

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
81 Higuera Street, Suite 200
San Luis Obispo, California 93401-5427

WASTE DISCHARGE REQUIREMENTS ORDER NO. 98-11
NPDES NO. CA0049018
Waste Discharger Identification No. 3 422010010

For
CHEVRON U.S.A. INC.
OIL/GAS AND DESALINATION PLANTS AT GAVIOTA'
Santa Barbara County

The California Regional Water Quality Control Board, Central Coast Region (hereafter Board), finds that:

1. Chevron U.S.A. Inc. (Discharger), at its oil and gas plant at Gaviota in Santa Barbara County, operates a seawater desalination plant, a wastewater treatment plant for produced water from crude oil and natural gas production, and an ocean outfall wastewater disposal system.
2. On July 31, 1997, the Discharger submitted an application for authorization to discharge the combined discharges from the desalination plant, the sewage treatment plant, boiler blowdown and miscellaneous minor discharges under the National Pollutant Discharge Elimination System (NPDES).
3. On April 10, 1998, the Board administratively extended the Permit to December 11, 1998.
4. The oil and gas plant and the desalination plant are on property (T5N, R32W, Section 35, SB B&M) at Gaviota, as shown on Attachment "A". The property is jointly owned by Point Arguello Pipeline Company (PAPCO) and Gaviota Gas Plant Company (GGP).
5. Offshore production platforms in the Discharger's Point Arguello Field produce crude oil, natural gas and formation water (produced water). The oil and gas plant separates the oil and gas from the produced water, which is treated by means of induced-gas flotation and settling, and is discharged to deep onshore injection wells. Other wastewaters discharged to deep wells include produced water filter backwash, gas processing wastewaters, sulfur dioxide scrubber waste, steam generator condensate, washdown water, fire control system test water, drainage seawater from the desalination plant sand filters and reverse osmosis units, process and utility wastewaters, equipment rinse and flush waters, vessel purge water, and stormwater not meeting the requirements of the General Industrial Stormwater Permit.
6. An aeration treatment/ultraviolet disinfection system treats approximately 0.001 MGD of sewage, which is discharged to the ocean. Other wastewaters discharged to the Pacific Ocean include 0.14 MGD of reverse osmosis reject brine, 0.36 MGD of excess seawater required to ensure that seawater intake pumps operate at the recommended discharge rate, and 0.0072 MGD of boiler blowdown. The ocean discharge also includes small flows of excess freshwater from the desalination plant; reverse osmosis filter backwash; brackish water reverse osmosis reject; water softener backwash; regeneration and rinse waters; and. Total average flow from the plant is about 0.5

Item No. 45, Attachment No. 1
Meeting of May 14, 2004
Gaviota Oil Heating Facility

MGD and total maximum flow is 1.2 MGD.

7. The Discharger proposes to continue to discharge wastewater to the Pacific Ocean through a 5,200-foot outfall/diffuser system. The outfall terminates in the Santa Barbara Channel at 34°27'29" N. Latitude, 120°12'43" W. Longitude in approximately 100 feet of water. The minimum initial dilution (sea-water:effluent) of the outfall is 72:1. The outfall location is shown on Attachment "A."
8. The Environmental Protection Agency and the Board classify this discharge as a minor discharge.
9. The State Water Resources Control Board (State Board) adopted the "Water Quality Control Plan, Ocean Waters of California - California Ocean Plan" (Ocean Plan) on March 20, 1997.
10. The Ocean Plan sets forth water quality objectives and other requirements governing discharge to the Pacific Ocean. The Water Quality Control Plan, Central Coastal Basin, (Basin Plan) was adopted by the Board on November 17, 1989 and approved by the State Board on August 16, 1990. The Board approved amendments to the Plan on February 11, 1994 and September 8, 1994.
11. The Basin Plan incorporates statewide plans and policies by reference and contains a strategy for protecting the beneficial uses of the Pacific Ocean. Existing and anticipated beneficial uses in the vicinity of the discharge include:
 - a. Water contact recreation;
 - b. Non-contact water recreation, including aesthetic enjoyment;
 - c. Industrial water supply;
 - d. Navigation;
 - e. Marine habitat;
 - f. Shellfish harvesting;
 - g. Mariculture;
 - h. Preservation of Rare and Endangered Species;
 - i. Fish migration;
 - j. Fish spawning; and,
 - k. Ocean commercial and sport fishing.
12. The shellfishing beneficial use (Finding 12.f) exists wherever mussels, clams or oysters may be harvested for human consumption. To the knowledge of this Regional Board, 1) Mussels are present at shoreline locations near the discharge; 2) clamming occasionally occurs but 3) oyster harvesting is impractical.
13. The County of Santa Barbara certified a Final Environmental Impact Report (FEIR) for the oil and gas plant project and the State Lands Commission prepared an addendum to the FEIR in accordance with the California Environmental Quality Act (Public Resources Code, Section 21100, et seq.) and the California Code of Regulations. The agencies identified one or more significant adverse effects of the project and have:
 - a. changed or altered the original project to mitigate or avoid the effects identified, as described in the FEIR; and,
 - b. determined that necessary project changes or alternatives are within the responsibility and jurisdiction of other public agencies such as the Board, and should be controlled by them. Mitigation measures to prevent nuisance and assure protection of beneficial uses of ocean waters will be implemented through this Order.
14. Waste discharge requirements for this discharge are exempt from the provisions of the California Environmental Quality Act (Public Resources Code, Section 21100, et seq.) in accordance with Section 13389 of the California Water Code.
15. A permit and the privilege to discharge waste into waters of the State is conditional upon the discharge complying with provisions of

Division 7 of the California Water Code and of the Clean Water Act (as amended or as supplemented by implementing guidelines and regulations) and with any more stringent effluent limitations necessary to implement water quality control plans, to protect beneficial uses, and to prevent nuisance. This Order shall serve as a National Pollutant Discharge Elimination System Permit pursuant to Section 402 of the Clean Water Act. Compliance with this Order should ensure that permit conditions are met and mitigate any potential water quality degradation due to the project.

16. On July 24, 1998, the Board notified the Discharger and interested agencies and persons of its intent to adopt waste discharge requirements for the discharge, provided them with a copy of the proposed order and an opportunity to submit written views and comments, and scheduled a public hearing.
17. In a public hearing on December 11, 1998, the Board heard and considered all comments pertaining to the discharge and found this Order consistent with the above findings.

IT IS HEREBY ORDERED, pursuant to authority in Section 13377 of the California Water Code, that Chevron U.S.A., Inc. its agents, successors and assigns, may discharge waste from the Gaviota Oil and Gas Plant, and Desalination Plant providing compliance is maintained with the following:

(Note: General permit conditions, definitions and the method of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for National Pollutant Discharge Elimination System Permits", dated January 1985. Applicable paragraphs are referenced in paragraph D.4 of this Order.)

Throughout this Order, the following footnotes provide the sources of the waste discharge requirements:

A = Ocean Plan

B = 40 CFR 435.12

A. DISCHARGE PROHIBITIONS

1. Discharge of treated wastewater at a location other than 34°27'29" N. Latitude, 120°12'43" W. Longitude is prohibited.
2. Discharge to the ocean of any wastes other than those described in Finding No. 6 is prohibited.

B. EFFLUENT LIMITATIONS

1. Effluent shall not exceed the following limits^{A*}

Constituents	Unit of Measure	Monthly Average (30 Day)	Weekly Average (7 Day)	Daily Maximum
Grease and Oil ^B	mg/L	48	-	72
	lbs/day	481*	-	721*
Suspended Solids	mg/L	60	-	-
	lbs/day	601*	-	-
Settleable Solids	mL/L	1.0	1.5	3.0
Turbidity	NTU	75	100	225
pH	Within limits of 6.0 to 9.0 at all times.			
Acute Toxicity	TUa	1.5	2.0	2.5

* For Flows less than 1.2 MGD, mass emission rates shall not exceed the "Maximum Allowable Mass Emission Rate."

2a. Effluent shall not exceed the following limits^A

PROTECTION OF MARINE AQUATIC LIFE

Constituent	Units	Concentration		
		6-Month Median	Daily Maximum	Instantaneous Maximum
Copper	mg/L	0.078	0.762	2.130
Chronic Toxicity	TUc	-	73	-

- b. During any 24-hour period, the effluent mass emission rate shall not exceed the "Maximum Allowable Mass Emission Rate".
- c. The Discharger shall report violations of the "Instantaneous Maximum" or "Maximum Allowable Daily Emission Rate" to the Executive Officer within 24 hours after discovery.
- d. During any six-month period, the effluent mass emission rate shall not exceed the "Maximum Allowable Six-month Median Mass Emission Rate."

- Based on the California Ocean Plan criterion using a minimum initial dilution of 72:1. If actual dilution is found to be less than this value, it will be recalculated and the order revised.

3. Effluent daily flow shall not exceed a monthly average of 0.5 MGD nor a daily maximum of 1.2 MGD.

4. Effluent shall be essentially free of materials and substances that^A

- a. float or become floatable upon discharge.

- b. may form sediments which degrade benthic communities or other aquatic life.

- c. accumulate to toxic levels in marine waters, sediments or biota.
- d. decrease the natural light to benthic communities and other marine life.
- e. materials that result in aesthetically undesirable discoloration of the ocean surface.

C. RECEIVING WATER LIMITATIONS

(Receiving water quality is a result of many factors, some unrelated to the discharge. This permit considers these factors and is designed to minimize the adverse effects of the discharge on the receiving water.)

The discharge shall not cause^A:

1. Floating particulates, grease and oil to be visible on the ocean surface.
2. Aesthetically undesirable discoloration of the ocean surface.
3. Significant reduction of transmittance of natural light in ocean waters outside the "zone of initial dilution".
4. Change in the rate of deposition of inert solids and the characteristics of inert solids in ocean sediments such that benthic communities are degraded.
5. The dissolved oxygen concentration outside the "zone of initial dilution" to fall below 5.0 mg/L or to be depressed more than 10 percent from that which occurs naturally.
6. The pH outside the "zone of initial dilution" to be depressed below 7.0, raised above 8.5, or changed more than 0.2 units from that which occurs naturally.
7. Dissolved sulfide concentrations of waters in and near sediments to significantly increase above that present under natural conditions.
8. Concentrations of the substances listed in Effluent Limitation No. B.2. to increase in marine sediments to levels which would adversely affect indigenous biota.
9. Objectionable aquatic growth or degradation of indigenous biota.
10. Concentrations of organic materials other than in marine sediments to increase to a level which would degrade marine life.
11. Degradation of marine communities, including vertebrate, invertebrate, and plant species.
12. Alteration in natural taste, odor, and color of fish, shellfish, or other marine resources used for human consumption.
13. Concentrations of organic materials in fish, shellfish or other marine resources used for human consumption to bioaccumulate to levels that are harmful to human health.
14. Degradation of marine life due to radioactive waste.

15. Temperature of the receiving water to adversely affect beneficial uses.
16. Increases in the natural water temperature exceeding 4°F at (a) the shoreline, (b) the surface of any ocean substrate, or (c) the ocean surface beyond 1,000 feet from the discharge system. The surface temperature limitation shall be maintained at least 50 percent of the duration of any complete tidal cycle.

D. PROVISIONS

1. If effluent toxicity monitoring according to Monitoring and Reporting Program No. 98-11 determines toxicity limitations in Discharge Specifications B.1 and B.2 of this Order are exceeded, the Discharger shall increase the frequency of toxicity testing to weekly and shall submit the test results to the Executive Officer (EO) no later than 21 days after the conclusion of the test. The EO will determine whether the Discharger shall implement a Toxicity Reduction Evaluation (TRE).

If required to do so, the Discharger shall implement the TRE according to the following schedule:

TASK	COMPLIANCE DATE
a. Take all reasonable measures necessary to immediately reduce toxicity, where the source is known.	Within 24 hours of determination of noncompliance with Discharge Specification
b. Submit for the approval of the EO a TRE plan specifying the toxicity reduction procedures to be employed	Within 90 days of determining noncompliance.
c. Initiate the TRE	Within 7 days of TRE plan approval.
d. Implement the TRE according to the approved procedures.	Over one year or as specified in the approved TRE plan
e. Submit TRE report including summary of findings, proposed corrective actions and data.	Within 60 days of concluding the TRE
f. Complete the TRE to meet permit conditions.	As determined by the EO
g. Return to regular monitoring upon final implementation of controls.	As determined by the EO.
2. The Discharger shall base the plan on (1) EPA's TRE Procedures, Phases 1, 2 and 3 which are, respectively, Document Nos. EPA 600/3-88/034, 600/3-88/035 and 600/3-88/036 and (2) <i>Generalized Methodology for Conducting Industrial TREs</i> (EPA 600/2-88/070).	
3. The Discharger shall comply with "Monitoring and Reporting Program No. 98-11", as ordered by the Executive Officer.	

December 11, 1998

4. The Discharger shall comply with all items of the attached "Standard Provisions and Reporting Requirements for National Pollutant Discharge Elimination System Permits", dated January 1985, except Item Nos. A.13 and D.1. Paragraph (a) of Item E.1. shall apply only if the bypass is for essential maintenance to assure efficient operation.
5. This Order expires on December 11, 2003 and the Discharger must file a Report of Waste Discharge in accordance with Title 23, Chapter 3, Subchapter 9, of the California Code of Regulations, not later than June 11, 2003 if it wishes to continue the discharge.

I, ROGER W. BRIGGS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Coast Region, on December 11, 1998.



Executive Officer

STATE OF CALIFORNIA
 CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
 CENTRAL COAST REGION
 81 Higuera Street, Suite 200
 San Luis Obispo, CA 93401-5427

MONITORING AND REPORTING PROGRAM NO. 98-11
 NPDES PERMIT NO. CA0049018
 Waste Discharger Identification No. 3 422010010

For
 CHEVRON U.S.A., INC.
 GAVIOTA OIL/GAS AND DESALINATION PLANTS,
 Santa Barbara County

INFLUENT MONITORING

Constituent	Units	Type of Sample	Sampling & Analyzing Frequency
Temperature	OF	grab	Monthly
Arsenic	mg/l	grab	December 2002
Chromium (Total)	mg/l	grab	"
Chromium (Hex)	mg/l	grab	"
Copper	mg/l	grab	"
Iron	mg/l	grab	"
Lead	mg/l	grab	"
Mercury	mg/l	grab	"
Nickel	mg/l	grab	"
Silver	mg/l	grab	"
Zinc	mg/l	grab	"
Cyanide	mg/l	grab	"

EFFLUENT MONITORING

Representative effluent samples of the discharge shall be collected at the specified frequency after the last point of treatment. The following shall constitute the effluent monitoring program:

Constituent	Units	Type of Sample	Sampling & Analyzing Frequency
Daily Flow	MG	Metered	Daily
Maximum Daily Flow	MGD	Metered	Monthly
Mean Daily Flow	MGD	Calculated	"
Turbidity	NTU	Grab	"
Temperature	OF	--	"

Constituent	Units	Type of Sample	Sampling & Analyzing Frequency
Settleable Solids	ml/l	Grab	Monthly
Grease and Oil	mg/l	Grab	"
pH	pH units	Grab	"
Dissolved Oxygen	mg/l	Grab	"
Total Suspended solids	mg/l	24-hour Composite	"
Ammonia (as N)	mg/l	Grab	June, 2002
Total Sulfides	mg/l	Grab	"
BOD, 5-Day	mg/l	24-hour Composite	Quarterly (Mar., June, Sept., Dec.)
Toxicity Concentration			
Acute ²	TUa	Grab	June, 2002
Chronic ³	TUc	Grab	"
¹ Phenolic Compounds (non-chlorinated)	mg/l	Grab	"
¹ chlorinated	mg/l	Grab	"
¹ Arsenic	mg/l	24-hour Composite	"
¹ Cadmium	mg/l	24-hour Composite	"
¹ Chromium (Total)	mg/l	24-hour Composite	"
¹ Chromium (Hex)	mg/l	24-hour Composite	"
Copper	mg/l	24-hour Composite	"
¹ Lead	mg/l	24-hour Composite	"
¹ Mercury	mg/l	24-hour Composite	"
¹ Nickel	mg/l	24-hour Composite	"
¹ Selenium	mg/l	24-hour Composite	"
¹ Silver	mg/l	24-hour Composite	"
¹ Zinc	mg/l	24-hour Composite	"
Cyanide	mg/l	Grab	"
¹ Acrolein	mg/l	Grab	"
¹ Antimony	mg/l	Grab	"
¹ Bis(2-chloroethoxy)methane	µg/l	Grab	"
¹ Bis(2-Chloroisopropyl)ether	mg/l	Grab	"
¹ Chlorobenzene	mg/l	Grab	"
¹ Chromium (III)	mg/l	24 hour Composite	"
¹ Di-n-butylphthalate	mg/l	Grab	"
¹ Dichlorobenzenes	g/l	Grab	"
¹ 1,1-dichloroethylene	g/l	Grab	"
¹ Diethylphthalate	g/l	Grab	"
¹ Dimethylphthalate	g/l	Grab	"
¹ 4,6-Dinitro-2-methylphenol	mg/l	Grab	"
¹ 2,4-dinitrophenol	µg/l	Grab	"
¹ Ethylbenzene	mg/l	Grab	"
¹ Fluoranthene	mg/l	Grab	"
¹ Hexachlorocyclopentadiene	mg/l	Grab	"
¹ Isophorone	g/l	Grab	"
¹ Nitrobenzene	mg/l	Grab	"

Constituent	Units	Type of Sample	Sampling & Analyzing Frequency
¹ Thallium	mg/l	Grab	June, 2002
¹ Toluene	g/l	Grab	"
¹ 1,1,2,2-Tetrachloroethane	mg/l	Grab	"
¹ Tributyltin	ng/l	Grab	"
¹ 1,1,1-Trichloroethane	g/l	Grab	"
¹ 1,1,2-Trichloroethane	g/l	Grab	"
¹ Acrylonitrile	µg/l	Grab	"
¹ Aldrin	ng/l	Grab	"
¹ Benzene	mg/l	Grab	"
¹ Benzidine	ng/l	Grab	"
¹ Beryllium	µg/l	Grab	"
¹ Bis(2-chloroethyl)ether	µg/l	Grab	"
¹ Bis(2-ethylhexyl)phthalate	µg/l	Grab	"
¹ Carbon tetrachloride	µg/l	Grab	"
¹ Chlordane	ng/l	Grab	"
¹ Chloroform	mg/l	Grab	"
¹ DDT	ng/l	Grab	"
¹ 1,4-dichlorobenzene	mg/l	Grab	"
¹ 3,3-dichlorobenzidine	µg/l	Grab	"
¹ 1,2-dichloroethane	mg/l	Grab	"
¹ Dichloromethane	mg/l	Grab	"
¹ 1,3-dichloropropane	mg/l	Grab	"
¹ Dieldrin	ng/l	Grab	"
¹ 2,4-Dinitrotoluene	µg/l	Grab	"
¹ 1,2-Diphenylhydrazine	µg/l	Grab	"
¹ Halomethanes	mg/l	Grab	"
¹ Heptachlor	ng/l	Grab	"
¹ Hexachlorobenzene	ng/l	Grab	"
¹ Hexachlorobutadiene	mg/l	Grab	"
¹ Hexachloroethane	µg/l	Grab	"
¹ N-Nitrosodimethylamine	mg/l	Grab	"
¹ N-Nitrosodiphenylamine	µg/l	Grab	"
¹ Polynuclear aromatic hydrocarbons	µg/l	Grab	"
¹ Polychlorinated biphenyls (PCB)	ng/l	Grab	"
¹ TCDD equivalents	pg/l	Grab	"
¹ Tetrachloroethylene	mg/l	Grab	"
¹ Toxaphene	ng/l	Grab	"
¹ Trichloroethylene	mg/l	Grab	"
¹ 2,4,6-Trichlorophenol	µg/l	Grab	"
¹ Vinyl chloride	mg/l	Grab	"

¹ In addition to the June 2002 sampling event, the discharger shall submit annual certification that constituent was not used or generated. If analysis detects a constituent not limited in Section 2a, or if acute toxicity, chronic toxicity, or a constituent limited in Section 2a exceeds its limit, then the Discharger shall resample the discharge within 24 hours.

- 2 Acute toxicity tests shall be 96-hour static-renewal tests conducted in accordance with *Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms (EPA 600/4-94-27F, August 1993, or subsequent editions)*. The test species shall be silversides larvae (*Menidia Beryllina*). The samples shall be 100 percent sample and a control.

Reference toxicant tests shall be conducted concurrently with the sample tests. Both tests must satisfy the test acceptability criteria specified in the reference cited above. If the test acceptability criteria are not achieved or if toxicity is detected, the sample shall be retaken and retested within 14 days of the failed sampling event. The retest results shall be reported in accordance with the chapter on report preparation in the reference cited above, and the results shall be attached to the next monitoring report.

The presence of effluent acute toxicity is represented by the statistically significant mortality of the test species in the wastewater sample compared with their mortality in the control sample. The sample's acute toxicity should be determined by establishing the LC₅₀ concentration as described in the above-mentioned document.

- 3 The test species shall be the sea urchin (*Strongylocentrotus Purpuratus*). Dilution and control water should be obtained from an unaffected area of the receiving waters or shall be synthetic seawater. The sensitivity of the test organisms to a reference toxicant shall be determined concurrently with each bioassay test and reported with the test results.

The following tests shall be used to measure TUC. Other tests may be added to the list when approved by the State Board.

Consistent	Effect	Test Duration	Reference
red Alga, <u>Champia parvula</u>	number of cystocarps	7-9 days	1
giant kelp, <u>Macrocystis pyrifera</u>	percent germination; germ tube length	48 hours	2
abalone, <u>Haliotis rufescens</u>	abnormal shell development	48 hours	2
oyster, <u>Crassostrea gigas</u> ; mussel, <u>Mytilus edulis</u>	abnormal shell development; percent survival	48 hours	3
urchins, <u>Strongylocentrotus purpuratus</u> , <u>S. franciscanus</u> ; sand dollar, <u>Dendraster excentricus</u>	percent fertilization	1 hour	4
shrimp, <u>Mysidopsis bahia</u>	percent survival; growth fecundity	7 days	1
silversides, <u>Menidia beryllina</u>	larval growth rate; Percent survival	7 days	1

Bioassay Reference

1. Weber, C.I., W.B. Horning, II, D.J. Klemm, T.W. Neiheisel, P.A. Lewis, E.L. Robinson, J. Menkedick, and F. Kessler (eds.). 1988. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to marine and estuarine organisms. EPA-600/4-87/028. National Technical Information Service, Springfield, VA.
2. Hunt, J.W., B.S. Anderson, S.L. Turpin, A.R. Conlong, M. Martin, F.H. Palmer, and J.J. Janik. Experimental Evaluation of Effluent Toxicity Testing Protocols with Giant Kelp, Mysids, Red Abalone, and Topsmelt. Marine Bioassay Project. Fourth Report. California State Water Resources Control Board, Sacramento.

3. American Society for Testing Materials (ASTM). 1987. Standard Practice for conducting static acute toxicity tests with larvae of four species of bivalve molluscs. Procedure E 724-80. ASTM, Philadelphia, PA.
4. Dinnel, P.M., J. Link, and Q. Stober. 1987. Improved methodology for sea urchin sperm cell bioassay for marine waters. Archives of Environmental Contamination and Toxicology 16: 23-32.

Domestic Effluent Monitoring

All effluent samples shall be collected from the domestic wastewater plant and analyzed at the frequency specified. Composite samples may be taken by a proportional sampling device approved by the Executive Officer, or by grab samples composited in proportion to the flow. In compositing grab samples, each sample interval shall not exceed one hour. The following shall constitute the effluent monitoring program.

Constituent	Type of Units	Sample	Minimum Sampling & Analyzing Frequency
Total Chlorine Residual	mg/l	Metered ¹	Continuous
Settleable Solids	mg/l	Grab	Monthly ²
Suspended Solids	mg/l	24-hr. composite	"
Grease and Oil	mg/l	Grab	"

¹ Only when chlorinating. Report alternative method of disinfection when used.

BIOSOLIDS MONITORING

The volume of biosolids removed from the domestic wastewater treatment facilities, along with the date removed and disposal location, shall be recorded and reported annually in September to the Board.

RECEIVING WATER MONITORING

The receiving water monitoring program shall be conducted in the Fall of 2002. The program consists of four sections (I - IV) and the Ocean Stations described below:

Ocean Stations

- 1 500 meters westward at depth of outfall diffuser midpoint
- 2 250 meters westward at depth of outfall diffuser midpoint
- 3 100 meters westward at depth of outfall diffuser midpoint
- 4 25 meters westward at depth of outfall diffuser midpoint
- 5 Reference station; 2000 meters eastward at depth of outfall diffuser midpoint.

I. Water Column Sampling

Water column samples shall be collected in September or October. Temperature, light transmittance, natural light attenuation, dissolved oxygen and pH shall be determined at the surface, mid-depth and two meters above the bottom at each station. Stations to be sampled are:

- WC-ZID Eight meters from the outfall in the wastewater plume*.
- WC-75M In the plume*, 75 meters from the outfall on the same heading as above.
- WC-150M In the plume*, 150 meters from the outfall on the same heading as above.
- WC-Control Ocean station No. 5 or a corresponding point 2,000 meters upcoast (east) of the outfall, whichever is upcurrent at the time of sampling.

*Plume to be located at the time of sampling by a combination of temperature-salinity profiles and light transmittance readings. Plume thickness shall be also be determined and samples taken mid-depth in the plume. (Sample control at same depth.) All plume locating data shall be reported and included in the receiving water monitoring report.

During sampling, observations of floating particulates, discoloration or grease and oil on the ocean surface shall be recorded. The observations shall be included in the receiving water monitoring report.

II. Bottom Sediment Sampling

Parameter	Units	Sampling Stations	Minimum Sampling and Analyzing Frequency
Sulphides (at pH 7)	mg/kg	1 thru 5	In the year 2002
Particle size Distribution incl. % retained on #200 sieve)	--	1 thru 5	"
Organic Matter (volatile solids or TOC)	mg/kg	1 thru 5	"
Total Coliform Organisms	MPN/100 g	1 thru 5	"
Fecal Coliform Organisms	MPN/100 g	1 thru 5	"
BOD	mg/kg	1 thru 5	"
Total Kjeldahl Nitrogen	mg/kg	1 thru 5	"
Arsenic	mg/kg	1 thru 5	"
Cadmium	mg/kg	1 thru 5	"
Total Chromium	mg/kg	1 thru 5	"
Hexavalent Chromium	mg/kg	1 thru 5	"
Copper	mg/kg	1 thru 5	"
Lead	mg/kg	1 thru 5	"
Mercury	mg/kg	1 thru 5	"
Nickel	mg/kg	1 thru 5	"
Iron	mg/kg	1 thru 5	"
Silver	mg/kg	1 thru 5	"

Parameter	Units	Sampling Stations	Minimum Sampling and Analyzing Frequency
Zinc	mg/kg	1 thru 5	"In the Year 2002"
Polynuclear Aromatic Hydrocarbons	mg/kg	1 thru 5	"
Selenium	mg/kg	1 thru 5	"
COD	mg/kg	1 thru 5	"
Oil and Grease	mg/kg	1 thru 5	"

The following procedure shall be carried out for sampling and analyzing ocean bottom sediments:

1. Duplicate samples shall be taken at each station and shall be analyzed and reported separately. Samples may be taken either by divers using non-contaminating samplers or by a surface operated grab sampler, which will obtain a relatively undisturbed sample. If the surface operated grab sampler is utilized, a subsample (uncontaminated by the sampler) should be taken from the grab. In either case, the top 5 cm of material shall be used for analyses. Enough cores shall be taken at each station to provide sufficient sediment material for the required duplicate analyses.
2. The contractor shall locate and mark the outfall terminus before beginning station locations and sampling. Reliance on charts, as built plans, etc., will not suffice.
3. Control stations have been selected in areas which should provide similar sediments as similar depths to the outfall stations. If the contractor encounters rocks or gravel at a station, he shall reposition the station, as necessary, to obtain a usable sediment sample. Station location changes shall be described in the final report.
4. Samples shall be placed in airtight polyethylene containers. Care shall be taken to ensure the containers are completely filled by the samples and air bubbles are not trapped in the containers. A separate subsample for sulfide analysis shall be placed in a small (100-200 ml) wide-mouth bottle and preserved with zinc acetate. The preservative must be carefully mixed with the sediment sample. The samples shall be stored immediately at 2 to 4 °C and not frozen or dried. Total sample storage time shall not exceed two weeks.

For bacterial analysis, storage time shall not exceed 6 to 8 hours. Bacterial analysis must be performed prior to preservation.

5. When processing for analyses, macrofauna and remnants should be removed, taking care to avoid contamination.
6. Chemical extractions are to be run for 24 hours with dilute HCL (.5N) using guidelines recommended by the SWRCB. Subsequent analysis shall be conducted in accordance with the current edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants," promulgated by the United States Environmental Protection Agency. Any variations must be reported with the test results.
7. Results shall be expressed on a dry-weight basis.
8. Results shall be compared between outfall and reference areas using standard statistical techniques. Data shall be compared in its raw form, and chemical results are to be normalized to the clay fraction, which is the percent by weight passing the No. 200 sieve, as follows:

$$\text{normalized result} = \frac{\text{raw result}}{\% \text{ of clay (as a decimal)}}$$

III. Benthic Biota
(same frequency as II)

1. At least five (5) samples will be taken at each of the five stations. The samples shall be taken by mechanical grab or qualified diver biologists utilizing 3-pound coffee cans (or similar) with both ends cut out. (The cans are to be pushed into the sediment full length, the top capped, surrounding sediment dug away, and the bottom capped). During collection, water temperature shall be recorded at three meter depth intervals and at the surface and bottom.
2. The sample shall be processed by washing it through a 1 mm sieve.
3. The sample should then be preserved in 10% buffered formalin or 75% alcohol. The material may be stained with Rose Bengal.
4. Coelenterates, polychaetes, macrocrustaceans, molluscs, ectoprocts, echinoderms, and algae shall be identified to species or at least to genus. All others shall be identified to the lowest taxon possible. All specimens shall be counted to provide information on abundance. Species abundance lists shall be presented with data reduced to standard area (sq. meter) and standard volume (liter).
5. For data from each sampling period, the following basic statistical analyses shall, as a minimum, be performed and reported:
 - a. The mean, median, range, standard deviation, and 95 percent confidence limits of the species abundance data reduced to standard area and volume.
 - b. Information theory species diversity index value

$$[H = - \sum_{i=1}^n \left(\frac{n_i}{N} \right) \log \left(\frac{n_i}{N} \right)], \quad \text{calculated with}$$

both natural and base-2 logarithms, for each replicate sample at each station and for the station as a whole (i.e., pooling data from all replicates for the station during one survey). In addition, the station mean, range, and standard deviation shall be calculated from the replicate index values.
 - c. The infaunal index, dominance index and distributional statistics on "dominant" species as developed by the Southern California Coastal Water Research Project (SCCWRP) shall be calculated for each station. SCCWRP should be contacted for the latest species list and formula required.
6. The names and qualifications of persons identifying this material shall be indicated in all data reports. Furthermore, type collections shall be established for the various groups. All material shall be saved and stored for future reference. Material can be discharged after four years.
7. The final report on community analyses shall include a complete discussion of survey results and possible influence of the outfall on the marine communities in the study area. The discussion should be based on statistical evidence developed in item 5, above, and on similarity analysis and cluster analysis of the data. It should include an analysis of natural community variation including the effects of different oceanic seasons and water temperatures, which could influence the validity of study results.

IV. Chemical Analysis of Biota
(same frequency as II)

Six (6) specimens of each species for chemical analysis shall be collected at the following locations:

Species	Outfall Area Stations 1, 2, 3 & 4 Combined	Control Area*
Pink Surfperch (<u>Zalembius rocaeus</u>)	6	6
Giant Red Sea Urchin (<u>Stronglyocentrotus franciscanus</u>)	6 (attached to outfall or nearby substrate)	6
Kellett's whelk (<u>Kelletia Kelletii</u>)	6	6
Queenfish (<u>Seriphus Politus</u>)	6	6
White Surfperch (<u>Phanerodon Furcatus</u>)	6	6

If one or both of the species listed above cannot be obtained as required, the discharger/contractor may nominate other available species to fulfill the requirements as necessary. Any substitutions must be approved by Regional Board staff prior to analysis. The standard and total length, wet weight, sex and physiological condition of each specimen shall be recorded. Tissue** shall be combined in a manner to produce sufficient material for two (2) separate analyses for each parameter from each sampling location. Each of these duplicate composite samples shall be separately analyzed for all toxic substances identified in the effluent and must include as a minimum, Cd, Total Cr, Cu, Pb, Hg, Ni, Ag and Zn. Specimens shall be stored in polyethylene -20°C prior to analysis.

*A control area is to be selected by the discharger near one of the Channel Islands. The site should provide similar habitats and species to the outfall area, and must be approved by the Regional Water Quality Control Board staff before sampling. Its location can be adjusted if necessary to obtain the required samples.

**Fish liver composites shall be analyzed for all trace metals except mercury. Fish flesh composites of dorsal muscle tissue shall be analyzed for mercury. Tissue for macro-invertebrate analysis to be approved by Regional Board staff.

OUTFALL INSPECTION

A diver or a remotely-operated vehicle shall visually inspect the outfall pipe and diffuser ports in the years 2000 and 2002. Any observed cracks, breaks, or malfunctions, and all findings and actions, shall be documented and reported to this Board.

REPORTING

Sampling and Analyzing Frequency

Report Due

Continuous, Daily, 3 times per Week,
Weekly, Monthly.

20th day of the following month.

Annually

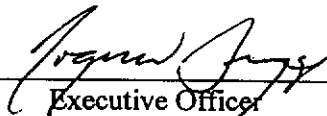
20th day of January in the year following the test..

Triennial

20th day of November.

Section I, II, III

20th day of November.

Ordered by: 
Executive Officer

Date: 12-16-98