, and pH), procedures for implementing water quality objectives for toxic pollutants, and discharge prohibitions. Many requirements of the Ocean Plan are incorporated into the limitations, conditions, and requirements of Order Nos. R9-2005-0005 and R9-2005-0006.

The Ocean Plan takes into account the "minimum probable initial dilution" in determining effluent limitations for toxic pollutants. Initial dilution is the process that results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge. For the purposes of the Ocean Plan, minimum initial dilution is the lowest average initial dilution within any single month of the year. Dilution estimates must be based on observed waste flow characteristics, observed receiving water density structure, and the assumption that no currents of sufficient strength to influence the initial dilution process flow across the discharge structure. On March 13, 1980, the State Board approved the use of calculated initial dilution factors for submerged offshore discharges using a "flux-weighted-average" approach developed by the California Institute of Technology. The minimum probable initial dilution for Units 2 and 3 is 10:1. Where applicable, this minimum dilution factor is used to calculate discharge limitations.

Caltech designed Outfalls 002 and 003 to have an initial dilution of at least 8:1 (*Hydraulic Modeling of Thermal Outfall Diffusers for the San Onofre Nuclear Power Plant, California Institute of Technology Report No. KH-R-30, January, 1974*). The Caltech laboratory verification modeling of the design demonstrated that the initial dilution of the outfalls, coupled with an analysis of field data on ocean currents, temperatures, and heat transfer really lead to an initial dilution of 10.5:1.

The Marine Review Committee (MRC) performed an independent study of the design and operation of SONGS Units 2 and 3 cooling systems as part of its larger study (required by the California Coastal Commission) spanning 1975 - 1989. The MRC verified the Caltech design and modeling studies by performing actual operational plume field tests using dye, current meters, and various field temperature studies. This independent analysis confirmed that the jet nozzles of the diffusers enable an initial dilution of at least 10:1. The MRC study indicated that the entire body of water from the diffuser jet nozzles is initially pushed towards the surface and offshore and there is minimal entrainment of water in the nozzles.

The Caltech and MRC studies demonstrated that the Zone of Initial Dilution (ZID) for each of the Unit 2 and 3 diffuser does not overlap with the other. In fact, the high dilution efficiency of the diffuser jet nozzles enables the initial dilution of effluent to be achieved within about 60 feet to either side of each diffuser. Therefore, there is no basis for a combined ZID or for additive effects from the discharges of Units 2 and 3.

As indicated earlier, the nearest shoreward discharge jet nozzle of the Unit 3 diffuser is located approximately 990 feet and 330 feet from the Unit 2 and 3 intakes respectively (in the lateral direction). This greatly exceed the 60 feet lateral distance in which initial dilution of effluent from the Unit 3 diffuser is achieved. Furthermore, the high dilution efficiency and design of the diffuser jet nozzles ensures that the discharge from the diffuser does not get entrained in the Unit 2 or 3 intakes.

The nearest Unit 2 diffuser jet nozzle is located a very large distance (approximately 2,700 feet) away from either of the two intakes (in the longitudinal direction). This significantly reduces the likelihood that warm water from the Unit 2 diffuser would be routed back to the intake conduits.

The Ocean Plan requires that discharges be located a sufficient distance from areas designated as being of special biological significance to assure maintenance of the natural water quality in such areas. The Heisler Park Ecological Preserve, located approximately 20 miles northwest of the SONGS facility, is the closest Area of Special Biological Significance (State Water Quality Protection Area), as designated by the State Board.

Section III.C of the Ocean Plan establishes procedures for determining effluent limitations for toxics, taking into consideration the minimum probable initial of the discharge dilution with ocean water, and requires that these limitations be expressed in terms of concentration and mass emissions. Due to the large volume of power plant discharges, the Ocean Plan describes special procedures for determining effluent

limitations for these facilities. Concentration-based limitations are determined and applied to the combined effluent (in-plant waste streams plus once through cooling water flow); however, the corresponding mass-based limitations (except those for chlorine, chronic toxicity, and all instantaneous maximum limitations) apply only to the in-plant waste streams.

THERMAL PLAN

On May 18, 1972, the State Water Resources Control Board adopted the Thermal Plan, which includes narrative and numeric water quality objectives for existing discharges (those discharges at least under construction prior to adoption of the Plan) and for new discharges. A revised Thermal Plan was adopted on September 18, 1975. SONGS Units 2 and 3 were not under construction when the Thermal Plan was adopted, and therefore, discharges from these facilities are considered new discharges under the Thermal Plan. Provisions of the Thermal Plan applicable to SONGS Units 2 and 3 require that their thermal discharges be conveyed to the open ocean, away from shorelines and at a protective distance from Areas of Special Biological Significance (State Water Quality Protection Areas). The Thermal Plan requires that the maximum temperature of thermal discharges from Units 2 and 3 not exceed the natural temperature of the receiving waters by more than 20º F ($\Delta T \leq 20^{\circ}$ F), and that thermal discharges from the Units not result in an increase in the natural water temperature exceeding 4º F at (a) the shoreline, (2) the surface of any ocean substrate, or (c) the ocean surface beyond 1,000 feet from the discharge system.

On July 31, 1972, the Regional Board adopted Order No. 72-26, granting an exception to the Thermal Plan to allow heat treatment of SONGS Units 2 and 3 condenser cooling water systems for the control of marine fouling organisms. Order No. 72-26 included the following language:

> *The companies may raise the temperature of the cooling water discharge from planned Units 2 and 3 of the San Onofre Generating Station to not more than 125°F for periods of not more than two hours once each five week period for each unit, for purposes of control of marine organism growth in the cooling water system only … Thermal treatment shall be done in such a manner and under such conditions that loss of fish and other marine life is eliminated or minimized, and effects upon ocean water quality is minimized.*

On February 15, 1973, the State Board adopted Order No. 73-5, concurring conditionally with Regional Board Order No. 72-26 and requiring the discharger to complete certain studies. Conditions of the State Order were incorporated into Regional Board Order No. 72-26 by addendum on March 6, 1973. Following completion of studies by the discharger in 1979 and submission of proposed heat treatment operating conditions, the State Board adopted Resolution No. 80-95 on December 18, 1980 approving the heat treatment studies and proposed operating criteria for SONGS Units 2 and 3. The resolution required that the heat treatment operating conditions be incorporated into the operating procedures and waste discharge requirements for the generating Units.

The Discharger began steps to justify a second exception to the Thermal Plan in accordance with the requirements of Section 316 (a) of the Clean Water Act, because a general loss in cooling efficiency had reduced SONGS Units 2 and 3 from generating full rated power while complying with the 20º F ΔT requirement of the Thermal Plan in 1997.

On February 11, 1998, after conducting a California Environmental Quality Act (CEQA) Initial Study of the requested exception to raise the discharge ΔT for SONGS Unit 2 and 3 to 25º F and following a public hearing, the Regional Board approved the exception as requested by the Discharger. On April 14, 1999, the State Water Resources Control Board, in Resolution No. 99-028, concurred, finding that the action complied with State and federal requirements for granting an exception to the Thermal Plan's discharge limitation, and approved the Regional Board's action.

The Thermal Plan exception granted by the State Board to SCE (Pursuant to Resolution No. 9-028) to increase its Delta T limitation from 20 degrees F to 25 degrees F was based on extensive studies conducted by SCE's contractor FlowScience in 1994. The report submitted by FlowScience (*FlowScience, Inc., Evaluation of SONGS Units 2 and 3 Ocean Cooling Water System Maximum Temperature Increment. FSI 931EJL. August 10, 1994*), as part of SCE's Thermal Plan exception application, showed that the 25 degrees F Delta T limitation in conjunction with the Unit 2 and 3 diffuser systems would enable SONGS to continue to comply with all provisions and objectives of the Thermal Plan. This includes the objective that the Units not cause an increase in the natural water temperature exceeding 4 degrees F at the shoreline, the surface of any ocean substrate, or the ocean surface beyond 1,000 feet from the discharge.
Modeling studies conducted by FlowScience indicated that the increase in natural temperatures due to the Unit 2 and 3 discharge at the shoreline, surface, and 1,000 ft (and beyond) would be much less than the 4 degrees F objective specified by the Thermal Plan even under worst-case scenario conditions (i.e. an effluent Delta-T of 25 degree F and no current in the receiving waters).

A graphical representation showing effectiveness of the Unit 2 and 3 diffusers in complying with receiving water temperature objectives of the Thermal Plan (at Delta T values of 20 and 25 degrees F) can be found in Attachment H-2 to the Orders.

U.S. EPA regulations at 40 CFR 125 Subpart H, which describe criteria for determining alternative effluent limitations under Section 316 (a) of the Clean Water Act, as well as SWRCB Resolution No. 99-028, require that exceptions to the discharge requirements of the Thermal Plan be reviewed at the time of NPDES permit renewal to assure that the thermal component of the discharge, alone or interacting with other discharge components or thermal sources, is not causing appreciable harm to a balanced indigenous community of marine life. In preparing Order Nos. R9-2005-0005 and R9-2005-0006, the Regional Board found that the thermal component of discharges from SONGS Units 2 and 3 have met the discharge specifications established by Order Nos. 99-47 and 99-48 and are expected to meet the discharge specifications of the Orders, which pertain to the thermal component of Unit 2 and 3 discharges. With consideration given to all

requirements of the Thermal Plan, including exceptions to the Thermal Plan already granted to the Discharger, the Regional Board finds that compliance with Order Nos. R9-2005-0005 and R9-2005-0006 will assure the protection of a balanced indigenous community of shellfish, fish, and wildlife in the receiving waters for discharges from SONGS Units 2 and 3.

In supplemental application materials submitted to the Regional Board for permit renewal on March 30, 2004, the Discharger requested a rewording of the Units 2 and 3 heat treatment scheduling criteria to allow heat treatment to occur at fixed six week intervals instead of intervals determined by a growth model for the Bay Mussel. The Discharger pointed out that a variable schedule for heat treatment complicates the scheduling of workers and equipment as well as routine maintenance operations. The Discharger also pointed out that over the past twelve years, when determining the frequency of heat treatments based on the growth model for the Bay Mussel, the average number of heat treatments for Units 2 and 3 have been 7.33 per year. Fifty-nine percent of these heat treatments have occurred from April through September, a period of greater mussel growth, and 41 percent have occurred from October through March. These frequencies correspond to heat treatments one time every 42 days between April and September and one time every 61 days between October and March. The Discharger's request would result in 1.4 additional heat treatments per year for Units 2 and 3 between October and March; however, heat treatments would then occur at fixed 6-week intervals.

The Regional Board acknowledges that scheduling of heat treatments for SONGS Units 2 and 3 based on the growth model for the Bay Mussel may be a complicated procedure that does not allow efficient scheduling of manpower and equipment. The Discharger's request to increase the number of heat treatments, however, is not consistent with the objectives and language of Regional Board Order No. 72-26 and State Board Resolution No. 80-95, which already define an approved exception to the Thermal Plan to allow heat treatments by SONGS Units 2 and 3. The requirements of these Orders, which were incorporated into Order Nos. 99-47 and 99-48, are also incorporated into Order Nos. R9-2005-0005 and R9-2005-0006. These requirements place significant emphasis on the frequency of heat treatment, target temperatures, and target durations for heat treatment, with the objective of minimizing thermal loading to receiving waters.

The Regional Board finds that the Discharger's request to allow heat treatment to occur at fixed six-week intervals will result in an increased thermal component to discharges from SONGS Units 2 and 3. Because the Thermal Plan requires the State Board's concurrence with exceptions to its provisions granted by the Regional Board, the Regional Board cannot grant the Discharger's request through this Order. To conduct heat treatments at more frequent intervals than allowed by the existing exception to the Thermal Plan, which places significant emphasis on the frequency of heat treatment, target temperatures, and target durations for heat treatment, the Discharger must undertake procedures established by Section 316 (a) of the Clean Water Act, its implementing regulations, and the Thermal Plan to seek an exception to the Thermal Plan.

In supplemental application materials submitted to the Regional Board for permit renewal on March 30, 2004, the Discharger requested that compliance with the Outfalls 002 and 003 discharge specifications for residual heat be determined by a daily average temperature calculation instead of an instantaneous maximum temperature measurement. The Discharger described a procedure where one of four circulating water pumps is stopped for ten minutes to reduce cooling water velocity through a section of the main condenser, thereby dislodging shells and debris which block condenser tubes. This "bumping" procedure helps to maintain condenser efficiency and reduces the need to manually clean condenser tubes. The reduced cooling water flow during the bumping procedure does cause an increase in the temperature differential between the intake and effluent temperatures from approximately 20º F to 24º F, which is within the temperature differential of 25º F allowed by the Regional Board and the State Board in Resolution No. 99-028, both granting an exception to the Thermal Plan for SONGS Units 2 and 3. Bumping can be performed on one section of the Units 2 and 3 main condensers at full power; however, if bumping is performed simultaneously on more than one section of the main condenser, power must be reduced in order to stay within the allowable temperature differential of 25º F. The Discharger has stated that measuring compliance with the discharge specification for residual heat using a daily average temperature calculation instead of an instantaneous maximum temperature measurement would permit simultaneous bumping of more than one condenser section, while complying with the Thermal Plan and exceptions already granted to the Discharger.

The Regional Board finds that, although thermal effects due to "simultaneous bumping" for ten-minute intervals may be minimal, the Discharger's request may result in temperature differentials that exceed 25º F, which would be in excess of the current Thermal Plan exception. The Regional Board also finds that granting the Discharger's request would be inconsistent with the process by which previous exceptions to the Thermal Plan were granted. Because the Thermal Plan requires the State Board's concurrence with exceptions to its provisions granted by the Regional Board, the Regional Board cannot grant the Discharger's request through these Orders To conduct "simultaneous bumping" at full power and potentially exceed the allowable temperature differential of 25º F, the Discharger must undertake procedures established by Section 316 (a) of the Clean Water Act and implementing regulations and the Thermal Plan, to seek an exception to the Thermal Plan.

CLEAN WATER ACT SECTION 316 (B)

Current CWA Section 316 (b) implementing regulations are applicable to facilities that meet the definition of a Phase II existing facility at 40 CFR 125.91. Such facilities withdraw cooling water from a water of the United States; have, or are required to have, an NPDES permit; generate and transmit electric power as their primary business activity; have a total facility design intake capacity of 50 mgd or greater; and use at least 25 percent of the withdrawn water exclusively for cooling purposes. Pursuant to CWA 316 (b) regulations, SONGS Units 2 and 3 are classified as a Phase II existing facilities. SONGS Unit 1, having ceased commercial generation of electric power in 1992, is not subject to the requirements of the Phase II rule.

Section 316 (b) of the Clean Water Act provides that any standard established pursuant to Section 301 or 306 of the Act and applicable to a point source must require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental effects.

Order Nos. 99-47 and 99-48 (adopted on August 11, 1999) required and/or encouraged the discharger to:

a. Continue to use effective techniques for reducing losses of midwater fishes in the intake structures, including the use of a velocity cap on the intake and the use of the fish return system, and

b. Schedule refueling and maintenance outages during March and April so as to minimize the loss of fish larvae, which are in greatest abundance in the coastal waters nears SONGS in those months.

Order Nos. 99-47 and 99-48 also noted that the California Coastal Commission amended its Permit No. 6-81-330-A to impose mitigation requirements to address impacts to the marine environment by operation of SONGS Units 2 and 3.

U.S. EPA finalized regulations regarding cooling water intake structures for existing facilities, which are applicable to SONGS Units 2 and 3, on February 16, 2004. The regulations, commonly referred to as "316 (b) Phase II", were published in the Federal Register on July 9, 2004, and became effective on September 7, 2004. Facilities that meet the definition of a Phase II facility must comply, or demonstrate a compliance strategy, when they become subject to a reissued NPDES permit adopted on or after the effective date of the regulations.

Ultimately, dischargers must demonstrate compliance with 316 (b) Phase II regulations by choosing one of five alternatives. These alternatives are generally summarized as: (1) demonstrate that the facility has reduced cooling water intake velocity to 0.5 feet per second or less; (2) demonstrate that the existing design and construction technologies, operational measures, and/or restoration measures meet the performance standards established by the regulations; (3) demonstrate that the facility has selected design and construction technologies, operational measures, and/or restoration measures that will, in combination with any existing design and construction technologies, operational measures, and/or restoration measures, meet the performance standards; (4) demonstrate that the facility has installed and properly operates and maintains an approved technology; or (5) demonstrate that a site-specific determination of best technology available is appropriate.

Most facilities, including SONGS Units 2 and 3, will be required to prepare a *Comprehensive Demonstration Study* to include the following components, if applicable:

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

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

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

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

e. Information to Support Site-Specific Determination of BAT, as described at 40 CFR 125.95 (b) (6); and

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

Within 180 days from the adoption date of the Orders, the Discharger will also be required to submit a *Proposal for Information Collection* as required by Section 125.95(b)(1) of the Phase II rule. The *Proposal for Information Collection* shall include the following information:

a. A description of the proposed and/or implemented technologies, operational measures, and/or restoration measures to be evaluated in the Study;

b. A list and description of any historical studies characterizing impingement mortality and entrainment and/or the physical and biological conditions in the vicinity of the cooling water intake structures and their relevance to this proposed Study. If the discharger proposes to use existing data, it must demonstrate the extent to which the data are representative of current conditions and that the data were collected using appropriate quality assurance/quality control procedures;

c. A summary of any past or ongoing consultations with appropriate Federal, State, and Tribal fish and wildlife agencies that are relevant to this Study and a copy of written comments received as a result of such consultations; and

d. A sampling plan for any new field studies the discharger proposes to conduct in order to ensure that there is sufficient data to develop a scientifically valid estimate of impingement mortality and entrainment at the site. The sampling plan must document all methods and quality assurance/quality control procedures for sampling and data analysis. The sampling and data analysis methods proposed must be appropriate for a quantitative survey and include consideration of the methods used in other studies performed in the source waterbody. The sampling plan must include a description of the study area (including the area of influence of the cooling water intake structure(s)), and provide a taxonomic identification of the sampled or evaluated biological assemblages (including all life stages of fish and shellfish).

The provisions, compliance requirements, and compliance schedules for the Section 316(b) Phase II rule have been incorporated into Order Nos. R9-2005-0005 and 2005-0006.

Historical CWA Section 316(b) and Related Studies Conducted at SONGS

Marine Review Committee(MRC) Studies:

Under the mandate of California Coastal Commission's (CCC) permit for SONGS (No. 6-81-330-A) a Marine Review Committee (MRC) was established in 1974 to carry out a comprehensive study on the effects of Units 2 and 3 on the marine environment in the vicinity of SONGS and to determine compliance with State and Federal water quality regulations. The MRC was comprised of three scientists, one appointed by SCE, one appointed by a coalition of environmental organizations, and one appointed by CCC. The MRC conducted its studies for a period of 15 years from 1974 to 1989. The MRC provided a final report on the studies to the CCC in 1989. The report (*Final Report of the Marine Review Committee to the California Coastal Commission, August 1989, MRC Document No. 89-02*) included a list of significant findings as summarized below:

Findings:

1. The giant kelp, kelp-bed fish, and large invertebrates living on the cobble bottom of the San Onofre Kelp (SOK) bed were impacted adversely by the turbid discharger from SONGS. In particular, high density kelp in SOK was reduced by about 200 acres or 60 percent below the abundance that would have occurred in the absence of SONGS.
2. There was an observed reduction in local midwater fish populations (e.g. local adult queenfish populations were reduced between 30 to 70 percent) but local benthic fish populations increased above the levels that would have occurred in the absence of SONGS. Populations of soft benthos and mysids did not appear to be adversely impacted by the SONGS discharge. Also the abundance of plankton near SONGS was largely unaffected by the SONGS operations, because the diffusers at Units 2 and 3 enable the discharge plume to mix very rapidly with ambient waters.
3. Although several billion fish larvae are entrained and killed in the SONGS cooling water system, there did not appear to be a clear decrease in the abundance of fish larvae near SONGS. Overall, more species increased than decreased. An exception, is the northern anchovy larvae, which showed a decrease of about 30 percent, although anchovy eggs increased by 100 percent. The vast majority of this very abundant species are offshore, and local depression in the SONGS' area has negligible consequences for the populations in the Southern California Bight.

Mitigation Requirements:

Based on its study findings, the MRC recommended a series of mitigation measures at

SONGS that would offset the localized losses of larval and adult populations of fish due to the SONGS intake structures and cooling water system and the adverse impacts. The MRC also recommended mitigation measures that would offset the adverse impacts of the SONGS discharge on the SOK. The MRC's mitigation recommendations were incorporated into CCC's amended permit (No. 6-81-330-A) to SONGS in 1991. The mitigation conditions are listed below:

1. SCE was required to create or substantially restore at least 150 acres of southern California wetlands. The CCC subsequently required SCE to enhance wetland habitat at San Dieguito Lagoon. Restoration work at this site is ongoing.
2. SCE was required to install fish barrier devices at the power plant to augment the intake velocity cap and fish return systems.
3. SCE was required to construct a 300-acre kelp reef. In 1997, the CCC decided to modify this requirement by requiring SCE to construct an artificial reef large enough to sustain 150 acres of medium to high density kelp bed community in conjunction with funding for a mariculture/marine fish hatchery. The construction of the artificial reef is currently in the experimental phase.

4. The above projects would be fully funded by SCE. The funds provided would enable the CCC to contract staff for technical oversight and independent monitoring of the mitigation projects.

Review of SONGS Historical Compliance with Section 316(b) Requirements by the U.S. EPA:

In June 1994, the U.S. EPA released a report titled *Review of Southern California Edison, San Onofre Nuclear Generating Station (SONGS) 316(b) Demonstration.* The report was prepared for the U.S. EPA by its contractor SAIC. The report reviewed the status of compliance of SONGS Units 2 and 3 with applicable Section 316(b) requirements in 1994. Since the Phase II rule for Section 316(b) was not yet promulgated in 1994, the U.S. EPA assessed SONGS' compliance with Section 316(b) based on Best Professional Judgement (BPJ).

In its report, the U.S. EPA indicated acknowledged that the receiving waters in the vicinity of SONGS contain viable, self-sustaining populations or communities of organisms and the plant incorporates appropriate intake water technologies for the purposes of minimizing adverse environmental impacts (relevant to 316(b) considerations). The intake water technologies at SONGS include the use of velocity caps on the submerged intake structures (to reduce entrainment of motile fishes through the conduit to the on-shore screen wells) and the employment of a fish return system (to reduce adult fish impingement losses on the intake screens). In its report, the U.S EPA indicated that the Units 2 and 3 appeared to comply with the requirements of Section 316(b) prevailing in 1994.

The U.S. EPA indicated that although SONGS appeared to comply with Section 316(b) requirements, the operations at SONGS were causing some adverse environmental

impacts (outside the context of Section 316(b), as identified by the Marine Review Committee. Consequently, the U.S. EPA recommended that SONGS continue to implement the mitigation measures recommended by the Marine Review Committee and incorporated in the permit issued to SONGS by the California Coastal Commission. The U.S. EPA also recommended that the Fish Return System at SONGS continue to be monitored (for weight and number of fish impinged) during heat treatments and for at least one continuous 24-hour period per week during normal operations of Units 2 and 3. This requirement has been incorporated in all NPDES permits since 1994 (including Order Nos. R9-2005-0005 and R9-2005-0006).

Based on the U.S. EPA's findings. it would not be feasible to require the power plant to make additional significant upgrades to its intake structures prior to the submittal of the *Comprehensive Demonstration Study (Study)*, required pursuant to the Phase II rule. The *Study*, which is due by January 9, 2008, will include implementation schedules for technological upgrades and/or restoration measures that would enable the facility to come into compliance with the rule. Therefore in the interim, it is appropriate for SONGS to continue operating in its current configuration.

Fish Return System Description and Efficiency Studies

The Fish Return System (FRS) at SONGS relies on the behavioral responses of fish to varying water velocities and pressures. Fish within the cooling water encounter concrete vanes and angled plastic louvers situated in front of the traveling screens. These are angled toward a bypass area and create a pressure differential detected by the fish, which swim along the louvers. The bypass area, a quiet-water concrete lined basin, measures 16 feet x 13 feet. A watertight elevator basket, open at the top, sits within the basin. When manually activated, the elevator ascends, collecting most of the fish in the basin. Upon reaching its maximum height, the elevator tips, spilling the fish into a sluice channel. This procedure is repeated several times until most fish are removed. Simultaneously, additional water flushes into the channel and the fish are discharged into a 4-foot diameter conduit which empties in approximately 20 feet deep water, about 1,900 feet offshore. The fish return conduit is common to both Units 2 and 3.

Studies on the efficiency of the Fish Return System (FRS) at SONGS were conducted during 1984-85 by the National Marine Fisheries Service (NMFS). The NMFS subsequently released a report on its findings in 1989. The report was titled *Analysis of Fish Diversion Efficiency and Survivorship in the Fish Return System at the San Onofre Nuclear Generating Station (NOAA Technical Report NMFS 76, April 1989)*. The report examined the efficiency of fish diversion within the FRS and also discussed the survivorship of the diverted fish.

A "corral" net was deployed at the end of the FRS outfall and monitored by divers to document the survival of fish returned to the ocean. A total of fourteen 96-hour samples were collected (six from Unit 2 and eight from Unit 3).

The report submitted by NMFS included the following significant findings regarding the FRS:

1. Most species of fish entrapped by the Units 2 and 3 intakes were diverted efficiently by the FRS. This was particularly true of such species as kelp bass, salema, yellowfin croaker, northern anchovy, and queen fish. In 1984, 13 of the 15 most abundant species were diverted with 80 percent efficiency, 10 species exceeding 90 percent.
2. With most species, larger individuals were diverted with highest frequency. The northern anchovy appear to be an exception to this rule. However, it is possible that the escape of small anchovies through the traveling screens may be responsible of this exception.
3. Occasionally small fish were eaten by predators as they exited the FRS. Infrequent visits of schooling predators such as jack mackerel appeared to result in highest predation pressure. Schools of these predators (as well as those of California barracuda) were observed during 13 of 80 days of observations at the FRS' discharge.
4. Although post-return survivorship studies in large holding cages at sea were difficult to carry out, the diverted fish generally survived 96 hours in holding cages after diversion. Thus, most fish survived their transit from the FRS.

EFFLUENT LIMITATIONS GUIDELINES

At 40 CFR 125, U.S EPA has established criteria and standards for the NPDES permitting process, including Criteria and Standards for Imposing Technology-Based Treatment Requirements Under Sections 301 (b) and 402 of the Clean Water Act (Subpart A) and Ocean Discharge Criteria (Subpart M). On November 19, 1982 at 40 CFR 423, U.S. EPA has also established technology-based effluent limitations guidelines for the steam electric power point source category, which are applicable to SONGS Units 2 and 3.

ANTI-DEGRADATION

The permitted discharges from SONGS Units 2 and 3 are consistent with the U.S. EPA's anti-degradation requirements at 40 CFR 131.12 and the State Water Resources Control Board's Resolution No. 68-16, *Statement of Policy with Respect to Maintaining High Quality Waters in California*, which requires the Regional Board, in regulating the discharge of wastes, to maintain high quality waters of the State, not unreasonably affect beneficial uses, and not allow water quality less than that described in the Regional Board's policies.

STORM WATER

In Water Quality Order No. 97-03-DWQ (NPDES General Permit No. CAS000001), the State Board adopted Waste Discharge Requirements for Discharges of Storm Water Associated with Industrial Activity, Excluding Construction Activities. On June 10, 1997, the Discharger submitted a Notice of intent for coverage under this general permit, and the State Board confirmed coverage and assigned WDID No. 9 375003198 to the

entire SONGS facility. Storm water discharges from SONGS Units 2 and 3 are therefore not covered under Order Nos. R9-2005-0005 and R9-2005-0006.

NUCLEAR REGULATORY COMMISSION

Section 301 of the Clean Water Act establishes a broad prohibition against the discharge of pollutants except in compliance with the Act's permit requirements; and Section 502 of the Act defines "pollutant" to include, inter alia, radioactive materials [33 U.S.C. 1362 (6)]. The U.S. EPA, which implements the Clean Water Act's prohibition on unauthorized discharges, requires a permit for every discharge of pollutants from a point source to waters of the United States through the NPDES permit program. In its implementing regulations the U.S. EPA also defines "pollutant" to include radioactive materials, but expressly excludes radioactive materials that are regulated under the Atomic Energy Act of 1954. The difference in the mandate of the Clean Water Act and the U.S. EPA's implementing procedures regarding the regulation of radioactive materials by the NPDES program was addressed by the U. S. Supreme Court in 1976, when citizens groups, concerned about potential discharges of radioactive effluents from nuclear facilities in Colorado, sought clarification of the definition of "pollutant." The U.S. Supreme Court found that since the first Atomic Energy Act (AEA) was passed, control over the production and use of atomic energy has rested with the Atomic Energy Commission, which became the Nuclear Regulatory Commission (NRC) in 1972. The AEA gives authority to the NRC to regulate three types of radioactive materials – source material, special nuclear material, and byproduct material. Production of atomic energy for industrial and commercial purposes may be undertaken only in accordance with licenses issued by the NRC, which address potential releases of these nuclear materials into the environment. [426 U.S. 1 (1976)] The Court agreed with the U.S. EPA that the U.S. EPA did not have authority to control radioactive materials that are regulated under the AEA through the NPDES permit program. This Order, therefore, does not regulate radioactive materials to the extent that such materials are the responsibility of the NRC pursuant to the AEA. (Practically, all radioactive materials associated with the fuel source of a nuclear powered electrical generating station, like SONGS, are source material, special nuclear material, or byproduct material, as defined by the AEA, and therefore, not subject to regulation by this Order.)

C. Impaired Water Bodies on CWA 303 (d) List

On June 5 and July 25, 2003, the U.S. EPA approved major portions of the list of impaired water bodies, prepared by the State Board pursuant to Section 303 (d) of the CWA, which are not expected to meet applicable water quality standards after implementation of technology-based effluent limitations for point sources. This 303 (d) list includes 3.7 miles of the Pacific Ocean shoreline within the San Clemente Hydrologic Area as impaired for bacteria indicators. Impairment has been detected at specific near shore locations that are not associated with outfalls from SONGS Units 2 and 3. The receiving waters of SONGS Units 2 and 3 are not otherwise included on the current 303 (d) list.

III. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

The CWA requires point source discharges to control the amount of conventional, nonconventional, and toxic pollutants that are discharged into the waters of the United States. The control of the discharge of pollutants is established through effluent limitations and other requirements in NPDES permits. The CWA establishes two principal bases for effluent limitations. First, dischargers are required to meet technology-based effluent limitations that reflect several levels of control that consider both technical factors as well as costs and economic impact. Second, they are required to meet water quality-based effluent limitations (WQBELs) that are needed to protect applicable designated uses of the receiving water. Dischargers are required to select the effluent limitations that are most stringent.

A. Technology-Based Effluent Limitations

1. Scope and Authority

The CWA requires that technology-based effluent limitations be established based on several levels of controls:

a. Best practicable treatment control technology (BPT), which is based on the average of the best performance by plants within an industrial category or subcategory. BPT standards apply to toxic, conventional, and nonconventional pollutants.

b. Best available technology economically achievable (BAT), which represents the best existing performance of treatment technologies that are economically achievable within an industrial point source category. BAT standards apply to toxic and nonconventional pollutants.

c. Best conventional pollutant control technology (BCT), which is a standard for the control from existing industrial point sources of conventional pollutants including BOD, TSS, fecal coliform, pH, and oil and grease. The BCT standard is established after considering the cost reasonableness of the relationship between the cost of attaining a reduction in effluent discharge and the benefits that would result, and also the cost effectiveness of additional industrial treatment beyond BPT.

d. New source performance standards (NSPS) that represent the best available demonstrated control technology standards. The intent of NSPS guidelines is to set limitations that represent state-of-the-art treatment technology for new sources.

The CWA requires EPA to develop effluent limitations, guidelines and standards (ELGs) representing application of BPT, BCT, BAT, and NSPS. Section 402 (a) (1) of the CWA and 40 CFR 125.3 of the NPDES regulations authorize the use of best professional judgment (BPJ) to derive technology-based effluent limitations on a case-by-case basis where ELGs are not available for certain industrial categories and/or pollutants of concern.

2. Applicable Technology-Based Effluent Limitations

Pursuant to Section 306 (b) (1) (B) of the CWA, U.S. EPA has established standards of performance for the steam electric power point source category, for existing and new sources, at 40 CFR Part 423. These regulations apply to SONGS Units 2 and 3 as "an establishment primarily engaged in the generation of electricity for distribution and sale which results primarily from a process utilizing fossil-type fuel … or nuclear fuel in conjunction with a thermal cycle employing the steam water system as the thermodynamic medium." (40 CFR 423.10) Standards of performance for existing facilities (instead of new source performance standards) are applicable to SONGS Units 2 and 3, because their construction was commenced before the publication of regulations on November 19, 1982, which proposed standards of performance for the industry. Following are applicable technology-based standards of performance (BPT and BAT) applicable to SONGS Units 2 and 3 from the effluent limitations guidelines for existing sources at 40 CFR 423. The guidelines do not include standards of performance based on BCT.

Standards of Performance Based on BPT

a. The pH of all discharges, except once through cooling water, shall be within the range of 6.0 – 9.0. [40 CFR 423.12 (b) (1)]

b. Low volume wastes are defined as those wastewater sources for which specific limitations are not established by the Effluent Limitations Guidelines at 40 CFR 423. The quantity of pollutants discharged from low volume waste sources shall not exceed the quantity determined by multiplying the flow of low volume waste sources times the concentration listed in the following table. [40 CFR 423.12 (b) (3)]:

Pollutant	Daily Max (mg/L)	30 Day Avg (mg/L)
Total Suspended Solids	100	30
Oil and Grease	20	15

c. The quantity of pollutants discharge in metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of metal cleaning wastes times the concentration listed in the following table. [40 CFR 423.12 (b) (5)]:

Pollutant	Daily Max (mg/L)	30 Day Avg (mg/L)
Total Suspended Solids	100	30
Oil and Grease	20	15

d. At the permitting authority's discretion, the quantity of pollutant allowed to be discharged may be expressed as a concentration limitation instead of the mass based limitations required by (b) and (c), above. [40 CFR 423.12 (b) (11)]

Standards of Performance Based on BAT

e. There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid. [40 CFR 423.13 (a)]

f. The quantity of pollutants discharged in once through cooling water from each discharge point shall not exceed the quantity determined by multiplying the flow of once through cooling water from each discharge point times the concentration listed in the following table. [40 CFR 423.13 (b) (1)]

Pollutant	Max Concentration (mg/L)
Total Residual Chlorine	0.2

g. Total residual chlorine may not be discharged from any single generating unit for more than two hours per day unless the Discharger demonstrates to the permitting authority that discharge for more than two hours is required for macroinvertebrate control. [40 CFR 423.13 (b) (2)]. The duration of each chlorination cycle shall not exceed 25 minutes.

h. The quantity of pollutants discharged in chemical metal cleaning wastes shall not exceed the quantity determined by multiplying the flow of metal cleaning wastes times the concentration listed in the following table. [40 CFR 423.13 (e)]

Pollutant	Daily Max (mg/L)	30 Day Avg (mg/L)
Total Copper	1.0	1.0
Total Iron	1.0	1.0

i. At the permitting authority's discretion, the quantity of pollutants allowed to be discharged may be expressed as concentration-based limitations instead of the mass based limitations required by (f) and (h), above. [40 CFR 423.13 (g)]

All applicable standards of performance from 40 CFR 423 were incorporated into Order Nos. 99-47 and 99-48 and are retained in Order Nos. R9-2005-0005 and R9-2005-0006. Differences between the effluent limitations guidelines at 40 CFR 423 and how they are expressed in Order Nos. 99-47and 99-48 and/or Order Nos. R9-2005-0005 and R9-2005-0006 are described below:

(1) Order Nos. 99-47 and 99-48 expressed the pH limitation (a), above, as applicable to the combined discharge from SONGS Units 2 and 3 (Outfalls 002 and 003), and the limitation is retained as such in Order Nos. R9-2005-0005 and R9-2005-0006.

(2) Order Nos. 99-47 and 99-48 established daily maximum, 30-day average, and instantaneous maximum limitations for total suspended solids and for oil and grease, applicable to low volume wastes, as required by the effluent limitations guidelines [(b), above]. These limitations are retained in Order Nos. R9-2005-0005 and R9-2005-0006.

(3) Order Nos. 99-47 and 99-48 established the limitations for iron and copper in chemical, metal cleaning wastes [h, above] as applicable for all metal cleaning wastes. These limitations are retained as such in Order Nos. R9-2005-0005 and R9-2005-0006.

(4) Order Nos. 99-47 and 99-48 required only concentration-based limitations of iron and copper for metal cleaning wastes [h, above]. Order Nos. R9-2005-0005 and R9-2005-0006 include both concentration-based and mass-based limitations for iron and copper, applicable to all metal cleaning wastes.

(5) Order Nos. 99-47 and 99-48 included 6-month median, daily maximum, and instantaneous maximum effluent limitations for total residual chlorine applicable to the combined discharge from Outfalls 002 and 003. These limitations are water quality based limitations derived from the California Ocean Plan, as described below, and are retained in Order Nos. R9-2005-0005 and R9-2005-0006.

B. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

U.S. EPA regulations at 40 CFR 122.44(d)(1)(i) require permits to include WQBELs for pollutants (including toxicity) that are or may be discharged at levels, which cause, have reasonable potential to cause, or contribute to an excursion above any state water quality standard. For discharges to the Pacific Ocean, the Ocean Plan allows the Regional Board little discretion in the application of WQBELs. The Ocean Plan requires the establishment of WQBELs in discharge permits for all Table B toxic pollutants in the Ocean Plan.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

Basin Plan

The Water Quality Control Plan, San Diego Basin (9) *(the Basin Plan)* was adopted by the Regional Board on September 8, 1994 and approved by the State Water Resources Control Board on December 13,1994. The Basin Plan identifies the following beneficial uses of the coastal waters of the Pacific Ocean.

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. Wildlife habitat,
h. Rare, threatened, or endangered species,
i. Marine habitat,
j. Aquaculture,
k. Migration of aquatic organisms,
l. Spawning, reproduction, and/or early development,
m. Shellfish harvesting

By reference, the Basin Plan adopts the *Water Quality Control Plan for Ocean Waters of California* (the Ocean Plan) and the *Water Quality Control Plan for Control of Temperature in the Coastal and Interstate Waters and Enclosed Bays and Estuaries of California* (the Thermal Plan). Although these two plans include most water quality objectives and implementing procedures that are applicable to discharges to the Pacific Ocean, the Basin Plan includes the following water quality objectives for dissolved oxygen and pH in ocean waters, which have been incorporated into Order Nos. R9-2005-0005 and R9-2005-0006.

Dissolved Oxygen
The dissolved oxygen concentration in ocean waters shall not at any time be depressed more than 10 percent from that which occurs naturally, as a result of the discharge of oxygen demanding waste materials.

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

Ocean Plan

The Basin Plan for the San Diego Basin adopts by reference the Ocean Plan (2001), which establishes beneficial uses and water quality objectives and procedures for their implementation to protect the quality of the State's ocean waters. Order Nos. 99-47 and 99-48 were written using the guidance of the Ocean Plan of 1997, and Order Nos. R9-2005-0005 and R9-2005-0006 have been written using the guidance of the updated 2001 Ocean Plan.

For all ocean waters of the State, the Ocean Plan establishes the beneficial uses described previously in this Fact Sheet. The Ocean Plan includes general provisions and water quality objectives for bacterial characteristics, physical characteristics, chemical characteristics, biological characteristics, and radioactivity. These water quality objectives from the Ocean Plan have been incorporated word-for-word as receiving water limitations into Order Nos. R9-2005-0005 and R9-2005-0006 and were also included in the previous orders for SONGS Units 2 and 3. Unlike Order Nos. 99-47 and 99-48, Order Nos. R9-2005-0005 and R9-2005-0006 includes the water quality objective for radioactivity as a receiving water limitation; however Section II. B of this Fact Sheet explains that the NPDES program applies only to those radioactive pollutants not regulated solely by the Nuclear Regulatory Commission pursuant to Atomic Energy Act of 1954.

Table B of the Ocean Plan includes the following water quality objectives for chemicals and chemical characteristics and requires that effluent limitations be established in NPDES permits for each chemical or chemical characteristic:

a. 6-month median, daily maximum, and instantaneous maximum objectives for 21 chemicals and chemical characteristics, including total residual chlorine and chronic toxicity, for the protection of marine aquatic life.
b. 30-day average objectives for 20 non-carcinogenic chemicals for the protection of human health.

c. 30-day average objectives for 42 carcinogenic chemicals for the protection of human health

From the Table B water quality objectives, effluent limitations for the **combined discharge** from Units 2 or 3 are calculated according to the following equation for all chemicals and chemical characteristics, except for chlorine, acute toxicity (if applicable), and radioactivity:

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

Where:

Ce = the effluent limitation (µg/L)
Co = the water quality objective to be met at the completion of initial dilution (µg/L)

Cs = background seawater concentration (µg/L)
Dm = minimum probable initial dilution expressed as parts seawater per part wastewater

For SONGS Units 2 and 3, Dm equals 10, based on observed waste flow characteristics, receiving water density structure, and the assumption that no currents of sufficient strength to influence the initial dilution process flow across the discharge structure. Initial dilution is the process that results in the rapid and irreversible turbulent mixing of wastewater with ocean water around the point of discharge. In accordance with Table B implementing procedures, Cs equals zero for all chemicals and chemical characteristics, except the following:

Background Seawater Concentrations (Cs)	
Pollutant	**Cs (µg/L)**
Arsenic	3
Copper	2
Mercury	0.0005
Silver	0.16
Zinc	8

As examples, effluent limitations for copper, chronic toxicity, chloroform, and chlorine are determined as follows.

Water quality objectives from the Ocean Plan are:

Pollutant	**6-Month Median**	**Daily Maximum**	**Instantaneous Maximum**	**30 Day Average**
Copper (µg/L)	3	12	30	-
Chronic Toxicity (TUc)	-	1	-	-
Chloroform (µg/L)	-	-	-	130
Chlorine (µg/L)	2	8	60	-

Using the equation, Ce = Co + Dm (Co – Cs), effluent limitations are calculated:

Copper

Ce = 3 + 10 (3 – 2) = 13 µg/L (6-Month Median)
Ce = 12 + 10 (12 – 2) = 112 µg/L (Daily Maximum)
Ce = 30 + 10 (30 – 2) = 310 µg/L (Instantaneous Maximum)

Chronic Toxicity

Ce = 1 + 10 (1 - 0) = 11 TUc (Daily Maximum)

Chloroform

Ce = 130 + 10 (130 – 0) = 1,430 µg/L

Chlorine

Ce = 2 + 10 (2 – 0) = 22 µg/L (6-Month Median)
Ce = 8 + 10 (8 – 0) = 88 µg/L (Daily Maximum)
Ce = 60 + 10 (60 – 0) = 660 µg/L (Instantaneous Maximum)

For intermittent chlorine sources, such as SONGS Units 2 and 3, water quality objectives for chlorine are variable (based on chlorination cycle time) and determined in accordance with the following equation from footnote c of Table B:

log y = - 0.43 (log x) + 1.8

where:

y = the water quality objective to apply when chlorine is being discharged (µg/L)

x = the duration of uninterrupted chlorine discharge in minutes

As an example, for SONGS Units 2 and 3, which normally discharge chlorine for 25 minute uninterrupted intervals, the applicable water quality objective for intermittent discharges of chlorine is calculated as follows:

log y = - 0.43 (log 25) + 1.8 = 1.199

y = 16 µg/L

Based on a water quality objective for chlorine of 16 µg/L for intermittent chlorine applications, using the equation, Ce = Co + Dm (Co – Cs), an effluent limitation for chlorine, is calculated:

Ce = 16 + 10 (16 – 0) = 176 µg/L

Conversely, an uninterrupted chlorine discharge of 40 minutes will render a water quality objective of 13 µg/l and an effluent limitation of 143 µg/l for chlorine.

The Regional Board is applying this effluent limitation for chlorine as the instantaneous maximum limitation applicable during chlorination events, so that the final water quality based effluent limitations for chlorine, applicable to the combined discharge through Outfalls 002 and 003, are as follows:

6-Month Median	Daily Maximum	Instantaneous Maximum
22 µg/L	88 µg/L	Based on the chlorination

		cycle time of each Unit and calculated using equation listed in Table B, *note c.*, of the 2001 Ocean Plan

Section III.C of the Ocean Plan (2001) is ambiguous in appearing to require establishment of effluent limitations for both acute and chronic toxicity for all ocean dischargers but requiring, only chronic, not acute, toxicity monitoring when the minimum initial dilution of the effluent is below 100 to 1. Further, the Ocean Plan provides an equation for determining acute toxicity limitations, which allow for a mixing zone for the acute toxicity objective that is 10 percent of the distance from the edge of the outfall structure to the edge of the chronic mixing zone. The Ocean Plan states that this equation applies only when the minimum probable initial dilution is greater than 24 to 1. The Regional Board, in consultation with the SWRCB staff, has concluded that an acute toxicity limitation is not required for discharges from SONGS Units 2 and 3 through Outfalls 002 and 003, which receive a minimum probable initial dilution of 10 to 1. Because new information (the revised Ocean Plan) is available since adoption of Order Nos. 99-47 and 99-48, the elimination of acute toxicity limitations from Order Nos. R9-2005-0005 and R9-2005-0006 does not violate anti-backsliding prohibitions of the Clean Water Act. Order Nos. R9-2005-0005 and R9-2005-0006 do include chronic toxicity limitations, which are consistent with Ocean Plan requirements, and which are more meaningful than acute toxicity limitations for the high volume, dilute flows typical of Outfalls 002 and 003.

Based on the implementing procedures described above, effluent limitations have been calculated for all Table B pollutants from the Ocean Plan and incorporated into Order Nos. R9-2005-0005 and R9-2005-0006. Section III.C.7.d. of the Ocean Plan describes compliance determination for Table B pollutants for dischargers which use a large volume of ocean water for once through cooling and states:

> *Effluent concentration values (Ce) shall be determined through the use of equation 1 considering the minimum probable initial dilution of the combined effluent (in-plant waste streams plus cooling water flow). These concentration values shall then be converted to mass emission limitations as indicated in equation 3. The mass emission limits will then serve as requirements applied to all in-plant waste streams taken together which discharge into the cooling water flow, except that limits for total chlorine residual, acute [if applicable per Section 3 (c)] and chronic toxicity, and instantaneous maximum concentrations in Table B shall apply to, and be measured in, the combined final effluent, as adjusted for dilution with ocean water.*

In accordance with guidance of the Ocean Plan for dischargers which use a large volume of ocean water for once through cooling, Order Nos. R9-2005-0005 and R9-2005-0006 have established water quality based effluent **concentration limitations**, applicable to the **combined discharge** through Outfalls 002 and 003, for total chlorine residual, chronic toxicity, and all for all toxic chemicals requiring instantaneous maximum

limitations for protection of marine aquatic life. In addition, **mass emission limitations**, applicable to the **combined flow of low volume, in-plant wastes**, are established for pollutants requiring 6-month median and daily maximum limitations for protection of marine aquatic life and for pollutants requiring 30-day average effluent limitations for protection of human health.

Most of the water quality based effluent limitations established by Order Nos. 99-47 and 99-48 are retained in Order Nos. R9-2005-0005 and R9-2005-0006. Differences between the water quality based effluent limitations in Order Nos. R9-2005-0005 and R9-2005-0006 and Order Nos. 99-47 and 99-48 are described below:

a. Maximum mass emission limitations for toxics in the **combined low-volume, in-plant discharges**, from Units 2 and 3 were based on the combined discharge flow of 1,287 mgd (i.e. total volume of cooling water and other flows being discharged from Outfalls 2 or 3) in Order Nos. 99-47 and 99-48. In Order Nos. R9-2005-0005 and R9-2005-0006, the mass emission limitation calculations are based exclusively on the total maximum low-volume in-plant wastestream flows (cooling water volumes are not factored into the calculations). The mass emission limitations calculations for individual toxics in Order Nos. R9-2005-0005 and R9-2005-0006 utilized a combined low-volume flow of 13.2 mgd (i.e. 1.38 mgd from Unit 1 and 11.8 mgd from Units 2 or 3) in conjunction with a Dm value of 10 and the water quality objectives listed in Table B of the Ocean Plan.

   The maximum combined low-volume discharges from Units 2 or 3 are 11.8 mgd in volume and include the following individual wastestreams (pursuant to 40 CFR 423, *Effluent Limitations Guidelines for the Steam Electric Power Generating Point Source Category*, treated domestic wastewater or metal cleaning wastes are not categorized as low-volume wastewaters):

   - Blowdown Processing
   - Makeup Demineralizer System
   - Radwaste System
   - Polishing Demineralizer System
   - Steam Generator Blowdown
   - Hotwell Overboard
   - Plant Drains (Building Sump)
   - Intake Structure Sump
   - Concrete Cutting Cooling Water

   The maximum combined low-volume discharges from Unit 1 are 1.38 mgd in volume and include the following individual wastestreams:

   - Radwaste System
   - Yard Drains
   - Dewatering Discharges

b. Order Nos. 99-47 and 99-48 did not include concentration-based, instantaneous maximum limitations for the **combined discharge** for cyanide, ammonia, non-chlorinated phenolic compounds, chlorinated phenolics, endosulfan, endrin, and HCH. Pursuant to the Ocean Plan (2001), limitations for these pollutants are required for protection of marine aquatic life. Limitations for these compounds are established by Order Nos. R9-2005-0005 and R9-2005-0006 for the combined discharge with a maximum flow rate 1,287 mgd.

c. Order Nos. 99-47 and 99-48 established the following water quality based effluent limitations, applicable to the **combined discharge** through Outfalls 002 and 0003, for total residual chlorine and acute and chronic toxicity:

	30 Day Avg	**Weekly Avg**	**Daily Max**	**Inst Max**
Total Residual Chlorine (µg/L)	22	88	200	-
Acute Toxicity (TUa)	1.5	2.0	-	2.5
Chronic Toxicity (TUc)	-	-	10	-

Order Nos. R9-2005-0005 and R9-2005-0006 do not include an effluent limitation for acute toxicity but do establish the following effluent limitations for total residual chlorine and chronic toxicity applicable to the combined discharge through Outfalls 002 and 003.

	6 Month Median	**Daily Max**	**Inst Max**
Total Residual Chlorine (µg/L)	22	88	Based on the chlorination cycle time of each Unit and calculated using equation listed in Table B, *note c.*, of the 2001 Ocean Plan
Chronic Toxicity (TUc)	-	11	-

The 2001 Ocean Plan requires 6-month median, daily maximum, and instantaneous maximum limitations for chlorine. The proposed 6-month median and daily maximum limitations have been determined from water quality objectives from Table B of the Ocean Plan. The proposed instantaneous maximum chlorine limitation is function of the chlorination cycle time and is calculated in accordance with footnote c of Table B for intermittent chlorine applications.

The basis for the chronic toxicity limitation in Order Nos. 99-47 and 99-48 is unclear. Because it was derived before revision of the Ocean Plan in 2001, however, water quality objectives and implementing procedures of the revised Ocean Plan represents new information, and the proposed limitation for chronic toxicity represents a permissible exception to the anti-backsliding provisions of

the Clean Water Act – information is now available that was not available at the time of issuance of Order Nos. 99-47 and 99-48. [CWA Section 402 (o)(2)(B)].

d. Order Nos. R9-2005-0005 and R9-2005-0006 acknowledge the impending termination of flows from Unit 1 to the Unit 1 outfall and the routing of up to 36.6 mgd of combined discharge flows from Unit 1 to the Unit 2 or 3 outfalls. Both Orders are structured to account for effluent limitations and monitoring requirements as a result of the potential routing of Unit 1 flows to the Units 2 or 3 outfalls. The total permitted flow through the Unit 2 and 3 outfalls shall, however, remain unchanged at 1,287 mgd. Furthermore, the concentration-based effluent limitations for the combined discharge through the Unit 2 and 3 outfalls are also not adjusted due to Unit 1 flows.

IV. MONITORING AND REPORTING REQUIREMENTS

40 CFR 122.48 requires all NPDES permits to specify recording and reporting of monitoring results. Sections 13267 and 13383 of the California Water Code require technical and monitoring reports. The Monitoring and Reporting Program (MRP) for Order Nos. R9-2005-0005 and R9-2005-0006 establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the MRPs for Order Nos. R9-2005-0005 and R9-2005-0006.

In an effort to standardize monitoring and reporting requirements and in order to support electronic data submittal of discharger self-monitoring reports, reporting units, definitions, and deadlines specified in the MRP for Order Nos. R9-2005-0005 and R9-2005-0006 have been written in accordance with the State Water Resource Control Board's *Water Quality Permit Standards Team Final Report***.**

A. Influent Monitoring

Fish Impingement

MRP Nos. 99-47 and 99-48 require that fish impingement monitoring be performed at the SONGS Units 2 and 3 intake structures during heat treatments and for at least one continuous 24-hour period per quarter during normal operations. The discharger is required to determine the total weight and number of each fish species removed from the traveling bar racks and screens during each monitoring event, as well as the length and sex in a representative sample.

In 2003, a total of 62 species of fish were counted at the Unit 2 intake structure. When fish count and weight is extrapolated to account for total influent flow, the estimated fish impingement in 2003 was 995,398 individuals weighing 5,644 kilograms. The top 15 species accounted for 99.7 percent of the total number and 98.3 percent of the total weight. Northern anchovies were the most numerous species contributing 88.8 percent of the total

number of fish and 61 percent of the total weight. Queenfish were the second most abundant species with 8.2 percent of the number and 19.3 percent of the total biomass.

In 2003, a total of 60 species of fish were counted at the Unit 3 intake structure. When fish count and weight is extrapolated to account for total influent flow, the estimated fish impingement in 2003 was 2,569,039 individuals weighing 16,279 kilograms. The top 15 species accounted for 99.9 percent of the total number and 99.5 percent of the total weight. Northern anchovies were the most numerous species contributing 88.8 percent of the total number of fish and 60.8 percent of the total weight. Queenfish were the second most abundant species with 7.5 percent of the number and 17.9 percent of the total biomass.

The MRPs for Order Nos. R9-2005-0005 and R9-2005-0006 retain the requirements of Order Nos. 99-47 and 99-48 for fish entrainment monitoring at the Unit 2 and 3 and intake structures.

B. Effluent Monitoring

In an effort to standardize monitoring and reporting requirements and in order to support electronic data submittal of discharger self-monitoring reports, reporting units, definitions, and deadlines specified in the MRPs for Order Nos. R9-2005-0005 and R9-2005-0006 have been written in accordance with the State Water Resource Control Board's *Water Quality Permit Standards Team Final Report***.**

Monitoring and Reporting Requirements for Order Nos. R9-2005-0005 and R9-2005-0006 are summarized in the following table. The MRPs should be consulted for greater detail regarding specific monitoring requirements:

System/Pollutants	**Monitoring Frequency**
Main Condenser Cooling Water Inflow	
Flow, Temperature	Continuous
pH, Turbidity	Monthly
Combined Discharge (Outfalls 002 and 003)	
Flow, Temperature	Continuous
pH, Turbidity	Monthly
Total Residual Chlorine	Weekly
Chronic Toxicity	Quarterly
Hydrazine	Monthly
Table B Pollutants (Aquatic Life)	Semiannually
Combined Low Volume Wastewaters	
Table B Pollutants	Annually
Individual Low Volume Wastewaters	
Metal Cleaning Wastewaters	
TSS, O&G	prior to discharge
Iron, Copper	prior to discharge
Other Low Volume Wastewaters	
Flow	Continuous

pH, TSS, O&G	Monthly
Sewage Treatment Plant Influent	
TSS	Monthly
Sewage Treatment Plant Effluent	
Flow	Daily
pH, TSS, O&G, Settleable Solids	Monthly

Most monitoring requirements from Order Nos. 99-47 and 99-48, including those established by Addendum No. 1 to Order Nos. 99-47 and 99-48 (August 30, 2000) are incorporated into the MRPs for Order Nos. R9-2005-0005 and R9-2005-0006. Discussion of monitoring requirements in Order Nos. 99-47 and 99-48 and those in the MRPs for Order Nos. R9-2005-0005 and R9-2005-0006, highlighting differences between the Orders, follows:

1. Due to reformatting, many provisions of MRP Nos. 99-47 and 99-48 appear in endnotes or in attachments to the MRPs for Order Nos. R9-2005-0005 and R9-2005-0006.

2. Cooling water intake monitoring requirements are unchanged and retained from Order Nos. 99-47 and 99-48.

3. There are three changes in monitoring requirements for the combined discharge through Outfalls 002 or 003 (combined discharges through individual Outfalls 002 or 003 are the combined flows of once through main condenser cooling water, low volume wastewaters, and all other wastewater flows from Units 2 or 3. Combined discharges through Outfalls 002 or 003 shall also include cooling water, low-volume wastewaters, and treated domestic wastewaters from Unit 1 whenever the discharger routes these Unit 1 flows through Outfalls 002 or 003):

   a. Order Nos. 99-47 and 99-48 required both acute and chronic toxicity monitoring. As discussed previously in the Fact Sheet, only a chronic toxicity limitation is established by Order Nos. R9-2005-0005 and R9-2005-006, and therefore, only chronic toxicity monitoring is required by the MRPs. A chronic toxicity limitation (and quarterly monitoring requirement) will provide more meaningful information regarding the nature of the discharge than an acute toxicity limitation and monitoring requirement in the high volume, dilute flows typical of Outfalls 002 and 003. Chronic toxicity monitoring procedures are changed to conform to the requirements of the 2001 Ocean Plan.

   b. Order Nos. 99-47 and 99-48 required semiannual monitoring for 10 metals which have water quality criteria listed in the Ocean Plan for protection of aquatic life. As discussed previously, Order Nos. 99-47 and 99-48 did not include combined discharge limitations for organics and non-metals which have aquatic life protection criteria. These additional seven pollutants (i.e. cyanide, ammonia, non-chlorinated phenolic compounds, chlorinated

phenolics, endosulfan, endrin, and HCH) were only addressed in the in-plant, low-volume monitoring program.

In accordance with Section III.C.7.d of the Ocean Plan, Order Nos. R9-2005-0005 and R9-2005-0006 has established concentration-based effluent limitations and semiannual monitoring for these seven additional pollutants for the combined discharge.

c. Order Nos. 99-47 and 99-48 require total residual chlorine in the combined discharge to be monitored on a monthly basis. Although monitoring data for the last two years has not indicated any violations in the total chlorine residual discharge limitation, this monitoring regimen may be insufficient due to the intermittent nature of chlorination cycles (i.e. typically 4 cycles per day, 25 minutes per Unit per cycle). The monitoring frequency for total residual chlorine in the MRPs for Order Nos. R9-2005-0005 and R9-2005-0006 has been increased from monthly to weekly.

4. Order Nos. 99-47 and 99-48 established monitoring requirements for "in-plant waste streams." The Discharger was required to composite a flow proportionate sample from specifically identified wastewater streams, which generally included all wastewaters originating from Units 2 and 3, except discharges of once through cooling water. The Discharger was also required to include in-plant wastestreams from Unit 1, when Unit 1 was diverting its in-plant wastestreams to the Unit 2 or Unit 3 outfalls (instead of the Unit 1 outfall). In-plant waste streams also included treated domestic wastewater from the Unit 1 and Mesa Complex sewage treatment plants. Analysis for pH and all Table B pollutants of the Ocean Plan was required annually.

Order Nos. R9-2005-0005 and R9-2005-006 also include monitoring requirements for "combined low volume wastewaters," which are the equivalent of "in-plant waste streams" from Order Nos. 99-47 and 99-48. In general, these wastewaters include all wastewaters originating from individual Units 2 or 3, except discharges of once through cooling water. To remain consistent with the definition of low volume wastes from the *Effluent Limitations Guidelines for the Steam Electric Power Generating Point Source Category* (40 CFR 423), Order Nos. R9-2005-0005 and R9-2005-0006 do not include treated domestic wastewater or metal cleaning wastes as low volume wastewaters. The individual, low volume wastewaters identified by Order Nos. R9-2005-0005 and R9-2005-0006 are:

- Blowdown Processing
- Makeup Demineralizer System
- Radwaste System
- Polishing Demineralizer System
- Steam Generator Blowdown

- Hotwell Overboard
- Plant Drains (Building Sump)
- Intake Structure Sump
- Concrete Cutting Cooling Water

Order Nos. R9-2005-0005 and R9-2005-0006 each require annual collection of separate flow weighted composite sample of low volume wastewaters originating from Units 2 and 3 respectively. Unit 1 low-volume wastewaters will be included in the in composite samples with Units 2 or 3 whenever the Discharger routes its effluent to the Units 2 or 3 outfalls (instead of the Unit 1 outfall). Once the Discharger permanently terminates usage of the Unit 1 outfall and rescinds Order No. 2000-04 (for Unit 1), all low-volume wastewaters from Unit 1 will be composited with low-volume wastewater from Units 2 or 3 on a routine basis.

The low-volume wastewaters from Unit 1 that will have to be composited with the Units 2 or 3 low-volume wastewaters include:

- Radwaste System
- Yard Drains
- Dewatering Discharges

The Regional Board acknowledges that, at the time of sample collection, it may not be possible to collect a sample aliquot from each low volume wastewater, and therefore certain wastewaters are identified as being of higher priority. The proportion of each waste stream to be added to the composite sample must be based on the actual (preferred) or estimated flow rates for the day on which samples are collected. The following example describes how a flow-weighted composite sample should be collected.

Say that the following individual low volume wastewaters are sampled. The flow rate for each individual wastewater is determined for that day, and the relative amount/volume, in percent, of each individual waste stream is determined. Using the percentages of each individual waste stream in the total, the amount of each individual waste stream to be composited in a five gallon (18,927 mls) sample is calculated. In the example, below, on the day of sample collection, condenser overboard flow accounts for 69 percent of the total flow of the low volume wastewaters that are sampled. 69 percent of five gallons equals 0.69 x 18,927 milliliters, which equals 13,060 milliliters. (There are 3,785 mLs per gallon and 18,927 mLs per five gallons.)

Low Volume Wastewater	**Flow**	**Percent of Total Flow**	**mLs to be Composited in a 5 Gal Sample**
Condenser Overboard	6.5 mgd	69	13,060
Makeup Demineralizer System	0.58 mgd	6	1,136

Radwaste System	0.25 mgd	3	568
Steam Generator Blowdown	0.43 mgd	5	946
Polishing Demineralizer System	1.5 mgd	16	3,028
Concrete Cutting Cooling Water	0.10 mgd	1	189
Total	9.45 mgd	100 percent	18,927 mls

Individual low volume waste stream monitoring requirements are unchanged and retained from Order Nos. 99-47 and 99-48.

Because treated domestic wastewaters have only been discharged through SONGS Outfall 001, Order Nos. 99-47 and 99-48 did not include monitoring requirements for effluent from the Unit 1 and Mesa Complex sewage treatment plants. Order Nos. R9-2005-0005 and R9-2005-0006 do include monitoring requirements for effluent from the Unit 1 and Mesa sewage treatment plants that will be effective only when treated domestic wastewater is being discharged through Outfalls 002 or 003. The proposed monitoring requirements are the same as those included in Order No. 2000-04 (for Unit 1).

Order Nos. 99-47 and 99-4 (and Order Nos. R9-2005-0005 and R9-2005-0006) do not have any specific monitoring/reporting requirements for Outfalls 004 (fish return system) and 005 (across the beach discharge) since there are no significant pollutants discharged from these outfalls. Order Nos. R9-2005-0005 and R9-2005-0006 required that all incidents of across the beach discharges through Outfall 005 shall be recorded and reported for the month during which the discharge occurred. The discharger shall report the date, time, and duration of each discharge; the source (system) of the wastewater that is discharged; an estimate of the volume discharged; and any other monitoring data that is generated during the discharge.

C. Receiving Water Monitoring

1. *Bacteria Monitoring*

Order Nos. 99-47 and 99-48, through Addendum No. 1, required the discharger to conduct coliform, fecal coliform, and enterococcus monitoring at two offshore and two surfzone receiving water stations in the vicinity of the SONGS Unit 1 outfall. At the offshore locations samples were required from the surface, mid-depth, and bottom. All sampling and bacterial analyses were required monthly, except from April 1 to October 31, when weekly sampling was required at one of the surfzone stations, the San Onofre State Beach.

In supplemental application materials submitted to the Regional Board for permit renewal on March 30, 2004, the discharger requested that bacteria monitoring at receiving water locations, as required by Order Nos. 99-47 and 99-48, be eliminated. The Regional Board has reviewed bacterial monitoring data submitted by the Discharger and finds that bacterial contamination is not a significant component of the discharge through Outfall

001 (where domestic wastewaters have been discharged in the past). To date, no samples collected in the vicinity of the Outfall 001 have shown elevated bacteria levels that exceed water quality criteria of the Ocean Plan. Infrequently elevated levels of enterococcus coliform bacteria found at near shore locations appear to be associated with storm water runoff and/or natural effects, such as rotting kelp. Because treated domestic wastewaters from the Mesa Complex and Unit 1 sewage treatment plants are diluted by 15 – 35 mgd, when discharged through Outfall 001, and would be diluted by at least 1,219 mgd, if discharged through Outfalls 002 or 003; and because bacteriological monitoring is already conducted by the San Diego County Department of Health near the SONGS facility, Order Nos. R9-2005-0005 and R9-2005-0006 do not include the receiving water, bacterial monitoring program established by Addendum No. 1 to Order Nos. 99-47 and 99-48 (adopted August 30, 2000).

2. *Continuous Temperature Monitoring*

Monitoring and Reporting Program (MRP) Nos. 99-47 and 99-48 require that continuously recording thermographs be employed at three receiving water stations. Temperature measurements are required from the surface, at 5 and 10 meters, and at near bottom depths on an hourly basis. Continuous water temperature data for 2003 showed the mean seasonal surface temperatures in summer were 20.2 to 20.4º C. The mean winter surface temperatures were 15.3 to 15.7º C. In 2003, sea surface temperatures fluctuated from - 4º to 2º C around the long term mean.

In 2003, there were 9 periods of conspicuous, short term temperature decreases, as evidenced by measurements at the surface and at the bottom. The decreases occurred between mid March and October, with the largest decreases occurring between mid August and late September. The short term temperature reductions appear to be related to the strong and persistent wind forced upwelling noted along the west coast of North America in 2003, with the largest, late summer events associated with seasonal tropical storms.

Order Nos. R9-2005-0005 and R9-2005-0006 retain the requirements of Order Nos. 99-47 and 99-48 for continuous temperature monitoring.

3. *Aerial Photographic Surveys*

MRP Nos. 99-47 and 99-48 require aerial photographic surveys to be conducted in the area of the Unit 2 and 3 diffuser systems.

As discussed below, the Regional Board has reviewed study data from an offshore transmissivity monitoring program and in-plant studies on effluent turbidity and agreed with Discharger's assertion that the Unit 2 and 3 discharges do not cause appreciable reductions in light transmission beyond the zone of initial dilution. Although Order Nos. R9-2005-0005 and R9-2005-0006 do not include a requirement to conduct offshore transmissivity monitoring, they retain the requirement for aerial photographic surveys of the discharge area.

4. *Trawling Surveys*

MRP Nos. 99-47 and 99-48 require quarterly offshore trawling at 20, 40, and 60 ft. isobaths at three offshore locations. Collected fish are to be counted and identified, and sex determination is required for selected species.

In 2003, surveys were conducted on March 19, June 10, September 2, and November 6. A total of 1,107 fish representing 25 species were taken during these surveys. Comparison of catch between the San Onofre and reference sites in 2003 indicate that the total number of fish and species richness remain similar to the reference sites.

The MRPs for Order Nos. R9-2005-0005 and R9-2005-0006 retain the requirements of Order Nos. 99-47 and 99-48 for trawling surveys.

5. *Kelp Densities*

MRP Nos. 99-47 and 99-48 require identification and counting of giant kelp plants greater than 2 meters three times per year at six sampling sites in the San Onofre Kelp. Substrate is to be qualitatively described. Random sampling is also required on a semiannual basis. Analysis of kelp bed densities has occurred since 1978 in stations located throughout the San Onofre Kelp; and the MRPs for Order Nos. R9-2005-0005 and R9-2005-0006 retain the requirements of Order Nos. 99-47 and 99-48 for kelp density monitoring.

6. *Kelp Bed Monitoring*

MRP Nos. 99-47 and 99-48 require the discharger to participate with other ocean discharges in the San Diego Region in an annual photographic survey of regional kelp beds. Using vertical aerial infrared photography, the purpose of the annual survey is to compare the extent of coastal kelp bed coverage areas to historical surveys. Significant, persistent losses must be investigated by divers to determine probable reasons for the loss. The MRPs for Order Nos. R9-2005-0005 and R9-2005-0006 retain the requirements of Order Nos. 99-47 and 99-48 for kelp bed monitoring.

7. *Temperature Profiles*

MRP Nos. 99-47 and 99-48 require development of temperature profiles, from surface to bottom, on a quarterly basis, at 29 receiving water locations.

Vertical temperature gradients were generally weak in 2003. From January through early March and in late November through December, gradients of less than 0.1º C per meter were measured. Moderate to strong gradients were observed from mid June through October, with a maximum gradient noted of 0.8º C per meter at one monitoring station. A short-term reverse in temperature stratification occurred in March 2003 at one

monitoring station, when bottom temperatures were measured up to 0.3º C warmer than temperatures at the surface.

The MRPs for Order Nos. R9-2005-0005 and R9-2005-0006 retain the requirements of Order Nos. 99-47 and 99-48 for temperature profiling.

8. *Transmissometer Profiles*

The Ocean Plan includes a water quality objective which requires that natural light not be significantly reduced at any point outside the zone of initial dilution as the result of the discharge of waste.

The Marine Review Committee of the California Coastal Zone Conservation Commission has estimated that the average level of natural light on the sea bottom at stations located downcoast from the SONGS Units 2 and 3 outfall diffusers is lowered by 6 to 16 percent relative to the level that would occur in the absence of SONGS during a downcoast current. The California Coastal Commission has acknowledged the findings of the Marine Review Committee and has conditioned the discharger's coastal permit to require mitigation that will offset the marine resource impacts that have been caused by SONGS Units 2 and 3 as identified by the Marine Review Committee.

On April 18, 1983, on a helicopter flight over the Outfall 003 diffusers, the Regional Board observed discoloration around the outfall, apparently as a result of operation of the SONGS Unit 3 circulating water pumps.

On February 10, 1992, the Regional Board held a special session to consider possible non-compliance with the water quality objective of the Ocean Plan for transmissivity by SONGS Units 2 and 3 following extensive studies performed for the Marine Review Committee. The Regional Board concluded that there was still insufficient information to support a finding of non-compliance. The Discharger was required to conduct a one-year study of turbidity at the Units 2 and 3 intake and outfalls for one year. This study, completed by the discharger in 1996, concluded that the turbidity of in-plant waste streams at SONGS Units 2 and 3 do not vary significantly from the turbidity naturally present in the once-through cooling water, which comprises the majority of the net discharge. Furthermore, the study concluded that the Unit 2 and 3 discharges do not cause a statistically significant reduction in natural light transmission at any point outside the zone of initial dilution.

MRP Nos. 99-47 and 99-48 require the discharger to develop surface to bottom profiles of light transmittance on a quarterly basis at 29 receiving water stations. In supplemental application materials submitted to the Regional Board for permit renewal on March 30, 2004, the discharger requested that transmissivity monitoring at receiving water locations be discontinued.

Monitoring of light transmittance during four separate oceanographic surveys in 2003 found no floating particulates, grease, oil, or noticeable discoloration of the sea surface

attributable to the SONGS facility. Further, transmissivity monitoring in 2003 and aerial photographic surveys suggested that transmissivity in the study area was strongly related to station depth and natural turbidity effects, and not the result of generating station effects.

The Regional Board has reviewed study data from the offshore transmissivity monitoring program and in-plant studies on effluent turbidity and concurs with Discharger's assertion that the Units 2 and 3 discharges do not cause appreciable reductions in light transmission beyond the zone of initial dilution. The Regional Board finds that the Units 2 and 3 discharges are compliant with the Ocean Plan prohibition against such adverse discharges. Order Nos. R9-2005-0005 and R9-2005-0006 do not include the provision to conduct offshore transmissivity monitoring but retain the requirement for aerial photographic surveys of the discharge area.

9. *Water Quality Measurements*

MRP Nos. 99-47 and 99-48 require quarterly monitoring of dissolved oxygen (DO) and pH at the surface of 10 receiving water stations. In 2003, DO concentrations in receiving water were similar to the results at the control stations in all quarterly monitoring events. The MRPs for Order Nos. R9-2005-0005 and R9-2005-0006 retain the requirements of Order Nos. 99-47 and 99-48 for pH and dissolved oxygen monitoring.

V. RATIONALE FOR SPECIAL PROVISIONS

A. Special Studies and Additional Monitoring Requirements [316 (b)]

On June 9, 2004, U.S. EPA promulgated new requirements to minimize adverse environmental impacts associated with existing cooling water intake structures under Section 316(b) of the Clean Water Act. This regulation, commonly referred to as "316(b) Phase II", will require existing dischargers of a certain size to adopt new technologies to reduce impingement mortality and entrainment to within a targeted range, or demonstrate a reasonable alternative for compliance. The facility will be required to update existing 316(b) demonstration studies and to provide a basis for selecting a compliance strategy as Best Technology Available (BTA). (See Section II.B, *CWA Section 316(b)* of this Fact Sheet).

B. Best Management Practices and Pollution Prevention

Section 402 of the Clean Water Act and U.S. EPA regulations 40 CFR 122.44 (k) authorize the requirement of best management practices, or BMPs, in NPDES permits. BMPs are measures for controlling the generation of pollutants and their release to waterways. These measures are important tools for waste minimization and pollution prevention.

Order Nos. R9-2005-0005 and R9-2005-0006 require the Discharger to maintain a BMP Plan that incorporates practices to achieve the objectives and specific requirements in the permit. The BMP Plan must be revised as new practices are developed for the facility.

The BMP Plan must be designed to prevent, or minimize the potential for, the release of toxic or hazardous pollutants, including any such pollutants from ancillary activities to waters of the United States. The BMP Plan shall be consistent with the general guidance contained in the U.S. EPA *Guidance Manual for Developing Best Management Practices (BMPs)* (EPA 833-B-93-004). The Discharger shall maintain the BMP Plan in an up-to-date condition and shall amend the BMP Plan in accordance with 40 CFR 125.100 - 125.104 whenever there is a change in facility design, construction, operation, or maintenance, which materially affects the potential for discharge from the SONGS facilities of significant amounts of hazardous or toxic pollutants into waters of the United States.

VI. PUBLIC PARTICIPATION

The California Regional Water Quality Control Board, San Diego Region (Regional Board) is considering the issuance of waste discharge requirements (WDRs) that will serve as a National Pollutant Discharge Elimination System (NPDES) permit for SONGS Units 2 and 3. As an initial step in the WDR process, the Regional Board staff has developed tentative WDRs. The Regional Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Regional Board has notified the permittee and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through the publication in the San Diego Union-Tribune and Orange County Register newspapers no less than 30 days prior to the scheduled hearing of March 9, 2005.

B. 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:

John H. Robertus, Executive Officer
Attn: Industrial Compliance Unit
Regional Water Quality Control Board, San Diego Region
9174 Sky Park Court, Suite 100
San Diego, California 92123

To ensure that the Regional Board has the opportunity to fully study and consider written material, comments regarding Order Nos. R9-2005-0005 and R9-2005-0006 should be

received in the Regional Board's office no later than 5:00 PM on February 25, 2005. Written material submitted after 5:00 PM on March 2, 2005 will not be provided to the Regional Board members and will not be considered by the Regional Board. Oral comments will be received at the hearing on March 9, 2005.

C. Public Hearing

In accordance with 40 CFR 124.10, the Regional Board must issue a public notice whenever NPDES permits have been prepared, and that the tentative permits will be brought before the Regional Board at a public hearing. The public notice has been published in the San Diego Union-Tribune and Orange County Register newspapers no less than 30 days prior to the scheduled public hearing. Tentative Order Nos. R9-2005-0005 and R9-2005-0006 will be considered by the Regional Board at a public hearing beginning at 9:00 a.m. on Mach 9, 2005. 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

D. Information and Copying

For additional information, interested persons may write the following address or contact Hashim Navrozali of the Regional Board by e-mail at hnavrozali@waterboards.ca.gov or by phone at (858) 467-2981.

Regional Water Quality Control Board, San Diego Region
Attn: Industrial Compliance – Hashim Navrozali
9174 Sky Park Court, Suite 100
San Diego, California 92123

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

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

Electronic copies of the Fact Sheet and tentative Orders can be accessed on the Regional Board website: http://www.waterboards.gov./sandiego/.

E. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding this tentative WDR/NPDES permit should contact the Regional Board staff identified above, reference this facility, and provide a name, address, and phone number.

Any person interested in subscribing to the San Diego Regional Board's electronic mailing list may register at the Regional Board's website:

http://www.waterboards.ca.gov/rwqcb9/misc/mailing_lists.html