APPENDIX L

LETTERS OF COMPLIANCE WITH STATE AND FEDERAL LAWS

APR 21 2003

EMC 03-139

MEMORANDUM

TO: MR. CLIFFORD JAMILE, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

FROM: FRANK J. DOYLE, P.E., ACTING DIRECTOR
DEPARTMENT OF ENVIRIONMENTAL SERVICES

SUBJECT: REASSESSMENT OF CONFORMANCE TO STATE OF HAWAII DEPARTMENT OF
HEALTH PUBLIC HEALTH REGULATIONS, TITLE II, CHAPTER 54, WATER QUALITY STANDARDS WITH RESPECT TO THE APPLICATION FOR A WAIVER OF SECONDARY TREATMENT REQUIREMENTS FOR DISCHARGE INTO MARINE WATERS BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA) FOR THE CITY AND COUNTY OF HONOLULU'S SAND ISLAND WASTEWATER TREATMENT PLANT.

The City and County of Honolulu is in the process of submitting to the U.S. Environmental Protection Agency (EPA) a reapplication for a waiver of secondary treatment requirements for discharge into marine waters for the Sand Island Wastewater Treatment Plant (SIWWTP). As part of the reapplication, the EPA requires certification from you that the discharge of primary effluent (wastewater receiving less than secondary treatment) will not affect any existing or potential sources of public water supplies, including the plans for desalination of ocean or brackish water.

The last secondary treatment requirement waiver reapplication for the subject facility was prepared and submitted to the EPA in 1994. Your response in 1994 referenced your letter of April 25, 1994 in which you stated that the discharge of primary treated effluent should not affect existing or potential sources of public water supplies, including your plans for desalination.

We have attached a copy of the Executive Summary from our most recent annual assessment report.

Significant changes have occurred since the 1994 reapplication:
The SIWWTP must meet a minimum of "primary" treatment standards. In 1987, the EPA revised the definition of "primary" treatment to include a requirement for a minimum removal of at least 30 percent of the influent biochemical oxygen demand (BOD) and at least 60 percent suspended solids. In order to insure that this requirement will be met, facilities are being constructed to assure compliance with regulatory effluent quality requirements. These facilities will be operable after the expiration of the existing permit.

The existing permit, in part, also requires us to construct and operate an ultraviolet disinfection (UV) system.

We would appreciate notification of your findings by the end of April 2003. Should you have any questions please contact Mr. Ross Tanimoto from our Division of Environmental Quality at 692-5371.

Attachment

APR 2 4 2003

EMC 03-159

Mr. David B. Allen
Regional Director
U.S. Fish and Wildlife Service
Region I
911 N.E. 11thAve.
Portland, Oregon 97232-4181

Dear Mr. Allen:

Subject: Conformance to the Proposed Rule of Interagency Cooperation Regarding Endangered Species Act of 1973, as Amended, with Respect to the 301 (h) Application for a Waiver of Secondary Treatment Requirements for Discharge into Marine Waters by the Environmental Protection Agency (EPA) for the City and County of Honolulu's Sand Island Wastewater Treatment Plant

The City and County of Honolulu is in the process of submitting to the U.S. Environmental Protection Agency (EPA) a reapplication for the waiver of secondary treatment requirements for discharge into marine waters for the Sand Island Wastewater Treatment Plant (SIWWTP). As delineated in Section 7(a) (2) of the Endangered Species Act of 1973, as amended, the EPA is required to consult with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service regarding all 301 (h) actions. The Department of Environmental Services, City and County of Honolulu, will act as the EPA'S non-Federal representative to conduct the informal consultation.

This informal consultation process is intended to assist the determination of whether the 301 (h) action will have an adverse effect on any listed endangered species or critical habitats and whether any further formal assessments are necessary. The informal consultation process requires the following assessments by your agency:

1 .A list of endangered and/or threatened species, if any, in area of the discharge; and

2. An assessment of potential impacts, if any, on listed endangered and/or threatened species.

As required by the EPA guidelines, we have provided the following information regarding the 301 (h) application for the Sand Island sewage outfall:

Executive Summaries of the 1992 Annual Assessment Report, Volume I and II, for the SIWWTP.

Executive Summaries of East Mamala Bay Final Wastewater Facilities Plan, December 1993.

APR 24 2003

The last secondary treatment requirement waiver application for the subject facility was prepared and submitted to the EPA in 1994.

We have attached a copy of the Executive Summary from our most recent annual assessment report. Generally, we have not seen significant changes to our operations and have not altered the facility (specifically the deep ocean outfall).

We would appreciate notification of your findings as soon as possible. Please contact Ross Tanimoto, Division of Environmental Quality, at (808) 527-6754 should you have any questions.

Sincerely,

FRANK J. DOYLE, P.E.
Acting Director

Attachment

APR 24 2003

EMC 03-161

Dr. Chiyome Fukino, M.D.
Clean Water Branch
Director of Health
Hawaii Department of Health
919 Ala Moana Boulevard, 3rd Floor
Honolulu, Hawaii 96814

Dear Dr. Fukino:

Subject: Reassessment of Conformance to State of Hawaii, Department of Health, Public Health Regulations, Title II, Chapter 54, Water Quality Standards with Respect to the 301 (h) Application for a Waiver of Secondary Treatment Requirements for Discharge into Marine Waters by the Environmental Protection Agency (EPA) for the City and County of Honolulu's Sand Island Wastewater Treatment Plant.

The City and County of Honolulu is in the process of submitting to the U.S. Environmental Protection Agency (EPA) a reapplication for a waiver of secondary treatment requirements for discharge into marine waters for the Sand Island Wastewater Treatment Plant (SIWWTP). As part of the reapplication, the EPA requires certification from you that the discharge of primary effluent (wastewater receiving less than secondary treatment) will not increase pollution control requirements for other point or non-point sources.

The last secondary treatment requirement waiver reapplication for the subject facility was prepared and submitted to the EPA in 1994. Response to the last application from your agency is delineated in a letter dated May 9, 1994.

We have attached a copy of the Executive Summary from our most recent annual assessment report.

We would appreciate notification of your findings as soon as possible. Please contact Mr. Ross Tanimoto, Division of Environmental Quality, at 692-5371 should you have any questions.

Sincerely,

FRANK J. DOYLE, P.E.
Acting Director

Attachment

APR 2 4 2003

EMC 03-162

Mr. Peter T. Young, Chairperson
Department of Land and Natural
Resources Office of the Chairperson
1151 Punchbowl Street, Room 130
Honolulu, Hawaii 96813

Dear Mr. Young:

Subject: Reassessment of Adverse Impacts on Recreational Activities and Recreational/Commercial Fisheries with Respect to the 301 (h) Application for a Waiver of Secondary Treatment Requirements for Discharge into Marine Waters by the Environmental Protection Agency (EPA) for the City and County of Honolulu's Sand Island Wastewater Treatment Plant.

The City and County of Honolulu is in the process of submitting to the U.S. Environmental Protection Agency (EPA) a reapplication for a waiver of secondary treatment requirements for discharge into marine waters for the Sand Island Wastewater Treatment Plant (SIWWTP). As part of the reapplication, the EPA requires certification from you that the discharge of primary effluent (wastewater receiving less than secondary treatment) will not, or has not in the past, had adverse impacts on recreational activities and fishing.

The last secondary treatment requirement waiver application for the subject facility was prepared and submitted to the EPA in 1994.

We have attached a copy of the Executive Summary from our most recent annual assessment report. We have no records of any prohibition of recreational activities such as swimming, fishing, diving, etc.

We would appreciate notification of your findings as soon as possible. Please contact Mr. Ross Tanimoto, Division of Environmental Quality at 692-5371 should you have any questions.

Sincerely,

FRANK J. DOYLE, P.E.
Acting Director

Attachment

APR 24 2003

EMC 03-160

Dr. Paul Henson
Field Supervisor for Ecological Services
U.S. Fish and Wildlife Service
300 Ala Moana Blvd, Room 3-122
Box 50088
Honolulu, Hawaii 96850

Dear Dr. Henson:

Subject: Conformance to the Proposed Rule of Interagency Cooperation Regarding Endangered Species Act of 1973, as Amended, with Respect to the 301 (h) Application for a Waiver of Secondary Treatment Requirements for Discharge into Marine Waters by the Environmental Protection Agency (EPA) for the County of Honolulu's Sand Island Wastewater Treatment Plant

The City and County of Honolulu is in the process of submitting to the U.S. Environmental Protection Agency (EPA) a reapplication for the waiver of secondary treatment requirements for discharge into marine waters for the Sand Island Wastewater Treatment Plant (SIWWTP). As delineated in Section 7(a)(2) of the Endangered Species Act of 1973, as amended, the EPA is required to consult with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service regarding all 301 (h) actions. The Department of Environmental Services, City and County of Honolulu, as its non-Federal representative is contributing to the informal consultation.

This informal consultation process is intended to assist the determination of whether the 301 (h) action will have an adverse effect on any listed endangered species or critical habitats and whether any further formal assessments are necessary. The informal consultation process requires the following assessments by your agency:

1 .A list of endangered and/or threatened species, if any, in area of the discharge; and

2. An assessment of potential impacts, if any, on listed endangered and/or threatened species.

As required by the EPA guidelines, we have provided the following Executive Summary from our most recent annual assessment report.

The last secondary treatment requirement waiver application for the subject facility was prepared and submitted to the EPA in 1994.

We would appreciate notification of your findings as soon as possible. Please contact Ross Tanimoto, Division of Environmental Quality, at 692-5371 should you have any questions.

Sincerely,

FRANK J. DOYLE, P.E.
Acting Director

Attachment

EMC 03-179

May 1, 2003

Margaret Akamine
National Marine Fisheries Service
1601 Kapiolani Blvd, Suite 1110
Honolulu, HI 96814-4700

Dear Ms. Akamine:

Subject: Conformance to the Proposed Rule of Interagency Cooperation Regarding Endangered Species Act of 1973, as Amended, with Respect to the 301(h) Application for a Waiver of Secondary Treatment Requirements for Discharge into Marine Waters by the Environmental Protection Agency (EPA) for the City and County of Honolulu's Sand Island Wastewater Treatment Plant.

The City and County of Honolulu is in the process of submitting to the U.S. Environmental Protection Agency (EPA) a reapplication for the a waiver of secondary treatment requirements for discharge into marine waters for the Sand Island Wastewater Treatment Plant (SIWWTP). As delineated in Section 7(a) (2) of the Endangered Species Act of 1973, as amended, the EPA is required to consult with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service regarding all 301(h) actions. The Department of Environmental Services, City and County of Honolulu, as its non-Federal representative is contributing to the informal consultation.

This informal consultation process is intended to assist the determination of whether the 301(h) action will have an adverse effect on any listed endangered species or critical habitats and whether any further formal assessments are necessary. The informal consultation process requires the following assessments by your agency:

1. A list of endangered and/or threatened species, if any, in area of the discharge; and

2. An assessment of potential impacts, if any, on listed endangered and/or threatened species.

As required by the EPA guidelines, we have provided the following Executive Summary from our most recent annual assessment report.

The last secondary treatment requirement waiver application for the subject facility was prepared and submitted to the EPA in 1994.

We would appreciate notification of your findings as soon as possible. Please contact Ross Tanimoto at (808) 692-5371 should you have any questions.

Sincerely,

FRANK J. DOYLE, P.E.
Acting Director

Attachment

EMC 03-180

April 21, 2003

Mary Lou Kobayashi
Planning Program Administrator
Office of State Planning
P. O. Box 2359
Honolulu, Hawaii 96804-2359

Dear Ms. Kobayashi:

Subject: Reassessment of Conformance to State of Hawaii, Department of Health, Public Health Regulations, Title II, Chapter 54, Water Quality Standards with Respect to the 301(h) Application for a Waiver of Secondary Treatment Requirements for Discharge into Marine Waters by the Environmental Protection Agency (EPA) for the City and County of Honolulu's Sand Island Wastewater Treatment Plant.

The City and County of Honolulu is in the process of submitting to the U.S. Environmental Protection Agency (EPA) a reapplication for a waiver of secondary treatment requirements for discharge into marine waters for the Sand Island Wastewater Treatment Plant (SIWWTP). As part of the reapplication, the EPA requires certification from you that the discharge of primary effluent (wastewater receiving less than secondary treatment) will not increase pollution control requirements for other point or non-point sources.

The last secondary treatment requirement waiver reapplication for the subject facility was prepared and submitted to the EPA in 1994. Response to the last application from your agency is delineated in a letter dated May 9, 1994.

We have attached a copy of the Executive Summary from our most recent annual assessment report.

We would appreciate notification of your findings as soon as possible. Please contact Mr. Ross Tanimoto at 692-5371 should you have any questions.

Sincerely,

FRANK J. DOYLE, P.E.
Acting Director

Attachment

LETTERS OF COMPLIANCE WITH STATE AND FEDERAL LAWS - Attachment

EXECUTIVE SUMMARY

ES.1 GENERAL

During 2002 the Sand Island Wastewater Treatment Plant (SIWWTP) operated under the NPDES 301(h) permit issued September 30, 1998. This 2002 Annual Assessment Report (AAR) includes the NPDES Permit as issued September 30, 1998, as Chapter 1. The SIWWTP Collection System and Facilities, Department Organization, Construction Projects, Collection System Spills and Pretreatment and the NonIndustrial Source Control Program are addressed in Chapter 2. Chapters 3 and 4 address treatment plant performance by analyzing influent, effluent and solids test results, operations and maintenance programs, and operator training relative to 301(h) requirements. Chapters 5 to 10 review the results of ocean monitoring and the condition of the ocean outfall. Chapter 11 and Appendix G address QA/QC aspects of the monitoring program. This report and the activities described herein are required under National Pollutant Discharge Elimination System (NPDES) 301(h) Waiver Permit No. HI 0020117, originally issued in 1990, effective January 15, 1992, modified effective February 16, 1995, reissued September 30, 1998, and effective November 3, 1998.

ES.2 PURPOSE

The Sand Island Wastewater Treatment Plant (SIWWTP), owned and operated by the City and County of Honolulu (CCH), Department of Environmental Services (ENV), is designed and operated to process influent wastewater into primary effluent and separated solids. The effluent is then discharged to the ocean while the solids are land filled. ENV's operation of SIWWTP is overseen by the Federal Environmental Protection Agency (EPA) and the State of Hawaii Department of Health (DOH), which jointly administer the NPDES 301(h) Permit.

The SIWWTP wastewater management program and the conditions of the permit issued by the regulatory agencies are designed to protect public health and preserve the beneficial uses of the ocean waters of Mamala Bay. The SIWWTP modified NPDES permit is issued pursuant to Section 301(h) of the Clean Water Act. This section waives the secondary treatment requirement of the Clean Water Act for ocean discharge of primary treated effluent. The permit was reissued September 30, 1998 and went into effect November 2, 1998. The new permit was based on an application for renewal submitted to EPA, with a copy to DOH, on August 18, 1994, as required by the permit and as supplemented by extensive correspondence during 1998.

The effect of the operation of the SIWWTP management program on the environment is measured by monitoring the effects of the discharge. The results of the ocean monitoring program are described in detail in the marine monitoring portion of this report. Results indicate that effluent discharge had no significant impact on designated beneficial uses of the Sand Island waterfront shoreline, nearshore, and offshore zones for the 2002 monitoring period. The designated beneficial uses include:

1. Shoreline: body-contact sports (swimming and wading), including natural public baths and picnicking;
2. Nearshore: body-contact sports (surfing, wind-surfing), general boating and recreational uses; and
3. Offshore: sport and commercial fishing, aesthetic conditions, and navigation.

During 2002, the SIWWTP achieved all NPDES permit requirements for water quality and monitoring with a few minor exceptions as described herein.

ES.2.1 Sand Island WWTP Service Area and Facilities

The SIWWTP serves metropolitan Honolulu from Niu Valley on the east to Moanalua Valley on the west, and from the coastal waters to the forest reserve in the north-south direction. This area is divided into four subsystems: South Honolulu system, extending from River Street-Pacific Heights-Dowsett to Niu Valley (and includes Kuliouou Valley whose wastewater is treated by the East Honolulu Wastewater Treatment Plant); North

Honolulu system, from Aala-Puunui-Nuuanu to Moanalua Valley; U.S. Army Fort Shafter sewer system serving Fort Shafter, Tripler Army Medical Center and Aliamanu military housing; and the Sand Island system serving Sand Island. The SIWWTP provides wastewater treatment services to a population of approximately 366,000 residents plus about 92,000 visitors. The wastewater effluent flow averaged 69.56 mgd in 2002, making SIWWTP the largest wastewater treatment plant in the state. In 1994 it was projected that by the year 2015, the de facto (residents plus visitors) population served by SIWWTP would be approximately 503,000 within the current service area boundaries. Wastewater flow to SIWWTP is delivered primarily by two pumping stations: the Ala Moana Pumping Station which serves East Honolulu and the Hart Street Pumping Station which serves West Honolulu. Two smaller pump stations also have force mains to the SIWWTP but the Fort Shafter (US Army facility) force main was not in service for all of 2002 and the flow from Fort Shafter was included in the flow from the Hart Street WWPS. The Parkway pump station serves the Sand Island area.

Treated effluent from SIWWTP flows by gravity (assisted by one or more of three pumps at periods of high flow) through an 84-inch outfall 9,000 feet offshore to a 3,500 foot long diffuser, located at an average depth of 235 feet. Here the effluent is mixed with seawater. Total outfall length (beach to end) is 12,516 feet and the effluent pump station maximum design flow is 220 mgd.

ES.2.2 Planning

The Department of Environmental Services plans for growth in the SIWWTP service area by preparation of such documents as the *East Mamala Bay Facilities Plan* (December 1993), and the *Long-Term Sewer Rehabilitation and Infiltration and Inflow Study* (completed in early 2000). These documents substantiate the need for the proposed facilities through a systematic evaluation of alternatives based on demographic, topographic, hydrologic, and institutional characteristics of the area. Also considered is the City's ability to implement the alternatives based on legal, institutional, financial, physical and management standpoints. Details of the planning process and its implementation and

current projects are covered in *Chapter 2 Facilities and Service Area, Facilities Planning, Pretreatment and Nonindustrial Source Control.*

ES.2.3 Facilities Design and Construction

The Department of Design and Construction (DDC), Divisions of Infrastructure Design and Engineering and Construction Management, formerly the Division of Engineering and Construction, manages the design and construction of the facilities required to effectively treat the increasing wastewater flows and solids loads and comply with regulatory requirements at all City WWTPs. The DDC, Industrial Design and Engineering Branch is responsible for preparing the construction documents for all ENV projects. The Industrial Construction Branch is responsible for construction and inspection of projects. Current projects are listed in Table 2.3 and 2.4.

ES.2.4 Collection System Diversions

The collection system, comprising approximately 573 miles of piping with an average installed age of approximately 49 years, experienced 114 unintentional flow diversions during 2002, see Table 2-2. The total volume of these diversions in 2002 was1,521,442 gallons, however, three spills of 1,166.000 gallons, 330,000 gallons and 12,000 gallons were from force main breaks. A program is being developed to evaluate the condition of all force mains and take preventative action to reduce the number of breaks experienced in the future. Without these three spills 2002 would have had the lowest spill volume ever recorded at only 13,442 gallons. See Chapter 2.3.3 for additional information.

ES.3 OPERATIONS

ES.3.1 Treatment Plant Operation and Maintenance

Chapter 3 presents a comprehensive summary of the operation and maintenance of the SIWWTP and its regulatory compliance record. The plant's discharge limits and actual discharges are presented in Table ES-1. Weekly averages for BOD_5 and TSS are limited to 1.5 times the monthly limits. Whole effluent toxicity test requirements are to use the

Hawaii sea urchin *Trypneustes gratilla* for monthly testing, however no compliance requirement has yet been imposed on test results. Monthly compliance tests using the water flea *Cerodaphnia dubia* continued to be required.

The NPDES 301(h) permit contains a requirement that the City construct a full time disinfection facility and put it into operation by July 21, 2002. Starting in March 2000 the City has requested a change in this operational date due to the significantly increased scope of the project. During the design stage it was determined that due to hydraulic constraints of the existing effluent pump station a new pump station was required which more than tripled the original cost estimate for the project. Construction of the disinfection facility and the integrated effluent pump station started in August 2001. Due to difficult foundation conditions and the discovery of PCB in the soil there have been further delays so that the disinfection system will not be operational before December 2003.

The clarifiers were operated in dissolved air flotation (DAF) mode in 2002 except for periods of high flow associated with rain storms and during repair of DAF related equipment. During 2002 the replacement of the DAF system piping downstream of the pumps, begun in 2001, was completed. This work was done under the contract to refurbish clarifiers #1, 2, 5, and 6 which was completed 13 December 2002. Replacement of the DAF piping has contributed to improved BOD removals. While the clarifiers were being refurbished the plant operated with five clarifiers. Treatment of return flows with polymers continued in 2002. In 2002 centrate was hauled from SIWWTP to other treatment plants (or their collection systems) in December after removals early in the month indicated marginal BOD removal rates. Historically the winter months, especially December, have had the lowest BOD removals so extra steps were taken to ensure compliance.

ES.3.2 Compliance

Part A of the modified NPDES permit stipulates that "The discharge shall be limited and monitored by Permittee as specified.." The limitations in the new (1998) permit are in all cases equivalent to or more stringent than in the 1990 permit.

The influent and effluent monitoring program for priority pollutants and pesticides (PP) was performed in accordance with the terms of the modified NPDES permit. Effluent priority pollutant concentrations were largely undetectable with 10 metals and 16 other PP identified in one or both of the samples analyzed, including one metal required by state regulations and not listed in the permit. The levels of chlordane and dieldrin, which are required to be tested monthly, exceeded the annual allowable permit limit as specified in the permit. Dieldrin also exceeded the daily limit once. All other exceedence calculations for compliance to the State Standard in receiving waters use the effluent concentration, the method limit or an estimated concentration level below the ML, and the minimum calculated plume dilution factor from the monitoring conducted during 2002 (see Chapter 6).

TABLE ES-1
NPDES DISCHARGE REQUIREMENTS AND SAND ISLAND WWTP ANNUAL AVERAGE INFLUENT AND EFFLUENT VALUES, 2002

Constituent	NPDES Permit Limit 30 Day Average	NPDES Permit Limit 7 Day Average	SIWWTP Influent 2002 Annual Average	SIWWTP Effluent 2002 Annual Average	Compliance with permit during all months
BOD					
Concentration, mg/l	116	160	159	105	yes
Load[1], kg/day	79,330	109,421	39,522	27,637	yes
Suspended Solids					
Concentration, mg/l	69	104	140	47	yes
Load[1], kg/day	47,187	71,124	34,736	14,424	yes
pH min/max	--	--[2]	6.72/7.42	6.70/7.24	Yes
Whole Effluent Toxicity, Toxic Unit Chronic[3] *(Ceriodaphnia dubia)* Annual maximum/average	94	--	--	22.7	Yes

Requirements from NPDES Permit dated 30 Sept. 1998, Section A, page 4-6.
Notes:

1. Permit loading rates are based on a flow of 82 mgd (3.59 m^3/s), plant dry weather design capacity.
2. pH shall not be less than 6.0 nor greater than 9.0 at any time.
3. Toxic unit Chronic (TU_c) based on monthly tests. See Section 3.5.4 and Tables 3.6 and 3.7.

TABLE ES-2 NPDES MONITORING REQUIREMENTS FOR SAND ISLAND WWTP INFLUENT AND EFFLUENT - 1998 PERMIT		
Parameter	**Type of Sample**	**Minimum Frequency**
INFLUENT		
BOD_5,mg/l	24-hour composite	7 days/week
Suspended Solids, mg/l	24-hour composite	7 days/week
Oil and Grease, mg/l	24-hour composite	3 days/week
Total Petroleum Hydrocarbons, mg/l	24-hour composite	3 days/week
Fats Oil and Grease mg/l	calculated	3 days/week
pH	grab	5 days/week
Priority Pollutants		
Volatile, mg/l, □g/l	24-hour composite	semi-annually
Others, mg/l, □g/l	24-hour composite	semi-annually
Other Pesticides, □g/l	24-hour composite	semi-annually
EFFLUENT		
Flow, mgd	Recorder/totalizer	continuous
BOD_5, mg/l	24-hour composite	7 days/week
Suspended Solids, mg/l	24-hour composite	7 days/week
Oil and Grease, mg/l	24-hour composite	3 days/week
Total Petroleum Hydrocarbons, mg/l	24-hour composite	3 days/week
Fats Oil and Grease mg/l	calculated	3 days/week - 1 grab/shift
pH	grab	5 days/week
Total Nitrogen	24-hour composite	
Total Phosphorus	24-hour composite	
Temperature, deg C	grab	Weekly
Enterococcus Bacteria, #/100 ml	grab	daily between 12 noon and 3 p.m.
Priority Pollutants		
Chlordane	24-hour composite	Monthly
Dieldrin	24-hour composite	Monthly
Volatile, mg/l, □g/l	24-hour composite	semi-annually
Remaining Pollutants mg/l, □g/l	24-hour composite	semi-annually
Whole Effluent Toxicity	24-hour composite or grab	Monthly

In 2002 sea urchin WET tests were required to be conducted but the results were not used for compliance determination. Twelve monthly tests were conducted successfully on the sea urchin species *Trypneustes gratilla* during 2002 (See Table 3-6) and averaged 276.5 TU_c. The test results exceeded the permit limit 11 times and were under the limit once.

In 2002, there were 13 instances where the SIWWTP was not in compliance with the NPDES permit requirements for monitoring or exceeded permit limits including one spill exceeding 50 gallons at the SIWWTP. Additional compliance related events for the SIWWTP ocean outfall and receiving waters are discussed in ES-4 below and detailed in chapters 5 to 8 of this report. The incidents of non-compliance at the treatment plant may be subdivided into permit limit exceedences and monitoring failures, see Tables ES-1 and ES-2. There were three permit limit exceedences and 12 monitoring noncompliances in 2002. The permit limit exceedences were for annual averages for chlordane and dieldrin for all of 2002 and the exceedence of the daily limit for dieldrin for May of 2002. The monitoring failures included lab errors, sampling equipment malfunctions, the failure by laboratory personnel and plant operators to follow sampling procedures, SCADA malfunctions and one flow meter recording failure, see Table 3-8.

ES.4 MARINE WATER QUALITY COMPLIANCE

Implementation of the reissued permit resulted in numerous monitoring changes including two new shoreline, two new nearshore and ten new offshore monitoring stations. Changes were also made in the number of samples monitored for priority pollutants and for benthic community. Because of difficulty in finding locations where sand is available to sample five additional stations were established and are monitored on the same frequency and for the same perimeters as other nearshore and offshore stations. Sampling requirements for permit section D. covering Light Extinction Coefficient, Turbidity, Dissolved Oxygen, Total Nitrogen, Ammonia Nitrogen, Nitrate+Nitrite Nitrogen, Total Phosphorous, Chlorophyll, pH, Temperature and Salinity were met. For purposes of this document, the Water Quality

Standards (WQS) are separated into four primary groups: nutrients; priority pollutants, bacteria, and chemistry. These groups are addressed in Chapters 5 to 8.

ES.4.1 Test Procedures and Methods

State WQS specify limits for 2% and 10% exceedence based on a statistical/graphical method of calculation for the analysis of monitoring data for: Total Nitrogen, Ammonia Nitrogen, Nitrate + Nitrite Nitrogen, Total Phosphorus, and Chlorophyll. A standard method for processing monitoring data is required. Compliance can only be determined after following the proper procedure. This procedure is explained and an example given in Chapter 5. Without an understanding of this procedure, further discussions cannot be applicable and consistent. The methodologies used were derived from existing documents issued by regulating authorities such as the Environmental Protection Agency (EPA) and Department of Health (DOH) and amplified by texts on statistics and numerical analysis.

ES.4.2 Nutrient Evaluation

Nutrients specified for evaluation in the NPDES 301(h) modified permit include nitrogen in its various forms, phosphorus and chlorophyll, and are considered in detail in Chapter 5. Ammonia Nitrogen was elevated at the ZOM for the 5 year evaluation, Total Nitrogen was, however, higher at the control stations than at the ZOM stations in both the one year and five year evaluations (See Tables 5.3 to 5.6). Wastewater may, therefore, not be the only or most significant contributor to the noncompliance for Ammonia Nitrogen.

ES.4.3 Priority Pollutants

Priority pollutants are addressed in Chapter 6. To the limits of analytical precision all effluent priority pollutant levels were in compliance with State WQS except for Chlordane and Dieldrin which, based on minimum calculated initial dilution levels exceed the State limit for these substances but were not found in either the fish sampling or in the sediment. Compliance to WQS for some priority pollutants is impossible to determine positively due to the standards specified being below the capability of current analytical procedures and equipment to measure. The presence of priority pollutants in fish and in marine sediments is also addressed in Chapter 6. The level of some pollutants in fish are elevated. Since

the pollutants that are elevated correlate poorly with pollutant levels in the effluent or in sediment the origin of such contamination cannot be identified and it is suggested that the State Department of Health (DOH) investigate further. The pollutant levels found in the marine sediments tested are low and not considered to be of concern.

ES.4.4 Recreational Waters Evaluation

Marine waters were monitored for enterococcus bacteria as an indicator of potential pathogenic bacterial contamination. During 2002 there were 10 shoreline exceedences of the State geometric mean limit of 7 for enterococcus for recreational waters, which are defined as waters within 1,000 feet of shore. An examination of the shoreline, recreational and nearshore data taken on the same days gave no indication that any elevated recreational waters enterococcus numbers were attributable to the outfall. There were no exceedences of State WQS at the three permit specified recreational water stations during 2002. All SI nearshore monitoring stations in the 1998 permit are located in excess of 2000 feet from shore, the closest being 2400 feet and the farthest being approximately 6,500 feet from shore. Elevated bacteria results at nearshore stations are reported, since they are not in recreational waters, as exceedences not noncompliances. The monitoring of recreational waters is addressed in Chapter 7. Most exceedences of the 7 geometric mean were during the wet season when precipitation is higher, stream flows are regularly elevated and flushing occurs from the shore into the ocean. It is clear that some of the exceedences at the nearshore stations were the result of the SIWWTP plume. However, since the nearshore stations which experienced the most elevated levels are approximately equidistant from the shore and the outfall (approximately 4,600 feet from the outfall, 4,400 feet from shore and 3,400 feet from recreational waters), it is unlikely that there was any measurable impact to recreational waters. Exceedences at nearshore stations are not noncompliances to state recreational water standards since the standard applies only to waters within 1000 feet of shore. At nearshore stations the highest levels of bacteria were often near the bottom, an indicator that the bacteria is from the dilute wastewater plume.

ES.4.5 Chemistry Evaluation

The chemistry evaluation relates to pH, temperature, salinity and dissolved oxygen readings obtained using the Sea-Bird CTD Profiler at one meter depth intervals at 18 stations for each of four quarters during 2002. This data was analyzed for compliance with Water Quality Standards (WQS) and the results are presented in Chapter 8.

The requirement for pH is an absolute standard of 8.1 +/- .5 units (301(h) modified Permit section B.3). All stations monitored were in compliance at all depths.

Temperature readings "Shall not vary more than 1 degree C from 'ambient conditions'" (301(h) modified Permit section B.3). Temperature data was collected in two quarters in 2002. Temperature readings at each depth were compared to the average temperature of the control stations at that same depth. Figures 8.1 through 8.3 show the presence of thermoclines during each monitoring period. Some of the temperature measurements recorded during the July, August, and November monitoring events were out of permit limits due to relatively strong thermoclines. Lower than allowed temperatures were found near the surface, near the depth of the outfall, and below the depth of the outfall. Since the discharge from the outfall is always less dense and usually warmer than the ambient waters, the outfall was unlikely to be the cause since the outfall plume always rises, mixing and cooling as it rises until it equals ambient waters in density and temperature.

Salinity "shall not vary more than 10% from natural or seasonal changes.." (301(h) modified Permit section B.3). Salinity readings at each depth were compared to the average salinity of the control stations at that same depth. All stations tested were in compliance at all depths.

The standard for dissolved oxygen is that it be "not less than 75% saturation" (301(h) modified Permit section B.2).Compliance is determined by comparing stations near the outfall to control stations. All offshore and nearshore stations tested were in compliance at all depths.

ES.4.6 Sediment and Biological Monitoring

The results of sediment and biological monitoring are discussed in Chapter 9. There is no evidence that the SIWWTP Outfall is adversely affecting the ocean floor or the numerous benthic fauna surrounding it.

ES.4.7 Sand Island Outfall and Diffuser Inspection

The SIWWTP NPDES 301(h) permit does not require an annual outfall inspection. It is performed annually by the City as a precautionary measure. During 2002 the planed inspection was delayed and finally done in January 3003. The inspection found the outfall to be in good condition except one 10 inch inspection port cover had come off and was partially deflecting the flow from one port. A few other ports had flows that were deflected or restricted. For additional detail see Chapter 10..

ES.4.8 Quality Assessment / Quality Control

Chapter 11 presents a discussion of the Water Quality Laboratory QA/QC program as it relates to the Sand Island Treatment Plant and to the Sand Island nearshore and offshore monitoring program. A requirement in the 1998 permit, a Sampling and Analysis Quality Assurance Project Plan, is included in this report as Appendix G.

ES.5 CONCLUSIONS

Conclusions and any Recommended Corrective Actions are addressed in the individual chapters where operations or monitoring are discussed.

During 2002 the SIWWTP operated, with some minor exceptions, in accordance with the provisions of the Sand Island NPDES 301(h) modified Permit. Ocean monitoring indicated some high bacterial counts at nearshore stations, well beyond recreational waters, that are probably attributable to the outfall but not a noncompliance. Shoreline stations near known nonpoint bacteria sources occasionally exceeded the state standard for bacteria. Chlordane and dieldrin in the effluent exceeded permit limits and five year ammonia nitrogen levels exceeded the SWQS limit at the outfall, however ambient total nitrogen levels at the control stations were higher than at the outfall.