

include general observations and photographic records of the outfall pipe/diffuser system and the surrounding ocean bottom in the vicinity of the outfall/diffuser. The inspection shall be conducted along the outfall pipe/diffuser system from landfall to its ocean terminus. A report detailing inspection results shall be submitted to the Central Coast Water Board and USEPA with the annual report required in Standard Provision C.8.

XI. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

B. Self Monitoring Reports (SMRs)

1. The Discharger is not currently submitting Self-Monitoring Reports (SMRs) using the State Water Board's California Integrated Water Quality System (CIWQS) Program Web site (<http://www.waterboards.ca.gov/ciwqs/index.html>). At any time during the term of this permit, the State Water Board or Central Coast Water Board will provide directions for SMR submittal when the CIWQS database is available to receive the discharger's monitoring data.
2. Monthly monitoring reports shall be submitted for all monitoring and sampling herein by the last day of the month following the sampling or monitoring event. An annual report shall be submitted by April 1st of each year, in accordance with Standard Provision C.8. In addition, monitoring data (effluent and ambient) shall be submitted in an electronic format to USEPA annually, in a form that is compatible with USEPA's STORET database.
3. If results of monitoring a constituent appear to violate effluent limitations based on a weekly, monthly, 30-day, or six-month period, but compliance or non-compliance cannot be validated because sampling is too infrequent, the frequency of sampling shall be increased to validate the test within the next monitoring period. The increased frequency shall be maintained until the Executive Officer agrees the original monitoring frequency may be resumed, as stated in B.2 of the Standard Provisions and Reporting Requirements.
4. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Sampling Frequency	Monitoring Period Begins On...	Monitoring Period	SMR Due Date
Continuous	Permit effective date	All	First day of second calendar month following month of sampling

X / day	Permit effective date	(Midnight through 11:59 PM) or any 24-hour period that reasonably represents a calendar day for purposes of sampling.	First day of second calendar month following month of sampling
X / week	Sunday following permit effective date or on permit effective date if on a Sunday	Sunday through Saturday	First day of second calendar month following month of sampling
X / month	First day of calendar month following permit effective date or on permit effective date if that date is first day of the month	1 st day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
X / quarter	Closest of January 1, April 1, July 1, or October 1 following (or on) permit effective date	January 1 through March 31 April 1 through June 30 July 1 through September 30 October 1 through December 31	May 1 August 1 November 1 February 1
X / semiannual period	Closest of January 1 or July 1 following (or on) permit effective date	January 1 through June 30 July 1 through December 31	August 1 February 1
X / year	January 1 following (or on) permit effective date	January 1 through December 31	April 1

4. Reporting Protocols. The Discharger shall report with each sample result the applicable reported Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in 40 CFR Part 136.

The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

- a. Sample results greater than or equal to the reported ML shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).
- b. Sample results less than the reported ML, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such

information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (\pm a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

- c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.
 - d. Discharger is to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from *extrapolation* beyond the lowest point of the calibration curve.
5. The Discharger shall submit SMRs in accordance with the following requirements:
- a. The Discharger shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations. The Discharger, if submitting electronically to CIWQS, is not required to duplicate the submittal of data that is developed in tabular format. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment.
 - b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.
 - c. According to Section XI.B.1 of the Monitoring and reporting Program, when available, SMRs must be submitted to the CIWQS Program Web Site and certified as required by the Standard Provisions (Attachment D), to the web address listed below:

<http://www.waterboards.ca.gov/ciwqs/index.html>
 - d. An Annual Self Monitoring Report Summary shall be due on April 1 following each calendar year and shall include:
 - I. All data required by this MRP for the corresponding monitoring period, including appropriate calculations to verify compliance with effluent limitations.
 - II. A discussion of any incident of non-compliance and corrective actions taken.

C. Discharge Monitoring Reports (DMRs)

1. As described in Section XI.B.1 above, at any time during the term of this permit, the State Water Board or Central Coast Water Board may notify the Discharger to electronically submit self-monitoring reports. Until such notification is given, the Discharger shall submit discharge-monitoring reports (DMRs) in accordance with the requirements described below.
2. DMRs must be signed and certified as required by the standard provisions (Attachment D). The Discharge shall submit the original DMR and one copy of the DMR to the address listed below:

State Water Resources Control Board
Division of Water Quality
Discharge Monitoring Report Processing Center
Post Office Box 100
Sacramento, CA 95812-1000

3. All discharge monitoring results must be reported on the official USEPA pre-printed DMR forms (EPA Form 3320-1). Forms that are self-generated or modified cannot be accepted.

D. Other Reports and Notifications

1. Cat Litter Public Education Outreach Annual Report. The Discharger shall include, as part of the April 1 annual self-monitoring report, a description of actions taken within the reporting year to implement the cat waste disposal outreach program and any proposed changes to the outreach program in the coming reporting year. Any changes in level of effort identified in Section VI.C.5 and implementation goals as a result of annual reevaluations shall be included in the annual report with adequate justification.
2. Cat Litter Public Education Outreach Work Plan. The Discharger shall develop a work plan that describes the planned public education activities. The cat litter public education work plan shall be due six (6) months after the effective date of this order.
3. Sanitary sewer overflows associated with the Discharger's collection system are subject to the online reporting and notifications requirements set forth in the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems Order No. 2006-0003-DWQ. The Discharger has enrolled under the statewide waste discharge requirements for sanitary sewer systems on as stated in Finding V of this Order. Therefore, all prohibitions, provisions, and monitoring and reporting requirements apply to the Discharger. For any discharges of sewage to a drainage channel or surface water, the Discharger is required to notify the State Office of Emergency Services, the local health officer or directors of environmental health with jurisdiction over affected water bodies, and the Central Coast Water Board, within two (2) hours after becoming aware of the discharge. Additionally, within 24-

hours the Discharger shall submit to the Central Coast Water Board certification that the appropriate agencies (i.e., Office of Emergency Services and Environmental Health) have been notified of the sewage discharge to surface water bodies.

Additionally, any sanitary sewer overflows or wastewater (either partially treated or untreated) that are released at the wastewater treatment plant are subject to the same notifications requirements as mentioned above for collections systems.

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ATTACHMENT F – FACT SHEET

As described in Section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the facility:

WDID:	3 400103001
Discharger:	City of Morro Bay and Cayucos Sanitary District
Name of Facility:	Morro Bay/Cayucos WWTP
Facility Address:	160 Atascadero Road
	Morro Bay, California 93442
	San Luis Obispo County
Facility Contact, Title and Phone:	Bruce Keogh, Wastewater Division Manager, (805) 772-6272
Authorized Person to Sign and Submit Reports:	Bruce Keogh, Wastewater Division Manager, (805) 772-6272
Mailing Address:	595 Harbor Street, Morro Bay, California 93442
Billing Address:	595 Harbor Street, Morro Bay, California 93442
Type of Facility:	Municipal WWTP
Major or Minor Facility:	Major
Threat to Water Quality:	1
Complexity:	B
Pretreatment Program:	No
Reclamation Requirements:	None
Facility Permitted Flow:	Peak seasonal dry weather flow of 2.36 MGD
Facility Design Flow:	Annual average of 2.06 MGD, Peak seasonal dry weather flow of 2.36 MGD
Watershed:	Estero Bay
Receiving Water:	Pacific Ocean
Receiving Water Type	Ocean

A. The City of Morro Bay and Cayucos Sanitary District (hereinafter Discharger) are the owner and operator of the Morro Bay/Cayucos Wastewater Treatment Plant (hereinafter Facility), a municipal wastewater treatment plant.

B. The Facility discharges wastewater to the Pacific Ocean at Estero Bay, a water of the United States, and is currently regulated by Order No. 98-15 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0047881, which was adopted

by the Central Coast Water Board on December 11, 1998. The permit expired March 1, 2004, but continues in force until the effective date of the new permit, in accordance with 40 CFR Part 122.6.

C. The Discharger applied for reissuance of its 301(h)-modified permit on July 7, 2003.

II. FACILITY DESCRIPTION

A. Description of Wastewater and Biosolids Treatment. The treatment plant provides treatment by a split stream process of physical and biological treatment. All wastewater flows through primary sedimentation basins. Approximately 1 MGD flows through secondary treatment facilities, including trickling filters, solids-contact, and secondary clarification. Secondary treated wastewater is then blended with primary treated wastewater and disinfected by chlorination, and then dechlorinated prior to discharge to the Pacific Ocean. Historically, biosolids have been anaerobically digested and dried, composted, and then trucked to the San Joaquin Valley for use as a soil conditioner. However, in the past two years, the Discharger has successfully implemented a composting operation at the treatment plant that will allow beneficial reuse of biosolids locally.

The Discharger's final Facility Master Plan includes the alternatives for upgrades. The City proposes to upgrade the facility to provide tertiary treatment. Details of the upgrades are conceptual as the Discharger is required to circulate an California Environmental Quality Act document that considers facility upgrade alternatives. However, the September 2007 Facility Master Plan recommends rehabilitation of the existing headworks and aerated grit chamber, demolition of primary clarifiers and trickling filters, construction of oxidation ditches, rehabilitation of the existing secondary clarifier and construction of a new secondary clarifier, construction of a new tertiary cloth filter, and rehabilitation of the existing chlorine contact chamber.

B. Effluent characteristics. According to the most recent monitoring data (June 2008), effluent has the following characteristics.

Table F-1. Effluent Characteristics for Conventional Parameters

Parameter	Units	Average Daily Value	Maximum Daily Value
Average Daily Flow	MGD	1.102	1.304
BOD	mg/L	48.8	53
TSS	mg/L	25	46
Total Chlorine Residual	mg/L	0.05	0.05
Total Coliform	MPN/100 mL	<2	<2
Temperature	°C	20	23
Turbidity	NTU	35.7	52
pH	s.u.	7.6	7.7
Settleable Solids	mL/L	<0.10	<0.10
Grease and Oil	mg/L	3.7	9.2
Chronic Toxicity ¹	TUc		5.6
Ammonia (as N)	mg/L	22	22

1 - Total coliform is to be sampled semi-annually (January and July). Therefore, results shown are reflective of the January 2008 semi-annual report.

The following table provides priority pollutants that were detected in the most recent semiannual report (January 2008).

Table F-2. Effluent Characteristics for Priority Pollutants

Parameter	Units	Detected Value	Violation
Chromium	µg/L	1.1	No
Copper	µg/L	.16	No
Mercury	µg/L	0.025	No
Nickel	µg/L	4.7	No
Zinc	µg/L	.60	No
Arsenic	µg/L	1.2	No
Lead	µg/L	2.1	No
Selenium	µg/L	0.91	No
Chloroform	µg/L	0.93	No
Dichlorobromomethane	µg/L	0.13	No
1,4 - Dichlorobenzene	µg/L	0.16	No
Methylene Chloride	µg/L	0.19	No
Toluene	µg/L	0.24	No
Total Xylenes	µg/L	0.79	No
m- Xylenes	µg/L	0.47	No
o- xylenes	µg/L	0.32	No
Bis (2-Ethylhexyl) phthalate	µg/L	12	No

C. Discharge Points and Receiving Waters. Effluent is discharged to the Pacific Ocean through a 27-inch diameter outfall that terminates with a 170-foot long diffuser in approximately 50 feet of water, 2900 feet from shore. The diffuser was modeled to achieve a minimum initial dilution of 133 parts seawater for every part effluent (133:1). The zone of initial dilution is approximately 103 feet wide 240 feet long.

D. Regulatory History. The treatment plant was originally constructed in 1954. It was upgraded in 1964 to a capacity of 1.0 MGD. In 1982, the outfall was extended further offshore to its current location. A new treatment plant was designed in 1981 to expand capacity and meet secondary treatment standards (discussed further below). Financial aid from state and federal agencies was not available. Consequently, the treatment plant's design was modified to provide biological treatment to a majority (~1 MGD), but not all, of the projected flow. In March 1983, Central Coast Water Board staff tentatively concurred that such a discharge would comply with applicable state laws, including water quality standards, and would not result in requirements for additional treatment, pollution control, or other requirements on any other point or non-point sources.

The treatment plant was upgraded from 1983 to 1985 to a peak seasonal dry weather flow of 2.36 MGD. In 1985, USEPA approved a Clean Water Act Section 301(h) Modified NPDES Permit that waived full secondary treatment requirements for Biochemical Oxygen Demand (BOD₅) and Total Suspended Solids (TSS). The Permit required 75% removal of TSS and included a 30-day average TSS effluent limit of 70 mg/L. The Permit required 30% removal of BOD₅ and included a 30-day average BOD₅ effluent limit of 120 mg/L.

The permit also required an extensive monitoring program. The monitoring program is discussed on page F-12.

The Permit was first reissued in 1992. The second Permit reissuance process began in May 1997. Multiple discussions between the Discharger, Central Coast Water Board staff, and USEPA staff resulted in several revisions to the permit and monitoring program, including a slight reduction in allowed mass-emissions of BOD₅, TSS, and oil & grease; expanded biosolids reporting; revised benthic sampling locations; and a revised receiving water sampling program. In July 1998, staff again determined that the discharge would comply with applicable state laws, including water quality standards, and would not result in requirements for additional treatment, pollution control, or other requirements on any other pollutant sources. USEPA issued a tentative decision to grant another modification of secondary treatment requirements in September 1998. The Central Coast Water Board approved the NPDES Permit, waiving secondary treatment requirements, in December 1998. The California Coastal Commission determined the Permit was consistent with the Coastal Zone Management Act on January 13, 1998. USEPA issued the Permit on January 26, 1999, which finally became effective March 1, 1999 (33 days after issuance).

Morro Bay/Cayucos Wastewater Treatment Plant is now one of only three remaining in California that operates under a 301(h)-modified permit. Others include Goleta Sanitary District and San Diego. In 2004, Goleta Sanitary District and the Central Coast Water Board entered an agreement requiring an upgrade to full secondary treatment standards by November 2014. Orange County Sanitation District, the largest in the nation to operate under a 301(h)-modified permit, recently elected to upgrade its treatment facilities to meet secondary treatment standards and forgo its 301(h) modified permit.

In anticipation of this Permit reissuance process, staff met with and sent a letter to the Discharger in January 2003 that requested they consider upgrading the treatment plant to meet federal secondary treatment standards and forgo their 301(h)-modified permit. In a March 20, 2003 response, City of Morro Bay Manager Robert Hendrix wrote:

"...we are using your correspondence as a catalyst for the formation of a long-term future policy on wastewater treatment. The [Morro Bay] City Council and [Cayucos] Sanitary District Board have selected members to serve on a subcommittee to work with your staff to consider a number of alternatives, formulate a draft policy or policies, and then return to the full legislative body in the late Spring of this year [2003] with a recommended course of action."

In mid-2003, the subcommittee commissioned a study as to whether an equalization basin could be added to improve treatment efficiency and allow the discharge to meet secondary treatment standards. The study concluded that an equalization basin would not accomplish this goal.

The Discharger submitted an application for reissuance of its Clean Water Act Section 301(h) Modified NPDES Permit on July 7, 2003. It also requested a determination ("401 Certification") as to whether the discharge will comply with applicable state laws, including water quality standards, and will not result in requirements for additional treatment, pollution control, or other requirements on any other pollutant sources. In an August 26, 2003 letter, Central Coast Water Board staff declined to make such a determination, instead deferring to the Central Coast Water Board to make such a determination through approval or disapproval of the NPDES Permit. This is more appropriate because of the complex legal issues, and it is a more comprehensive and publicly transparent process.

The existing permit expired on March 1, 2004, but continues in force until the effective date of reissuance, in accordance with 40 CFR Part 122.6.

In June 2004, after public opposition to the 301(h)-modified permit, the Discharger commenced a process to upgrade the treatment plant to meet secondary treatment standards. The Discharger hired Carollo Engineers to assist in development of a detailed timeline to implement the upgrade. Water Board staff and USEPA chose to delay the Permit reissuance process until the timeline was developed. In April 2005, Carollo Engineers presented a 15-year timeline at a public meeting of the Discharger. After considering many public comments in opposition to the 15-year timeline, the Discharger rejected the 15-year timeline and directed Carollo Engineers to return with a timeline that was as "quick as possible."

In May 2005, Carollo Engineers returned and presented a 9.5-year timeline to the Discharger. The 9.5-year timeline was based on the shortest reasonable time necessary to select an engineering consultant, coordinate between the Dischargers, develop a facility plan, obtain financing and permits, and design and construct the improvements. The 9.5-year timeline requires the Discharger to achieve full compliance with secondary treatment standards by June 23, 2015. The Discharger accepted the 9.5-year timeline and formally proposed it to Water Board staff on June 15, 2005. Water Board staff met with the Discharger July 15, 2005, and tentatively agreed to the 9.5-year timeline. Water Board staff and the Discharger drafted a tentative settlement agreement that enforces the 9.5 year timeline, and provides for one more 301(h)-modified permit. This 301(h)-modified permit is necessary because the timeline to achieve compliance with secondary treatment standards exceeds the five-year life of an NPDES permit. The next NPDES permit (September 2013, if the Water Board adopts a permit at this hearing) will contain secondary treatment requirements, and will be accompanied by a time schedule or other order to shield the Discharger from mandatory minimum penalties until the upgrade is completed. If State and federal law (see 40 CFR 122.47) allow a compliance schedule in the NPDES permit, the permit will include the compliance schedule and no time schedule or other order will be necessary. The tentative settlement agreement contains additional provisions regarding new evidence and Central Coast Water Board discretion.

Water Board staff presented the revised modified 301(h) Waiver NPDES Permit to the Central Coast Water Board on May 11, 2006. Prior to the May 11, 2006 meeting, Water Board staff and the Discharger entered into a revised settlement agreement that expedited the conversion schedule to 8.5 years. The Central Coast Water Board had questions regarding the potential affects of continued discharges from the Facility; more specifically, whether continued facility discharges would effect the southern sea otter and brown pelican. As a result, the Central Coast Water Board continued the hearing to allow USEPA to develop an Endangered Species Act Biological Evaluation (BE) on the potential effects. Furthermore, the BE would be required to receive concurrence of "no likely adverse effects" pursuant to Section 7 of the Federal Endangered Species Act from the USFWS.

The USEPA drafted the BE on September 6, 2007, and requested concurrence of "no likely adverse effects" on the brown pelican and southern sea otter from the USFWS. The BE recognizes no likely adverse effects on the southern sea otter and brown pelican provided that the Discharger implement conservation measures, which include:

- Public outreach program to minimize the input of cat litter-box wastes into the municipal sewer systems;
- Regular monitoring of nutrient loading from the facility's ocean outfall; and
- Facility upgrade to at least full secondary or tertiary treatment by 2014.

The USFWS formally responded to the USEPA's request for concurrence in a letter dated December 21, 2007. The USFWS letter concurred with the USEPA's findings indicating that continued discharges from the Facility would not likely have adverse effects to endangered species in the area. The USFWS letter states, "[w]e concur with your determination that the proposed project is not likely to adversely affect the brown pelican or southern sea otter." However, the USFWS letter recognized that there are material gaps in current data and that additional data gathering would optimize the understanding of potential effects from the continued discharge. The USFWS letter states, "[w]e recognize that the conservation measures proposed in the Biological Evaluation for this action will assist in gathering information useful in evaluating this issue, as will independent research being conducted by a number of interested parties."

As noted in Finding AA of this Order, the Discharger plans on converting the existing facility to tertiary treatment as part of the upgrades. Furthermore, the Discharger submitted to Water Board staff drafts for the development and implementation of a nutrient monitoring program and a Cat Litter Public Outreach program consistent with the conservation measures as proposed by USEPA. These conservation measures are incorporated into the revised Order. The May 11, 2006 settlement agreement has been updated to revise the conversion schedule and make other revisions to reflect new factual information available since the May 11, 2006 hearing. The Dischargers

will be presenting the updated settlement agreement to their governing boards for approval on November 19, 2008.

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the requirements and authorities described in this section.

A. Legal Authorities

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

B. California Environmental Quality Act (CEQA)

This action to adopt an NPDES permit is exempt from the provisions of the California Environmental Quality Act (Public Resources Code Section 21100, et seq.) in accordance with Section 13389 of the CWC.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** The Central Coast Water Board adopted the *Water Quality Control Plan, Central Coast Basin* (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, State Water Resources Control Board Resolution No. 88-63 requires that, with certain exceptions, the Central Coast Water Board assign the municipal and domestic supply use to water bodies that do not have beneficial uses listed in the Basin Plan. Beneficial uses applicable to Pacific Ocean are as follows:

Discharge Point	Receiving Water	Beneficial Uses
001	Pacific Ocean	<ul style="list-style-type: none"> • Water contact recreation (REC-1); • Non-contact water recreation (REC-2); • Industrial service supply (IND); • Navigation (NAV); • Marine habitat (MAR); • Shellfish harvesting (SHELL); • Commercial and sport fishing (COMM); • Rare, threatened, or endangered species (RARE); • Wildlife habitat (WILD).

2. **Secondary Treatment Standards and Clean Water Act Section 301(h).** The 1972 Clean Water Act required publicly owned treatment works to meet treatment standards that were based on performance of wastewater treatment technology available at that time. Clean Water Act Section 301 established a required performance level, referred to as "secondary treatment," that publicly owned treatment works were required to meet by July 1, 1977. The secondary treatment standards, as found in 40 CFR Part 133, are:

Parameter	30-Day Average	7-Day Average
BOD ₅ and TSS	30 mg/L	45 mg/L
BOD and TSS Removal	At least 85%	--
pH	6 – 9 at all times	

Due to the extensive volume of the ocean relative to inland water bodies, dilution of wastewater discharges to the ocean is generally much greater than discharges to inland water bodies. Most major ocean discharges in the Central Coast Region achieve initial dilution of greater than 100 parts seawater for every part effluent. On the contrary, most inland discharges in the Central Coast Region are to water bodies with little or no natural flow, therefore little or no dilution occurs. Although effluent BOD₅ and TSS values for a typical ocean discharge may exceed secondary treatment standards, the final concentration of these pollutants in the receiving water will be far less than a typical inland surface water discharge that meets secondary treatment standards. This dilution effect is the primary basis for the modification of secondary treatment standards provided in Clean Water Act Section 301(h). However, the direction of our laws, regulations, and policies is steadily toward reducing the discharge of pollution to the environment, not justifying pollutant loading with dilution. There are several additional factors that must be considered before approving a 301(h)-modified permit, as noted below.

Clean Water Act Section 301(h) provides for a modification of secondary treatment standards for publicly owned treatment works that discharge into marine waters if the modified requirements do not interfere with the attainment or maintenance of water quality. USEPA has promulgated specific regulations pertaining to Clean Water Act Section 301(h) in 40 CFR, Part 125, Subpart G.

In order to obtain a 301(h)-modified permit, an applicant must demonstrate that:

- There is an applicable water quality standard specific to the pollutant for which the modification is requested (usually BOD₅ and TSS);
- The discharge of pollutants in accordance with such modified requirements will not interfere, alone or in combination with pollutants from other sources, with the attainment or maintenance of that water quality which assures protection of public water supplies and protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife, and allows recreational activities, in and on the water;
- The applicant has established a system for monitoring the impact of such discharge on a representative sample of aquatic biota, to the extent practicable, and the scope of such monitoring is limited to include only those scientific investigations which are necessary to study the effects of the proposed discharge;
- Such modified requirements will not result in any additional requirements on any other point or nonpoint source;
- All applicable pretreatment requirements for sources introducing waste into such treatment works will be enforced;
- In the case of any treatment works serving a population of 50,000 or more, with respect to any toxic pollutant introduced into such works by an industrial discharger for which pollutant there is no applicable pretreatment requirement in effect, sources introducing waste into such works are in compliance with all applicable pretreatment requirements, the applicant will enforce such requirements, and the applicant has in effect a pretreatment program which, in combination with the treatment of discharges from such works, removes the same amount of such pollutant as would be removed if such works were to apply secondary treatment to discharges and if such works had no pretreatment program with respect to such pollutant;
- To the extent practicable, the applicant has established a schedule of activities designed to eliminate the entrance of toxic pollutants from nonindustrial sources into such treatment works;

- There will be no new or substantially increased discharges from the point source of the pollutant to which the modification applies above that volume of discharge specified in the permit;
- The applicant at the time such modification becomes effective will be discharging effluent which has received at least primary or equivalent treatment and which meets the criteria established under section 304(a)(1) [of the Clean Water Act] after initial mixing in the waters surrounding or adjacent to the point at which such effluent is discharged. (40 CFR Part 125.57)

USEPA's Tentative Decision Document dated November 10, 2005, evaluates the Discharger's compliance with each of these nine criteria. USEPA's tentative decision is that the Discharger meets each of the above criteria and the Permit is eligible for reissuance.

3. **Antidegradation Policy.** Section 131.12 of 40 CFR requires that State water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution 68-16, which incorporates the requirements of the federal antidegradation policy. Resolution 68-16 requires that existing water quality is maintained unless degradation is justified based on specific findings. As discussed in detail in this Fact Sheet, the permitted discharge is consistent with the antidegradation provision of 40 CFR §131.12 and State Water Board Resolution 68-16. The permit does not allow any new or increased discharges compared to the previous permit. Effluent limitations for several constituents are more stringent than the previous permit. In addition, the Permit does not permit any degradation of receiving waters.
4. **Anti-Backsliding Requirements.** Sections 402(o)(2) and 303(d)(4) of the CWA and 40 CFR §122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require that effluent limitations in a reissued permit must be as stringent as those in the previous permit, with some exceptions in which limitations may be relaxed. All effluent limitations in the Order are at least as stringent as the effluent limitations in the previous Order.
5. **Monitoring and Reporting Requirements.** Section 122.48 of 40 CFR requires all NPDES permits to specify requirements for recording and reporting monitoring results. Sections 13267 and 13383 of the CWC authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (MRP) establishes monitoring and reporting requirements to implement federal and State requirements. This MRP is provided in Attachment E.

The Discharger's monitoring program is among the most comprehensive of all municipal ocean discharges of less than 5 MGD in California. More importantly, the monitoring for this permit is thorough, covering the treatment process, receiving waters, seafloor sediment, and marine life. Influent and effluent quality and quantity are routinely monitored to evaluate treatment process efficiency.

Effluent is regularly monitored for conventional pollutants (e.g. TSS, pH), as well as whole effluent toxicity and priority pollutants (e.g. arsenic, benzene, halomethanes, etc.).

Receiving water monitoring includes both surf zone monitoring and ocean monitoring near the discharge. The discharge is approximately 2700 feet offshore.

Surf zone monitoring includes grab samples taken on a weekly basis in the summer months and at least monthly during the winter months, at eight monitoring stations, ranging from 5600 feet upcoast of the outfall diffuser, to 5000 feet downcoast of the outfall diffuser. Samples are analyzed for total and fecal coliform organisms to assess conditions for water contact recreation and shellfish harvesting.

Ocean monitoring stations are located in a target-shaped grid around the outfall diffuser to assess the short- and long-term impacts of the discharge on the receiving water, benthic sediment, and biota in the vicinity of the discharge. Ocean monitoring data are collected quarterly by deploying electronic probes by boat at each monitoring station to measure dissolved oxygen, pH, salinity, temperature, density, and light transmittance at frequent intervals through the entire water column. The data are interpolated to create graphical cross sections of the discharge plume. The cross sections are used to approximate the geometry and behavior of the discharge plume under various oceanographic conditions.

Sediment monitoring is conducted annually in October at nine stations surrounding the discharge, to assess the temporal (i.e. changes over time) and spatial (i.e. changes in distance from the outfall) occurrence of pollutants in sediment, and physical and chemical quality of the sediments. Parameters that are measured include sediment particle size, BOD₅, sulfides, heavy metals, and persistent organic pollutants (e.g. DDT).

Bottom-dwelling (or "benthic") organisms are monitored annually in October at the same monitoring stations where sediment monitoring occurs. Benthic community health is represented by indices of density, diversity, trophic index, species, dominance, and richness. Statistical evaluations of these indices are used to assess any changes over time or in distance from the outfall.

Additionally, biosolids and the outfall/diffuser system are inspected annually.

IV. EVALUATION OF COMPLIANCE WITH PERMIT REQUIREMENTS

Whereas USEPA's evaluation is focused on compliance with the nine criteria discussed above, Water Board staff's evaluation is focused on compliance with the Permit's effluent and receiving water limitations, as well as relevant laws and regulations that are specific to California. Staff's evaluation is based on data generated by the Discharger's Monitoring and Reporting Program.

A. Effluent Limitations.

1. **Total Suspended Solids.** The Permit requires removal of at least 75% of TSS from the influent stream. Additionally, effluent shall not exceed the following limits:

Constituent	Unit	Monthly (30-Day) Average	Maximum At Any Time
TSS	mg/L	70	105
	lbs/day	1203	1804
	kg/day	546	819

The treatment plant was designed to comply with these limitations at an annual average flow of 2.06 MGD. Current influent flows are approximately 55% of the design capacity, thus the long-term average effluent TSS concentration is far below these limitations. However, these limitations were violated on three related occasions during a brief period in 2002. The TSS effluent maximum limit of 105 mg/L was violated on August 26, 2002 (reported value: 107 mg/L), and September 11, 2002 (147 mg/L). The TSS effluent monthly (30-day) average limit of 70 mg/L was exceeded in September 2002 (79 mg/L). The violations resulted from an upset of the biological treatment process, which was later attributed to a distinct alteration of influent characteristics by excessive loading of pH-neutralization chemicals from an industrial laundry facility. The industrial laundry facility discontinued use of the suspect chemicals. Biological treatment performance subsequently improved and the violations ceased. There have been no other violations of effluent TSS limits since 1998.

The Central Coast Water Board issued mandatory penalties totaling \$15,000 for these and other effluent violations described below on July 14, 2000 (Mandatory Penalty Order No. 00-100), November 7, 2003 (Mandatory Penalty Order No. R3-2003-0052), and July 1, 2008 (Mandatory Penalty Order No. SWB-2008-3-0009).

2. **BOD₅.** The Permit requires removal of at least 30% of BOD₅ from the influent stream. Additionally, effluent shall not exceed the following limits:

Constituent	Unit	Monthly (30-Day) Average	Maximum At Any Time
BOD ₅	mg/L	120	180
	lbs/day	2062	3092
	kg/day	936	1404

BOD₅ and TSS are closely correlated. Since the facility is designed to remove 75% of TSS, the facility necessarily removes far greater than 30% of BOD₅. Consequently, these limitations were never exceeded in the life of the existing Permit. The long-term average BOD₅ removal efficiency since 1986 is over 70%.

well above the 30% requirement. The long-term average effluent BOD₅ concentration since 1986 is 52 mg/L, well below the 120 and 180 mg/L limitations.

3. **pH.** The Permit requires effluent pH to remain within 6.0 and 9.0 at all times. Effluent pH has been monitored daily since 1993, amounting to over 4,000 measurements. No measurement was below 6.9 or greater than 8.2.
4. **Other Effluent Violations.** In addition to the three effluent TSS violations reported above, the Discharger violated effluent limitations on five occasions since 1998.

The TCDD Equivalents (more commonly referred to as 'dioxin') effluent 30-day average limitation of 0.52 pg/L was violated July 10, 2002. The reported dioxin concentration was 0.56 pg/L, 8% greater than the effluent limit. This exceedance was much smaller than the 20% instrumentation calibration standard. The Discharger states that the particular dioxin congener that was responsible for the violation is ubiquitous in the environment. The Discharger also stated that the violation could be attributed to laboratory contamination, which is commonplace when measuring concentrations at sub-parts-per-quadrillion. Staff has requested the Discharger sample the influent if any TCDD Equivalents violations occur in the future to determine whether or not any dioxin is formed within the treatment plant.

The total chlorine residual effluent daily maximum limitation of 1.07 mg/L was violated on April 21, 2000 (3.45 mg/L) and June 30, 2004 (6.3 mg/L). Violations of the effluent instantaneous maximum of 8.04 mg/L occurred December 29, 2002 (10+ mg/L), January 16, 2003 (10+ mg/L), and October 20, 2004 (10+ mg/L). The first two violations occurred when a system that removes solids from the bottom of the chlorine contact chamber broke down and required emergency repair. The chlorine contact chamber had to be drained to complete the repair, hence was unusable. Rather than discharging undisinfected effluent, the Discharger opted to utilize the outfall pipe as a makeshift chlorine contact chamber, which prevented dechlorination and resulted in the chlorine violation.

The chlorine violations on December 29, 2002, and January 16, 2003, occurred when a sampling device that controls the chlorine dosing process became clogged with solids from the contact chamber. The clogged device delivered false feedback to the dosing process, which overdosed the contact chamber with chlorine and overwhelmed the dechlorination process. The October 20, 2004 violation occurred when the motor for this same sampling device failed. These problems are quite common in all similar wastewater treatment facilities. These latest chlorine violations are classified by USEPA as "Significant Non-compliance" (see www.epa.gov/echo), which resulted in temporary listing of the Discharger on USEPA's Watch List.

The Central Coast Water Board issued mandatory penalties totaling \$15,000 for most of these effluent violations on July 14, 2000 (Mandatory Penalty Order No. 00-100), November 7, 2003 (Mandatory Penalty Order No. R3-2003-0052), and July 1, 2008 (Mandatory Penalty Order No. SWB-2008-3-0009).

B. Receiving Water Limitations

1. **Bacteria.** The Permit specifies that the discharge shall not cause the following bacterial limits to be exceeded in the water column at all areas where shellfish may be harvested for human consumption:

Parameter Applicable to any 30-day period	Total Coliform Organisms (MPN/100 mL)
Median	70
90% of samples	230

According to staff's analysis of all surf zone total coliform monitoring data, the Discharger consistently complies with this requirement. Staff analyzed all surf zone total coliform monitoring data collected since 1993. The data set consisted of approximately 500 at each monitoring station. With exception to the monitoring station at the mouth of Morro Creek, the annual median at each monitoring station was well below 70 MPN/100 mL. With exception to the Morro Creek monitoring station, no less than 98% of samples from each monitoring station were below 230 MPN/100 mL.

The median value at the Morro Creek monitoring station was consistently greater than 70 MPN/100 mL and the "90% of samples" criteria was exceeded in six of the last 15 years. However, the Morro Bay/Cayucos wastewater discharge could not be causing these exceedances for two reasons: (1) samples at the Morro Creek monitoring station are taken of the creek prior to flowing into the ocean, where the discharge's influence is highly unlikely, and (2) if the discharge were causing the exceedances, then exceedances also would be expected at other monitoring stations in similar proximity to the discharge. As discussed above, this is not the case. This analysis demonstrates that the shoreline near the discharge, with exception to the mouth of Morro Creek, meets the shellfish harvesting receiving water limitation.

Since water contact recreation receiving water limitations are less stringent than shellfish harvesting limitations, this beach also meets water contact receiving water limitations. Independent monitoring supports this conclusion. County of San Luis Obispo Environmental Health Services (EHS) has been monitoring this beach at stations 75 feet north of the Morro Rock parking lot (near Station F), and at the projection of Atascadero Road (near Station E) weekly during summer months since November 2001, and weekly during winter months since February 2002. Heal the Bay's Beach Report Card (see www.healthebay.org/brc/annual/2007/counties/slo/grades.asp), which is based on EHS' monitoring results, gave both locations an A+ grade for wet weather conditions as of March 2008 and an A+ for dry weather conditions as of July 2008.

- 2. Light Transmittance.** The Permit specifies that the discharge shall not cause significant reduction in the transmittance of natural light at any point outside the initial dilution zone.

According to the Tetra Tech's March 1984 *Morro Bay 301(h) Application*, ambient TSS measured in Estero Bay ranges from 20 to 34 mg/L. Assuming the discharged concentration of TSS is 70 mg/L, the expected contribution of TSS to Estero Bay by effluent-following dilution is approximately 0.5 mg/L. This would constitute a 1.4% to 2.5% increase in ambient TSS concentrations. Such a small increase is not expected to significantly reduce water clarity.

The Discharger has monitored light transmittance at all 16 receiving water-monitoring stations on a quarterly basis since 1998. As a measure of monitoring program's resolution, the monitoring data show statistically significant decreases in light transmittance within the initial dilution zone (which is not a violation of the permit). The data also show occasional minor decreases in light transmittance outside the initial dilution zone. These minor decreases in light transmittance outside the initial dilution zone are caused by entrainment of the more turbid seafloor layer by the buoyant discharge. This phenomenon is not attributed to quality of the effluent and is not controllable, and is not considered a violation.

- 3. Dissolved Oxygen.** The Permit specifies that the discharge shall not cause the dissolved oxygen (DO) 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.

So far over 2,015 DO measurements were collected at the sixteen regularly sampled receiving water stations during 2007. None were below 5.0 mg/L. The annual average DO concentration was 7.05 mg/L during 2007. The discharge has not caused the DO concentration outside the zone of initial dilution to fall below 5.0 mg/L or be depressed more than 10 percent from that which occurs naturally.

- 4. pH.** The Permit specifies that the discharge shall not cause the pH outside the zone of initial dilution to be depressed below 7.0, raised above 8.3, or changed more than 0.2 units from that which occurs naturally.

As discussed above, effluent pH has been measured daily since 1993, amounting to over 4,000 measurements. None were below 6.9 or above 8.2. The long term average effluent pH (7.5) is close to the mean pH of the receiving waters (7.66). The ocean is well-buffered system that is capable of assimilating such small differences in alkalinity. Recent data suggests that the discharge has not caused the pH outside the zone of initial dilution to be depressed below 7.0, raised above 8.3, or changed more than 0.2 units from that which occurs naturally.

- 5. Sulfides in Sediment.** The Permit specifies that the discharge shall not cause the dissolved sulfide concentration of waters in and near sediments to be significantly increased above that present under natural conditions.

To evaluate compliance with this requirement, the Discharger performed statistical tests on the "null hypothesis," or expected situation, that the mean sulfide concentration within 60 meters of the diffuser structure (nearfield) is not significantly higher than the mean concentration among midfield and reference stations (distant). The test compares the magnitude of the difference in mean sulfide concentrations with the variability about those means. In October 2002, the mean sulfide concentration of nearfield stations was 116 mg/kg and the mean sulfide concentration of distant stations was 65 mg/kg, a 51 mg/kg difference. The p-value was 0.04. P-values less than 0.05 (95% confidence) indicate that the higher nearfield mean sulfide concentration is significant and the null hypothesis may be rejected. This suggests the discharge has caused the dissolved sulfide concentration of waters in and near sediments to be significantly increased above that present under natural conditions.

The Discharger contends that despite the apparently significant differences in mean sulfide concentrations, the statistical power to detect the observed differences between the means is relatively low. More specifically, the ability to detect a difference in mean sulfide concentrations of 51 mg/kg is only 54% (Power=0.54). According to the Discharger's Offshore Monitoring and Reporting Program 2002 Annual Report, "Differences with statistical powers below 0.7 are generally considered indeterminate with respect to the presence of impacts (p. 4-20)." Staff checked the basis for this statement, Jacob Cohen's 1988 Statistical Power Analysis for the Behavioral Sciences, and found it to be accurate.

Staff requested that the Discharger investigate ways to increase statistical power. In a January 8, 2004 letter, the Discharger explained that sediment sulfides concentrations around the outfall have historically been highly variable. Prior to 2001, the Discharger employed an antiquated technique to measure dissolved sulfides in sediment, which yielded highly variable results. In 2001, in an attempt to decrease variability, the Discharger switched to a more advanced total sulfide analysis, which uses acid and heat to strip sulfides out of sediment samples. Unfortunately, the total sulfide analysis also yielded highly variable results. In October 2002, the Discharger developed a technique to extract pore water from the sediment, in an attempt to obtain a sample that would most accurately measure compliance with the subject requirement. The pore water samples were analyzed for dissolved sulfides with a Method Detection Limit of 0.05 mg/L. No dissolved sulfides were detected in any samples.

The Discharger's new pore water extraction technique is the most appropriate technique employed thus far to measure compliance with the subject requirement. The technique measures sulfides that are actually available to benthic organisms. Staff recommends the Discharger be given the option to monitor dissolved sulfides in sediment pore water. The Discharger has analyzed at least 45 samples for sulfides in sediment. None of the 45 samples contained detectible concentrations of sulfides. Furthermore, the pore water extraction technique is relatively difficult and expensive, so the proposed Order does not require sulfides monitoring in sediment.

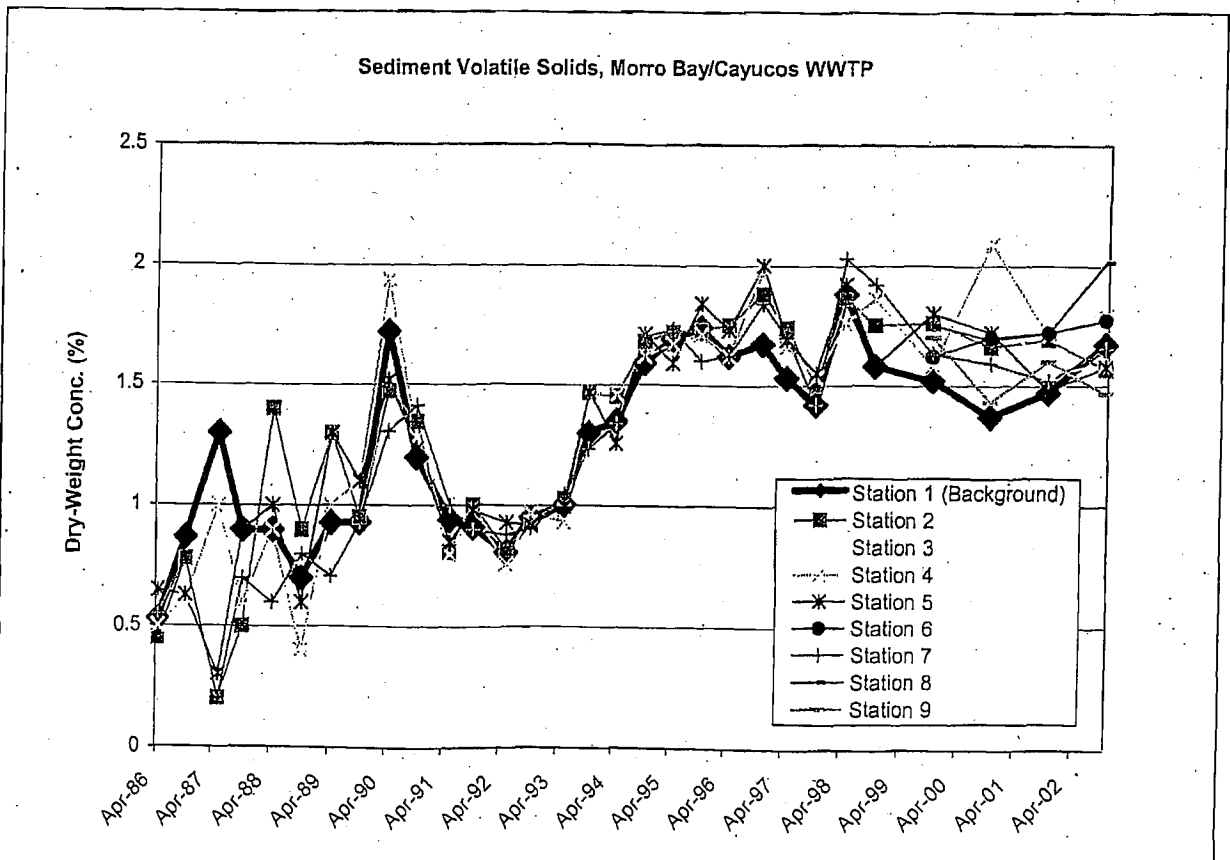
6. Organic Materials in Sediment. The Permit establishes sediment quality standards for synthetic organic pollutants ("priority pollutants") by specifying that:

"The discharge shall not cause the concentration of organic materials in marine sediments to increase above levels which would degrade marine life; and

The discharge shall not cause the concentration in marine sediments of [priority pollutants] to be increased above levels which would degrade indigenous biota."

The Discharger measured organic materials in sediment by monitoring Total Kjeldahl Nitrogen (TKN), BOD₅, oil & grease, and volatile solids concentrations. For the sake of simplicity, the analysis provided here focuses on volatile solids. The Discharger has monitored volatile solids at all sediment monitoring stations at least annually since 1986. Figure 1 represents all volatile solids monitoring results. The background sediment monitoring station (Station 1, located 1016 meters upcoast of the discharge) is represented by a deep bold line. If the discharge were causing organic matter in marine sediment to increase, then volatile solids at monitoring stations near the discharge would increase more rapidly than the background monitoring station. Such a condition would be represented by a visible departure of the near-discharge monitoring results from the background monitoring results. As can be seen, this is not the case. All of the near-discharge monitoring results with exception to one (Station 4 in October 2000) fall within the 95% confidence interval of the background monitoring station. This suggests the discharge is not causing organic materials in sediments to increase.

These receiving water limitations are intended to protect marine life. Compliance



with these requirements is not based solely on concentrations of organic-loading parameters in sediment. Compliance determinations must take into account the health of marine communities in the vicinity of the discharge.

7. **Marine Life.** The Permit states "the concentration of organic materials in marine sediments shall not be increase to levels that would degrade marine life."

According to the 2005 California Ocean Plan:

"Degradation shall be determined by a comparison of the waste field and reference site(s) for characteristic species diversity, population density, contamination, growth anomalies, debility, or supplanting of normal species by undesirable plant and animal species. Degradation occurs if there are significant differences in any of three major biotic groups, namely, demersal fish, benthic invertebrates, or attached algae. Other groups may be evaluated where benthic species are not affected, or are not the only ones affected."

The Discharger has measured the health of the benthic (bottom-dwelling) community of marine life in the vicinity of the discharge since 1986. Benthic community samples collected at each monitoring station are represented by indices of abundance, diversity, richness, and trophic (feeding) structure. Figure 2 provides a succinct record of all these indices since 1986.

In simple terms, benthic community degradation would be characterized by:

- Greater fluctuations in organism density at stations closer to the discharge,
- Decreased number of species and diversity over time and in closer proximity to the discharge,
- Increased dominance over time and at stations in closer proximity to the discharge, and
- A trophic index less than 58.

Significant differences between areas near and distant from the discharge would be illustrated as a visible departure of the indices at stations near the outfall (shown in red (lighter), Stations 4 and 5) from the indices at distant stations (shown in black (darker), Stations 1, 2, and 7) in Figure 2.

Figure 2a shows that although density has fluctuated over time, density at all the monitoring stations tended to fluctuate together. The density at stations near the outfall is not consistently higher or lower than density at distant stations. Prior to 1999, benthic community structure was measured both post-summer, as it is currently, and post-winter, when the area of the discharge has been scoured by rough oceanographic conditions. The fluctuations in density data decrease after 1999 when post-winter monitoring was discontinued. This suggests the fluctuations observed prior to 1999 were caused by natural seasonal fluctuations, not degradation of sediment by the discharge.

Figures 2b and 2c show no downward trends in the number or diversity of species

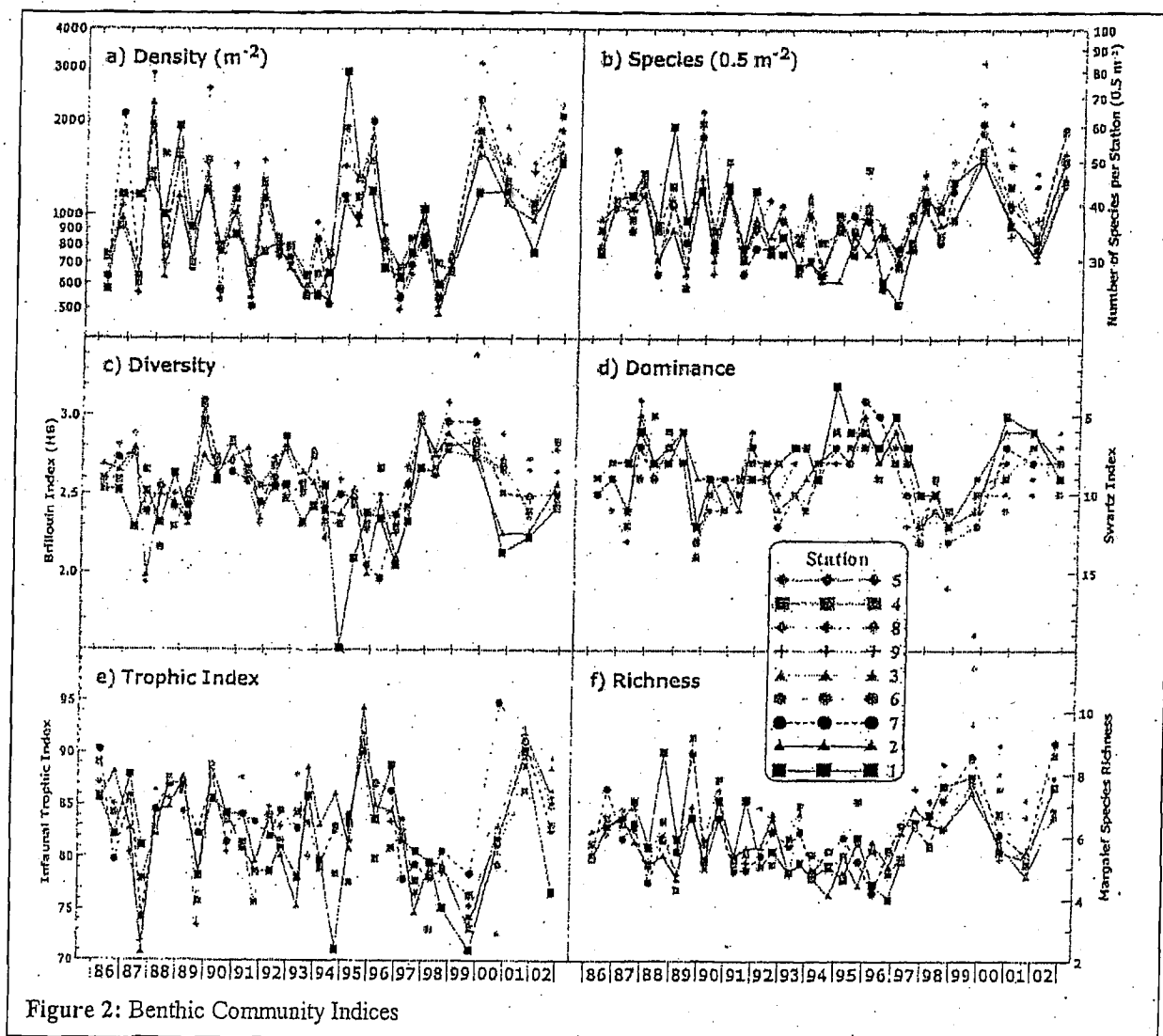


Figure 2: Benthic Community Indices

that would suggest degradation of the benthic community near the discharge. The numbers and diversity of species in samples collected near the discharge consistently coincides with samples collected distant from the discharge.

Interestingly, the numbers and diversity of species were often greatest in samples collected closest to the discharge.

Figure 2d is a record of the Swartz Index of species dominance. The Swartz Index is defined as the number of species accounting for 75% of the individual organisms collected. Consequently, Swartz Index and dominance are inversely related. Degradation of the benthic community would be characterized by decreasing Swartz Index over time and in closer proximity to the discharge. Figure 2d (note the inverted vertical scale) shows no trends that would suggest the benthic community near the discharge has been degraded. Dominance in samples collected near the discharge consistently coincides with samples collected distant from the discharge.

Figure 2e is a record of the Infaunal Trophic Index (ITI). ITI is a measure of the relative dominance of benthic organisms with different feeding behaviors. Benthic organisms are divided into four groups according to their feeding behavior; Group I (suspension feeders), Group II (surface-detritus feeders), Group III (surface deposit feeders), and Group IV (sub-surface detritus feeders). When species in Group I and Group II dominate, ITI values are above 58 and sediments are considered relatively clean. Degradation of the benthic community would appear as a gradual decrease in the ITI at monitoring stations near the discharge relative to stations distant from the discharge. As shown in Figure 8e, the ITI of samples collected near the discharge consistently coincides with samples collected distant from the discharge. The ITI has never been below the critical value of 58 at any station. In fact, the ITI has never dipped below 70. These observations suggest the benthic community has not been degraded by the discharge.

In many of the above instances, the nearfield (60 meters or less from the discharge point) benthic monitoring stations yielded more favorable results than the "reference" Station No. 1 (1016 meters upcoast of the discharge point). This is contrary to what is expected by such a monitoring design. This suggests Benthic Monitoring Station No. 1 is located in a much different environment than the discharge, and does not accurately represent background conditions. USEPA staff, the Discharger, and Central Coast Water Board staff met to discuss this issue in April 2004, and all agreed that Station No. 1 detracted from the power of the monitoring program to detect spatial and temporal trends in benthic sediment measurements and community health. Station Nos. 2 and 7, which are 150 meters upcoast and downcoast of the discharge point, respectively, are close enough to the discharge to ensure they are in a comparable environment, yet far enough from the discharge to be considered representative of background conditions. Staff therefore recommends Station Nos. 2 and 7 replace Station No. 1 as the reference stations.

8. **Toxoplasma and Sea Otters.** In April 2002, an association of scientists, including those from UC Davis School of Veterinary Medicine, California Department of Fish and Game, and Central Coast Water Board staff Karen Worcester and Dave Paradies, published "*Coastal Freshwater Runoff Is A Risk Factor For Toxoplasma Gondii Infection Of Southern Sea Otters*" in the International Journal for Parasitology. The study documented extensive infection of southern sea otters along the Central

Coast by *Toxoplasma gondii*, a protozoan parasite known to originate in land-based mammals, primarily felines. The scientists theorize that sea otters become infected by *T. gondii* by consuming shellfish, which are filter feeders and accumulate microorganisms such as *T. gondii* in their tissue. More than 220 live and dead sea otters were examined between 1997 and 2001, with the goal of identifying spatial clusters and risk factors for *T. gondii* infection. The study found:

"Spatial analysis of pooled live and dead otter serological data revealed a large cluster of *T. gondii*-seropositive [i.e., infected] otters (20/23, or 87% seropositive) within a 20 km coastal region centered on the towns of Morro Bay and Cayucos, California. Otters sampled from the area were nearly twice as likely to be seropositive to *T. gondii* as expected, and this difference was statistically significant ($P = 0.082$)."

The study evaluated the cluster of high infection rates around Morro Bay and Cayucos to determine whether other risk factors could explain the cluster. The study found:

"...significantly increased odds of *T. gondii* seropositivity were detected for otters sampled near maximal (heavy) freshwater outfalls. Based on our analysis, the odds of *T. gondii* seropositivity were highest for adult male sea otter samples from areas of central California with maximal freshwater outflow, especially those sampled near Morro Bay/Cayucos. No significant associations with *T. gondii* seropositivity were found in relation to sewage flow, either by univariate analysis or by logistic regression analysis. However, 96% of our otter samples (214/223) were obtained from coastal areas with minimal values for municipal sewage exposure."

Although the study suggests the high rate of infections are most closely associated with heavy freshwater outflow (the second highest rate of infection was centered around Elkhorn Slough, a freshwater outflow similar in magnitude to Morro Bay), staff is concerned that the highest infection rates are centered around the only discharge with a 301(h)-modified permit in the studied area. Scientists have speculated that flushable cat litter may be a source of *T. gondii* in domestic wastewater. In March 2003, staff requested that the Discharger evaluate its discharge as a potential source of *T. gondii*. The Discharger collaborated with the UC Davis School of Veterinary Medicine to monitor the discharge by hanging clusters of mussels from buoys at each end of the outfall diffuser. Any *T. gondii* present in the discharge will accumulate in the mussels over time. According to a December 13, 2004 letter from Dr. Patricia Conrad of the UC Davis School of Veterinary Medicine:

"We were able to complete testing of 120 mussels that had been outplanted at the Morro Bay outfall buoy (30 mussels each in the early dry season, late dry season, early wet season, and late wet season). *Toxoplasma* RNA was not detected in any of the 120 mussels from the outfall buoy that have been tested thus far."

These results suggest that the subject discharge is not a source of *T. gondii* loading to Estero Bay.

C. Sewage Spills.

Since 1998, the following sewage spills from the Discharger's respective collection systems were reported:

City of Morro Bay:

Date	Volume (gal)	Cause	Reach Surface Waters?
Sept. 24, 1998	<100	Failure of bypass during sewer line repair	Yes, Morro Bay
Feb. 19, 1999	Unknown	Blockage in main	No
July 16, 1999	1,000	Blockage in main	Yes, Morro Bay
Nov. 23, 1999	150	Rocks and concrete blockage in main	No
Feb. 7, 2001	Unknown	Pipe failure due to corrosion	Yes, Morro Bay
July 4, 2000	100	Cause unknown	No
Oct. 7, 2000	300	Blockage in main	Yes, Morro Bay
Oct. 15, 2000	1,000	Blockage in main	No
Nov. 2, 2000	750	Blockage in main	Yes (50 gal.), Morro Bay
Feb. 14, 2002	500-800	Line failure during pump station repair	Yes, Pacific Ocean
Dec. 22, 2002	300	Blockage in main	Unknown
Jan. 20, 2003	200	Root blockage in main	No
Jan. 22, 2003	250	Grease blockage in main	No
Oct. 22, 2003	300-350	Blockage in main	No
April 30, 2004	100-200	Unknown	Unknown
July 6, 2004	70	Flushmeter in Group Camp restroom stuck on	Yes, Morro Bay
December 31, 2004	8,400	Morro Creek overflowed banks; flooded wet well and sludge drying beds	Yes, Pacific Ocean
February 18, 2005	135	Surcharged manhole due to excessive inflow from heavy rainfall	No
January 1, 2007	100	Debris blocked private lateral	Yes, Morro Bay
October 21, 2007	300	Pipe/Infrastructure failure	No
December 31, 2007	35	Debris/root blockage	No

Date	Volume (gal)	Cause	Reach Surface Waters?
January 12, 2008	30	Root blockage from private lateral	No
January 16, 2008	100	Unknown backup from private lateral	Yes, Morro Bay
June 12, 2008	10	Root blockage	Yes, Morro Bay
July 24, 2008	5	Root Blockage	No

Cayucos Sanitary District:

Date	Volume (gal)	Cause	Reach Surface Waters?
Feb. 13, 2000	760	System surcharged due to heavy rains	Yes, Pacific Ocean
Dec. 23, 2003	200	Blockage in main	Yes, Cayucos Creek
April 18, 2005	300-400	Power generator failure	Yes, Pacific Ocean
May 17, 2008	120	Debris blockage	No
June 9, 2008	5	Backup from private lateral	No
June 16, 2008	5	Root blockage	No

In general, the Discharger responded to each sewage spill appropriately; the spill was quickly contained, the cause of the spill was eliminated, the affected area was cleaned up and disinfected, proper authorities were notified, creeks and/or beaches were posted if necessary, and maintenance/replacement schedules were adjusted if necessary to prevent future problems.

The Dischargers have enrolled separately under the General Waste Discharge Requirements for Sanitary Sewer Systems, Order No. 2006-0003-DWQ, adopted May 2, 2006, by the State Board. The City of Morro Bay received formal enrollment status for General WDR coverage on January 8, 2007. Cayucos Sanitary District received formal enrollment status for coverage on January 9, 2007. The General WDRs require collection system entities to develop a Sanitary Sewer Management Plan (SSMP). SSMPs are required to include goals; organization; legal authority; operations and maintenance program; design and performance provisions; overflow emergency response plan; fats, oils, and greases control program; systems evaluations and capacity assurance program; monitoring, measures, and program modifications; and SSMP Program audit. Additionally, the General WDRs require the collection system entities to report sanitary sewer overflows (SSOs). Collection system entities are required to report SSOs that are greater than 1,000 gallons. Furthermore, some entities must also report SSOs less than 1,000 gallons discharging to surface waters or storm drains or that threaten public health. Reporting provisions are set forth in the General WDRs. Reporting shall occur through the Statewide Online SSO database. Reporting times vary depending on discharge amount and destination. The Discharger is currently compliant with the regulations of the General WDRs for Sanitary Sewer Systems.