II. ENFORCEMENT TRIGGERS

Violations of WDRs or applicable statutory or regulatory requirements should result in a prompt enforcement response against the discharger. It is recognized, however, that Regional Water Board resources are limited, and that resources may be best used and water quality may be best protected by focusing on violations and discharges that pose the greatest threat to human health and the environment. What follows is an outline of violations and discharges that should trigger an immediate enforcement response from the Regional Water Board. Regional Water Boards are encouraged to ensure that violations of WDRs or unauthorized discharges of waste not listed below also receive an appropriate enforcement response. ***At a minimum, Regional Water Board staff shall bring the following to the attention of their Regional Water Board for possible enforcement action:***

A. POLLUTANTS

For major NPDES permittees, as defined in 40 CFR Section 122.2 (July 1, 1994), the enforcement criterion is: exceedence of Category 1 pollutants by 1.4 times the monthly average effluent limit for any two months in a six month period; or exceedence of Category 2 pollutants by 1.2 times the monthly average effluent limit for any two months in a six month period. Category 1 and Category 2 pollutants are defined as Group 1 and Group 2 pollutants respectively, as listed in 40 CFR Section 123.45, Appendix A (July 1, 1994). The Categories are shown in Attachment 1.

B. CHRONIC VIOLATIONS

For major NPDES permittees, as defined in 40 CFR Section 122.2 (July 1, 1994), the enforcement criterion for chronic violations is exceedence of the monthly average effluent limit for any pollutant in any four months in a six month period, or exceedence of the monthly average effluent limit for any pollutant in the same season for two years in a row.

C. TOXICITY

Regional Water Board staff shall bring any incidence of acute toxicity which violates WDRs, Basin Plans, or other provisions of law to the attention of their Regional Water Board for possible enforcement action. Where acute toxicity can be shown to be the

result of failure of a discharger to exercise normal care in handling, treating, or discharging waste, an enforcement action with a monetary assessment should be issued.

Similarly, staff shall bring violations of narrative toxicity standards contained in WDRs or Basin Plans due to chronic toxicity to the attention of their Regional Water Board for possible enforcement action. Regional Water Boards should develop enforcement triggers to implement narrative toxicity standards due to chronic toxicity. The Regional Water Boards enforcement provisions will remain in effect until the State Water Board adopts either statewide plans or a policy with provisions for enforcement of narrative toxicity standards. Regional Water Boards must amend their toxicity enforcement provisions and criteria to conform to such statewide plans or policies after they are adopted.

D. PROHIBITIONS

Regional Water Board staff shall bring *violations of prohibitions contained in WDRs, Basin Plans, or enforcement orders to the attention of their Regional Water Board for possible enforcement action.* The level of response and whether that response is a formal enforcement should depend on the degree of discharger culpability, environmental damage, independent action by the discharger to correct the violation, etc.

E. SPILLS

Spills generally refer to unauthorized discharges and are considered to be significant violations of State law and basin plans. Because the significance of the spill in terms of environmental impact depends on the amount of material spilled, the nature of the spilled material, size of the affected water body, or the proximity of the spill to a water body (if the spill was not directly to the water body) Regional Water Boards have discretion to determine the appropriate enforcement level and monetary liability. In making this determination Regional Water Boards may consider actions taken by the discharger to immediately notify appropriate authorities, and to initiate cleanup and other actions to minimize potential effects of the spill.

F. FAILURE TO SUBMIT REPORTS

In some cases, reports required by WDRs, Cease and Desist Orders, Cleanup and Abatement Orders, and Basin Plans measure progress in implementing long-term corrective actions intended to achieve permanent compliance with permits, Basin Plans, and state and federal laws and regulations. ***Failure to submit reports required in WDRs, orders, or Basin Plans within 30 days from the due date, or submission of reports which are so deficient or incomplete as to cause misunderstanding and thus impede the review of the status of compliance are serious violations which staff shall bring to the attention of their Regional Water Board for possible enforcement action. An exception to this will occur when it is recognized in program workplans that some categories of self-monitoring reports will not be reviewed.*** Violations of these types of reporting requirements should include monetary assessments.

G. COMPLIANCE SCHEDULES

Violations of compliance schedule milestones for starting construction, completing construction, or attaining final compliance by 90 days or more from the date of the milestone specified in an enforcement order or WDRs shall result in staff bringing the matter to the attention of their Regional Water Board for possible enforcement action.

H. PRETREATMENT PROGRAM IMPLEMENTATION

Staff shall bring failure of a publicly-owned treatment works, as defined in 40 CFR Section 122.2 (July 1, 1994), to implement its approved pretreatment program, as defined in 40 CFR Section 403.3 (July 1, 1994), as required in its WDRs, including failure to enforce industrial pretreatment requirements on industrial users to the attention of their Regional Water Board for possible enforcement action. This includes pretreatment program compliance schedules.

I. STORM WATER PROGRAM

Discharges of storm water associated with industrial activities require compliance with the General Industrial Activities Storm Water Permit. ***Failure to submit a Notice of Intent for coverage under the general permit, develop a Storm Water Pollution Prevention Plan (SWPPP), implement a SWPPP, conduct monitoring,***

and submit annual reports after specific notification to the discharger are significant violations and shall warrant staff bringing the matter to their Regional Water Board for possible enforcement action.

III. TYPES OF ENFORCEMENT ACTIONS

The State and Regional Water Boards have a variety of enforcement tools to use in response to non-compliance by dischargers. This section describes the range of options and discusses procedures that are common to some or all of these options.

An enforcement action is any informal or formal action taken to address an incidence of actual or threatened non-compliance with existing regulations or provisions designed to protect water quality. Formal enforcement actions fall into two basic categories: those that direct future actions by dischargers and those that address past violations. Actions which generally direct future action include imposition of time schedules and issuance of Cease and Desist Orders and Cleanup and Abatement Orders. Actions taken to address past violations include issuance of notices to comply (minor violations), rescission of waste discharge requirements, administrative civil liability, and referral to the Attorney General or District Attorney. In some instances, both types are used concurrently to deal with a specific violation (e.g., discharger has had past violations but has not yet corrected the problem).

Determination of who is responsible for a particular violation can sometimes be difficult. For a regulated discharge, the discharger is usually the same individual to whom the WDRs were issued. For unauthorized discharges, the discharger is usually the property owner, tenant, or lessee. The Regional Water Board's legal counsel should be consulted where determination of the discharger is in question.

Enforcement actions should be initiated as soon as possible after discovery of the violation. If the violation continues, Regional Water Board staff shall consider escalating their response from less formal enforcement actions, such as notice of violation (NOV) letters, to increasingly more formal and severe enforcement actions, and if necessary, shall bring this to the attention of their Regional Water Board for possible escalation of enforcement action.

Any person aggrieved by an action or failure to act by a Regional Water Board may petition the State Water Board to review the decision. The petition must be received by the State Water Board within 30 days of the Regional Water Board action or refusal to act, or 60 days after a request has been made to the Regional

Water Board to act. In addition, the State Water Board may, at any time and on its own motion, review any action or failure to act by a Regional Water Board.

A. INFORMAL ENFORCEMENT

For minor violations, the first step is usually informal enforcement action. Staff should contact the discharger by phone and document the conversation in a follow-up letter. Staff should inform the discharger of the specific violations, discuss how and why the violations occurred, and discuss how and when the discharger will come back into compliance. This step can be deleted for significant violations, such as repeated or intentional illegal discharges, falsified reports, etc.

The NOV letter is an informal enforcement action. The purpose of a NOV letter is to bring a violation to the discharger's attention and to give the discharger an opportunity to correct the violation before formal enforcement actions are taken. Continued noncompliance should trigger formal enforcement action.

An NOV letter should be signed by the Executive Officer and should cover the following points: description of specific violations, summary of applicable enforcement options (including maximum ACL), and a request for a written response. The letter should always go to the discharger named in the Regional Water Board order, even if staff normally deals with a consultant. See Attachment 2 for an example of a NOV.

A special form of the NOV letter is the Field Notice of Violation, a form used by Regional Water Board staff in the field (Attachment 3). This form describes the violation and requests corrective action as appropriate. The purpose is to alert the discharger immediately to the violation and the potential for civil liability.

B. TIME SCHEDULE ORDER

Pursuant to Water Code Section 13300, actual or threatened discharges of waste in violation of requirements can result in imposition of a time schedule which sets forth the actions a discharger shall take to correct or prevent the violation.

C. NOTICES TO COMPLY

Notices to Comply are issued pursuant to Chapter 5.8 (commencing with section 13399) of Division 7 of the Water Code. This Chapter provides an expedited approach for dealing with minor violations. Commonly referred to as the "fix-it-ticket" legislation, this law requires the use of field-issued notices to comply as the sole enforcement option in given situations involving minor violations.

Notices to Comply are ordinarily written during the course of an inspection by an authorized representative of the State or Regional Water Board to require a discharger to address minor violations that can be corrected within 30 days. Major features of this law include the following:

- An inspector has the discretion not to issue a notice to comply for a minor violation.
- A notice to comply is not required if there is immediate correction.
- A single notice to comply is used to cite all minor violations detected during the same inspection.
- With exceptions, a notice to comply is the sole means by which an inspector may cite a minor violation.
- If testing is required to determine if there has been a violation, a notice to comply may be issued at a latter date.
- Other enforcement actions may be taken upon a failure to comply or if necessary to prevent harm to public health or the environment.
- Criminal proceedings are not limited by the new law.
- Civil penalties may still be assessed for minor violations if warranted or required by federal law.

The violations listed below are considered to be minor in nature provided the violations do not include the following:

- Any knowing, willful, or intentional violation of Division 7 (commencing with section 13000) of the Water Code.

- Any violation of Division 7 of the Water Code that enables the violator to benefit economically from noncompliance, either by realizing reduced costs or by gaining a competitive advantage.

- Any violation that is a chronic violation or that is committed by a recalcitrant violator.

- Any violation that cannot be corrected within 30 days.

Minor Violations:

A. Inadvertent omissions or deficiencies in recordkeeping that do not prevent an overall compliance determination.

B. Records not physically available at the time of the inspection provided the records do exist and can be produced in a timely manner.

C. Failure to have permits available during an inspection.

D. Inadvertent violations of insignificant administrative provisions that do not involve a discharge of waste or a threat thereof.

E. Violations that result in an insignificant discharge of waste or a threat thereof; provided, however, there is no significant threat to human health, safety, welfare or the environment and provided further that such violations do not violate any other order or prohibition issued by the State or Regional Boards. Significant threat means the threat of or an actual change in water quality that could result in a violation of water quality objectives or a condition of pollution or nuisance.

D. CEASE AND DESIST ORDERS

Cease and Desist Orders (CDOs) are adopted pursuant to Water Code Sections 13301-13303. CDOs are normally issued to dischargers regulated by WDRs and often remain in force for years.

CDOs are typically issued to regulate dischargers with chronic non-compliance problems. These problems are rarely amenable to a short-term solution; often, compliance involves extensive capital improvements or operational changes. The CDO will usually set a compliance schedule, including interim deadlines (if appropriate), interim effluent limits (if appropriate), and a final compliance date. CDOs may also include restrictions on additional service connections (referred to as a "connection ban") to community sewer systems. These have been applied to sanitary sewer systems but can be applied to storm sewer systems, as well. Violations of CDOs should trigger further enforcement in the form of an ACL or referral to the Attorney General for injunctive relief or monetary remedies.

E. CLEANUP AND ABATEMENT ORDERS

Cleanup and Abatement Orders (CAOs) are adopted pursuant to Water Code Section 13304. CAOs are generally issued to dischargers that are not being regulated by WDRs. With the exception of ground water cleanups, CAOs are typically short-lived enforcement orders.

CAOs are issued by the Regional Water Board, or by the Executive Officer under delegation from the Regional Water Board pursuant to Water Code Section 13223. Executive Officer-issued CAOs should be used when speed is important, such as when a major spill or upset has occurred and waiting until the Regional Water Board can meet to approve a CAO would be inappropriate. Regional Water Boards should keep an accurate record of staff oversight costs for CAOs since dischargers are liable for such expenses. If staff costs are not recovered voluntarily or through civil court actions, the amount of the costs constitutes a lien on the affected property and foreclosure may be used. Violations of CAOs should trigger further enforcement in the form of an ACL or referral to the Attorney General for injunctive relief or monetary remedies.

F. MODIFICATION OR RESCISSION OF WASTE DISCHARGE REQUIREMENTS

In accordance with the provisions of the Water Code, and in the case of NPDES permits, the Federal Water Pollution Control Act, the Regional Water Board may modify or rescind WDRs in response to violations. Rescission of WDRs generally is not an appropriate enforcement response where the discharger is unable to prevent the discharge, as in the case of a wastewater treatment plant.

G. ADMINISTRATIVE CIVIL LIABILITY

Administrative civil liability (ACL) means monetary assessments imposed by a Regional Water Board. The Water Code authorizes ACLs in several circumstances:

Water Code Section	Type of Violation
13261	Failure to furnish report of waste discharge or to pay required fees.
13265	Unauthorized discharge of waste.
13268	Failure to furnish technical report.
13308	Failure to comply with time schedule.
13350	Intentional or negligent violation of CDO; CAO; WDRs; or Regional Water Board prohibition (Basin Plan), which results in pollution, or unauthorized release of any petroleum product.
13385	Violation of NPDES permit, Basin Plan Prohibition, etc.

Water Code Sections 13323-13327 describe the ACL process to be used. The Water Code authorizes Regional Water Board Executive Officers to issue an ACL Complaint. The Complaint describes the violation, proposes a specific monetary assessment, and sets a hearing date (no more than 60 days after the Complaint is issued).

The discharger may either waive their right to a hearing or appear at the Regional Water Board hearing to dispute the Complaint. In the latter case, the Regional Water Board has the choice of dismissing the Complaint, adopting an ACL order (ACL amount need not be the same as in the Complaint), or adopting a different enforcement order (e.g. referral to Attorney General).

ACL actions are intended to address past violations. If the underlying problem has not been corrected, the ACL action should be accompanied by a Regional Water Board order to compel future work by the discharger (e.g. CAO or CDO). One exception involves late reports, where a revised submittal deadline could have the effect of encouraging further delay for some dischargers.

H. REFERRALS TO ATTORNEY GENERAL OR DISTRICT ATTORNEY

The Regional Water Board can refer violations to the state Attorney General or ask the appropriate county District Attorney to seek criminal relief. In either case, a superior court judge will be asked to impose civil or criminal penalties. In some cases, the Regional Water Board may find it appropriate to request the U.S. Attorney's Office to review potential violations of federal environmental statutes, including the Clean Water Act, Migratory Bird Treaty Act, or the Resource Conservation and Recovery Act.

1. Attorney General

The Attorney General can seek civil enforcement of a variety of Water Code violations, essentially the same ones for which the Regional Water Board can impose ACL. Maximum per-day or per-gallon civil monetary remedies are two to ten times higher when imposed by the court instead of the Regional Water Board. The Attorney General can also seek injunctive relief in the form of a restraining order, preliminary injunction, or permanent injunction pursuant to Water Code Sections 13262, 13264, 13304, 13331, 13340 and 13386. Injunctive relief may be appropriate where a discharger has ignored enforcement orders.

For civil assessments, referrals to the Attorney General should be reserved for cases where the violation merits a significant enforcement response but where ACL is inappropriate. For example, when a major oil spill occurs, several state agencies can seek civil monetary remedies under different state laws; a single civil action by the Attorney General is more effective than numerous individual actions. A violation (or series of violations) with major public health or water quality impacts should be considered for referral, in order to maximize the monetary assessment because of its effect as a deterrent. Referral for recovery of natural resources damages under common law theories, such as nuisance, may also be appropriate.

Normally, a case should not be recommended for referral to the Attorney General unless it has been informally determined that the Attorney General is able and willing to handle the case. Even with the Attorney General in the lead role, referrals often consume considerable staff time, especially if staff members are requested to testify at trial.

The majority of cases referred are settled out of court, although the process takes many months (or years). Since the Regional Water Boards gained the authority to impose ACL for substantial amounts, fewer cases need be referred to the Attorney General.

2. District Attorney

District Attorneys may seek civil or criminal penalties under their own authority for many of the same violations the Regional Water Board pursues. While the Water Code requires a formal Regional Water Board referral to the Attorney General, the Regional Water Board's Executive Officer is not precluded from bringing appropriate matters to the attention of a District Attorney. A major area where District Attorney involvement should be considered is for unauthorized releases of hazardous substances. In most of these cases, the Regional Water Board is not the lead agency, and the referral action is intended to support the local agency that is taking the lead (e.g. county health department or city fire department). In many cases, Regional Water Board staff lacks the time to prepare an enforcement action, and a District Attorney referral is another option to seeing the matter pursued. Many District Attorney offices have created task forces specifically staffed and equipped to investigate environmental crimes including water pollution. These task forces may ask for Regional Water Board support which should be given within available resources.

In addition to the criminal sanctions and civil fines, the District Attorney often pursues injunctive actions to prevent unfair business advantage. The law provides that one business may not gain unfair advantage over its competitors by using prohibited tactics. A business that fails to comply with its WDRs or an enforcement order competes unfairly with other businesses that obey the law.

3. Civil versus Criminal Actions

Enforcement actions taken by the Regional Water Board are civil actions. In cases where there is reason to believe that specific individuals or entities have engaged in criminal conduct, the Regional Water Board or Executive Officer may request that criminal actions be pursued by the District Attorney. Under criminal law, individual persons, as well as responsible parties in public agencies and business entities, may be subject to fines or imprisonment.

It is not expected or desired that Regional Water Board staff will attempt an in-depth analysis of whether environmental criminal conduct has occurred in each individual case. While criminal statutes differ, many require some type of intent or knowing behavior on the part of the violator. This intent may be described as knowing, reckless, or willful. In addition to the required intent, criminal offenses consist of a number of elements, each one of which must be proven. Determining whether the required degree of intent and each of the elements exists often involves a complex analysis. If a potential environmental criminal matter comes to the attention of staff, consultation with Regional Water Board management and counsel should take place first before making any contact with other enforcement authorities.

When evaluating whether a case should be referred for criminal investigation, particular attention should be given to the degree of intent and the gravity of the violation. A good rule of thumb is that if the conduct appears to be intentional or reckless and constitutes a serious threat to human health or the environment, careful consideration should be given to pursuing the case criminally.

I. SPECIAL SITUATIONS

1. Violations at State or Federal Facilities

For violations caused by a department or other entity of the State of California, the Executive Officer should notify the director or head of the department or entity of the nature of the violation, the actions needed to abate or clean up the discharge, and the potential of a State or Regional Water Board enforcement action. Depending upon the significance of the violation and/or the willingness and ability of the department to comply, an

enforcement action (ACL, CAO, or CDO) may be issued to correct the violation and to deter future violations.

Violations at federal facilities should be handled similarly. Due to sovereign immunity, however, the State cannot obtain penalties from federal agencies for past violations (e.g., no ACLs) under most circumstances. One significant exception is provided by the Federal Facilities Compliance Act of 1992, which allows the States to penalize federal agencies, under specified circumstances, for violations of state hazardous waste management requirements. In addition, under Water Code Section 13308 a Regional Water Board may seek ACL, up to a maximum of $10,000 per day of violation, against federal facilities for violation of a time schedule order, which was adopted to ensure future compliance with an existing enforcement order.

2. Integrated Enforcement

State and Regional Water Board staff shall cooperate with other environmental regulatory agencies, where appropriate, to ensure that enforcement actions are coordinated. The aggregate enforcement authority of the Boards and Departments of the California Environmental Protection Agency (Cal/EPA) should be coordinated to eliminate inconsistent, overlapping and redundant efforts. The following steps should be taken by Regional Water Board staff to assist in integrated enforcement efforts: participate in multi-agency enforcement coordination; share enforcement information; participate in cross-training efforts; participate with other agencies in enforcement efforts focused on specific individuals or categories of discharges.

The exchange of information among the Boards and Departments is especially important. Recent case law imputes the knowledge of each state agency to all others. Cal/EPA will be maintaining a data base for information on all enforcement actions. Quick and accurate filing of enforcement data with the State Water Board and Cal/EPA is essential.

3. Oil Spills

Responses to oil spills to marine or estuarine waters should be coordinated through the Department of Fish and Game's Office of Oil Spill Prevention and Response (OSPR). OSPR staff may pursue enforcement action administratively or through referral to the local District Attorney, and, in such cases, the Regional Water

Board generally should not invest staff time in a parallel effort. Staff should assist in an investigation by providing documentation, sampling, etc. If the discharger has not prepared a plan acceptable to the Regional Water Board to prevent recurrence, the Regional Water Board should request such a technical report under Water Code Sections 13267 or 13383.

Major oil spills, those in excess of 10,000 gallons, usually involve a number of governmental jurisdictions. Such spills should be brought to the Regional Water Board for consideration of referral to the Attorney General for recovery of civil monetary remedies and damages.

Oil spills to inland (fresh) waters are not within the jurisdiction of OSPR. If formal enforcement actions are taken, they are usually enforced by either the county District Attorney under either the Fish and Game Code or Health and Safety Code, or by the Regional Water Board under the Water Code. In general, if the District Attorney is interested in pursuing the case, the Regional Water Board should consult with the District Attorney before pursuing its own enforcement action to avoid any potential double jeopardy issues. However, staff should always request that any settlement include recovery of staff costs and any actions that appear necessary to prevent recurrence of a spill and to mitigate damage to the environment.

4. Hazardous Materials Spills

Hazardous materials are those meeting the criteria specified in Title 22, Division 4.5, Chapter 11, California Code of Regulations. ***Regional Water Board staff shall coordinate enforcement actions with the Department of Toxic Substances Control and/or any local or county hazardous material program.*** Spills constitute unlawful disposal of hazardous waste pursuant to the Health and Safety Code. ***Regional Water Board staff shall consider referring spills in all but the smallest amounts to the appropriate District Attorney,*** (generally in the 100-10,000 gallon range). ***If the District Attorney chooses not to pursue the case, Regional Water Board staff shall consider issuing an ACL Complaint*** unless the spill was very small or limited in impact. Due to the nature of the materials discharged, the Regional Water Board staff should consider issuing the ACL Complaint in an amount at or near the legal maximum.

Large spills of hazardous materials, 10,000 gallons or more, should be treated like large oil spills, and ***should be considered for referral to the Attorney General. If necessary, Regional Water Board staff should coordinate with the District Attorney or U.S. Attorney to determine whether criminal prosecution is warranted.*** In addition, such spills may constitute the unlawful disposal of hazardous waste pursuant to the Hazardous Waste Control Act (Health and Safety Code Section 25100 et seq.) and, in most cases, should be investigated in conjunction with the Department of Toxic Substances Control.

5. Spills of Nonhazardous Materials

Spills of materials that do not meet the formal criteria as being hazardous can still be highly toxic, such as some petroleum hydrocarbons or detergents, or of only limited toxicity, such as corn syrup. For this reason, such spills must be evaluated case-by-case for enforcement.

6. Storm Water Discharges

As compliance with the State Water Board's General Industrial Activities Storm Water Permit has costs associated with it, industries that are currently in compliance are at an economic disadvantage as compared to industries that are not. The imposition of ACL for noncompliance with the General Industrial Activities Storm Water Permit will be based on factors required by statute, including the costs that the facility avoided by not complying. These costs include: the annual fee, the cost of Storm Water Pollution Prevention Plan development, the cost of implementing best management practices, and the cost of monitoring and reporting. ACL will be in addition to the requirement of submitting a notice of intent to comply with the permit along with the first year's annual permit fee. ACL may be assessed by either the State Water Board or the Regional Water Boards.

7. Solid Waste Facilities

Provisions were added to the Public Resources Code (PRC) in 1995 which impact on enforcement activities at solid waste facilities:

(a) Where a Regional Water Board has issued, or is likely to issue an enforcement action against a solid waste facility, they must provide a statement to the local enforcement

agency, the Solid Waste Management Board, the air pollution control district and the Department of Toxic Substances Control, if the violation involves the jurisdiction of that agency. This statement must be provided at least 10 days prior to the date of issuance of an enforcement order which is not an emergency, within five days from the date of issuance of an enforcement order for an emergency, or within 15 days of the discovery of a violation of a state law, regulation, or term or condition of a solid waste facilities permit for a solid waste facility, which is likely to result in an enforcement action. The statement must provide an explanation of and justification for the enforcement action, or a description of the violation (PRC Section 45019).

(b) The appropriate Regional Water Board must inspect a solid waste facility within 30 days of receipt of an enforcement action or proposed enforcement action from one of the above agencies if such action stems from a complaint concerning a solid waste facility and if a water quality violation is at issue (PRC Section 45020).

(c) If a Regional Water Board receives a complaint concerning a solid waste facility, which is not within its jurisdiction, it must refer the complaint to the appropriate state agency within 30 days (PRC Section 45021).

(d) If a Regional Water Board receives a complaint concerning a solid waste facility, either directly or by referral from another state agency, it shall either take appropriate enforcement action, refer the complaint to the Attorney General, the district attorney, or city attorney, whichever is applicable, or provide, within 60 days, to the person who filed the complaint a written explanation as to why enforcement action is not appropriate (PRC Section 45022).

(e) Regional Water Board enforcement activities at solid waste facilities shall comply with the following (PRC Section 45020):

(1) Enforcement activities shall eliminate duplication and facilitate compliance.

(2) Facility operators must be notified before administrative civil liability (ACL) is imposed.

(3) Prior to imposing ACL, and upon the request of a solid waste facility operator, the Regional Water Board must meet with the operator to clarify regulatory requirements and to determine how the operator could come into voluntary compliance. The operator may request a meeting with all agencies involved in the enforcement matter.

(4) The Regional Water Board must consider the factors listed in PRC Section 45016 in determining the appropriate enforcement action.

IV. DETERMINING ACL AMOUNTS

The Water Code gives the Regional Water Board substantial discretion in setting ACL amounts. How this discretion is exercised is based upon several factors, some of which relate to the discharger and some of which relate to the discharge itself. The Regional Water Board is required to consider ten factors when setting ACL amounts but has latitude in how it applies and weighs each factor. This discretion is helpful, since no two cases are alike, but this often results in significant staff effort to recommend a reasonable ACL amount. In addition, maximum potential assessments are huge for some violations. Setting ACL amounts at or near the maximum often is not practical nor is it always good public policy.

One goal of this policy in calculating ACL amounts is consistency. ***Similar violations should result in similar amounts***; dischargers should have some idea of their potential exposure. Another goal is deterrence; ***ACL amounts should create a strong disincentive for future violations***. Finally, ***dischargers should not gain an economic benefit from the violations.***

A. MINIMUM AND MAXIMUM ACL AMOUNTS

The Water Code establishes maximum ACL amounts for each type of violation. These amounts are expressed as a function of violation duration (dollars per day) or violation magnitude (dollars per gallons discharged). Maximum ACL amounts range from $1,000 to $10,000 per day and $10 per gallon. (See Attachment 4).

Water Code Section 13350 also establishes minimum ACL amounts for certain violations. These amounts are either $100 or $500 per day of violation. The Regional Water Board is required to impose these minimum amounts unless it makes express findings based upon the factors specified in Water Code Section 13327.

B. FACTORS TO BE CONSIDERED

Section 13327 of the Water Code requires the Regional Water Board to consider ten factors when determining the amount of ACL:

> "(T)he nature, circumstances, extent, and gravity of the violation or violations, whether the discharge is

susceptible to cleanup or abatement, the degree of toxicity of the discharge, and, with respect to the violator, the ability to pay, the effect on ability to continue in business, any voluntary cleanup efforts undertaken, any prior history of violations, the degree of culpability, economic savings, if any, resulting from the violation, and such other matters as justice may require."

The first three factors relate to the environmental significance of the violations. The remaining factors deal with the character, actions and economic worth of the violator. These factors should be used not only in determining an appropriate ACL amount, but also in deciding whether an ACL should be issued at all. Below is a discussion of some common issues for the ten factors, followed by a matrix for use as a guide in determining monetary assessments. (Note that several of the factors have been grouped together).

1. Nature, Circumstance, Extent, and Gravity of Violation and Degree of Toxicity

These factors address the magnitude and duration of a violation. More fundamentally, they address the impact of a violation and its effect on beneficial uses, including public health and water quality. This factor should be weighted heavily in calculating ACL amounts.

There are different methods to define the gravity of different types of violations. For spills, the main concern is the volume, duration, and toxicity of the material spilled. For effluent limit violations, the concern is the violation's significance (e.g., how much above the effluent limit). For time schedule violations, the length of the delay and its effects on overall compliance are the primary issues.

2. Degree of Culpability

Higher ACL amounts should be set for intentional or negligent violations than for accidental, non-negligent violations. Showing intent or negligence is not always easy. A first step is to identify any performance standards (or, in their absence, prevailing industry practices) in the context of the violation. The test is what a reasonable and prudent person would have done or not done under similar circumstances.

3. Prior History of Violations

Higher ACL amounts should be set in cases where there is a pattern of previous violations. If the Regional Water Board has already imposed ACL for past violations, then ACL for additional violations of the same type should be substantially higher. However, a Regional Water Board cannot impose ACL on a discharger more than once for the same violation.

4. Susceptibility to Cleanup and Voluntary Cleanup Efforts Undertaken

These two factors relate to cleanup efforts. The ACL amount should be reduced to reflect good-faith efforts by the violator to clean up wastes or abate the effects of waste discharges. In many cases, the violation is not amenable to cleanup or abatement, such as a regulated discharge to surface waters in excess of effluent limits or a time schedule violation for site investigation. In these cases, the ACL amount is unaffected by the cleanup or abatement factor.

5. Economic Savings

Dischargers should not enjoy a competitive advantage because they flout environmental laws. Assessments for Water Code violations should at a minimum take away whatever economic savings a firm or agency gains as a result of those violations.

Economic savings fall into two categories: (1) deferred capital spending and (2) reduced or avoided costs of operation and maintenance (O&M). To estimate economic savings, the first step is to identify which capital improvement projects or O&M activities were delayed or avoided. The second step is to estimate these capital and O&M costs and express them as a present value.

Cost data may often be obtained from the discharger, especially when the discharger explains what it did to prevent future recurrence of the violations. If the discharger does not volunteer this cost information, staff can require it via a Water Code Section 13267 or 13383 request. Financial management programs can convert capital and O&M costs into an economic savings estimate.

Savings from deferred capital spending is calculated based on the amount of interest that could have been earned on the capital funds during the delay period. Savings from O&M activities are calculated for the entire delay period and expressed as a present value.

6. Ability to Pay and Ability to Continue in Business

Normally, assessments are not set so high as to put firms out of business or seriously harm their ability to continue in business. In a similar sense, government agencies have finite resources to pay assessments, notwithstanding their broad powers to raise revenue. At issue is how the Regional Water Boards calculate a firm's (or agency's) ability to pay.

Draft USEPA guidance provides one possible method for analyzing affordability. See 1994 "Draft Economic Guidance for Water Quality Standards Workbook" by USEPA. The draft guidance suggests analyzing four factors: liquidity (short-term ability to pay bills); solvency (long-term ability to pay bills); leverage (current debt load and ability to borrow additional funds); and earnings (how pollution-related costs affect profitability).

7. Other Matters as Justice May Require

This factor affords the Regional Water Board wide discretion. However, it applies only to matters not already addressed in the list above and it should be used primarily for any considerations that are specific to the violator. This factor can also be used as a basis for recovery of staff costs incurred in the ACL process. Staff costs should be added to the ACL amount derived from the other ACL factors to come up with the total ACL amount. Details on deriving staff costs are given below.

Finally, litigation considerations may justify a reduction in the amount due to applicable precedents, competing public interest considerations, or the specific facts or evidentiary issues pertaining to a particular case.

ASSESSMENT MATRIX

After an analysis of the above factors, the following matrix should be used as a guide to determine the appropriate ACL assessment based upon the determined level of "Environmental

Significance" and "Compliance Significance". The overlap in the amounts in the matrix is intended to allow for flexibility in the amount assessed. The "Environmental Significance" relates to the violation itself: the gravity of the violation(s)--nature, circumstances, extent, and degree of toxicity of the discharge; and whether the discharge is susceptible to cleanup or abatement. The "Compliance Significance" deals with the discharger: voluntary cleanup efforts undertaken by the violator; the violator's prior history of violations; and the violator's degree of culpability.

After consulting the following matrix: the final amount to be assessed may be decreased by the violator's ability to pay and the effect on the violator's ability to continue in business; and the final amount to be assessed may be increased or decreased by other matters as justice may require. This should include recovery of staff costs. If the amount assessed is less than the minimums specified in Water Code Section 13350, findings based on consideration of the above factors to justify such an assessment are required.

Assessment Matrix			
COMPLIANCE SIGNIFICANCE (DISCHARGER)	ENVIRONMENTAL SIGNIFICANCE (DISCHARGE)		
	MINOR	MODERATE	MAJOR
MINOR	$100 - $2,000	$1,000 - $20,000	$10,000 - $100,000
MODERATE	$1,000 - $20,000	$10,000 - $100,000	$50,000 - $200,000
MAJOR	$10,000 - $100,000	$50,000 - $200,000	$100,000 to maximum amount

Examples of violations which correspond to the above categories may be found in Attachment 5.

C. RECOVERY OF STAFF COSTS

Enforcement orders issued under Water Code Section 13304 and ACL orders should address recovery of staff costs incurred in preparing the enforcement action, since most enforcement consumes significant amounts of staff time. Water Code Section 13304 explicitly allows the recovery of staff costs which are incurred

in connection with a CAO. As discussed above, staff costs should also be considered as one of the "other matters as justice may require" when calculating ACL assessments.

CAOs should always include a provision that the Regional Water Board may seek recovery of staff costs, including costs for any staff investigation and oversight of cleanup, associated with the order. Below is an example of cost-recovery language:

> "Pursuant to Section 13304 of the Water Code, the discharger is hereby notified that the Regional Water Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action required by this Order. The discharger shall reimburse the Board upon receipt of a billing statement for those costs."

D. SUPPLEMENTAL ENVIRONMENTAL PROJECTS

The State Water Board supports the use of supplemental environmental projects which are funded or implemented by dischargers in exchange for a suspension of a portion of an ACL or other monetary assessment, which would otherwise be paid directly to the State Cleanup and Abatement Account. Supplemental projects should mitigate damage done to the environment by the discharger, and usually should involve the restoration or enhancement of wildlife and aquatic habitat or beneficial uses in the general vicinity of the violation. However, projects may also consist of less direct environmental benefits, such as preparation of certain kinds of studies or an industry specific public awareness activity. Generally, acceptable projects should fall into one of five categories: pollution prevention, pollution reduction, environmental restoration, environmental auditing, and public awareness. Supplemental environmental projects may be considered if: (1) violations are corrected through actions to ensure future compliance; (2) deterrence objectives are served by payment of an appropriate monetary assessment; (3) there is an appropriate relationship between the nature of the violation and the environmental benefits to be derived from the supplemental project; and (4) the project is not otherwise required or would not proceed in the absence of the proposal.

Supplemental environmental projects should only consist of measures that go above and beyond the obligation of the discharger to voluntarily undertake measures necessary to assure compliance with permits and regulations. For example, sewage pump stations should have basic reliability features to minimize the occurrence of sewage spills. A mitigation project following a pump station spill should not include installation of these basic reliability features nor should credit be given for the money spent on cleanup.

Supplemental environmental projects should not equal the total amount of the ACL assessment. Except in very minor cases, the ACL order should require a cash payment (to the State Cleanup and Abatement Account) of a portion of the ACL amount, which includes staff costs. The purpose of this is to deter future non-compliance. The supplemental project costs should equal or exceed the remainder of the ACL amount. Therefore, the total ACL package may include a monetary assessment, the supplemental project, plus staff costs.

The supplemental environmental project should be clearly described in the ACL order, including a detailed description of the mitigation project and a completion deadline; if the discharger fails to complete the project by this time, then the discharger should pay the ACL amounts which were previously suspended to the State Cleanup and Abatement Account. This feature provides the discharger an incentive for prompt implementation of mitigation projects. If the discharger completes the mitigation in a timely manner, this portion of the ACL may be suspended.

POLLUTANT CATEGORIES

Category 1 Pollutants - These are pollutants for which the enforcement criterion is 1.4 times the effluent limit for exceedences of monthly average effluent limits which occur two months in a six month period.

Oxygen Demand
Biochemical Oxygen Demand
Chemical Oxygen Demand
Total Oxygen Demands
Total Organic Carbon
Other

Solids
Total Suspended Solids
Total Dissolved Solids
Other

Nutrients
Inorganic Phosphorous Compounds
Inorganic Nitrogen Compounds
Other

Detergents and Oils
Methylene blue active substances
Nitrillotriacetic acid
Oil and Grease
Other detergents or algicides

Minerals
Calcium
Chloride
Fluoride
Magnesium
Sodium
Potassium
Sulfur
Sulfate
Total Alkalinity
Total Hardness
Other Minerals

Metals
Aluminum
Cobalt
Iron
Vanadium

Category 2 Pollutants - These are pollutants for which the enforcement criterion is 1.2 times the effluent limit for exceedences of monthly average effluent limits which occur two months in a six month period.

Metals
All metals not specifically listed under Category 1.

Inorganics
Cyanide
Total Residual Chlorine

Organics
All organics not specifically listed under Category 1.

SAMPLE NOTICE OF VIOLATION

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

_____ REGION

In the matter of:)
)
)
)
)
)
)

NOTICE OF VIOLATION

No. _____

YOU ARE HEREBY NOTIFIED THAT:

On (date), you were notified of the following violations:

_____ Staff review of self-monitoring reports submitted pursuant to Monitoring and Reporting Program indicated that your discharge was in violation of effluent limitations or other waste discharge requirements in Order No. _____.

_____ Staff inspection of your facility revealed conditions which violate your Waste Discharge Requirements in Order No. _____.

_____ Observations of your facility revealed conditions which violate . . .

_____ Technical or Monitoring Reports required by Order No. _____, or requested in a letter dated (date) have not been received on time (Due date: (date)).

As of ____(date)____, the above violations had not been satisfactorily corrected. This Notice of Violation serves as a final notice to correct the above violations by ___(date)___. If you fail to correct the above violations by this date, the Board shall take appropriate enforcement actions authorized by the Porter-Cologne Water Quality Control Act (Div. 7 of the Water Code, commencing with Section 13000), including the possible assessment of civil liabilities of (amount of liability) per day of violation, or referral to the State Attorney General for judicial sanctions.

This Notice is based on the following specific circumstances:

EXAMPLES

1. A self-monitoring report for the month of May 1994 was not submitted to the Regional Water Quality Control Board, Region ____ .

2. On September 2, the Regional Water Quality Control Board inspector observed seepage from your landfill. The seepage was flowing into a drainage ditch which runs along the southeast boundary of your property and is ultimately tributary to _____.
   Order No. _____ prohibits any discharge of wastes and leachate to surface waters.

STATE OF CALIFORNIA
California Regional Water Quality Control Board Telephone:
_____ Region FAX:
(ADDRESS)

FIELD NOTICE OF VIOLATION

I. INCIDENT INFORMATION

Incident Date: _____ Time: _____ Previous Occurrence: Yes ___ No ____
Material: _____ Volume:
Location: _____
Phone Number: _____ City/County: _____
Description of Incident: _____
Waters Impacted: _____
Extent of Impact: _____
Responding Agencies: _____
Contacts: _____

II. VIOLATION SECTION

On _____, at _____, you were advised of the following Water Code Section violation(s):

( ) 13264 Unauthorized discharge of waste to State waters
( ) 13304 Discharge of waste in violation of waste discharge requirements or other orders or Basin Plan Prohibitions
( ) 13350 Unauthorized release of petroleum products to State Waters
( ) 13385 Discharge to State waters without a permit

III. CORRECTIVE ACTIONS SECTION

You are hereby notified that the violations must be satisfactorily corrected immediately. You are requested to submit a report within five (5) working days describing the incident, volume discharged, and cleanup or other measures undertaken to correct the violation.

You are advised that you may be subject to civil liability due to violation of the State Water Code Section(s). Failure to correct the above violations may result in an enforcement action, leading to Administrative Civil Liability including liabilities of up to $10,000 per day or more. Your response actions and cooperation will be taken into account in assessing the amount of any civil liability as a result of this violation.

I acknowledge receipt of this Notice of Violation.

RECIPIENT NAME: _____

TITLE: _____

SIGNATURE: _____ DATE: _____

(NOTE: Signing this document is not an admission of guilt.)

RWQCB STAFF NAME: _____

TITLE: _____

SIGNATURE: _____ DATE: _____

(Note to staff: Attach Table of Maximum Civil Liability)

MAXIMUM CIVIL LIABILITY AMOUNTS

Water Code Section	Violation	Maximum Liability if Imposed by: Board	Court
13261(b)	Failure to furnish a report of waste discharge or pay fee	$1,000 per day	$5,000 per day
13261(d)	Willful submission of a false report, withholding information, or failure to furnish report of waste discharge for hazardous waste	$5,000 per day	$25,000 per day
13265(b)	Discharge of waste without Board-issued WDR or WDR waiver after notification by Board	$1,000 per day	$5,000 per day
13265(d)	Discharge of hazardous waste without Board-issued WDR or WDR waiver	$5,000 per day	$25,000 per day
13268(b)	Failure to furnish a technical or monitoring program report	$1,000 per day	$5,000 per day
13268(d)	Knowing failure or refusal to furnish a technical or monitoring report if discharging hazardous waste	$5,000 per day	$25,000 per day
13308	Time schedule violation	$10,000 per day	
13350	Intentional or negligent violation of CDO or CAO; intentional or negligent waste discharge in violation of WDR or other Board order or prohibition; or intentional or negligent release of petroleum product: (d) there is a discharge and a CAO (e) there is a discharge and no CAO (f) there is no discharge but Board order is violated	 $5,000 per day $10 per gallon $1,000 per day	 $15,000 per day $20 per gallon $10,000 per day
13385	Violates NPDES permit, or Basin Plan prohibition, program requirements, etc.	$10,000 per day and $10 per gallon, for amounts not cleaned up in excess of $1,000 gallons (net)	$25,000 per day and $25 per gallon, for amounts not cleaned up in excess of $1,000 gallons (net)

Notes: "Hazardous waste" is defined in H&SC Section 25117; "hazardous substance" is defined in H&SC Section 25140 as well as Section 311(b)(2) of Clean Water Act (surface water discharges).

1.) Compliance Significance: Moderate
Environmental Significance: Minor

A single-walled fiberglass tank containing 2,500 gallons of citric acid (pH 3.2) is stored without secondary containment at a beverage production and bottling facility. A forklift hits and breaks the tank and 1,000 gallons of the contents flow into a storm drain tributary to an estuary. The operator takes swift abatement and remedial steps to contain the spill. Minimal impact is made to waters of the state.

2.) Compliance Significance: Moderate
Environmental Significance: Moderate

Five years ago, volatile organic compounds (VOCs) were discovered in the soil and groundwater beneath a plating shop and at other site locations of a facility. The Regional Water Board issued a Cleanup and Abatement Order (CAO) with a time schedule for soil and groundwater investigation and remediation. To date, the plating company has conducted initial site investigation, but is in violation of its CAO time schedule for a complete investigation, site remediation, and source control. A previous ACL was issued to this facility for violation of the same CAO two years ago. The Company is in violation of its CAO for 347 days.

LISTING OF ACRONYMS

ACL	Administrative Civil Liability
Cal/EPA	California Environmental Protection Agency
CAO	Cleanup and Abatement Order
CDO	Cease and Desist Order
DFG	Department of Fish and Game
NOV	Notice of Violation
NPDES	National Pollutant Discharge Elimination System
O&M	Operation and Maintenance
OSPR	Oil Spill Prevention and Response (unit of DFG)
SMR	Self-Monitoring Report
SWPPP	Storm Water Pollution Prevention Plan
USEPA	U.S. Environmental Protection Agency
WDR	Waste Discharge Requirements

STATE WATER RESOURCES CONTROL BOARD

WATER QUALITY ENFORCEMENT POLICY

February 19, 2002

CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

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INTRODUCTION

The State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCBs) (together "Boards") are the principal state agencies with primary responsibility for the coordination and control of water quality. In the Porter-Cologne Water Quality Control Act (Porter-Cologne), the Legislature declared that the "state must be prepared to exercise its full power and jurisdiction to protect the quality of the waters in the state from degradation..." (California Water Code section 13000). Porter-Cologne grants the Boards the authority to implement and enforce the water quality laws, regulations, policies and plans to protect the groundwater and surface waters of the state. Timely and consistent enforcement of these laws is critical to the success of the water quality program and to ensure that the people of the State have clean water. It is the policy of the SWRCB that the Boards shall strive to be fair, firm and consistent in taking enforcement actions throughout the State, while recognizing the individual facts of each case. The primary goal of this Enforcement Policy is to create a framework for identifying and investigating instances of noncompliance, for taking enforcement actions that are appropriate in relation to the nature and severity of the violation, and for prioritizing enforcement resources to achieve maximum environmental benefits. Toward that end, it is the intent of the SWRCB that the RWQCBs operate within the framework provided by this Policy.

Enforcement serves many purposes. First and foremost, it assists in protecting the beneficial uses of waters of the State. Swift and firm enforcement can prevent threatened pollution from occurring and can promote prompt cleanup and correction of existing pollution problems. Enforcement ensures compliance with requirements in SWRCB and RWQCB regulations, plans, policies, and orders. Enforcement not only protects the public health and the environment, but also creates an "even playing field," ensuring that dischargers who comply with the law are not placed at a competitive disadvantage by those who do not. It also deters potential violators and, thus, further protects the environment. Monetary remedies, an essential component of an effective enforcement program, provide a measure of compensation for the damage that pollution causes to the environment and ensure that polluters do not gain an economic advantage from violations of water quality laws.

It is important to note that enforcement of the State's water quality requirements is not solely the purview of the Boards and their staff. Other agencies (e.g., the California Department of Fish and Game) have the ability to enforce certain water quality provisions in state law. State law also allows for members of the public to bring enforcement matters to the attention of the Boards and authorizes aggrieved persons to petition the SWRCB to review most actions or in-actions by the RWQCB. In addition, state and federal statutes provide for public participation in the issuance of most orders, policies and water quality control plans. Finally, the federal Clean Water Act (CWA) authorizes citizens to bring suit against dischargers for certain types of CWA violations.

I. FAIR, FIRM AND CONSISTENT REGULATION AND ENFORCEMENT

A. Standard, Enforceable Orders

Fair, firm and consistent enforcement depends on a foundation of solid requirements in law, regulations, policies, and the adequacy of enforceable orders. Such orders include but are not limited to: waste discharge requirements (WDRs), including National Pollutant Discharge Elimination System (NPDES) permits; waivers; certifications; and cleanup and abatement orders. The extent to which enforceable orders include well-defined requirements and apply similar requirements to similar situations affects the consistency of compliance and enforcement. Whenever the circumstances of a discharge are similar, the provisions of the enforceable orders should be comparable.

The SWRCB, with assistance and advice from the RWQCBs and other stakeholders will compile and maintain examples of standard enforceable orders. RWQCBs' orders shall be consistent except as appropriate for the specific circumstances related to the discharge and to be consistent with applicable water quality control plans. Such modifications must be consistent with applicable state and federal law. RWQCB Water Quality Control Plans may include unique requirements that apply within a region and that must be implemented.

B. Determining Compliance

The Boards shall implement consistent and valid methods to determine compliance with enforceable orders. Compliance assurance activities include the review of self-monitoring reports, facility inspections and complaint response. Compliance assurance activities are discussed in more detail in section II of this Policy.

C. Timely and Appropriate Enforcement

An enforcement action is any informal or formal action taken to address the failure to comply or the threatened failure to comply with applicable statutes, regulations, plans, policies, or enforceable orders. Enforcement actions should be initiated as soon as possible after discovery of the violation.

Enforcement actions should be appropriate for each type of violation and should be similar for violations that are similar in nature and have similar water quality impacts. Appropriate enforcement informs the violator that the violation has been noted and recorded by the Board, results in a swift return to compliance, and serves as a deterrent for future violations. When appropriate, enforcement also requires remediation of environmental damage.

D. Progressive Enforcement

Progressive enforcement is an escalating series of actions that allows for the efficient and effective use of enforcement resources to: 1) assist cooperative dischargers in achieving compliance; 2) compel compliance for repeat violations and recalcitrant violators; and 3) provide a disincentive for noncompliance. For some violations, an informal response such as a phone call or staff enforcement letter is sufficient to inform the discharger that the violation has been noted by the RWQCB and to encourage a swift return to compliance. More formal enforcement is often an appropriate first response for more consequential violations. If any violation continues, the enforcement response should be quickly escalated to increasingly more formal and serious actions until compliance is achieved. Progressive enforcement is not appropriate in all circumstances. For example, where there is an emergency situation needing immediate response, immediate issuance of a cleanup and abatement order may be appropriate.

E. Enforcement Priorities

Every violation deserves an appropriate enforcement response. However, because resources are limited, the RWQCBs must continuously balance the need to complete non-enforcement program tasks with the need to address violations. Within available resources for enforcement, the RWQCBs must then balance the importance or impact of each potential enforcement action with the cost of that action. Informal enforcement actions are usually very cost effective and are therefore the most frequently used enforcement response. Most formal enforcement actions are relatively costly and must therefore be targeted to the RWQCB's highest priority violations.

The first step in enforcement prioritization is the determination of the relative importance of the violation. Section III of this Policy identifies criteria for determining if a violation should be identified as a priority violation. Priority violations include: all NPDES violations that the United States Environmental Protection Agency (USEPA) requires to be reported on the Quarterly Non-Compliance Report (QNCR) for the purpose of tracking significant non-compliance; all serious violations as defined in California Water Code section 13385; and other violations that the SWRCB and/or RWQCB considers to be significant and therefore high priority. Staff will indicate, for each violation, whether or not the violation meets the "priority violation" criteria in section III of this Policy.

The second step is to identify dischargers that are repeatedly or continuously in violation of requirements. California Water Code section 13385(i) prescribes mandatory minimum penalties for specific instances of multiple violations for NPDES discharges. Those provisions are discussed in more detail in Section V.D. of this Policy. In addition to those violations, and for non-NPDES discharges, the RWQCB will identify those dischargers with an excessive number of violations (e.g., four or more similar types of violations in a six month period) or seasonally recurring violations (e.g., violations of a monthly average effluent limitation for a specific pollutant in the same season[1] for two consecutive years). The SWRCB will develop enhanced

[1] "Season" means either: 1) spring, summer, autumn, or winter; or 2) a time or part of the year during which a specified kind of agricultural work is performed or a specified kind of weather prevails (e.g., the harvest season, the rainy season, etc.).

data routines and reporting capabilities to enhance the RWQCBs' ability to identify such dischargers with chronic violations.

The third step is for senior staff and management to review, for each newly identified priority violation and for each discharger identified as having chronic violations, other characteristics of the discharger and violations that would affect decisions about the appropriate enforcement response. Once each month senior staff and management should meet and assign, for each discharger with priority or chronic violations, a relative priority for enforcement of "high", "medium" or "low". Except for confidential information regarding ongoing investigations or enforcement, the list of dischargers identified as high priority for enforcement should be reported to the RWQCB and should be available upon request from the RWQCB. The criteria for selecting relative enforcement priority include, but are not limited to:

(a) the applicability of mandatory minimum penalty provisions of California Water Code sections 13385 and 13399.33;
(b) evidence of, or threat of, pollution or nuisance and the magnitude or impacts of the violation;
(c) evidence of negligence or recalcitrance;
(d) the availability of resources for enforcement;
(e) USEPA expectations for timely and appropriate enforcement for NPDES delegated programs[2];
(f) specific recommended enforcement pursuant to Section V of this Policy;
(g) case-by-case factors that may mitigate a violation including the compliance history of the violator and good-faith efforts of the violator to eliminate noncompliance;
(h) impact or threat to watersheds or water bodies that the RWQCB considers high priority (e.g., due to the vulnerability of an existing beneficial use or an existing state of impairment);
(i) potential to cleanup and abate effects of pollution; and
(j) the strength of evidence in the record to support the enforcement action.

Serious threats of violation must also be dealt with promptly in order to avoid or mitigate the effects of the threatened violation. Within available resources, formal enforcement actions should be targeted at dischargers with the highest priority violations, chronic violations and/or threatened violations. Dischargers with priority violations that do not receive formal enforcement should receive informal enforcement.

[2] For NPDES facilities that are listed on the Quarterly Noncompliance Reports (QNCR) USEPA considers timely enforcement of Significant Noncompliance (SNC) violations to be an enforcement action taken within five months after the first quarter of SNC (Guidance for Oversight of NPDES Programs, USEPA Office of Water, May 1987). USEPA considers appropriate enforcement to be an enforceable order or agreement that requires specific corrections to address the violations; in California, Cease and Desist Orders, Cleanup and Abatement Orders, or judicial consent decrees are considered by USEPA to meet this expectation.

F. Environmental Justice

The State and Regional Boards shall promote enforcement of all health and environmental statutes within their jurisdictions in a manner that ensures the fair treatment of people of all races, cultures, and income levels, including minority populations and low-income populations in the state. The SWRCB is participating in, and fully supports, the efforts of the California Environmental Protection Agency Working Group on Environmental Justice (convened pursuant to Public Resources Code 72002) to develop and implement an interagency environmental justice strategy.

II. COMPLIANCE ASSURANCE

Compliance with WDRs, Water Quality Control Plan prohibitions, enforcement orders, and other provisions of law administered by the SWRCB or RWQCBs can be determined through discharger self-monitoring reports (SMRs), compliance inspections, facility reporting, complaints, or file review.

A. Self-Monitoring Reports (SMRs)

The Boards ensure compliance with WDRs and other Board orders by requiring dischargers to implement a monitoring and reporting program under California Water Code sections 13267 and 13383, and to periodically submit SMRs. Reporting frequency for regulated dischargers depends on the nature and impact of the discharge. The regulations that implement the CWA also specify monitoring requirements. Enforceable orders that require a monitoring and reporting program should explicitly require the discharger to clearly identify all violations of applicable requirements in a cover letter or in the SMR and to discuss corrective actions taken or planned and the proposed time schedule of corrective actions. Identified violations should include a description of the requirement that was violated and a description of the violation.

When specifying signatory requirements in WDRs, the RWQCB should ensure that those individuals who have responsibility for the collection, analysis and/or reporting of compliance monitoring data are required to sign and certify reports of monitoring results. Responsible individuals may include the following: the chief plant operator; the chief of an in-house laboratory; and/or the individual(s) responsible for preparation and submittal of SMRs.

RWQCB staff shall regularly review all discharger SMRs and document all violations and any subsequent enforcement response in the Boards' enforcement data management system.

B. Compliance Inspections

On-site compliance inspections are conducted by the RWQCB staff under the authority provided in California Water Code sections 13267 and 13383. Compliance inspections provide the RWQCB an opportunity to verify that information submitted in SMRs is complete and accurate. Compliance inspections address compliance with WDRs, laboratory quality control and assurance, record keeping and reporting, time schedules, best management practices, pollution

prevention plans, and any other pertinent requirements. RWQCB staff shall document all violations identified as the result of compliance inspections and any subsequent enforcement response in the facility file and in the Boards' enforcement data management system.

C. Direct Facility Reporting

California Water Code section 13271 requires any person who, without regard to intent or negligence, causes or permits any hazardous substance or sewage to be discharged in or on any waters of the state, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the state to notify the Office of Emergency Services of the discharge as specified in that section. The Office of Emergency Services then immediately notifies the appropriate RWQCB and the local health officer and administrator of environmental health of the discharge.

WDRs, including NPDES permits, should require regulated facilities to report to the RWQCB by phone within a specified time, followed by a written report and/or a discussion in the next SMR, when certain events occur, such as:

(a) Discharges that are not in accordance with WDRs and that pose an immediate public health threat;
(b) Bypass of raw or partially treated sewage or other waste from a treatment unit or discharge of wastewater from a collection system in a manner inconsistent with WDRs;

(c) Treatment unit failure or loss of power that threatens to cause a bypass; and
(d) Any other operational problems that threaten to cause significant violations of WDRs or impacts to receiving waters or public health.

D. Complaints and Complaint Investigations

Often information regarding an actual or potential violation or unauthorized discharge is obtained through telephone or written notification from a member of the public, another public agency or an employee working at a regulated facility. Complaints may also involve nuisance conditions, such as noxious odors that extend beyond a wastewater treatment plant boundary. During the course of an investigation additional violations that are indirectly related or unrelated to the original investigation may also be discovered. RWQCB staff shall document all complaints and findings resulting from complaint investigations.

E. Case Record Maintenance and Review

WDRs, enforcement orders (e.g., cleanup and abatement orders, cease and desist orders, and time schedule orders), and requests for reports required pursuant to California Water Code section 13267 frequently mandate completion of tasks, which the dischargers must confirm by submission of appropriate reports to the RWQCBs. Failure to submit the reports or to complete the required tasks may be the basis for additional enforcement. RWQCBs shall use data management systems to track tasks and reports required of dischargers.

Often the RWQCB first hears about spills or other violations from the California Department of Fish and Game, the California Department of Toxic Substance Control, the Office of Emergency Services or other agencies. District Attorneys are another source of information. The RWQCBs can use this information to decide whether to initiate joint or separate enforcement actions.

III. DETERMINING "PRIORITY" VIOLATIONS

Priority violations include: all NPDES violations that the United States Environmental Protection Agency (USEPA) requires to be reported on the Quarterly Non-Compliance Report (QNCR) for the purpose of tracking significant non-compliance; all violations subject to mandatory minimum penalties pursuant to California Water Code section 13385; and other violations that the SWRCB and/or RWQCB considers to be significant and therefore high priority. The general criteria below have been developed to assist the RWQCBs in identifying priority violations in order to help establish priorities for enforcement efforts. Depending on the circumstances, violations that are not included on this list could nonetheless be considered "priority" as well. RWQCB staff should indicate, for each violation, whether or not the violation meets the "priority violation" criteria in this section. RWQCB senior staff and management should use the criteria specified in Section I. E. of this policy to further evaluate the priority violations and, within available resources, target formal enforcement actions at the highest priority violations.

The following subsections comprise a non-exclusive list of "priority" violations that will be identified as priority violations in the enforcement database, that will be further evaluated for possible formal enforcement, and that should, at a minimum, receive informal enforcement.

A. NPDES Effluent and Receiving Water Limitation Violations

For facilities with NPDES permits, except as specified in subsection (e) of this section, the following violations of numeric effluent and receiving water limits are priority violations:

(a) Except as specified in subsections (a)(i) and (a)(ii), any violation of an effluent or receiving water limitation for a Group 1 pollutant (see Table III-1) by 40 percent or more or any violation of an effluent or receiving water limitation for a Group 2 pollutant (see Table III-2) by 20 percent or more.

(i) For discharges of pollutants subject to the SWRCB's "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California," or the "California Ocean Plan", where the effluent or receiving water limitation for a pollutant is lower than the applicable Minimum Level, any discharge that equals or exceeds the Minimum Level is a priority violation. For violations of effluent limitations only, such a discharge would also be considered to be a serious violation pursuant to California Water Code section 13385(h)(2)(a).

(ii) For discharges of pollutants that are not subject to the SWRCB's "Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California," or the California Ocean Plan (e.g., pollutants that are not addressed by the applicable plan) where the effluent or receiving water limitation

for a pollutant is lower than the applicable quantitation limit[3], any discharge that: 1) equals or exceeds the quantitation limit; and 2) exceeds the effluent or receiving water limitation by 40 percent or more for a Group 1 pollutant or by 20 percent or more for a Group 2 pollutant, is a priority violation. For violations of effluent limitations only, such discharges would be considered to be serious violations pursuant to California Water Code section 13385(h)(2)(a).

(b) Any waste discharge that violates a flow limitation by ten percent or more.

(c) Any waste discharge that violates a receiving water temperature limitation by three degrees Celsius (5.4 degrees Fahrenheit) or more.

(d) Any waste discharge that violates an effluent or receiving water limitation for pH by one pH unit or more or, where the discharger is continuously monitoring pH, any discharge that violates the effluent or receiving water limit by 1 pH unit for ten minutes or longer in a calendar day.

(e) Violations of receiving water limits will not be considered priority violations if: the NPDES permit contains requirements for responding to receiving water violations by investigating the cause of the violation; the facility is in compliance with those requirements; and the facility takes necessary action to ensure that its effluent does not cause or contribute to future violations of receiving water limits.

[3] There are also multiple definitions for the term "quantitation limit." One generally accepted definition for the quantitation limit is the concentration at which a state certified laboratory has determined with a specified degree of confidence, that the actual concentration of the pollutant present in the sample is within a specified percentage of the concentration reported. For the purpose of this policy, the applicable quantitation limit is the quantitation limit specified or authorized in the applicable waste discharge requirements.

Table III-1. Group 1 Pollutants. This list of pollutants is based on Appendix A to Section 123.45 of Title 40 of the Code of Federal Regulations. For the purpose of data entry into the Permit Compliance System (PCS), the United States Environmental Protection Agency (USEPA) has identified a list of pollutants, which are included as Group 1 pollutants under the various classifications of "other." This list is included in Appendix A of this Policy and is hereby incorporated into this Table III-1.

Oxygen Demand
Biochemical Oxygen Demand (BOD)
Chemical Oxygen Demand (COD)
Total Oxygen Demands
Total Organic Carbon
Other

Solids
Total Suspended Solids (TSS)
Total Dissolved Solids (TDS)
Other

Nutrients
Inorganic Phosphorous Compounds
Inorganic Nitrogen Compounds
Other

Detergents and Oils
Methylene Blue Active Substances
Nitrillotriacetic Acid
Oil and Grease
Other Detergents or Algicides

Minerals
Calcium
Chloride
Fluoride
Magnesium
Sodium
Potassium
Sulfur
Sulfate
Total Alkalinity
Total Hardness
Other Minerals

Metals
Aluminum
Cobalt
Iron
Vanadium

Table III-2. Group 2 Pollutants. This list of pollutants is based on Appendix A to Section 123.45 of Title 40 of the Code of Federal Regulations. For the purpose of data entry into the Permit Compliance System (PCS), USEPA has identified a list of pollutants, which are included as Group 2 pollutants. This list is included in Appendix B of this Policy and is hereby incorporated into this Table III-2.

Metals
All metals not specifically listed under Group 1.

Inorganics
Cyanide
Total Residual Chlorine

Organics
All organics not specifically listed under Group 1.

B. Toxicity Violations

Failure to conduct whole effluent toxicity (WET) monitoring tests when required by an enforceable order is a priority violation. Failure to provide valid test results (i.e., meet all test acceptability criteria) or otherwise comply with test and quality assurance procedures, including failure to retest as required following the failure to meet test acceptability criteria, is a priority violation.

Violations of numeric whole effluent toxicity limits contained in WDRs, Water Quality Control Plan prohibitions or other provisions of law are priority violations unless: the WDRs contain requirements for responding to the violation by investigating the cause of the violation (e.g., a Toxicity Identification Evaluation and/or a Toxicity Reduction Evaluation); the facility is in compliance with those requirements; and the facility takes necessary action to ensure that its effluent does not cause or contribute to future violations of whole effluent toxicity limits.

Failure to implement a required Toxicity Identification Evaluation and/or a Toxicity Reduction Evaluation or to otherwise comply with conditions of WDRs or other enforceable orders in response to toxicity violations is a priority violation.

C. Violations of Prohibitions

WDRs, Water Quality Control Plans, and enforcement orders often contain prohibitions (year-round or seasonal) against certain types of discharges of waste. Violations of such prohibitions that result in an adverse impact to beneficial uses or in a condition of nuisance or pollution are considered priority violations.

D. Spills (including other unauthorized discharges)

Priority violations include:

(a) sewage or treated wastewater spills that cause a public health threat and/or are greater than 5000 gallons;
(b) spills of other materials that cause a public health threat or cause toxicity to fish or other aquatic or terrestrial species or that result in an adverse impact to other beneficial uses of groundwater or surface water;
(c) spills of materials containing persistent, bioaccumulative pollutants in quantities and or concentrations that pose a significant risk to human health or the environment;
(d) unpermitted discharges of pollutants in Areas of Special Biological Significance;
(e) discharges from unregulated facilities that cause violations of water quality objectives;
(f) discharges of sediment that impact spawning habitat; and
(g) unpermitted discharges of pollutants to waters identified as impaired (on the Clean Water Act section 303(d) List) for that pollutant.

E. Failure to Submit Plans and Reports

Failure by waste water treatment facilities that are approaching treatment capacity to submit plans that are required to address capacity issues within six months of the date specified in WDRs is a priority violation.

Failure to submit reports required by WDRs, California Water Code sections 13267 and 13383, California Water Code section 13260, regulations or Water Quality Control Plans within 30 days from the due date, or submission of reports which are so deficient or incomplete as to impede the review of the status of compliance are priority violations. When required in WDRs or other enforceable orders, the failure to clearly identify all violations of applicable requirements in a cover letter or in the SMR is a priority violation. In addition, failure to comply with the notification requirements contained in California Water Code sections 13271 and 13272 is a priority violation. Failure to submit a Spill Prevention, Control, and Countermeasures (SPCC) Plan, required by Health and Safety Code Section 25270.5(c) within 30 days from the due date is a priority violation. Violation of signatory requirements for plans and reports is a priority violation.

F. Violations of Compliance Schedules

Violations of compliance schedule dates (e.g., schedule dates for starting construction, completing construction, or attaining final compliance) by 30 days or more from the compliance date specified in an enforceable order are priority violations.

G. Pretreatment Program Violations

Failure of a publicly-owned treatment works (POTW) to substantially implement its approved pretreatment program as required in its WDRs, including failure to enforce industrial pretreatment requirements on industrial users and failure to meet pretreatment program compliance schedules is a priority violation.

Discharges from Industrial Users (IUs) that cause a POTW to have a plant upset or an effluent limit violation are priority violations. Discharges from an IU that exceed a categorical limit for a Group 1 pollutant by 40% or more or for a Group 2 pollutant by 20% or more are priority violations. Note: The SWRCB or RWQCB normally takes enforcement against an IU only when the POTW fails to take appropriate enforcement actions.

H. Storm Water Program Violations

1. Industrial and Construction Discharges

Certain construction and industrial activities require compliance with either the General NPDES Permit for Storm Water Discharges Associated with Construction Activity (Construction Storm Water Permit) or the General NPDES Permit for Discharges of Storm Water Associated with Industrial Activity Excluding Construction (Industrial Storm Water Permit). Failure to submit a Notice of Intent for coverage under the general permits is a priority violation if a discharge to a water of the United States has occurred or is likely to occur. Priority violations include failure to:

(a) develop a Storm Water Pollution Prevention Plan (SWPPP) within 30 days of the due date which includes appropriate, site-specific best management practices (BMPs);
(b) implement a SWPPP;
(c) conduct required monitoring; or
(d) submit an annual report within 30 days of the due date.

The Storm Water Enforcement Act of 1998 (California Water Code section 13399.25 et seq.) includes mandatory enforcement actions. It requires the RWQCB to notify the discharger if it fails to submit a Notice of Intent or an annual report. The RWQCB must impose administrative penalties for failure to respond to two notifications. In addition to any penalty mandated by the Storm Water Enforcement Act of 1998, the RWQCB may, without prior notice, assess administrative civil liability against all priority violations, as these are also violations of section 13385(a).

2. Municipal Discharges

In most urban areas, discharges of storm water from municipal separate storm sewer systems (MS4s) to waters of the United States must be in compliance with a Municipal NPDES Storm Water Permit. Failure to either submit a report of waste discharge, to develop a storm water management plan within 30 days of the due date, to implement one or more components of its storm water management plan, to conduct monitoring, or to submit an annual report within 30 days of the due date is a priority violation. For example, the failure of a municipality to develop and/or implement a construction site program element that includes a demonstration of adequate legal authority and the implementation of an effective inspection and enforcement program is a priority violation.

Under the Storm Water Enforcement Act of 1998 (California Water Code section 13399.25 et seq.), the RWQCB must send notices to a permittee who fails to submit an annual report, and must impose administrative penalties for failure to respond to two notifications. However, the RWQCB may, without prior notice, assess administrative civil liability for failure to submit an annual report, as this also violates section 13385(a).

3. Failure to attain performance standardsand failure to report and address violations

Most storm water permits require the discharger(s) to comply with general performance practices or standards. For example, performance standards applicable to industrial and construction storm water discharges are to implement best management practices using the best available technology economically achievable and best conventional technology. Performance standards applicable to municipal storm water discharges are to implement best management practices that reduce the discharge of pollutants from municipal separate storm sewer systems to the maximum extent practicable. If storm water and/or authorized non-storm water discharges cause or substantially contribute to a violation of an applicable water quality standard, the discharger is usually required to take specific, iterative actions (e.g., modify its Storm Water Management Plan) to resolve such violations. Priority violations include the failure to report violations as required by the permit and/or the failure to comply with permit requirements for addressing identified violations. The criteria for priority violations in section III (A) of this Policy apply to NPDES storm water permits that contain numeric effluent limitations.

I. Clean Water Act Section 401 Violations

Discharges into waters of the United States that require a federal permit or license also require certification (in accordance with Section 401 of the Clean Water Act) from the SWRCB or RWQCB that the discharge will comply with the State's water quality standards. Failure to obtain required certification prior to a discharge that causes or contributes to a condition of nuisance or pollution or violates water quality standards is a priority violation. Failure to comply with conditions specified in the certification is a priority violation.

J. Violation of Water Quality Objectives in Groundwater

Any discharge of waste resulting in, or likely to result in, a violation of an applicable water quality objective, groundwater limitations, groundwater protection standards or other applicable concentration limits in waste discharge requirements for pollutants in groundwater, or in the creation of a condition of nuisance, is a priority violation unless the discharge is permitted or otherwise specifically authorized by the SWRCB or RWQCB.

K. Discharge of Bio-solids to Land

The following violations of the SWRCB General WDRs for discharge of bio-solids to land are priority violations:

(a) Any discharge in violation of the setback requirements;
(b) Any discharge that exceeds 1.4 times the agronomic rate[4] for nitrogen, where the site is not a land-reclamation site;
(c) Any discharge of tail-water in violation of the requirements;

[4] Agronomic Rate: The nitrogen requirements of a plant needed for optimal growth and production, as cited in professional publications for California or recommended by the County Agricultural Commissioner, a Certified Agronomist or Certified Soil Scientist.

(d) Any discharge that exceeds the Background Cumulative Adjusted Loading Rate in the requirements, or exceeds the Ceiling Pollutant Concentration Limits;
(e) Any violation of the specific Class B Discharge Specifications; and
(f) Any violations of pathogen reduction requirements or violations of harvesting and site restriction requirements.

L. Waste Discharge Requirement (WDR) Program

The following violations of requirements in WDRs for discharges regulated by the WDR Program are priority violations:

(a) Failure to monitor as required;
(b) The failure to maintain required freeboard in ponds;
(c) Any discharge that exceeds flow limits by 20 percent or more;
(d) Any discharge that exceeds the effluent limitation for biological oxygen demand or total dissolved solids by 100 percent or more;
(e) Any discharge where the dissolved oxygen is less than 50 percent of the effluent limitation; or
(f) Other violations as determined by the Board.

It is a priority violation for a person to discharge waste in violation of California Water Code section 13264.

M. Aboveground Petroleum Storage Act

The following violations of the Aboveground Petroleum Storage Act (California Health and Safety Code section 25270 et.seq.) are priority violations:

(a) Failure to file a storage report;
(b) Failure to prepare a Spill Prevention, Control and Countermeasures Plan prepared in accordance with guidelines contained in Part 112 of Title 40 of the Code of Federal Regulations;
(c) Failure to establish a monitoring system;
(d) Failure to report spills;
(e) Failure to conduct daily visual inspections of any tank storing petroleum;
(f) Failure to allow the regional board to conduct periodic inspections of the tank facility; and
(g) Failure to install a secondary means of containment when required.

N. Land Disposal

The following violations of requirements in WDRs for facilities regulated by the Land Disposal Program are priority violations:

(a) Failure to submit required construction quality assurance plans prior to construction;
(b) Failure to submit required construction quality assurance / quality control certification reports prior to waste discharge;
(c) Failure to implement an adequate waste load checking program and/or knowing acceptance of un-permitted waste;
(d) Failure to install and/or maintain required thickness of acceptable cover material;

(e) Failure to monitor (ground and surface water) as required;
(f) The failure to respond to evidence of a release of waste to groundwater as required in WDRs or other enforceable orders (i.e., failure to develop and implement an Evaluation Monitoring and/ or a Corrective Action Program);
(g) Un-permitted discharge of leachate or waste to surface water;
(h) Slope failure or erosion resulting in the exposure of waste and/or the discharge of sediment or other pollutants to surface water that impacts beneficial uses, causes or contributes to a violation of an applicable water quality objective or in the creation of a condition of nuisance or pollution; and
(i) Failure to maintain required freeboard.

O. Failure to Pay Fees, Penalties or Liabilities

Failure to pay fees, penalties or liabilities within 30 days of the due date is a priority violation unless the discharger has filed a timely petition pursuant to California Water Code section 13320 for review of the fee, penalty or liability; or an alternate payment schedule has been accepted by the RWQCB.

P. Falsifying Information

Falsification of information submitted to the Board or intentional withholding of information required by applicable laws, regulations or an enforceable order is a priority violation.

IV. ENFORCEMENT ACTIONS

The Boards have a variety of enforcement tools to use in response to non-compliance by dischargers. This section describes the range of options and discusses procedures that are common to some or all of these options. With specified exceptions California Water Code section 13360 (a) prohibits the SWRCB or RWQCB from specifying the design, location, type of construction, or particular manner in which compliance may be had with a particular requirement.

A. Standard Language

In order to provide a consistent approach to enforcement throughout the state, enforcement orders should be standardized where appropriate. The SWRCB intends to maintain model enforcement orders containing standardized provisions for use by the RWQCBs. RWQCBs should use the models and modify terms and conditions as appropriate for the specific circumstances related to the discharge and to be consistent with RWQCB plans and policies.

B. Informal Enforcement Actions

An informal enforcement action is any enforcement action taken by SWRCB or RWQCB staff that is not defined in statute. An informal enforcement action can include any form of communication (verbal, written, or electronic) between SWRCB and/or RWQCB staff and a discharger about a violation or potential violation. These actions may, in some circumstances, be

petitioned to the RWQCB or the RWQCB Executive Officer but cannot be directly petitioned to the SWRCB.

The purpose of an informal enforcement action is to quickly bring a violation to the discharger's attention and to give the discharger an opportunity to return to compliance as soon as possible. The RWQCB may take formal enforcement action in place of, or in addition to, informal enforcement actions. Continued noncompliance is considered a priority violation and should trigger formal enforcement action.

1. Verbal Enforcement Actions and Enforcement Letters

For many violations, the first step is a verbal enforcement action. Staff should contact the discharger by phone or in person and inform the discharger of the specific violations, discuss how and why the violations occurred, and discuss how and when the discharger will correct the violation and achieve compliance. Staff shall document the conversation in the facility case file and in the enforcement database.

An enforcement letter is often appropriate as a follow-up, or in lieu of, a verbal enforcement action. Enforcement letters are signed by staff or by the appropriate senior staff. The letter should inform the discharger of the specific violations, and, if known to staff, discuss how and why the violations occurred and how and when the discharger will correct the violation and achieve compliance.

Verbal enforcement actions and enforcement letters must not include language that excuses the violation or that modifies a compliance date in WDRs or other orders issued by the State or RWQCB.

2. Notice of Violation (NOV)

The NOV letter is the highest level of informal enforcement action. An NOV should be signed by the RWQCB Executive Officer or designated staff and should be addressed and mailed to the discharger(s) by certified mail. In cases where the discharger has requested that their consultant be notified of RWQCB actions, the consultant should also receive a copy of the NOV. The NOV letter should include a description of specific violations, a summary of potential enforcement options available for non-compliance (including the potential daily or per gallon maximum Administrative Civil Liability (ACL) available), and, when appropriate, a request for a written response by a specified date. The summary of potential enforcement options shall include appropriate citations to the California Water Code and should specify that the RWQCB reserves the right to take any enforcement action authorized by law.

C. Formal Enforcement Actions

Formal enforcement actions are statutorily recognized actions to address a violation or threatened violation of water quality laws, regulations, policy or orders. Formal enforcement orders should contain findings of facts that establish all the statutory requirements of the specific statutory provision being utilized. The actions listed below present options available for enforcement.

1. Notices to Comply

Notices to Comply are issued pursuant to California Water Code section 13399 et seq., which requires the use of Notices to Comply as the only means by which the SWRCB or RWQCB can issue citations for minor violations. A violation is determined to be minor by the SWRCB or the RWQCB after considering factors defined in California Water Code sections 13399(e) and (f) and the danger the violation poses to, or the potential that the violation has for endangering human health, safety, or welfare or the environment.

(a) The violations listed below are considered to be minor violations for the purpose of compliance with California Water Code section 13399 et seq.:

(i) Inadvertent omissions or deficiencies in recordkeeping that do not prevent an overall compliance determination.
(ii) Records (including WDRs) not physically available at the time of the inspection provided the records do exist and can be produced in a timely manner.
(iii) Inadvertent violations of insignificant administrative provisions that do not involve a discharge of waste or a threat thereof.
(iv) Failure to have permits available during an inspection.
(v) Violations that result in an insignificant discharge of waste or a threat thereof; provided, however, there is no significant threat to human health, safety, welfare or the environment.

(b) A violation is not considered minor in nature if it is a priority violation as described in Section III of this Policy or includes any of the following:

(i) Any knowing, willful, or intentional violation of Division 7 (commencing with Section 13000) of the California Water Code.
(ii) It involves any violation that enables the violator to benefit economically from noncompliance, either by realizing reduced costs or by gaining a competitive advantage.
(iii) Chronic violations or violations committed by a recalcitrant violator.
(iv) Violations that cannot be corrected within 30 days.

2. Notices of Stormwater Noncompliance

The Stormwater Enforcement Act of 1998 (California Water Code section 13399.25 et seq.) requires that each RWQCB notify storm water dischargers who have failed to file a notice of intent to obtain coverage, a notice of non-applicability, a construction certification, or annual reports. If, after two notifications, the discharger fails to file the applicable document a mandatory civil liability shall be assessed against the discharger.

3. Technical Reports and Investigations

California Water Code sections 13267(b) and 13383 allow RWQCBs to conduct investigations and to require technical or monitoring reports from any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste in accordance with the conditions in the section. Failure to comply with requirements made by a RWQCB pursuant to California Water Code section 13267(b) is a priority violation and may

result in administrative civil liability pursuant to California Water Code section 13268. Failure to comply with orders made pursuant to California Water Code section 13383 may result in administrative civil liability pursuant to California Water Code section 13385. Section 13267(b) and 13383 requirements are enforceable when signed by the Executive Officer of the RWQCB.

California Water Code section 13267 (b) requires Regional Boards to:

- provide the person who is required to provide the reports with a written explanation with regard to the need for the reports, and
- identify the evidence that supports requiring that person to provide the reports.

To comply with these requirements, the RWQCB should include a brief statement regarding the relationship between the information that is being sought and the water quality issue that is being investigated (e.g., to determine the level of the discharge's impact on beneficial uses or to determine compliance with waste discharge requirements.) The Regional Board should also identify a basis for suspecting that the recipient(s) of the order discharged, is discharging, or may discharge waste. This may be accomplished by including a brief statement regarding the person's current or former ownership or control over the location of the discharge or the person's control over the discharge itself. If the existence of a discharge is in question, the statement should also identify a basis for suspecting a discharge (e.g., a brief description of the condition downstream or down-gradient of the suspected discharge). These statements required by 13267(b) may, for example, be contained in a transmittal letter, in the 13267(b) requirements, or in the findings in an order. . Note these statements are not required by California Water Code section 13383, which applies only to discharges subject to regulation under the NPDES program.

Although they should be cited in Cleanup and Abatement Orders, Cease and Desist Orders, and section 13308 Time Schedule Orders, it is important to note that California Water Code sections 13267 and 13383 are not strictly enforcement statutes. RWQCBs should routinely cite those sections as authority whenever asking for technical or monitoring reports. California Water Code section 13267 should also be cited in all non-NPDES WDRs, waivers and certifications as authority for monitoring and reporting requirements. California Water Code section 13383 should be cited in all NPDES permits.

4. Cleanup and Abatement Orders (CAOs)

Cleanup and Abatement Orders (CAOs) are adopted pursuant to California Water Code section 13304. CAOs may be issued to any person who has discharged or discharges waste into the waters of this state in violation of any waste discharge requirement or other order or prohibition issued by a regional board or the state board, or who has caused or permitted, causes or permits, or threatens to cause or permit any waste to be discharged or deposited where it is, or probably will be, discharged into the waters of the state and creates, or threatens to create, a condition of pollution or nuisance (discharger). The CAO requires the discharger to clean up the waste or abate the effects of the waste, or, in the case of threatened pollution or nuisance, take other necessary remedial action, including, but not limited to, overseeing cleanup and abatement efforts.

RWQCBs should keep an accurate record of staff oversight costs for CAOs, because dischargers are liable for such costs. When a CAO specifies that staff costs are to be recovered from the

discharger, failure to pay invoiced amounts for staff costs is a violation of the CAO that is subject to an ACL.

RWQCBs shall comply with SWRCB Resolution No. 92-49, "Policies And Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304", in issuing CAOs. CAOs should require discharger(s) to clean up the pollution to background levels or the best water quality which is reasonable if background levels of water quality cannot be restored in accordance with Resolution No. 92-49. At a minimum, cleanup levels must be sufficiently stringent to fully support beneficial uses, unless the RWQCB allows a containment zone. In the interim, and if restoration of background water quality cannot be achieved, the CAO should require the discharger(s) to abate the effects of the discharge. Abatement activities may include the provision of alternate water supplies. CAOs should name all dischargers for whom there is sufficient evidence of responsibility as set forth in California Water Code section 13304.

CAOs that require submission of technical and monitoring reports should always state that the reports are required pursuant to California Water Code section 13267. CAOs shall contain language describing likely enforcement options available for non-compliance and should specify that the RWQCB reserves its right to take any enforcement action authorized by law. Such language shall include appropriate California Water Code citations. Violations of CAOs should trigger further enforcement in the form of an ACL, a Time Schedule Order (TSO) under California Water Code section 13308, or referral to the Attorney General for injunctive relief or monetary remedies.

5. Section 13300 Time Schedule Orders (TSOs)

Pursuant to California Water Code section 13300, the RWQCB can require the discharger to submit a time schedule which sets forth the actions that the discharger will take to address actual or threatened discharges of waste in violation of requirements. TSOs that require submission of technical and monitoring reports should state that the reports are required pursuant to California Water Code section 13267.

6. Section 13308 Time Schedule Orders (13308 TSOs)

California Water Code section 13308 authorizes the RWQCB to issue a Section 13308 Time Schedule Order (13308 TSO) which prescribes a civil penalty if compliance is not achieved in accordance with the time schedule. The RWQCB may issue a 13308 TSO if there is a threatened or continuing violation of a cleanup and abatement order, cease and desist order, or any requirement issued under California Water Code sections 13267 or 13383. The penalty must be set based on an amount reasonably necessary to achieve compliance and may not contain any amount intended to punish or redress previous violations. Therefore, the 13308 TSO should contain findings explaining how the penalty amount will induce compliance without imposing punishment. For example, it could include a calculation of how much money the discharger is saving each day by delaying compliance. The 13308 TSO provides the RWQCBs with their primary mechanism for motivating compliance, and if necessary, assessing monetary penalties against federal facilities.

If the discharger fails to comply with the 13308 time schedule, the penalty is imposed when the RWQCB Executive Officer issues a complaint for Administrative Civil Liability. If the amount of proposed liability in the Complaint is less than the amount specified in the 13308 Order, the

RWQCB is required by California Water Code 13308(c) to include specific findings setting forth the reasons for its action based on California Water Code section 13327. The penalty may not exceed $10,000 for each day in which the violation of the 13308 TSO occurs.

7. Cease And Desist Orders (CDOs)

Cease and Desist Orders (CDOs) are adopted pursuant to California Water Code sections 13301-13303. CDOs may be issued to dischargers violating or threatening to violate WDRs or prohibitions prescribed by the RWQCB or the SWRCB. CDOs are often issued to dischargers with chronic non-compliance problems. These problems are rarely amenable to a short-term solution. Often, compliance involves extensive capital improvements or operational changes. The CDO will usually contain a compliance schedule, including interim deadlines (if appropriate), interim effluent limits (if appropriate), and a final compliance date. CDOs may also include restrictions on additional service connections to community sewer systems and combined stormwater/sewer systems.

Section 4477 of the Government Code prohibits all state agencies from entering into contracts of $5,000 or more for the purchase of supplies, equipment, or services from any nongovernmental entity who is the subject of a CDO which is no longer under review and which was issued for violation of WDRs or which has been finally determined to be in violation of federal laws relating to air or water pollution. The SWRCB provides the list of such violators to other state agencies and publishes the list on the internet at http://www.swrcb.ca.gov.

CDOs that require submission of technical and monitoring reports should state that the reports are required pursuant to California Water Code section 13267. CDOs shall contain language describing likely enforcement options available for non-compliance and specify that the RWQCB reserves its right to take any further enforcement action authorized by law. Such language shall include appropriate California Water Code citations. Violations of CDOs should trigger further enforcement in the form of an ACL, 13308 Order or referral to the Attorney General for injunctive relief or monetary remedies.

8. Modification Or Rescission Of Waste Discharge Requirements

In accordance with the provisions of the California Water Code, the RWQCB may modify or rescind WDRs in response to violations. Depending on the circumstances of the case, rescission of WDRs may be appropriate for failure to pay fees, penalties or liabilities; discharges that adversely affect beneficial uses of the waters of the state; and violation of the SWRCB General WDRs for discharge of bio-solids due to violation of the Background Cumulative Adjusted Loading Rate. Rescission of WDRs generally is not an appropriate enforcement response where the discharger is unable to prevent the discharge, as in the case of a publicly owned treatment works (POTW).

9. Administrative Civil Liability (ACL)

ACL means monetary assessments imposed by a RWQCB or the SWRCB. The California Water Code and the Health and Safety Code authorize ACLs in several circumstances which are

summarized in Table IV-1[5]. Staff working on ACLs should consult the appropriate section of the Code to review the entire text.

Table IV-1. Summary of Relevant California Water Code and Health and Safety Code Authority for Imposing Administrative Civil Liability Pursuant to this Policy.

STATUTE	COVERAGE
§ 13261 (California Water Code)	Up to $1,000 per day for failure to furnish reports of waste discharge or failure to pay annual program fees. ($5,000 per day for non-NPDES discharges if hazardous waste is involved and there is a willful violation.)
§ 13265 (California Water Code)	Up to $1,000 per day for discharging without a permit. ($5,000 per day for non-NPDES discharges if hazardous waste is involved and violation is due to negligence.)
§ 13268 (California Water Code)	Up to $1,000 per day for failing or refusing to furnish technical or monitoring reports or falsifying information therein. (Up to $5,000 per day for non-NPDES discharges if hazardous waste is involved and there is a knowing violation.)
§ 13271 (California Water Code)	Up to $20,000 for failing to notify the Office of Emergency Services (OES) of a discharge of hazardous substances that exceeds the reportable quantity or more than 1000 gallons of sewage.
§ 13272 (California Water Code)(Limitation: Does not apply to spills of oil into marine waters as defined in Government Code §8670.3(f).)	Not less than $500 and not more than $5000 per day for each day of failure to notify OES of a discharge of any oil or product in or on the waters of the state.
§ 13308 (California Water Code)	Up to $10,000 per day for violations of time schedules. Amount to be prescribed when time schedule is established.

[5] Sections 13627.1, 13627.2, 13627.3 and 13627.4 of the Water Code and section 25284.4 of the Health and Safety Code authorize the SWRCB to impose administrative civil liability on wastewater treatment plant operators and underground storage tank testers, respectively. This policy does not apply to, and is not intended to limit in any way, the SWRCB's imposition of any disciplinary action, including administrative civil liability, on these individuals pursuant to this authority, except that the types of enforcement actions discussed in subpart V. B. shall be considered.

§ 13350 (California Water Code)	• Up to $10 per gallon of waste discharged, or • Up to $5000 per day of violation. The Regional Board is required to make a specific finding if it imposes civil liability in an amount less than $100 per day of violation if there is no discharge, or less than $500 per day of violation if there is a discharge and a CAO is issued.
§ 13385 (a) (California Water Code)	For NPDES permit program violations or discharges to surface water: Up to $10,000 per day of violation plus an additional liability of $10 per gallon for each gallon over 1,000 gallons where there is a discharge that is not cleaned up. A "discharge" as used in this section is defined as any discharge from a point source to navigable waters of the United States, any introduction of pollutants into a POTW, or any use or disposal of sewage sludge.
§ 13385 (h) and (i) (California Water Code)	• 13385 (h) (1) … Mandatory minimum penalties of three thousand dollars ($3,000) shall be assessed for the first serious violation as defined by statute and each additional serious violation in any period of six consecutive months, except that the SWRCB or RWQCB may elect to require the discharger to spend an amount equal to the penalty for the first serious violation on a supplemental environmental project or to develop a pollution prevention plan. • 13385 (i) Mandatory minimum penalties of three thousand dollars ($3,000) shall be assessed for each violation whenever the person does any of the following four or more times in any period of six consecutive months, except that the requirement to assess the mandatory minimum penalty shall not be applicable to the first three violations: (1) Exceeds a waste discharge requirement effluent limitation. (2) Fails to file a report pursuant to Section 13260. (3) Files an incomplete report pursuant to Section 13260. (4) Exceeds a toxicity discharge limitation contained in the applicable waste discharge requirements where the waste discharge requirements do not contain pollutant-specific effluent limitations for toxic pollutants.

§ 13399.33 (California Water Code)	• Not less than $5,000 per year or fraction thereof for failure to submit required notice of intent for coverage under stormwater permit. • Not less than $1,000 per year or fraction thereof for failure to submit notices on non-applicability, annual reports or construction certification as required by stormwater program.

a) ACL Complaint

California Water Code sections 13323-13327 describe the process to be used to assess ACLs. The California Water Code authorizes RWQCB Executive Officers to issue an ACL Complaint. California Water Code section 13261(b)(1) authorizes both the RWQCB Board Executive Officers and the State Board Executive Director to issue an ACL complaint for failing to furnish a report of waste discharge or pay a waste discharge requirement fee. The ACL Complaint describes the violation and provision of law authorizing imposition of the civil liability, proposes a specific civil liability, and informs the recipient that a public hearing will be held within 60 days after the Complaint is served. Section VII of this policy provides specific instructions for staff to use when developing and documenting a recommendation for the amount of the assessment. It is the policy of the SWRCB that a public comment period should be provided prior to the settlement of any ACL, including mandatory minimum penalties. The SWRCB or RWQCB should use appropriate methods to notify the public of the proposed action. Appropriate methods include, but are not limited to, posting notices on the internet, mailing and/or e-mailing documents to all known interested parties and publishing notices in newspapers. ACLs issued under section 13385 for violations of the CWA must allow a 30-day public comment period and public notice must include publishing a notice in a newspaper of general circulation for any proposed settlement of the ACL.

Upon receipt of an ACL Complaint, the discharger(s) may waive its right to a public hearing and pay the liability; negotiate a settlement (memorialized in the form of an amended complaint); or appear at the RWQCB or SWRCB hearing to dispute the Complaint. If the discharger waives its right to a public hearing and pays the liability, a third party may still comment on the Complaint at any time during the public comment period. Following review of the comments, the Executive Officer may withdraw the ACL complaint. An ACL Complaint may be redrafted and issued as appropriate. In cases where a public hearing before the RWQCB or SWRCB is not held, summary information regarding the final disposition of the Complaint should be included in the SWRCB or RWQCB Agenda.

If the discharger does not waive the right to a public hearing, California Water Code section 13233(b) requires that a public hearing be held within 60 days of the issuance of the complaint. The discharger may agree in writing that the hearing can be held more than 60 days after the issuance of the complaint. The hearing shall be before a panel of the RWQCB or before the RWQCB or SWRCB. Following the hearing the RWQCB or SWRCB will consider whether to affirm, modify or reject the liability. If the RWQCB or SWRCB adopts an ACL Order, it may be for an amount that is greater or less than the amount proposed in the complaint but may not exceed the maximum statutory liability. If the Executive Officer decides to dismiss the liability prior to the hearing, the Executive Officer must withdraw the Complaint.

b) Suspended Liability

The RWQCB or SWRCB may, by various means, allow a portion of the liability to be satisfied through the successful completion of a Supplemental Environmental Project (SEP) and/or a Compliance Project (CP). The remaining portion of the liability shall be paid to the State Cleanup and Abatement Account or other fund or account as authorized by statute. The specific procedures for suspending liability for SEPs and CPs are discussed in greater detail in Sections IX and X of this Policy.

c) Staff Costs

The portion of the ACL amount that is intended to recover staff costs should always be paid to the State Cleanup and Abatement Account or other fund or account as authorized by statute. Staff costs are discussed in greater detail in Section VII of this Policy.

d) ACL Order

ACL Orders are final upon adoption and cannot be reconsidered by the RWQCB. ACL Orders can only be modified by the SWRCB pursuant to California Water Code section 13320 or in superior court if a petition for writ of mandate was properly filed in accordance with California Water Code section 13330. All cash payments to the SWRCB or RWQCBs, shall be paid to the State Cleanup and Abatement Account or other fund or account as authorized by statute.

10. Referrals To Attorney General, District Attorney, United States (U.S.) Attorney or City Attorney

The RWQCB or SWRCB can refer violations to the state Attorney General for civil enforcement actions. The RWQCB or SWRCB can also request the appropriate county District Attorney or City Attorney seek criminal prosecution. A superior court may be requested to impose civil or criminal penalties. In some cases (e.g., when the District Attorney or Attorney General is unable or unwilling to accept a case), the RWQCB may find it appropriate to request the USEPA's criminal investigation division or the U.S. Attorney's Office to review potential violations of federal environmental statutes, including but not limited to the CWA, the Endangered Species Act, the Migratory Bird Treaty Act, or the Resource Conservation and Recovery Act.

a) Attorney General

At the request of the RWQCB or SWRCB, the Attorney General can seek judicial civil liabilities on behalf of the RWQCB or SWRCB for California Water Code violations, essentially the same ones for which the RWQCB or SWRCB can impose ACLs. Maximum per-day or per-gallon civil monetary remedies are two to ten times higher when imposed by the court instead of the RWQCB. The Attorney General can also seek injunctive relief in the form of a restraining order, preliminary injunction, or permanent injunction pursuant to California Water Code sections 13262, 13264, 13304, 13331, 13340 and 13386. Injunctive relief may be appropriate in emergency situations, or where a discharger has ignored enforcement orders or does not have the ability to pay a large ACL.

For civil assessments, referrals to the Attorney General should be reserved for cases where the violation merits a significant enforcement response but where an ACL would be inappropriate or ineffective. For example, when a major oil spill occurs, several state agencies can seek civil monetary remedies under different state laws; a single civil action by the Attorney General may be more efficient than numerous individual agency actions. A violation (or series of violations) with major public health or water quality impacts should be considered for referral in order to maximize the monetary assessment because of its effect as a deterrent. Referral for recovery of natural resources damages under common law theories, such as nuisance, may also be appropriate.

b) District Attorney, City Attorney, USEPA or U.S. Attorney

District Attorneys, City Attorneys, USEPA, or U.S. Attorneys may seek civil or criminal penalties under their own authority for some of the same violations the RWQCB pursues. A request by the RWQCB is not required. The decision to file a criminal action and what charges to bring is within the sole discretion of the prosecutor who acts on behalf of the people of the state in general. A RWQCB can request prosecution or investigation and should cooperate with a prosecutor but the criminal action is not controlled by, or the responsibility of, the RWQCB. Staff should always request that any settlement by the District Attorney require any actions that are necessary to prevent recurrence of a spill and/or to mitigate damage to the environment and include recovery of staff costs.

A major area where District Attorney involvement should be considered is where there is suspected criminal action related to releases of hazardous substances or toxic materials. A request for District Attorney involvement would support the local agency or another state agency that is taking the lead (e.g., county health department, city fire department, California Department of Fish and Game or the California Department of Toxic Substances Control). Many District Attorney offices have created task forces specifically staffed and equipped to investigate environmental crimes including water pollution. These task forces may request RWQCB support which should be provided within available resources. District Attorneys also have the resources to carry out investigations that may be beyond the expertise of RWQCB staff. For example, a District Attorney's investigator is skilled at interviewing witnesses and collecting evidence. Such assistance can help a RWQCB determine if enforcement action is required and help with developing the evidence needed to prove the basis for enforcement.

In addition to the criminal sanctions and civil fines, the District Attorney often pursues injunctive actions to prevent unfair business advantage. The law provides that one business may not gain unfair advantage over its competitors by using prohibited tactics. A business that fails to comply with its WDRs or an enforcement order competes unfairly with other businesses that obey the law.

In cases where there is a serious violation of the CWA and additional investigatory resources are needed, the USEPA or U.S. Attorney may be contacted. Civil matters should be referred to the USEPA, not directly to the U.S. Attorney

Investigations by prosecutors are confidential and are generally not subject to Public Records Act disclosure. It is essential that staff working with the prosecutor or prosecutor's investigators maintain this confidentiality.

c) Civil versus Criminal Actions

Enforcement actions taken by the RWQCB are administrative or civil actions. In cases where there is reason to believe that specific individuals or entities have engaged in criminal conduct, the RWQCB may refer the case to the District Attorney, City Attorney, Attorney General, USEPA's criminal investigation division or the U.S. Attorney. Under criminal law, individual persons, as well as responsible parties in public agencies and business entities, may be subject to fines or imprisonment.

While criminal statutes differ, most require some type of intent or knowing behavior on the part of the violator. This intent may be described as knowing, reckless, or willful. In addition to the required intent, criminal offenses usually consist of a number of elements, each one of which must be proven. Determining whether the required degree of intent and each of the elements exists often involves a complex analysis. If a potential environmental criminal matter comes to the attention of staff, staff should inform RWQCB management and the RWQCB's attorney.

D. Petitions of Enforcement Actions

Persons affected by most formal enforcement actions or failures to act by a RWQCB may file petitions with the SWRCB for review of such actions or failures to act. The petition must be received by the SWRCB within 30 days of the RWQCB action. A petition on the RWQCB's failure to act must be filed within 30 days of the date the RWQCB refuses to act or within 60 days after a request has been made to the RWQCB to act. Actions taken by the Executive Officer of the RWQCB pursuant to authority delegated by the RWQCB (e.g., cleanup and abatement orders) are considered actions by the Board and are also subject to the 30-day time limit. In addition, significant enforcement actions by a RWQCB Executive Officer may be reviewed by the RWQCB at the request of the discharger. When a discharger has unsuccessfully petitioned the RWQCB and subsequently petitions the SWRCB for review, the petition to the SWRCB must be filed within 30 days of the Executive Officer's action. The SWRCB may, at any time and on its own motion, review most actions or failures to act by a RWQCB. When a petition is filed with the SWRCB, the time for payment of fees, liabilities or penalties that are the subject of the petition is extended during the SWRCB review of the petition.

V. SPECIFIC RECOMMENDED ENFORCEMENT

It is the intent of the SWRCB that the following specific instances of non-compliance receive consistent enforcement responses from the SWRCB and all nine RWQCBs. These specific recommendations should be considered when senior staff and management establish the relative priority for enforcement pursuant to section I.E. of this Policy. Decisions by the SWRCB and RWQCB to deviate from these specific recommendations should be based on extenuating circumstances that are documented in the discharger/facility record (e.g., file, databases, other records).

A. Dischargers Knowingly Falsifying or Knowingly Withholding Information that is Required to be Submitted to State Regulatory Agencies

The foundation of the State's regulatory program relies on dischargers accurately, and honestly reporting information required by the Boards. This required information includes, but is not limited to: reports of waste discharge; self monitoring reports including influent and effluent quality; flow data; surface and groundwater data; spills of untreated or partially treated wastewater; and technical reports. Knowingly falsifying or knowingly withholding such information that would indicate violations of requirements contained in board orders, plans and policies erodes the State's regulatory program and places the health of the public and the environment at risk. The SWRCB views these violations as very important and strongly encourages the RWQCBs to respond to any instance of falsification or withholding of required information in accordance with this policy.

The discharger is responsible for compliance with orders and reporting of required information, including violations, to the SWRCB or RWQCB. The discharger is also responsible for ensuring that any employees, agents, or contractors acting on its behalf report required information truthfully, accurately and on time.

Enforcement of statutes pertaining to falsification or withholding of required information should be a high priority and considered as follows:

(a) Initiate investigation of all instances of suspected falsification or withholding of water quality data within thirty days of becoming aware of the allegations. If the results of preliminary investigation suggest a possibility of criminal wrongdoing by the discharger, the SWRCB and RWQCB staff shall consult with management and the RWQCB's counsel to consider informing the appropriate criminal investigative agency.

(b) Protect the confidentiality of all staff investigations of potential instances of knowingly falsifying or withholding required information. The RWQCBs shall protect the complainant's personal information such as name, address, phone numbers and employment data by providing a secure location for files about matters related to ongoing criminal investigations or licensing (e.g., treatment plant operator certification). The information in these files shall not be released to the public without consulting with the RWQCB attorney.

(c) Forward all cases where the investigation supports the allegation of falsification or intentional withholding of water quality data to the District Attorney, Circuit Prosecutor, Attorney General or the U.S. Attorney for criminal investigation.

(d) The SWRCB and the RWQCBs should pursue administrative actions against the discharger including assessment of civil liabilities and consideration of rescission of WDRs if there is sufficient evidence of falsification or intentional or negligent withholding of required information and the criminal investigators and/or prosecutors agree that the administrative and civil process will not interfere with, or jeopardize, the criminal investigation.

(e) The RWQCB should implement an intensive inspection schedule (e.g., bi-monthly inspections for a period of six months) for any facility where the investigation supports the allegation of falsification or withholding of water quality data. Inspections should involve thorough review of facility water quality records, procedures and processes, logbooks, and sampling of effluent at regular intervals. Requesting the assistance of the

District Attorney, Attorney General, or U.S. Attorney should be considered in complex cases.

B. Certified Wastewater Treatment Plant Operators and Licensed Underground Storage Tank Testers Knowingly Falsifying or Knowingly Withholding Information that is Required to be Submitted to State Regulatory Agencies

1. The SWRCB's Office of Operator Certification shall promptly consider suspending or revoking the Operator Certificate, or imposing administrative civil liability, on any operator who knowingly commits any of the following acts if doing so impacts or threatens to impact water quality:

(a) knowingly falsifies required information submitted to the SWRCB or RWQCB;
(b) withholds required information from the SWRCB or RWQCB;
(c) knowingly submits false information on an application for operator certification; or
(d) through threats, coercion, or intimidation forces others to falsify or withhold required information from the SWRCB or RWQCB. The Office of Operator Certification shall report to the SWRCB at a public meeting its decisions where formal disciplinary action has been taken against any operator for such action(s).

2. The SWRCB's Office of Tank Tester Licensing shall promptly consider suspension or revocation, or the imposition of administrative civil liability, of any licensed tank tester who knowingly commits any of the following acts if doing so impacts or threatens to impact water quality:

(a) knowingly falsifies required information submitted to the SWRCB;
(b) withholds required information from the SWRCB;
(c) knowingly submits false information on an application for license, or
(d) through threats, coercion, or intimidation forces others to falsify or withhold required information from the SWRCB.

C. Failure to Submit Reports and Submittal of Inadequate Reports

As stated above, the State's water quality regulatory program relies on dischargers to report information specified in the WDR or in another enforceable order. If the discharger fails to submit a report, or submits a report that is inadequate (i.e., so deficient or incomplete as to impede the review of the status of compliance) the RWQCB should issue a notice of violation to the discharger. The notice of violation must not include language that excuses the violation or that modifies the original compliance date. If the discharger does not submit an adequate report within 60 days of the original compliance date, the RWQCB should issue an ACL unless the delay is beyond the reasonable control of the discharger.

D. Mandatory Minimum Penalties for NPDES Violations

Mandatory penalty provisions are required by California Water Code section 13385(h) and (i) for specified violations of NPDES permits. For violations that are subject to those mandatory minimum penalties, the RWQCB must either assess an ACL for the mandatory minimum penalty

or assess an ACL for a greater amount. California Water Code section 13385(h) requires that a mandatory minimum penalty of $3,000 be assessed by the RWQCB for each serious violation. A serious violation is any waste discharge that exceeds the effluent limitation for a Group I pollutant by 40 percent or more, or a Group II pollutant by 20 percent or more. (See Tables III-1 and III-2). Section III.A.(a) of this policy addresses situations where the effluent limit for a pollutant is less than or equal to the quantitation limit. As an alternative to assessing $3,000 for the first serious violation in a six-month period, the RWQCB may require the discharger to spend an amount equal to the penalty for a SEP or to develop a pollution prevention plan (PPP). Exceptions to the imposition of mandatory minimum penalties are provided for violations that are caused by acts of war or by an unanticipated, grave natural disaster or other natural phenomenon of an exceptional, inevitable, and irresistible character or by an intentional act of a third party. Such exceptions do not apply if the violation could have been prevented or avoided by the exercise of due care or foresight by the discharger. Such exceptions are fact specific and should be evaluated on a case by case basis.
If the RWQCB allows the discharger to prepare a PPP pursuant to California Water Code section 13263.3 or an SEP in lieu of paying $3,000 for the first violation, the RWQCB must wait until the discharger has not had any serious violations for six months before it can allow the discharger to prepare an SEP or PPP in lieu of the mandatory penalty for additional serious violations. Any SEP or PPP allowed pursuant to California Water Code section 13263.3 should only consist of measures that go above and beyond the existing obligation of the discharger.

The RWQCB is required by California Water Code section 13385(i) to assess mandatory minimum penalties of $3,000 per non-serious violation, not counting the first three violations. A non-serious violation occurs if the discharger does any of the following four or more times in any period of six consecutive months:

(a) exceeds WDR effluent limitations;
(b) fails to file a report of waste discharge pursuant to California Water Code section 13260;
(c) files an incomplete report of waste discharge pursuant to California Water Code section 13260; or
(d) exceeds a toxicity discharge limitation where the WDRs do not contain pollutant-specific effluent limitations for toxic pollutants.

The six-month time period is calculated as a “rolling” 180 days.

The intent of these portions of the California Water Code is to assist in bringing the State’s permitted facilities into compliance with WDRs. RWQCBs should issue mandatory minimum penalties within seven months of the time that the violations qualify as mandatory minimum penalty violations, or sooner if the total mandatory penalty amount is $30,000 or more. This will encourage the discharger to correct the violation in a timely manner.

A single operational upset which leads to simultaneous violations of one or more pollutant parameters shall be treated as a single violation. EPA defines “single operational upset” as “an exceptional incident which causes simultaneous, unintentional, unknowing (not the result of a knowing act or omission), temporary noncompliance with more than one CWA effluent discharge pollutant parameter. Single operational upset does not include… noncompliance to the extent caused by improperly designed or inadequate treatment facilities” (“Issuance of Guidance Interpreting Single Operational Upset” Memorandum from the Associate Enforcement Counsel, Water Division, U.S.EPA, September 27, 1989.). The EPA Guidance further defines an

"exceptional" incident as a "non-routine malfunctioning of an otherwise generally compliant facility." Single operational upsets include such things as upset caused by a sudden violent storm, a bursting tank, or other exceptional event and may result in violations of multiple pollutant parameters. The discharger has the burden of demonstrating a single operational upset occurred. The RWQCB shall apply the above EPA Guidance in determining if a single operational upset occurred. A finding that a single operational upset has occurred is not a defense to liability, but may affect the number of violations.

California Water Code section 13385(j) includes several limited exceptions to the mandatory minimum penalty provisions. The primary exceptions are for discharges that are in compliance with a cease and desist order or time schedule order under narrowly specified conditions. California Water Code section 13385(k) provides an alternative to assessing mandatory minimum penalties against a POTW that serves a small community, "as defined by subdivision (b) of Section 79084". Under this alternative, the RWQCBs may require the POTW to spend an amount equivalent to the mandatory minimum penalty toward a compliance project that is designed to correct the violations.

California Water Code section 79084 defines "small community" as a municipality with a population of 10,000 persons or less, a rural county, or a reasonably isolated and divisible segment of a larger municipality where the population of the segment is 10,000 persons or less, with a financial hardship as determined by the board.

It is the policy of the SWRCB that "rural county" means a county classified by the Economic Research Service, United States Department of Agriculture (ERS, USDA) with a rural-urban continuum code of four through nine.

It is the policy of the SWRCB that "financial hardship" means that the median annual household income for the community is less than 80% of the California median annual household income. It is the policy of the SWRCB that "median annual household income" means the median annual household income of the community based on the most recent census data or a local survey approved by the SWRCB. If a community believes that the census data does not represent the community, and the community is not a Census Designated Place, a City or a Town, the community may apply to the SWRCB for designation as a "small community with a financial hardship". The application must include a map of community boundaries, a list of properties, the number of households and the number of people in the community. Additional information including information regarding income and/or property values of the community may be submitted in support of the application. If the application does not provide an adequate basis for the calculation of median household income, the SWRCB may require an independent income survey conducted in accordance with a pre-approved methodology. A subdivision of state government shall not be considered a small community with a financial hardship. The SWRCB will maintain a current list of designated small communities with a financial hardship.

The following counties qualify as rural counties with a financial hardship		
Alpine	Inyo	Plumas
Calaveras	Kings	Sierra
Colusa	Lake	Siskiyou
Del Norte	Lassen	Tehama
Glenn	Mariposa	Trinity

Humboldt	Mendocino	Tuolumne
Imperial	Modoc	
Based on 1990 Census Data		

E. Failure To Pay Annual Fees

California Water Code section 13260 requires that each person prescribed WDRs shall pay an annual fee, except confined animal feeding or holding operations, which have a one-time $2,000 fee and solid waste landfills, which are not subject to WDR fees pursuant to an exclusion in Public Resources Code section 48004(b). Failure to pay the fee when requested is a misdemeanor (and a priority violation) and may be subject to an ACL imposed by the RWQCB or SWRCB of up to $1,000 per day pursuant to California Water Code section 13261.

If the annual fee is not paid within 30 days of the due date on the original invoice, the SWRCB staff shall issue a Demand Letter for the annual fee which informs the recipient of the amount due and states that non-payment of the fee within 30 days could result in one or more of the following:

(a) an ACL imposed by the RWQCB not to exceed $1,000 per day;
(b) a civil liability imposed by the superior court not to exceed $5,000 per day;
(c) recission of existing WDRs; or
(d) prosecution as a misdemeanor.

If the fee is not paid within 30 days of the date of the Demand Letter, the SWRCB staff shall issue a Notice of Violation and an ACL Complaint should be issued by the RWQCB Executive Officer. The amount of an ACL for nonpayment of fees should reflect an escalation of liability if there is a past history of failure to pay fees. In addition to the ACL, the discharger remains responsible for payment of the annual fees.

F. Failure To Pay Administrative Civil Liabilities

The SWRCB should pursue collection of unpaid administrative civil liabilities. The California Water Code states that ACLs shall be paid within 30 days of the RWQCB's adoption of an ACL Order unless the petitioner files a petition for review under California Water Code section 13320. When a petition is filed with the SWRCB, payment is extended during the SWRCB review of the petition and shall be paid within 30 days of the SWRCB's decision on the petition unless the petitioner seeks judicial review pursuant to California Water Code section 13330. Payment of an ACL is also extended while a writ of mandate is pending before the superior court. If the petitioner fails to pay the liability and fails to seek judicial review within 30 days of the SWRCB action, the SWRCB may file for a judgment to collect the ACL pursuant to California Water Code section 13328. Application is made to the appropriate court in the county in which the liability was imposed, generally within 60 days of the failure to pay.

As an alternative to Section 13328, the SWRCB or RWQCB may pursue judicial collection for failure to pay an ACL imposed for CWA violations pursuant to California Water Code section 13385. After the time to file for judicial review has expired, the California Water Code provides that the Attorney General upon request must petition the appropriate court to collect the liability. The person failing to pay the liability on a timely basis is required to pay, in addition to that

penalty, interest, attorney's fees, cost for collection proceedings and a quarterly nonpayment fee for each quarter during which the failure to pay persists. The nonpayment fee is equal to 20 percent of the aggregate amount of the person's liability and the nonpayment fees unpaid at the beginning of each quarter.

G. Acute and Chronic Toxicity and Public Health

Where any violation can be shown to be the result of a discharger's failure to exercise normal care in handling, treating, or discharging waste, and that failure has resulted in acute or chronic toxicity to fish or wildlife and/or a public health threat, the SWRCB or RWQCB should consider assessing civil liability.

Acute toxicity is toxicity that is severe enough to cause mortality or extreme physiological disorder rapidly (typically within 48 or 96 hours). Chronic toxicity is the toxicity impact that lingers or continues for a relatively long period of time, often 1/10 of a lifespan or more. Chronic effects include, but are not limited to mortality, stunted growth, or reduced reproduction rates.

VI. SPECIAL CONSIDERATIONS

A. Violations at Federal Facilities

The CWA and the Resource Conservation and Recovery Act contain limited waivers of sovereign immunity. Due to sovereign immunity, the State cannot assess penalties or liabilities against federal agencies for past violations (i.e., no ACLs) under most circumstances. One significant exception is provided by the Federal Facilities Compliance Act of 1992 (42 USCA 6901 et seq), which allows the States to penalize federal agencies, under specified circumstances, for violations of state hazardous waste management requirements. In addition, under California Water Code section 13308, a RWQCB may seek an ACL, up to a maximum of $10,000 per day of violation, against federal facilities for any violation of a time schedule order. The time schedule order issued pursuant to Section 13308 prescribes a civil penalty that is based upon the amount necessary to achieve future compliance with an existing enforcement order. The RWQCB should take the action administratively, but if the federal government declines to pay, the RWQCB must refer the matter to the Attorney General's Office to file an action in state or federal court.

B. Integrated Enforcement

SWRCB and RWQCB staff should cooperate with other environmental regulatory agencies, where appropriate, to ensure that enforcement actions are coordinated. The aggregate enforcement authorities of the Boards and Departments of the California Environmental Protection Agency (Cal/EPA) and the Resources Agency should be coordinated to eliminate inconsistent and inappropriately duplicative efforts. Where appropriate and as resources allow, RWQCB staff should take the following steps to assist in integrated enforcement efforts:

(a) participate in multi-agency enforcement coordination;
(b) share enforcement information;
(c) participate in cross-training efforts;

(d) participate with other agencies in enforcement efforts focused on specific individuals or categories of discharges; and
(e) where other regulatory agencies have jurisdiction regarding site remediation, the RWQCB should inform and consult with those agencies to ensure that remedial activities will satisfy the aggregate requirements for all.

1. Solid Waste Facilities

Where a RWQCB has issued, or is likely to issue an enforcement action to a solid waste facility that is also under the jurisdiction of the Integrated Waste Management Board, the RWQCB must comply with California Public Resources Code sections 45016, 45019 and 45020.

2. Hazardous Waste Facilities

The role of the RWQCBs regarding enforcement at "offsite hazardous waste treatment, storage, or disposal activities and onsite activities which are required to have a Resource Conservation and Recovery Act (RCRA) Subtitle C permit" was prescribed by the 1995 Cal/EPA "Framework for the Implementation of Health and Safety Code Section 25204.6(b) (SB 1082)". The RWQCB issues WDRs and monitoring programs that are no less stringent than RCRA requirements. The Department of Toxic Substances Control incorporates those WDRs by reference into its permit and carries out all oversight responsibilities associated with hazardous waste facilities, including oversight of groundwater monitoring and other requirements in WDRs. The Department of Toxic Substances Control must coordinate enforcement actions for violation of the WDRs with the RWQCB before initiation of enforcement.

Under RCRA Subtitle C Authorization, corrective action is normally implemented pursuant to the authority of the Department of Toxic Substances Control. The Framework, however, identified over 60 hazardous waste facilities where the RWQCB acts as lead agency for corrective action oversight of existing releases. RWQCBs shall consult with the Department of Toxic Substances Control to ensure that corrective action at those facilities is at least RCRA equivalent.

3. Oil Spills

Responses to oil spills to inland waters that may impact fish and wildlife resources or to marine or estuarine waters should be coordinated with the Department of Fish and Game's Office of Oil Spill Prevention and Response (OSPR). Staff shall consult with the RWQCB management and the RWQCB attorney to determine appropriate action. Staff should assist in an investigation by providing documentation, sampling, etc. If the discharger has not prepared a spill prevention plan or the plan is not acceptable to the RWQCB, the RWQCB should request a technical report under California Water Code sections 13267 or 13383. Major oil spills, those in excess of 10,000 gallons, usually involve a number of governmental jurisdictions. Such spills should be brought to the RWQCB for consideration of referral to the Attorney General for recovery of civil liability and other remedies.

If formal enforcement actions are taken, they are usually enforced by either the county District Attorney under either the Fish and Game Code or Health and Safety Code, or by the RWQCB under the California Water Code. In general, if the District Attorney is interested in pursuing the case, the RWQCB should consult with the District Attorney before pursuing its own enforcement

action to avoid any potential double jeopardy issues. However, staff should always request that any settlement by the District Attorney include recovery of staff costs and require any actions that appear necessary to prevent recurrence of a spill and/or to mitigate damage to the environment. If a District Attorney is the enforcement lead, RWQCB staff should generally focus their efforts on cleanup and prevention of future spills.

4. Hazardous Waste Spills

Hazardous wastes are those meeting the criteria specified in Title 22, Division 4.5, Chapter 11, California Code of Regulations. RWQCB staff should coordinate enforcement actions involving hazardous waste spills with the California Department of Toxic Substances Control and/or any local or county hazardous waste program. The Department of Fish and Game should be consulted whenever pollution events may impact fish and wildlife resources. Spills constitute unlawful disposal of hazardous waste pursuant to the Health and Safety Code. RWQCB staff should consider referring spills of all but the smallest amounts to the appropriate District Attorney. In addition, the RWQCB should consider assessing an ACL unless the spill was very small or limited in impact. Due to the nature of the materials discharged, the RWQCB should consider assessing an ACL in an amount at or near the legal maximum. If the California Department of Toxic Substances Control is seeking penalties or damages through a referral to the Attorney General, the RWQCB should consider joining that action in lieu of assessing an ACL.

Large spills of hazardous waste or hazardous substances, 10,000 gallons or more, should be treated like large oil spills, and should be considered for referral to the Attorney General. If appropriate, RWQCB staff should coordinate with the District Attorney or U.S. Attorney to determine whether criminal prosecution is warranted. In addition, such spills may constitute the unlawful disposal of hazardous waste pursuant to the Hazardous Waste Control Act (Health and Safety Code section 25100 et seq.) and, in most cases, should be investigated in conjunction with the California Department of Toxic Substances Control.

C. Violations at Waste Water Treatment Facilities that are Operating at 80% or more of Design Capacity

In addition to any formal or informal response to a violation at a waste water treatment facilities that is operating at 80% or more of its permitted capacity, when appropriate, the RWQCB should require, pursuant to Water Code section 13300 or section 13301, a detailed time schedule of specific actions the discharger proposes to take in order to correct or prevent a violation of requirements.

VII. Monetary Assessments in Administrative Civil Liabilities (ACLs)

The following provisions apply to all ACLs except mandatory minimum penalties required pursuant to California Water Code sections 13385(h) and (i) and penalties pursuant to California Water Code section 13399.33. Mandatory minimum penalties are discussed in Section V.D. of this Policy.

The SWRCB or RWQCB must make several important decisions in specifying the conditions of an ACL. First, the Board must determine the amount of the liability considering the factors in

law. The factors that must be considered are included in the stepwise approach presented later in this section. Next, the Board must consider whether the discharger should be allowed to satisfy some or all of that monetary assessment by completing or funding one or more supplemental environmental projects (SEPs). SEPs are discussed in Section IX. Finally, when the underlying problem that caused the violation(s) has not been corrected, the Board may include provisions in the ACL to encourage future work by the discharger to address problems related to the violation. The Board does this by including an additional monetary assessment against the discharger that is based on the cost of returning to and/or maintaining compliance (i.e., the estimated cost of completing the specified Compliance Projects) This portion of the monetary assessment will be suspended pending the satisfactory completion of the specified Compliance Projects (CPs). CPs are discussed in greater detail in Section X.

The California Water Code requires that the determination of the amount of the liability include the consideration of a number of factors. Prior to issuing a complaint the RWQCB Executive Officer should consider each factor. This consideration shall be documented in the ACL Complaint or in a staff report. If the RWQCB issues an ACL Order, the order shall contain findings explaining the Board's consideration of the factors. The documentation of elements such as the economic benefit, staff costs and avoided costs are necessary for the appropriate distribution of the total liability.

The California Water Code lists a number of factors that must be taken into consideration when setting ACLs. California Water Code section 13327, governing ACL amounts for a wide variety of violations, states that:

> [The Board] shall take into consideration the nature, circumstance, extent, and gravity of the violation or violations, whether the discharge is susceptible to cleanup or abatement, the degree of toxicity of the discharge, and, with respect to the violator, the ability to pay, the effect on ability to continue in business, any voluntary cleanup efforts undertaken, any prior history of violations, the degree of culpability, economic benefit or savings, if any, resulting from the violation, and other matters as justice may require.

California Water Code section 13385(e), governing ACL amounts for violations subject to the CWA, requires consideration of different factors stating that:

> The regional board, the state board, or the superior court, as the case may be shall take into account the nature, circumstances, extent, and gravity of the violation or violations, whether the discharge is susceptible to cleanup or abatement, the degree of toxicity of the discharge, and, with respect to the violator, the ability to pay, the effect on its ability to continue its business, any voluntary cleanup efforts undertaken any prior history of violations, the degree of culpability, economic benefit or savings, if any, resulting from the violation, and other matters that justice may require. At a minimum, liability shall be assessed at a level that recovers the economic benefits, if any, derived from the acts that constitute the violation.

The California Water Code does not specify how these factors are to be weighed or combined when setting the actual dollar amount of an ACL. This section describes the procedure to be used by SWRCB and RWQCB staff to develop a recommendation for the amount of the monetary assessment in an ACL based on the facts of the case. The steps in the procedure are shown in Table VII-1. This procedure applies to ACLs issued under both California Water Code section 13327 and California Water Code section 13385(e). Staff should carefully document

each step in the ACL Complaint, ACL Order or the staff-report for the ACL. The manner in which the SWRCB or RWQCB considers these factors for any given situation is up to the discretion of the Board within the limits of statutory maximums and minimums described in Section VII.I.

Table VII-1. Procedure to set ACL amounts

Step	Procedure
A. Initial Liability	Set an initial liability based on the extent and severity of the violation and the sensitivity of the receiving water. An initial liability should also be calculated for non-discharge violations.
B. Beneficial Use Liability	If possible, estimate the dollar value of any impacts of the violation on beneficial uses of the affected waters.
C. Base Amount	The Base Amount is a single amount that is a result of combining the figures derived from the first 2 steps. For many ACLs, the base amount will simply be the initial liability from step A. because the calculation of the beneficial use liability may not be appropriate. The base amount reflects the extent and severity of the violation and its impact on beneficial uses.
D. Adjustment for discharger's conduct	Determine factors to adjust the Base Amount with respect to the conduct of the discharger's history of violations and other considerations. Apply these factors to the Base Amount from step C.
E. Adjustment for other factors	Determine whether any other factors should be taken into consideration when setting the ACL amount. If appropriate, adjust the figure from Step D to include these factors.
F. Economic Benefit	Estimate the economic benefit to the discharger. Economic benefit is any savings or monetary gain derived from the acts that constitute the violation. Add the economic benefit to the amount in step E.
G. Staff Costs	Estimate the SWRCB and RWQCB staff costs resulting from the violation. Add this cost to the figure determined from steps A through F.
H. Adjustment for ability to pay	If appropriate, increase or reduce the figure from Steps A through G with respect to the discharger's ability to pay and ability to continue in business.
I. Check against statutory limits	Check the figure from steps A through H against the statutory maximum and minimum limits.

A. Initial Liability

Set an Initial Liability based on factors related to the discharge - the nature, circumstances, extent, and gravity of the violation, the degree of toxicity of the discharge, and the susceptibility of the discharge to cleanup or abatement. This may include the consideration of information such as the pollutants contained in a discharge, the volume of the discharge, the sensitivity of the receiving water and its beneficial uses, threats to water quality and aquatic life, threats to human health and the volume of the receiving water relative to the discharge. The way that this amount is calculated will depend on the type of violation. For spills, effluent limitation violations, and similar violations, the initial water quality liability can be based on a per-gallon and/or per day charge.

For non-discharge violations such as late reports, failure to submit reports, and failure to pay fees, this initial water quality liability should be set considering the impact on the RWQCB's ability to effectively administer its water quality programs in addition to the above factors. These impacts include, but are not limited to, additional RWQCB staff costs beyond the

normally required effort and the potential consequences of delayed clean-up, coordination, mitigation and enforcement response by the RWQCB due to late or omitted reports. For late or missing reports, the initial water quality liability amount could also consider impacts to water quality caused by the delay or failure. Timely follow-up on these violations acts as a deterrent to the violator and others and supports those dischargers who readily commit the resources necessary to comply with similar requirements.

B. Beneficial Use Liability

Review the designated beneficial uses of the receiving water and determine whether the violation has resulted in any quantifiable impacts related to beneficial uses. Quantitative information may only be available for a limited number of impacts such as beach closure days, but where readily available the RWQCB should consider it.

C. Base Amount

The Base Amount is the Initial Liability, the Beneficial Use Liability or a combination of the Initial Liability and the Beneficial Use Liability. When it is possible to calculate the Beneficial Use Liability, the RWQCBs should assess the extent to which the Beneficial Use Liability represents the entire harm resulting from the violation. The RWQCBs may, at their discretion, find it appropriate to combine the amounts from Steps A and B in a way that reflects the significance of the impacts quantified in Step B relative to the total impacts of the violation.

The way that the Initial Liability and the Beneficial Use Liability should be combined will depend on how the violation harms the beneficial uses of the receiving waters and the extent to which this harm has been quantified. For example, a sewage spill will typically result in a wide variety of impacts, such as fish kills, degradation of wildlife habitat, and beach closures. For a sewage spill to the ocean in an urban area with high beach use, impacts on beach recreation may represent most of the harm resulting from the spill. If it is possible to estimate the value of the lost beach recreation in step B, it is appropriate to take this value and add it to some portion of the Initial Liability amount to reflect the total impact.

For a sewage spill contaminating a beach in a remote area, where beach use is relatively low, impacts on beach use may be less important than other impacts, such as degradation of wildlife habitat and harm to a pristine environment. In such a case, the combined liability (steps A and B) may be based more heavily on the Initial Liability, because the impacts quantified in step B may be less significant relative to the entire impacts of the violation.

D. Conduct of the Discharger

The Base Amount from Step C must then be adjusted to reflect the conduct of the discharger. This adjustment reflects factors such as the degree of culpability of the discharger, any voluntary cleanup efforts undertaken and the discharger's history of violations. This adjustment can be made by determining values for the four factors in Table VII-2, and using them to determine a conduct factor that is applied to the Base Amount. The RWQCB may apply the various conduct factors using percentages. A percentage less than 100 percent may be appropriate for a discharger that made exemplary efforts such as voluntary cleanup. Percentages greater than 100 percent are appropriate for dischargers that demonstrated less than exemplary behavior such as delaying notification of a spill. Large multiplier percentages 200 - 500 percent may be

appropriate for cases involving falsification of data or other deliberate acts or in cases where the discharger disregarded warnings from Board staff or other parties about the threat of discharge.

This calculation is:

ACL = Base Amount × CF1 × CF2 × CF3 × CF4

Note: Conduct factors should be expressed as a decimal (e.g. 90% = .9).

Table VII-2. Conduct Factors to adjust ACLs

Factor	Adjustment for
Culpability Factor (CF1)	Discharger's degree of culpability regarding the discharge. Higher ACL amounts should be set for intentional or negligent violations than for accidental, non-negligent violations. A first step is to identify any performance standards (or, in their absence, prevailing industry practices) in the context of the violation. The test is what a reasonable and prudent person would have done or not done under similar circumstances.
Notification Factor (CF2)	Extent to which the discharger reported the violation as required by law or regulation.
Cleanup and Cooperation Factor (CF3)	Extent to which the discharger cooperated in returning to compliance and correcting environmental damage, including any voluntary cleanup efforts undertaken.
History of violations factor (CF4)	Prior history of violations

In considering the discharger's prior history of violations careful consideration should be given to whether or not past violations that were not subject to previous ACLs should be included in the current ACL. Where there is a pattern of violations or the violation was intentional, the assessed liability could be substantially affected when considerations such as aggregate impacts and economic benefit are included.

E. Other Factors

If the RWQCB believes that the amount determined using Steps A through D is inappropriate, the amount may be adjusted. Examples of circumstances warranting an adjustment under this step are:

(a) The discharger publicized the violation and the subsequent enforcement actions in a way that encourages others to violate water quality laws and regulations.
(b) The threat to human health or the environment was so egregious that the preceding factors did not, in the opinion of the RWQCB, adequately address this violation.
(c) The discharger has provided, or RWQCB staff has identified other pertinent information not previously considered that indicates a higher or lower amount is justified.

(d) A consideration of issues of environmental justice indicates that the amount would have a disproportionate impact on a particular socioeconomic group.

If such an adjustment is made, the reasons for the extent and direction of the adjustment must be noted in the administrative record.

F. Economic Benefit

Economic benefit is any savings or monetary gain derived from the acts that constitute the violation. In cases when the violation occurred through no fault of the discharger and it was demonstrated that the discharger exercised due care, there may be no economic benefit. In cases where the violation occurred because the discharger postponed improvements to a treatment system, failed to implement adequate control measures (such as Best Management Practices (BMPs)) or did not take other measures needed to prevent the violations, economic benefit should be estimated as follows:

(a) Determine those actions required by an enforcement order or an approved facility plan, or that were necessary in the exercise of reasonable care, to prevent the violation. Needed actions may have been capital improvements to the discharger's treatment system, implementation of adequate BMPs or the introduction of procedures to improve management of the treatment system.

(b) Determine when and/or how often these actions should have been taken as specified in the order or approved facility plan, or as necessary to exercise reasonable care, in order to prevent the violation.

(c) Estimate the type and cost of these actions. There are two types of costs that should be considered, delayed costs and avoided costs. Delayed costs include expenditures that should have been made sooner (e.g. for capital improvements such as plant upgrades and collection system improvements, training, development of procedures and practices, etc) but that the discharger is still obligated to perform. Avoided costs include expenditures for equipment or services that the discharger should have incurred to avoid the incident of non-compliance, but that are no longer required. Avoided costs also include ongoing costs such as needed additional staffing from the time determined under step "b" to the present, treatment or disposal costs for waste that cannot be cleaned up, and the cost of effective erosion control measures that were not implemented as required.

(d) Calculate the present value of the economic benefit. The economic benefit is equal to the present value of the avoided costs plus the "interest" on the delayed costs. This calculation reflects the fact that the discharger has had the use of the money that should have been used to avoid the instance of non-compliance. This calculation should be done using the USEPA's BEN [6]computer program (the most recent version is accessible at

[6] USEPA developed the BEN model to calculate the economic benefit a violator derives from delaying and/or avoiding compliance with environmental statutes. Funds not spent on environmental compliance are available for other profit-making activities or, alternatively, a defendant avoids the costs associated with obtaining additional funds for environmental compliance. BEN calculates the economic benefits gained from delaying and avoiding required environmental expenditures such as capital investments, one-time non-depreciable expenditures, and annual operation and maintenance costs.

http://www.swrcb.ca.gov) unless the SWRCB or RWQCB determines, or the discharger demonstrates to the satisfaction of the SWRCB or RWQCB, that, based on case-specific factors, an alternate method is more appropriate for a particular situation.

(e) Determine whether the discharger has gained any other economic benefits. These may include income from continuing in production when equipment used to treat discharges should have been shut down for repair or replacement.

(f) The RWQCBs should not adjust the economic benefit for expenditures by the discharger to abate the effects of the discharge.

The economic benefit shall be added to the adjusted base amount calculated from the previous steps unless the RWQCB determines that it is not appropriate. The ACLC or ACL Order shall include a finding that supports the determination.

G. Staff Costs

Staff costs may be one of the "other factors that justice may require", and should be estimated when setting an ACL. Staff should estimate the cost that investigation of the violation and preparation of the enforcement action(s) has imposed on government agencies. This can include all activities of a progressive enforcement response that results in the ACL. Staff costs should be added to the amount calculated from the previous steps.

H. Ability to Pay and Ability to Continue in Business

The procedure in Steps A through G gives an amount that is appropriate to the extent and severity of the violation, economic benefit and the conduct of the discharger. This amount may be reduced or increased based on the discharger's ability to pay.

The ability of a discharger to pay an ACL is limited by its revenues and assets. In most cases, it is in the public interest for the discharger to continue in business and bring operations into compliance. If there is strong evidence that an ACL would result in widespread hardship to the service population or undue hardship to the discharger, it may be reduced on the grounds of ability to pay. The RWQCBs may also consider increasing an ACL to assure that the enforcement action would have a similar deterrent effect for a business or public agency that has a greater ability to pay.

BEN uses standard financial cash flow and net present value analysis techniques based on generally accepted financial principles. First, BEN calculates the costs of complying on time and of complying late adjusted for inflation and tax deductibility. To compare the on time and delayed compliance costs in a common measure, BEN calculates the present value of both streams of costs, or "cash flows," as of the date of initial noncompliance. BEN derives these values by discounting the annual cash flows at an average of the cost of capital throughout this time period. BEN can then subtract the delayed-case present value from the on-time-case present value to determine the initial economic benefit as of the noncompliance date. Finally, BEN compounds this initial economic benefit forward to the penalty payment date at the same cost of capital to determine the final economic benefit of noncompliance.

Normally, an ACL should not seriously jeopardize the discharger's ability to continue in business or operation. The discharger has the burden of proof of demonstrating lack of ability to pay and must provide the information needed to support this position. This adjustment can be used to reduce the ACL to an amount that the discharger can reasonably pay and still bring operations into compliance. The downward adjustment for ability to pay should be made only in cases where the discharger is cooperative and has the ability and the intention to bring operations into compliance within a reasonable amount of time. If the violation occurred as a result of deliberate or malicious conduct, or there is reason to believe that the discharger can not or will not bring operations into compliance, the ACL must not be adjusted for ability to pay.

The RWQCBs may also consider increasing the ACL because of ability to pay. For example, if the RWQCB determines that the proposed amount is unlikely to have an appropriate deterrent effect on an uncooperative discharger with a greater ability to pay, the amount should be increased to the level that the Board determines is necessary to assure future compliance.

I. Statutory Maximum and Minimum Limits

The ACL must be checked against the statutory maximum and minimum limits to ensure that it is in compliance with the appropriate section of law. The maximum amount for an ACL issued under California Water Code section 13385 is $10,000 for each day in which a violation occurs plus $10 per gallon for amounts discharged but not cleaned up in excess of 1,000 gallons. The statutory maximum amounts for ACLs issued under California Water Code sections 13261, 13350, and 13399.33 are summarized in Table IV-1.

California Water Code section 13385, which applies to discharges regulated pursuant to the CWA, was amended effective January 1, 2000, to state that "At a minimum, liability shall be assessed at a level that recovers the economic benefits, if any, derived from the acts that constitute the violation". Therefore, for such violations occurring on or after January 1, 2000, the minimum amount for an ACL is the economic benefit. For violations subject to mandatory minimum penalties pursuant to California Water Code section 13385 (h) and (i), the Regional Board may choose in its discretion to assess civil liability in addition to the mandatory penalty. In such cases, the total recovered amount must be no less than the mandatory penalty amount or the economic benefit, whichever is greater.
It is the policy of the SWRCB that all ACLs that are not Mandatory Minimum Penalties should be assessed at a level that at a minimum recovers the economic benefit.

VIII. STATE WATER POLLUTION CLEANUP AND ABATEMENT ACCOUNT

Sections13440-13443 of the California Water Code establish a Cleanup and Abatement Account[7] (CAA) which is administered by the SWRCB. The CAA receives monies from court

[7] The SWRCB Administrative Procedures Manual, Chapter 4.4, 1992 (subject to ammendment), explains the process and responsibilities for the management of the CAA.

judgments, ACLs[8], and other specified sources. A RWQCB attempting to remedy a significant unforeseen water quality problem that poses an actual or potential public health threat, and for which the RWQCB does not have adequate resources budgeted, may apply to the SWRCB to receive money from the CAA to assist it in responding to the problem. In addition, the SWRCB and other public agencies with the authority to cleanup waste or abate the effects thereof may utilize the account to assist in the cleanup or abatement of the waste. Each application for CAA funds is judged on its own merits.

A. Emergency Requests

RWQCB Executive Officers (or their designee) or public agencies may request emergency funds verbally for amounts up to $100,000. These requests shall be directed to the Chief of the Division of Clean Water Programs. In the absence of that individual, other designated staff should be called in the order listed: the Chief Counsel, the Executive Director, the Chief Deputy Director, the Chief of the Division of Administrative Services. Any of these five individuals may review and approve the request.

Within one week following the oral request, the requesting agency shall submit the request in writing to the Chief of the Division of Clean Water Programs.

B. Non-Emergency Requests

Non-emergency requests and all requests for more than $100,000 must be submitted, in writing, for approval by the SWRCB. The Chief of the Division of Clean Water Programs, determines if the request is eligible for funding, and presents eligible requests to the SWRCB with a staff recommendation.

C. Contracts

Contracts executed by a RWQCB consistent with Water Code Section 13304 and funded by the CAA are exempt from General Services review, and may be approved more quickly. When time permits, these contracts should be in writing. Otherwise, Section 13304 allows a RWQCB to enter into oral contracts. If the RWQCB enters into an oral contract, the terms of the contract must be documented and submitted to the Division of Clean Water Programs. It must be submitted within one week of the date of the oral contract with copies for the Accounting and Contracts Offices.

IX. Supplemental Environmental Projects (SEPs)

The SWRCB or RWQCB may allow a discharger to satisfy some or all of the monetary assessment imposed in an ACL Complaint or Order completing or funding one or more SEPs. SEPs are projects that enhance the beneficial uses of the waters of the State, provide a benefit to the public at large, and that, at the time they are included in an ACL action, are not otherwise

[8]Not all of the money received from ACLs is deposited in the CAA. For example, money received from ACLs issued pursuant to California Water Code 13399.33 is deposited in the Waste Discharge Permit Fund.

required of the discharger. California Water Code section 13385(h)(3) allows limited use of SEPs associated with mandatory minimum penalties. California Water Code section 13399.35 also allows limited use of SEPs for up to 50 percent of a penalty assessed under section 13399.33. In addition, the SWRCB supports the inclusion of SEPs in other ACL actions, so long as these projects meet the criteria specified in this section. These criteria should also be considered when the SWRCB or RWQCB is negotiating SEPs as part of the settlement of civil actions brought in court.

A. Process for Project Selection

Any public or private entity may submit a proposal to the SWRCB (or to the RWQCB for transmittal to the SWRCB) for an SEP that they propose to fund through this process. Staff at the SWRCB shall evaluate each proposal and maintain a list of candidate SEPs that satisfy the general criteria in subsection C of this section. The list of candidate SEPs shall be made available on the Internet along with information on completed SEPs and SEPs that are in-progress. When a RWQCB is considering allowing a discharger to perform an SEP in lieu of some or all of a monetary assessment, the RWQCB should direct the discharger to the list of candidate SEPs. The discharger may select a SEP from the list of candidate SEPs or may propose a different SEP that satisfies the general criteria for SEPs. When the discharger submits a proposal to the RWQCB for a SEP, it should include draft provisions (i.e., details of the specific activities that will be conducted, and of the estimated budget for each activity in the SEP) for a contract to be executed between the discharger(s) who will be funding the project and the entity performing the SEP if different from the discharger. The discharger should be requested to provide information regarding the additional selection criteria in subsection D of this section and shall demonstrate to the satisfaction of the Board that the selected or proposed SEP also satisfies the Nexus requirements in subsection E of this section.

B. ACL Complaints and ACL Orders allowing SEPs

All ACL Complaints and Orders that include suspended liabilities for SEPs shall include or reference detailed specifications for evaluating the timely and successful completion of the SEP. The ACL Complaint or Order shall contain or reference specific performance standards, and identified measures or indicators of performance. The ACL Complaint or Order shall specify that the discharger is required to meet these standards and indicators.

Any portion of the liability that is not suspended must be paid to the State Cleanup and Abatement Account or other fund or account as authorized by statute. The ACL Complaint or Order shall state that failure to pay any required monetary assessment on a timely basis will cancel the provisions for suspended penalties for SEPs and the suspended amounts will become immediately due and payable.

The ACL Complaint or Order shall either include a time schedule or reference a TSO with a single or multiple milestones and the amount of liability that will be permanently suspended upon the timely and successful completion of each milestone. Except for the final milestone, the amount of the liability suspended for any portion of a SEP cannot exceed the projected cost of performing that portion of the SEP. The Complaint or Order should state that, if the final total cost of the successfully completed SEP is less than the amount suspended for completion of the SEP, the discharger must remit the difference to the State Cleanup and Abatement Account or other fund or account as authorized by statute. The Complaint or Order should state that if any

SEP milestone is not completed to the satisfaction of the Executive Officer by the date of that milestone, the previously suspended liability associated with that milestone shall be immediately due and payable to the State Cleanup and Abatement Account or other fund or account as authorized by statute. It is the discharger's responsibility to pay the amount(s) due, regardless of any agreements between the discharger and any third party contracted to implement the project. Therefore, the discharger may want to consider a third party performance bond or the inclusion of a penalty clause in their contract.

Since ACL Orders are final upon adoption and cannot be reconsidered by the RWQCB, the RWQCB may want to include provisions in the ACL Order to extend the deadline for any milestone if it, or its Executive Officer, determines that the delay was beyond the reasonable control of the discharger. If the RWQCB fails to reserve jurisdiction for this purpose, the time schedule in the ACL Order can only be modified by the SWRCB pursuant to California Water Code section 13320.

The ACL Complaint or Order shall include provisions for project tracking, reporting, and oversight:

(a) The ACL Complaint or Order shall require the discharger to provide the SWRCB or RWQCB progress reports, as appropriate, and shall require a final report, certifying the completion of the SEP.
(b) The ACL Complaint or Order shall require the discharger to provide the SWRCB or RWQCB a post-project accounting of expenditures.
(c) The SWRCB or RWQCB shall not manage or control funds that may be set aside or escrowed for performance of a SEP. Nor may the SWRCB or RWQCB retain authority to manage or administer the SEP. The SWRCB or RWQCB may require the discharger to select and hire an independent management company or other appropriate third party, which reports solely to the SWRCB or RWQCB, to audit implementation of the SEP. The company should evaluate compliance with performance measures and report to the SWRCB or RWQCB about the timely and successful completion of the SEP. Alternatively, as a condition of the SEP, the SWRCB or RWQCB may require the discharger to pay into the Cleanup and Abatement Account or other fund or account as authorized by statute an amount equal to the estimated cost for oversight of the SEP by the SWRCB or RWQCB. The RWQCB or third party auditor shall track the implementation of the SEP (e.g., through progress reports, meetings with the discharger, etc.) to ensure that the implemented SEP reasonably follows the approved project and achieves the original objectives.
(d) The ACL Complaint or Order should require that, whenever the discharger publicizes an SEP or the results of the SEP, it will state in a prominent manner that the Project is being undertaken as part of the settlement of an enforcement action.

C. General SEP Qualification Criteria

All SEPs approved by the SWRCB or RWQCB must satisfy the following general criteria:

(a) An SEP shall only consist of measures that go above and beyond the obligation of the discharger. For example, sewage pump stations should have appropriate reliability features to minimize the occurrence of sewage spills in that particular collection system. The installation of these reliability features following a pump station spill would not qualify as an SEP.

(b) The SEP should directly benefit or study groundwater or surface water quality or quantity, and the beneficial uses of waters of the State. Examples include but are not limited to:

(i) monitoring programs;
(ii) studies or investigations (e.g., pollutant impact characterization, pollutant source identification, etc.);
(iii) water or soil treatment;
(iv) habitat restoration or enhancement;
(v) pollution prevention or reduction;
(vi) wetland, stream, or other waterbody protection, restoration or creation;
(vii) conservation easements;
(viii) stream augmentation;
(ix) reclamation;
(x) public awareness projects (e.g., industry specific, public-awareness activity, or community environmental education projects such as watershed curriculum, brochures, television public service announcements, etc.);
(xi) watershed assessment (e.g., citizen monitoring, coordination and facilitation);
(xii) watershed management facilitation services; and
(xiii) non-point source program implementation.

(c) The SEP shall not directly benefit the SWRCB or RWQCB functions or staff. For example, SEPs shall not be gifts of computers, equipment, etc. to the SWRCB or RWQCB.

(d) The SEP shall not be an action, process or product that is otherwise required of the discharger by any rule or regulation of any entity (e.g., local government, California Coastal Commission, United States Environmental Protection Agency, United States Army Corps of Engineers, etc.) or proposed as mitigation to offset the impacts of a discharger's project(s).

D. Additional SEP Qualification Criteria

The following additional criteria should be evaluated by the SWRCB and RWQCB during final approval of SEPs proposed by the discharger:

(a) The SEP should, when appropriate, include documented support by other resource agencies, public groups and affected persons.

(b) The SEP should, when appropriate, document that the project complies with the California Environmental Quality Act.

(c) Regionwide use/benefit - Some projects may benefit the specific watershed yet still provide added value regionwide or even statewide. For example, development of a spill prevention course could benefit not just the local watershed but the whole region or state if properly packaged and utilized. Likewise, a monitoring program for a particular water body could also provide information that staff could use in assessing other discharges, spills, 401 certifications or flood control activities in a river. Projects, which provide the SWRCB or RWQCB with added value, are encouraged.

(d) Combined funding - Some projects use seed money to create a much greater or leveraged impact. Often other agencies will contribute staff time, laboratory services, boat use, or other services as part of a monitoring project. While the applicant may propose to spend hard money on equipment or materials, they may be donating expertise and labor to accomplish a much larger project. Matching funds, in kind services and leveraged projects are encouraged.

(e) Institutional stability and capacity - The RWQCB shall consider the ability of the discharger or third party contractor to accomplish the work and provide the products and reports expected. This criterion is especially important when a Board receives money as the result of a settlement and must then select and fund projects proposed from many sources.

(f) Projects that involve environmental protection, restoration, enhancement or creation of waterbodies should include requirements for monitoring to track the long-term success of the project.

E. Nexus Criteria

An SEP must have a nexus (connection or link) between the violation(s) and the SEP. Nexus is the relationship between the violation and the proposed project. This relationship exists only if the project remediates or reduces the probable overall environmental or public health impacts or risks to which the violation at issue contributes, or if the project is designed to reduce the likelihood that similar violations will occur in the future. An SEP must meet one or more of the following criteria. SEP approval is more likely for projects meeting more criteria.

Geographic Nexus - The proposed project should have a geographic link or nexus with the area where the water quality problem or violation occurred. For example, a spill to a river might require a plan to improve habitat or fish populations in the river in the general area of the spill. Work in a tributary watershed might be appropriate depending on the circumstances, however, work in a far different part of the region or state would likely not meet the geographic nexus criteria.

Spill Type or Violation - The proposed project should be related to the specific spill type or violation. For example, an SEP for a sewage spill ACL could include holding spill prevention workshops for other dischargers in the general area (both a geographic and violation type nexus). The workshops should go beyond what is necessary just to address mandatory work, equipment, and improvements required to correct the nature of the violation.

Beneficial use protection - Where specific beneficial uses were affected by the violation, it is appropriate to design SEPs that address protection and improvement of those uses. Where fish populations and habitats are affected, efforts to improve habitats and populations would be ideal, especially in the same watershed. Water quality monitoring, including flows, channel morphology, and habitat characteristics would be appropriate projects. In this case, the nexus is between the type of violation and the specific beneficial uses impacted. It is also important to keep endangered species issues in focus and to consult with the Department of Fish and Game, the National Marine Fisheries Service, and US Fish and Wildlife Service about impacts of violations on these species and possible SEPs.

X. Compliance Projects (CPs)

A CP is a project that is designed to address problems related to the violation and bring the discharger back into compliance in a timely manner.

A. CPs under California Water Code Section 13385(k)

In lieu of assessing all or a portion of a mandatory minimum penalties against a POTW serving an eligible small community, the SWRCB or RWQCB may, pursuant to California Water Code section 13385 (k), require that the POTW to spend an equivalent amount toward the completion of a CP. CPs must be proposed by the POTW and the SWRCB or RWQCB must find all of the following:

(a) The CP is designed to correct the violations within five years;
(b) The CP is in accordance with this Enforcement Policy; and
(c) The POTW has demonstrated that it has sufficient funding to complete the CP.

It is the policy of the SWRCB that the following conditions shall apply to Compliance Projects under California Water Code section 13385(k):

(d) The amount of the penalty suspended shall not exceed the cost to return to and/or maintain future compliance.
(e) CPs shall also comply with the general conditions for CPs specified in subsection C of this Section.

B. CPs in other ACLs

If the underlying problem that caused the violation(s) has not been corrected, the cost of returning to and/or maintaining compliance (i.e., the estimated cost of completing the CP) may be included by the RWQCB in the ACL as an additional monetary assessment against the discharger that is suspended pending the satisfactory completion of a CP. Payment of the additional monetary assessment is only required the CP is not satisfactorily completed. The monetary assessment for the CP is in addition to the economic benefit calculated as part of the ACL in accordance with section VII.F.

It is the policy of the SWRCB that the following conditions shall apply to Compliance Projects in all ACLs except ACLs under California Water Code section 13385(k):

(a) The amount of the assessment suspended shall not exceed the additional portion of the monetary assessment that was based on the discharger's cost of completing the CP.
(b) Either the RWQCB or the discharger may recommend specific CPs that could be included in the ACL action.
(c) CPs shall also comply with the general conditions for CPs specified in subsection C of this Section.

C. General Conditions for all CPs

The following general conditions apply to all CPs:

(a) CPs may include, but are not limited to: construction of new facilities; upgrade or repair of existing facilities; conducting water quality investigations or monitoring; operating a cleanup system; adding staff; training; studies; and the development of operation, maintenance and/or monitoring procedures.
(b) CPs should be designed to bring the discharger back into compliance in a timely manner and/or prevent future noncompliance.
(c) A CP is a project that the discharger is otherwise obligated to perform independent of the ACL itself.
(d) CPs shall have clearly identified project goals, costs, milestones, and completion dates and these shall be specified in the ACL action.
(e) CPs that will last longer than one year shall have at least annual reporting requirements.
(f) If the discharger completes the CP to the satisfaction of the RWQCB or the Executive Officer by the specified date, the suspended amount is permanently suspended.
(g) If the CP is not completed to the satisfaction of the RWQCB or the Executive Officer on the specified date the amount suspended becomes due and payable to the State Cleanup and Abatement Account or other fund or account as authorized by statute.
(h) The ACL Complaint or Order shall clearly state that payment of the previously suspended amount does not relieve the discharger of the independent obligation to take necessary actions to achieve compliance.

Since ACL Orders are final upon adoption and cannot be reconsidered by the RWQCB, the RWQCB should include a clause in the time schedule for completing CPs. Such clause should reserve the RWQCB's jurisdiction to modify the time schedule if it, or its Executive Officer, determines that the delay was beyond the reasonable control of the discharger. If the RWQCB fails to reserve jurisdiction for this purpose, the time schedule in the ACL Order can only be modified by the SWRCB pursuant to California Water Code section 13320. Another option that allows some flexibility in the time schedule for a CP is for the Board to adopt a CAO or a CDO at the same time it adopts the ACL Order. The ACL would require compliance with the time schedule in the CAO or CDO. All cash payments to the SWRCB or RWQCBs, including previously suspended liabilities assessed for failure to comply with CPs or SEPs, shall be paid to the State Cleanup and Abatement Account or other fund or account as authorized by statute.

XI. DISCHARGER SELF-AUDITING

It is desirable to encourage self-auditing, self-policing, and voluntary disclosure of environmental violations by dischargers. Self-auditing and voluntary disclosure of violations that are not otherwise required to be reported to the Boards shall be considered by the Boards when determining enforcement actions and in appropriate cases may lead to a determination to forego or lessen the severity of an enforcement action. Falsification or misrepresentation of such voluntary disclosures shall be brought to the attention of the appropriate RWQCB for possible enforcement action.

XII. ENFORCEMENT REPORTING

In order to ensure greater consistency in the reporting by the RWQCBs on violations and enforcement actions, the enforcement reports for all Regions will be standardized. These reports will include a listing of facilities with a water quality violation during the reporting period or unresolved from a previous reporting period, including violations without a RWQCB response. This listing shall include at least the following information:

(a) The date of violation;
(b) An identification whether the violation is considered to be a priority violation (see Section III);
(c) The RWQCB response, if any;
(d) The date of the response;
(e) The corrective action taken by the discharger, at least in cases of priority violations; and
(f) A listing of all previous violations for the facility which occurred in the previous 12 months and the associated RWQCB response.

The enforcement reports will be presented to the RWQCBs on no greater than quarterly intervals. The report format will be produced by the State Water Information Management (SWIM) data system and the RWQCBs will utilize the SWIM to track and monitor discharger's violations and RWQCB's enforcement activities. Utilization of the SWIM data system by the RWQCBs is essential for the SWRCB's compliance with California Water Code section 13385 (m), which requires statewide reporting of violations to the Legislature.

A. Summary Violation and Enforcement Reports

All RWQCBs shall produce standard quarterly reports addressing priority violations. The SWRCB will specify the format of the summary reports.

B. Spill Reporting for Sanitary Sewer Collection Systems

The RWQCBs shall enter all available data on spills into the Sanitary Sewer Overflow/Spills Module of the SWRCB's SWIM data system. It is the SWRCB's goal to achieve consistent reporting of spills from regulated sanitary sewer collections systems.

XIII. POLICY REVIEW AND REVISION

It is the intent of the SWRCB that this Policy be reviewed and revised, as appropriate, at least every five years.

Appendix A. Group 1 Pollutants

The following list of pollutants is hereby included as Group 1 pollutants (pursuant to Appendix A to Section 123.45 of Title 40 of the Code of Federal Regulations) under the classifications of "other."

5-DAY SUM OF WLA VALUES
5-DAY SUM OF BOD5 DISCHARGED
7-DAY SUM OF WLA VALUES
7-DAY SUM OF BOD5 DISCHARGED
ACIDITY
ACIDITY, CO2 PHENOL (AS CACO3)
ACIDITY, TOTAL (AS CACO3)
ACIDITY-MINRL METHYL ORANGE (AS CACO3)
ALGICIDES, GENERAL
ALKALINITY, BICARBO-NATE (AS CACO3)
ALKALINITY, CARBO- NATE (AS CACO3)
ALKALINITY, PHENOL- PHTHALINE METHOD
ALKALINITY, TOTAL (AS CACO3)
ALUMINUM
ALUMINUM CHLORIDE, DISSOLVED, WATER
ALUMINUM SULFATE
ALUMINUM, POTENTIALLY DISSOLVD
ALUMINUM, TOTAL RECOVERABLE
ALUMINUM, ACID SOLUABLE
ALUMINUM, DISSOLVED (AS AL)
ALUMINUM, IONIC
ALUMINUM, TOTAL
ALUMINUM, TOTAL (AS AL)
AMMONIA & AMMONIUM- TOTAL
AMMONIA (AS N) + UNIONIZED AMMONIA
AMMONIA, UNIONIZED
AVG. OF 7-DAY SUM OF BOD5 VALUES
BARIUM, SLUDGE, TOT, DRY WEIGHT (AS BA)
BICARBONATE ION- (AS HCO3)
BIOCHEMICAL OXYGEN DEMAND-5
BIOCIDES
BOD % OVER INFLUENT
BOD (ULT. 1ST STAGE)
BOD (ULT. 2ND STAGE)
BOD (ULT. ALL STAGES)
BOD 35-DAY (20 DEG. C)
BOD CARBONACEOUS, 25-DAY (20 DEG. C)
BOD, 11-DAY (20 DEG. C)
BOD, 20-DAY (20 DEG. C)
BOD, 20-DAY, PERCENT REMOVAL
BOD, 5-DAY (20 DEG. C)
BOD, 5-DAY 20 DEG C PER CFS OF STREAMFLW
BOD, 5-DAY DISSOLVED
BOD, 5-DAY PERCENT REMOVAL
BOD, 5-DAY (20 DEG.C) PER PRODUCTION
BOD, CARB-5 DAY, 20 DEG C, PERCENT REMVL
BOD, CARBONACEOUS 5 DAY,5 C
BOD, CARBONACEOUS (5-DAY, 20 DEG C)
BOD, CARBONACEOUS 05 DAY, 20C
BOD, CARBONACEOUS 20 DAY, 20C
BOD, CARBONACEOUS, 28-DAY (20 DEG.C)
BOD, CARBONACEOUS, PERCENT REMOVAL
BOD, FILTERED, 5 DAY, 20 DEG C
BOD, NITROG INHIB 5-DAY (20 DEG. C)
BOD, PERCENT REMOVAL (TOTAL)
BOD, MASS, TIMES FLOW PROP. MULTIPLIER
BOD-5 LB/CU FT PROCESS
BORIC ACID
BORON, DISSOLVED (AS B)
BORON, SLUDGE, TOTAL DRY WEIGHT (AS B)
BORON, TOTAL
BORON, TOTAL (AS B)
BORON, TOTAL RECOVERABLE
BROMIDE (AS BR)
BROMINE CHLORIDE
BROMINE REPORTED AS THE ELEMENT

CALCIUM IN BOTTOM DEPOSITS
CALCIUM, TOTAL RECOVERABLE
CALCIUM, DISSOLVED (AS CA)
CALCIUM, PCT EXCHANGE
CALCIUM, PCT IN WATER, (PCT)
CALCIUM, TOTAL (AS CA)
CARBON DIOXIDE (AS CO2)

CARBON, TOT ORGANIC (TOC)
CARBON, TOT ORGANIC (TOC) PER 1000 GALS.
CARBON, TOTAL (AS C)
CARBON, TOTAL INORGANIC (AS C)
CARBONACEOUS OXYGEN DEMAND, % REMOVAL
CARBONATE ION- (AS CO3)
CBOD5 / NH3-N
CHEM. OXYGEN DEMAND (COD) % REMOVAL
CHEM. OXYGEN DEMAND PER PRODUCTION
CHEMICAL OXYGEN DEMAND (COD)
CHEMICAL OXYGEN DEMAND (COD)
CHEMICAL OXYGEN DEMAND (COD)
CHLORIDE
CHLORIDE (AS CL)
CHLORIDE, DISSOLVED (AS CL)
CHLORIDE, DISSOLVED IN WATER
CHLORIDE, PER CFS OF STREAMFLOW
CHLORIDE, PERCENT REMOVAL
CHLORIDE, SLUDGE, TOTAL DRY WEIGHT
CHLORIDES & SULFATES
CHLORINE DEMAND, 1 HR
CHLORITE

COBALT, DISSOLVED (AS CO)
COBALT, TOTAL (AS CO)
CONDUCTIVITY, NET
COPPER, SLUDGE, TOT, DRY WEIGHT (AS CU)
DIGESTER SOLIDS CONTENT, PERCENT
DITHIOCARBAMATE, RPTD AS DITHIOCARBONATE
DRILLED SOLIDS IN DRILLING FLUIDS
E.COLI, MTEC-MF
ENDRIN KETONE, IN WATER
FERROCHROME LIGNO- SULFONATED FRWTR MUD
FERROCYANIDE
FERROUS SULFATE
FIRST STAGE OXYGEN DEMAND, % REMOVAL
FLOW, MAXIMUM FLOW RANGE
FLUORIDE - FREE
FLUORIDE, DISSOLVED (AS F)
FLUORIDE, TOTAL (AS F)
FLUOROBORATES
FREE ACID, TOTAL
HARDNESS, TOTAL (AS CACO3)
HYDROCHLORIC ACID
HYDROCHLORIC ACID
HYDROGEN PEROXIDE
HYDROGEN PEROXIDE (T) DILUTION RATIO
HYDROGEN SULFIDE
IODIDE (AS I)
IRON
IRON AND MANGANESE -SOLUBLE
IRON AND MANGANESE -TOTAL
IRON, POTENTIALLY DISSOLVD
IRON, DISSOLVED (AS FE)
IRON, DISSOLVED FROM DRY DEPOSITION
IRON, FERROUS
IRON, SLUDGE, TOTAL, DRY WEIGHT (AS FE)
IRON, SUSPENDED
IRON, TOTAL (AS FE)
IRON, TOTAL PER BATCH
IRON, TOTAL PER PRODUCTION
IRON, TOTAL PERCENT REMOVAL
LIGHTLY TREATED LIG-NOSULFONATED MUD
LITHIUM, DISSOLVED (AS LI)
LITHIUM, TOTAL (AS LI)
MAGNESIUM, DISSOLVED (AS MG)
MAGNESIUM, IN BOTTOM DEPOSITS
MAGNESIUM, PCT EXCHANGE
MAGNESIUM, TOTAL (AS MG)
MAGNESIUM, TOTAL RECOVERABLE
MANGANESE IN BOTTOM DEPOSITS (DRY WGT)
MANGANESE, POTENTIALLY DISSOLVD
MANGANESE, DISSOLVED (AS MN)
MANGANESE, SUSPENDED
MANGANESE, TOTAL
MANGANESE, TOTAL (AS MN)
MANGANESE, TOTAL RECOVERABLE
METHYLENE BLUE ACTIVE SUBSTANCES
MICROSCOPIC ANALYSIS
MOLYBDENUM, DRY WEIGHT
MONOBORO CHLORATE
NICKEL, DRY WEIGHT
NITRILOTRIACETIC ACID (NTA)
NITRITE NITROGEN, DISSOLVED (AS N)
NITRITE PLUS NITRATE DISSOLVED 1 DET.
NITRITE PLUS NITRATE IN BOTTOM DEPOSITS
NITRITE PLUS NITRATE TOTAL 1 DET. (AS N)
NITROGEN (AS NO3) SLUDGE SOLID
NITROGEN OXIDES (AS N)
NITROGEN SLUDGE SOLID
NITROGEN SLUDGE TOTAL
NITROGEN, AMMONIA DISSOLVED
NITROGEN, AMMONIA PER CFS OF STREAMFLW
NITROGEN, AMMONIA TOTAL (AS N)
NITROGEN, AMMONIA TOTAL (AS NH4)
NITROGEN, AMMONIA IN BOTTOM DEPOSITS
NITROGEN, AMMONIA, PERCENT REMOVAL
NITROGEN, AMMONIA, SLUDGE, TOT DRY WGT
NITROGEN, AMMONIA, TOT UNIONIZED (AS N)
NITROGEN, KJELDAHL DISSOLVED (AS N)
NITROGEN, KJELDAHL TOTAL (AS N)
NITROGEN, NITRATE DISSOLVED
NITROGEN, NITRATE TOTAL (AS N)
NITROGEN, NITRATE TOTAL (AS NO3)
NITROGEN, NITRITE TOTAL (AS N)
NITROGEN, NITRITE TOTAL (AS NO2)
NITROGEN, ORGANIC TOTAL (AS N)
NITROGEN, SLUDGE, TOT, DRY WT. (AS N)
NITROGEN, TOTAL KJELDAHL, % REMOVAL
NITROGEN, INORGANIC TOTAL
NITROGEN, OXIDIZED
NITROGEN-NITRATE IN WATER, (PCT)
NITROGEN-NITRITE IN WATER, (PCT)
NITROGENOUS OXYGEN DEMAND (20-DAY, 20C)
NITROGENOUS OXYGEN DEMAND, % REMOVAL
NON-IONIC DISPERSANT (NALSPERSE 7348)
NON-NITROGENOUS BOD
OIL & GREASE
OIL & GREASE AROMATIC
OIL & GREASE % REMOVAL
OIL & GREASE (FREON EXTR.-IR METH)TOT,RC
OIL AND GREASE
OIL AND GREASE

OIL AND GREASE (SOXHLET EXTR.) TOT.
OIL AND GREASE PER CFS OF STREAMFLW
OIL AND GREASE PER PRODUCTION
OIL AND GREASE VISUAL
OIL AND GREASE, HEXANE EXTR METHOD
OIL AND GREASE, PER 1000 GALLONS
OXYGEN DEMAND FIRST STAGE
OXYGEN DEMAND, DISSOLVED
OXYGEN DEMAND, SUM PRODUCT
OXYGEN DEMAND, ULTIMATE
OXYGEN DEMAND, CHEM. (COD), DISSOLVED
OXYGEN DEMAND, CHEM. (HIGH LEVEL) (COD)
OXYGEN DEMAND, CHEM. (LOW LEVEL) (COD)
OXYGEN DEMAND, TOTAL
OXYGEN DEMAND, TOTAL (TOD)
OXYGEN DEMAND, ULT. CARBONACEOUS (UCOD)
OXYGEN DEMAND, ULT., PERCENT REMOVAL
OZONE
OZONE - RESIDUAL
PH, CAC03 STABILITY
PHOSPHATE TOTAL SOLUBLE
PHOSPHATE, DISSOLVED COLOR METHOD (AS P)
PHOSPHATE, ORTHO (AS PO4)
PHOSPHATE, ORTHO (AS P)
PHOSPHATE, TOTAL (AS PO4)
PHOSPHATE, TOTAL COLOR. METHOD (AS P)
PHOSPHATE, DISSOLVED/ORTHOPHOSPHATE (AS P)
PHOSPHATE, POLY (AS PO4)
PHOSPHOROUS 32, TOTAL
PHOSPHOROUS, IN TOTAL ORTHOPHOSPHATE
PHOSPHOROUS, TOTAL ELEMENTAL
PHOSPHOROUS, TOTAL ORGANIC (AS P)
PHOSPHOROUS, TOTAL, IN BOTTOM DEPOSITS
PHOSPHORUS (REACTIVE AS P)
PHOSPHORUS, DISSOLVED
PHOSPHORUS, TOTAL PERCENT REMOVAL
PHOSPHORUS,TOTAL SOLUBLE (AS PO4)
POTASSIUM, DISSOLVED (AS K)
POTASSIUM, IN BOTTOM DEPOSITS
POTASSIUM, PCT EXCHANGE
POTASSIUM, TOTAL RECOVERABLE
POTASSIUM, TOTAL PCTIN WATER, (PCT)
PROPARGITE
RATIO FECAL COLIFORM & STREPTOCOCCI
RESIDUE, SETTLEABLE
RESIDUE, TOTAL FILTERABLE
RESIDUE, TOTAL FILTERABLE
RESIDUE, TOTAL VOLATILE
RESIDUE, TOTAL NON- SETTLEABLE
RESIDUE, VOLATILE NONFILTERABLE
SEAWATER GEL MUD
SETTLEABLE SOLIDS PERCENT REMOVAL
SILICA, DISSOLVED (AS SIO2)
SILICA, TOTAL (AS SIO2)
SILICON, TOTAL
SLUDGE BUILD-UP IN WATER
SLUDGE SETTLEABILITY 30 MINUTE
SLUDGE VOLUME DAILY INTO A WELL
SLUDGE, RATE OF WASTING
SODIUM ADSORPTION RATIO
SODIUM ARSENITE
SODIUM CHLORIDE (SALT)
SODIUM HEXAMETA- PHOSPHATE
SODIUM IN BOTTOM DEP (AS NA) (DRY WGT)
SODIUM NITRITE
SODIUM SULFATE, TOTAL
SODIUM, %
SODIUM, % EXCHANGE- ABLE SOIL, TOTAL
SODIUM, DISSOLVED (AS NA)
SODIUM, SLUDGE, TOT, DRY WEIGHT (AS NA)
SODIUM, TOTAL (AS NA)
SODIUM, TOTAL (AS NA)
SODIUM, TOTAL RECOVERABLE
SOLIDS ACCUMULATION RATE TOT DRY WEIGHT
SOLIDS, FIXED DISSOLVED
SOLIDS, FIXED SUSPENDED
SOLIDS, SETTLEABLE
SOLIDS, SLUDGE, TOT, DRY WEIGHT
SOLIDS, SUSPENDED PERCENT REMOVAL
SOLIDS, TOTAL
SOLIDS, TOTAL DISSOLVED
SOLIDS, TOTAL DISSOLVED (TDS)
SOLIDS, TOTAL DISSOLVED- 180 DEG.C
SOLIDS, TOTAL FIXED
SOLIDS, TOTAL SUSPENDED
SOLIDS, TOTAL VOLATILE
SOLIDS, TOTAL DISS., PERCENT BY WEIGHT
SOLIDS, TOTAL DISSOLVED, TOTAL TONS
SOLIDS, TOTAL NON-VOLATILE, NON-FIXED
SOLIDS, TOTAL SUSP PER PRODUCTION
SOLIDS, TOTAL SUSP PER 1000 GALLONS
SOLIDS, TOTAL SUSP PER BATCH
SOLIDS, TOTAL SUSP PER CFS OF STREAMFLW
SOLIDS, VOLATILE DISSOLVED
SOLIDS, VOLATILE SUSPENDED
SOLIDS, VOLATILE SUSPENDED, % REMOVAL
SOLIDS, VOLATILE SUSP IN MIXED LIQUOR
SOLIDS, DRY, DISCHARGETO SOL.HANDLING SYS.
SOLIDS, DRY, INCIN.AS % OF DRYSOL.FROMTRMTPLT

SOLIDS, DRY, REMOVEDFROM SOL. HANDLING SYS.
SOLIDS-FLOTNG-VISUAL DETRMNTN-# DAYS OBS
SOLIDS, TOT. VOLATILE PERCENT REMOVAL
SOLIDS, VOLATILE % OF TOTAL SOLIDS
SULFATE
SULFATE (AS S)
SULFATE, DISSOLVED (AS SO4)
SULFATE, TOTAL (AS SO4)
SULFIDE, DISSOLVED, (AS S)
SULFIDE, TOTAL
SULFIDE, TOTAL (AS S)
SULFITE (AS S)
SULFITE (AS SO3)
SULFITE WASTE LIQUOR PEARL BENSON INDEX
SULFUR DIOXIDE TOTAL
SULFUR, TOTAL
SULPHUR, TOTAL ELEMENTAL
SUM BOD AND AMMONIA, WATER
SURFACTANTS (MBAS)
SURFACTANTS (LINEAR ALKYLATE SULFONATE)
SURFACTANTS, AS CTAS, EFFLUENT
SUSPENDED SOLIDS
SUSPENDED SOLIDS, TOTAL ANNUAL
SUSPENDED SOLIDS, TOTAL DISCHARGE
TOTAL SUSP. SOLIDS- LB/CU FT PROCESS
TRIARYL PHOSPHATE
TURBIDITY, HCH TURBIDIMITER
VANADIUM, DISSOLVED (AS V)
VANADIUM, SUSPENDED (AS V)
VANADIUM, TOTAL
VANADIUM, TOTAL (AS V)
VANADIUM, TOTAL DRY WEIGHT (AS V)
VANADIUM, TOTAL RECOVERABLE
WLA BOD-5 DAY VALUE

Appendix B. Group 2 Pollutants

The following list of pollutants are hereby included as Group 2 pollutants (pursuant to Appendix A to Section 123.45 of Title 40 of the Code of Federal Regulations) under the classifications of "other."

1,2,3 TRICHLORO-ETHANE
2,4,6 TRICHLOROPHENOL, DRY WEIGHT
2-HEXANONE
2-PROPANONE
1, 2, 4-TRIMETHYL-BENZENE
1, 3, 5-TRIMETHYL-BENZENE
1,1 DICHLORO 1,2,2,2 TETRAFLUOROETHANE
1,1 DICHLORO 2,2,2- TRIFLUOROETHANE
1,1,1 TRICHLORO-2,2,2TRIFLUOROETHANE
1,1,1,2,2-PENTA- FLUOROETHANE
1,1,1,3,3-PENTA- FLUOROBUTANE
1,1,1-TRICHLORO- ETHANE
1,1,1-TRICHLOROETHANE, DRY WEIGHT
1,1,1-TRIFLUORO-ETHANE
1,1,2,2-TETRACHLORO-ETHANE
1,1,2,2-TETRACHLOROETHANE, DRY WEIGHT
1,1,2-TRICHLORO- ETHANE
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE
1,1,2-TRICHLOROETHANE, DRY WEIGHT
1,1-DICHLORO-1- FLUOROETHANE
1,1-DICHLOROETHANE
1,1-DICHLOROETHANE, DRY WEIGHT
1,1-DICHLOROETHENE
1,1-DICHLOROETHYLENE
1,1-DICHLOROETHYLENE, DRY WEIGHT
1,1-DIMETHYL- HYDRAZINE
1,2,3 TRICHLORO- BENZENE
1,2,4,5-TETRACHLORO-BENZENE
1,2,4,5-TETRAMETHYL-BENZENE
1,2,4-TRICHLORO- BENZENE
1,2,4-TRICHLOROBENZENE, DRY WEIGHT
1,2-BIS(2-CHLOROETH-ONY) ETHANE
1,2-CIS-DICHLORO-ETHYLENE
1,2-DICHLOROBENZENE
1,2-DICHLOROBENZENE, DRY WEIGHT
1,2-DICHLOROETHANE
1,2-DICHLOROETHANE, DRY WEIGHT
1,2-DICHLOROETHANE, TOTAL WEIGHT
1,2-DICHLOROPROPANE
1,2-DICHLOROPROPANE, DRY WEIGHT
1,2-DICHLOROPROPENE
1,2-DIPHENYL- HYDRAZINE
1,2-DIPHENYL-HYDRAZINE, DRY WEIGHT
1,2-PROPANEDIOL
1,2-TRANS-DICHLORO- ETHYLENE
1,2-TRANS-DICHLOROETHYLENE, DRY WEIGHT
1,3 DICHLOROPROPANE
1,3-DIAMINOUREA
1,3-DICHLOROBENZENE
1,3-DICHLOROBENZENE, DRY WEIGHT
1,3-DICHLOROPROPENE, TOTAL WEIGHT
1,4 DICHLOROBUTANE
1,4_____DIOXANE
1,4'-DDT (O,P'-DDT)
1,4-DICHLOROBENZENE
1,4-DICHLOROBENZENE, DRY WEIGHT
1,4-XYLENE
1-BROMO-2-CHLOROETHANE
1-CHLORO-1,1- DIFLUOROETHANE
1-HYDROXY-ETHYLIDENE
1-METHYLNAPHTHALENE
1-NITROSOPIPERIDINE
2,2DIBROMO-3-NITRILOPROPIONAMIDE
2,2-DICHLOROVINYL DIMETHYLPHOSPHATE
2,2-DIMETHYL-2,3-DI-HYDRO-7-BENZOFURANOL
2,3 DICHLOROPROPYLENE
2,3,4,6-TETRACHLORO-PHENOL
2,3,7,8 CHLORO- DIBENZOFURAN
2,3,7,8 TETRACHLORODIBENZO-P-DIOXIN
2,3,7,8 TETRACHLORODIBENZO-P-DIOXIN SED,
2,3,7,8-TETRACHLORO-DIBENZO-P-DIOXIN
2,4,5 - T
2,4,5 - TRICHLORO- PHENOL
2,4,5, TP(SILVEX)
2,4,5-TP(SILVEX) ACIDS/SALTS WHOLE WATER SAMPLE
2,4,5-TRICHLOROPHENOXYPROPIONIC ACID
2,4,6-TRICHLORO- PHENOL
2,4-DB
2,4-DICHLOROPHENOL
2,4-DICHLOROPHENOXYACETIC ACID
2,4-DIMETHYLPHENOL
2,4-DINITROPHENOL
2,4-DINITROTOLUENE
2,4-DINITROTOLUENE, DRY WEIGHT
2,4-TOLUENEDIAMINE
2,5-TOLUENEDIAMINE
2,6-DINITROTOLUENE
2,6-DINITROTOLUENE, DRY WEIGHT
2-ACETYL AMINO- FLOURCENE
2-BUTANONE
2-BUTANONE PEROXIDE

2-CHLOROANILINE
2-CHLOROETHANOL
2-CHLOROETHYL VINYL ETHER (MIXED)
2-CHLOROETHYL VINYL ETHER, DRY WEIGHT
2-CHLORONAPHTHALENE
2-CHLOROPHENOL
2-ETHYL-1-HEXANOL
2-ETHYL-2-METHYL- DIOXOLANE
2-METHYL-2-PROPANOL
2-METHYL-4,6-DINITROPHENOL
2-METHYL-4-CHLOROPHENOL
2-METHYLNAPHTHALENE
2-METHYLNAPHTHALENE
2-METHYLPHENOL
2-NAPHTHYLAMINE
2-NITROANILINE
2-NITROPHENOL
2-SECONDARY BUTYL- 4,6-DINITROPHENOL
3,3'-DICHLORO- BENZIDINE
3,3'-DICHLOROBENZIDINE, DRY WEIGHT
3,4 BENZOFLUORAN- THENE
3,4,5 TRICHLORO- GUACACOL
3,4,6-TRICHLORO- CATECHOL
3,4,6-TRICHLORO- GUAIACOL
3-CHLOROPHENOL
3-NITROANILINE, TOTAL IN WATER
4,4'-BUTYLDENEBIS- (6-T-BUTYL-M-CRESOL)
4,4'-DDD (P,P'-DDD)
4,4'-DDE (P,P'-DDE)
4,4'-DDT (P,P'-DDT)
4,6-DINITRO-O-CRESOL
4-BROMOPHENYL PHENYL ETHER
4-CHLORO-3, 5-DIMETHYLPHENOL
4-CHLORO-3-METHYL PHENOL
4-CHLOROPHENYL PHENYL ETHER
4-METHYLPHENOL
4-METHYLPHENOL
4-NITRO-M-CRESOL
4-NITRO-N-METHYLPHTHALIMIDE, TOTAL
4-NITROPHENOL
9,10 DICHLOROSTEARIC ACID
9,10 EPOXYSTEARIC ACID
A-BHC-ALPHA
ABIETIC ACID
ACENAPHTHENE
ACENAPHTHENE, SED (DRY WEIGHT)
ACENAPHTHYLENE
ACETALDEHYDE
ACETAMINOPHEN
ACETIC ACID
ACETONE
ACETONE, DRY WEIGHT
ACETONE IN WASTE
ACETOPHENONE
ACID COMPOUNDS
ACIDS,TOTAL VOLATILE (AS ACETIC ACID)
ACROLEIN
ACROLEIN, DRY WEIGHT
ACRYLAMIDE MONOMER
ACRYLIC ACID
ACRYLONITRILE
ACRYLONITRILE, DRY WEIGHT
A-ENDOSULFAN-ALPHA
ALACHLOR (BRAND NAME-LASSO)
ALACHLOR, DISSOLVED
ALDICARB
ALDICARB SULFONE
ALDICARB SULFOXIDE
ALDRIN
ALDRIN + DIELDRIN
ALDRIN, DRY WEIGHT
ALKYL BENZENE SULFONATED (ABS)
ALKYLDIMETHYL ETHYL AMMONIUM BROMIDE
ALKYLDIMETHYLBENZYL AMMONIUM CHLORIDE
ALPHA ACTIVITY
ALPHA EMITTING RADI-UM ISOTOPES, DISSOL.
ALPHA GROSS RADIOACTIVITY
ALPHA, DISSOLVED
ALPHA, SUSPENDED
ALPHA, TOTAL
ALPHA, TOTAL, COUNTING ERROR
ALPHABHC DISSOLVED
ALPHA-ENDOSULFAN
AMIBEN (CHLORAMBEN)
AMINES, ORGANIC TOTAL
AMINOTROL - METHYLENE PHOSPHATE
ANILINE
ANTHRACENE
ANTIMONY IN BOTTOM DEPOSITS (DRY WGT)
ANTIMONY, DISSOLVED (AS SB)
ANTIMONY, TOTAL (AS SB)
ANTIMONY, TOTAL RECOVERABLE
AROMATICS, SUBSTITUTED
AROMATICS, TOTAL PURGEABLE
ARSENIC
ARSENIC, POTENTIALLY DISSOLVD
ARSENIC, DISSOLVED (AS AS)
ARSENIC, DRY WEIGHT
ARSENIC, TOTAL (AS AS)
ARSENIC, TOTAL RECOVERABLE
ASBESTOS
ASBESTOS (FIBROUS)
ATRAZINE
ATRAZINE, DISSOLVED
AZOBENZENE
BALAN (BENEFIN)
BARIUM IN BOTTOM DEPOSITS (DRY WGT)

BARIUM, POTENTIALLY DISSOLVD
BARIUM, DISSOLVED (AS BA)
BARIUM, TOTAL (AS BA)
BARIUM, TOTAL RECOVERABLE
BASE NEUTRALS & ACID (METHOD 625), TOTAL
BASE NEUTRALS & ACID (METHOD 625), EFFLNT
BASE/NEUTRAL COMPOUNDS
BAYER 73 LAMPREYCIDE IN WATER
B-BHC-BETA
B-BHC-BETA DISSOLVED
B-ENDOSULFAN-BETA
BENTAZON, TOTAL
BENZENE
BENZENE (VOLATILE ANALYSIS)
BENZENE HEXACHLORIDE
BENZENE SULPHONIC ACID
BENZENE, DISSOLVED
BENZENE, DRY WEIGHT
BENZENE, HALOGENATED
BENZENE, TOLUENE, XYLENE IN COMBINATN
BENZENE, ETHYLBENZENETOLUENE, XYLENE COMBN
BENZENEHEXACHLORIDE
BENZIDINE
BENZIDINE, DRY WEIGHT
BENZIOC ACIDS-TOTAL
BENZISOTHIAZOLE
BENZO(A)ANTHRACENE
BENZO(A)PYRENE
BENZO(A)PYRENE, DRY WEIGHT
BENZO(B)FLUORANTHENE (3,4-BENZO)
BENZO(GHI)PERYLENE
BENZO(K)FLUORANTHENE
BENZOFURAN
BENZY CHLORIDE
BENZYL ALCOHOL
BENZYL CHLORIDE
BERYLLIUM IN BOTTOM DEPOSITS (DRY WGT)
BERYLLIUM, POTENTIALLY DISSOLVD
BERYLLIUM, DISSOLVED (AS BE)
BERYLLIUM, TOTAL (AS BE)
BERYLLIUM, TOTAL RECOVERABLE (AS BE)
BETA, DISSOLVED
BETA, SUSPENDED
BETA, TOTAL
BETA, TOTAL, COUNTING ERROR
BETASAN(N-2-MERCAPTOETHYLBENZENESULFAMID
BEZONITRILE (CYANOBENZENE)
BHC, TOTAL
BHC-ALPHA
BHC-DELTA
BHC-GAMMA
BIOASSAY (24 HR.)
BIOASSAY (48 HR.)
BIOASSAY (96 HR.)
BIOASSAY (24 HR)
BIOASSAY (48 HR)
BIOASSAY (96 HR)
BIS -- PHENOL-A (ALPHA)
BIS (2-CHLORO-ISOPROPYL) ETHER
BIS (2-CHLOROETHOXY) METHANE
BIS (2-CHLOROETHOXY) METHANE, DRY WT.
BIS (2-CHLOROETHYL) ETHER
BIS (2-ETHYLHEXYL) PHTHALATE
BIS (2-ETHYLHEXYL) PHTHALATE, DRY WGT
BIS (CHLOROMETHYL) ETHER
BIS (TRICHLOROMETHYL) SULFONE
BIS ETHER
BISMUTH, TOTAL (AS BI)
BISPHENOL-A
BROMACIL
BROMACIL (HYVAR)
BROMOCHLOROMETHANE
BROMODICHLOROETHANE
BROMOFORM
BROMOFORM, DRY WEIGHT
BROMOMETHANE
BUTACHLOR
BUTANE
BUTANOIC ACID
BUTANOL
BUTANONE
BUTHDIENE TOTAL
BUTOXY ETHOXY ETHANOL TOTAL
BUTYL ACETATE
BUTYL BENZYL PHTHALATE
BUTYLATE (SUTAN)
CADMIUM
CADMIUM TOTAL RECOVERABLE
CADMIUM IN BOTTOM DEPOSITS (DRY WGT)
CADMIUM SLUDGE SOLID
CADMIUM SLUDGE TOTAL
CADMIUM, POTENTIALLY DISSOLVD
CADMIUM, DISSOLVED (AS CD)
CADMIUM, TOTAL (AS CD)
CADMIUM, SLUDGE, TOT DRY WEIGHT (AS CD)
CAFFEINE
CAPTAN
CARBAMATES
CARBARYL TOTAL
CARBN CHLOROFRM EXT-RACTS, ETHER INSOLUBL
CARBOFURAN
CARBON DISULFIDE
CARBON TETRACHLORIDE

CARBON TETRACHLORIDE, DRY WEIGHT
CARBON, CHLOROFORM EXTRACTABLES
CARBON, DISSOLVED ORGANIC (AS C)
CARBOSULFAN, TOTAL
CERIUM, TOTAL
CESIUM, TOTAL (AS CS)
CHLOR, PHENOXY ACID GP, NONE FOUND
CHLORAL
CHLORAL HYDRATE
CHLORAMINE RESIDUAL
CHLORDANE (CA OCEAN PLAN DEFINITION)
CHLORDANE (TECH MIX & METABS), DRY WGT
CHLORDANE (TECH MIX. AND METABOLITES)
CHLORDANE, ALPHA, WHOLE WATER
CHLORDANE, GAMMA, WHOLE WATER
CHLORENDIC ACID

CHLORIDE, ORGANIC, TOTAL
CHLORINATED DIBENZO-FURANS, EFFLUENT
CHLORINATED DIBENZO-FURANS, SLUDGE
CHLORINATED DIBENZO-P-DIOXINS, EFFLUENT
CHLORINATED DIBENZO-P-DIOXINS, SLUDGE
CHLORINATED ETHANES
CHLORINATED HYDRO- CARBONS, GENERAL
CHLORINATED METHANES
CHLORINATED ORGANIC COMPOUNDS
CHLORINATED PESTI- CIDES, TOTAL
CHLORINATED PESTI- CIDES, TOT & PCB'S
CHLORINATED PHENOLS
CHLORINATION
CHLORINE DIOXIDE
CHLORINE DOSE
CHLORINE RATE
CHLORINE USAGE
CHLORINE, COMBINED AVAILABLE
CHLORINE, FREE AVAILABLE
CHLORINE, FREE RESIDUAL, TOTAL EFFLUENT
CHLORINE, TOTAL RESIDUAL
CHLORINE, TOTAL RESIDUAL (DSG. TIME)
CHLORINE, TOTAL RES.DURATION OFVIOLATION

CHLOROBENZENE
CHLOROBENZENE, DRY WEIGHT
CHLOROBENZILATE
CHLOROBUTADIENE (CHLOROPRENE)
CHLORODIBROMOMETHANE
CHLORODIBROMOMETHANE, DRY WEIGHT
CHLORODIFLUORO- METHANE
CHLORODIMEFORM
CHLOROETHANE
CHLOROETHANE, TOTAL WEIGHT
CHLOROETHYLENE BISTHIOCYANATE
CHLOROFORM
CHLOROFORM EXTRACTABLES, TOTAL
CHLOROFORM, DISSOLVED
CHLOROFORM, DRY WEIGHT
CHLOROHEXANE, TOTAL
CHLOROMETHANE
CHLOROMETHYL BENZENE
CHLORONITROBENZENE
CHLOROPHENOXY PROPANANOL
CHLOROSYRINGEALDEHYDE, EFFLUENT
CHLOROTOLUENE
CHLOROXAZONE
CHLORPHENIRAMINE
CHLORPYRIFOS
CHROMIUM
CHROMIUM, DRY WEIGHT
CHROMIUM TOTAL RECOVERABLE
CHROMIUM SLUDGE SOLID
CHROMIUM SLUDGE TOTAL
CHROMIUM TRIVALENT IN BOTTOM DEPOSITS
CHROMIUM, DISSOLVED (AS CR)
CHROMIUM, HEXAVALENT
CHROMIUM, HEXAVALENT
CHROMIUM, HEXAVALENT (AS CR)
CHROMIUM, HEXAVALENT DISSOLVED (AS CR)
CHROMIUM, HEXAVALENT IN BOT DEP (DRY WT)
CHROMIUM, HEXAVALENT POTENTIALLY DISOLVD
CHROMIUM, HEXAVALENT TOT RECOVERABLE
CHROMIUM, SUSPENDED (AS CR)
CHROMIUM, TOTAL
CHROMIUM, TOTAL (AS CR)
CHROMIUM, TOTAL PERCENT REMOVAL
CHROMIUM, TOTAL DRY WEIGHT (AS CR)
CHROMIUM, TOTAL IN BOT DEP (WET WGT)
CHROMIUM, TRIVALENT (AS CR)
CHROMIUM, TRIVALENT, POTENTIALLY DISSOLVD
CHRYSENE
CIS-1,3-DICHLORO PROPENE
CITRIC ACID
CN, FREE (AMENABLE TO CHLORINE)
COBALT, TOTAL RECOVERABLE
COLUMBIUM, TOTAL
COMBINED METALS SUM
COPPER
COPPER TOTAL RECOVERABLE
COPPER AS SUSPENDED BLACK OXIDE
COPPER IN BOTTOM DEPOSITS (DRY WGT)
COPPER SLUDGE SOLID
COPPER SLUDGE TOTAL

COPPER, DISSOLVED (AS CU)
COPPER, POTENTIALLY DISSOLVED
COPPER, SUSPENDED (AS CU)
COPPER, TOTAL (AS CU)
COPPER, TOTAL PER BATCH
COUMAPHOS
CRESOL
CYANATE (AS OCN)
CYANIDE (A)
CYANIDE AND THIOCYANATE - TOTAL
CYANIDE COMPLEXED TO RANGE OF COMPOUND
CYANIDE FREE NOT AMENABLE TO CHLORIN.
CYANIDE IN BOTTOM DEPOSITS (DRY WGT)
CYANIDE SLUDGE SOLID
CYANIDE, FILTERABLE, TOTAL
CYANIDE, FREE-WATER PLUS WASTEWATERS
CYANIDE, TOTAL (AS CN)
CYANIDE, TOTAL RECOVERABLE
CYANIDE, WEAK ACID, DISSOCIABLE
CYANIDE,DISSOLVED STD METHOD
CYANIDE,FREE (AMEN. TO CHLORINATION)
CYCLOATE (RONEET)
CYCLOHEXANE
CYCLOHEXANONE
CYCLOHEXYL AMINE (AMINO HEXAHYDRO)
CYCOHEXANONE
DACONIL (C8CL4N2)
DACTHAL
DDD IN WHOLE WATER SAMPLE
DDE
DDT
DDT/DDD/DDE, SUM OF P,P' & O,P' ISOMERS
DECACHLOROBIPHENYL (DCBP) TOTAL
DECHLORANE PLUS
DEHYDROABIETIC ACID
DELNAV
DELTA BENZENE HEXACHLORIDE
DEMETON
DIAZINON
DIBENZO (A,H) ANTHRACENE
DIBENZO (A,H) ANTHRACENE, DRY WEIGHT
DIBENZOFURAN
DIBROMOCHLORO- METHANE
DIBROMODICHLOROMETHANE
DIBROMOMETHANE
DICHLONE
DICHLORAN, TOTAL
DICHLOROBENZENE
DICHLOROBENZENE, ISOMER
DICHLOROBENZYLTRIFLUORIDE
DICHLOROBROMOMETHANE
DICHLOROBROMOMETHANE, DRY WEIGHT
DICHLOROBUTADIENE
DICHLOROBUTENE- (ISOMERS)
DICHLORODEHYDRO- ABEIETIC ACID
DICHLORODIBROMOMETHANE
DICHLORODIFLUORO- METHANE
DICHLOROETHENE, TOTAL
DICHLOROFLUORO METHANE
DICHLOROMETHANE
DICHLOROPROPYLENE, 1,2
DICHLOROTOLUENE
DICHLOROTRIFLUORO- ETHANE
DICHLORVOS, TOTAL
DICHLORVOS, TOTAL DISSOLVED
DICHLORVOS, TOTAL SED DRY WEIGHT
DICHLORVOS, TOTAL SUSPENDED
DICYCLOHEXYLAMINE, TOTAL
DICYCLOPENTADIENE
DIDECYLDIMETHYL AMMONIUM CHLORIDE
DIDROMOMETHANE, 1-2
DIELDRIN
DIELDRIN, DRY WEIGHT
DIETHL METHYL BENZENESULFONAMIDE
DIETHYL PHTHALATE
DIETHYL PHTHALATE, DRY WEIGHT
DIETHYLAMINE
DIETHYLAMINOETHANOL
DIETHYLBENZENE
DIETHYLENE GLYCOL DINITRATE, TOTAL
DIETHYLHEXYL PHTHALATE ISOMER
DIETHYLHEXYL- PHTHALATE
DIETHYLSTILBESTEROL
DIFOLATAN
DIISOPROPYL ETHER
DIMETHOXYBENZIDINE
DIMETHYL BENZIDINE
DIMETHYL DISULFIDE TOTAL
DIMETHYL NAPHTHALENE
DIMETHYL PHTHALATE
DIMETHYL PHTHALATE
DIMETHYL PHTHALATE, DRY WEIGHT
DIMETHYL SULFIDE TOTAL
DIMETHYL SULFOXIDE TOTAL
DIMETHYLAMINE
DIMETHYLANILINE
DI-N-BUTYL PHTHALATE
DI-N-BUTYL PHTHALATE, DRY WEIGHT
DI-NITRO BUTYL PHENOL (DNBP)
DINITROTOLUENE
DI-N-OCTYL PHTHALATE
DI-N-OCTYL PHTHALATE, DRY WEIGHT
DINOSEB
DINOSEB (DNBP)
DIOXANE
DIOXIN
DIOXIN (TCDD) SUSPENDED
DISSOLVED RADIOACTIVE GASSES

DISULFOTON
DIURON
DOCOSANE
DODECYLGUANIDINE SALTS
DYFONATE
DYPHYLLINE
EDTA
EDTA AMMONIATED
ENDOSULFAN SULFATE
ENDOSULFAN, ALPHA, IN WASTE
ENDOSULFAN, BETA, INWASTE
ENDOSULFAN, TOTAL
ENDRIN
ENDRIN + ENDRIN ALDEHYDE (SUM)
ENDRIN ALDEHYDE
EPHEDRINE SULFATE
EPICHLOROHYDRIN
EPTC (EPTAM)
ESTRADIOL
ETHALFLURALIN WATER, TOTAL
ETHANE, 1,2-BIS (2- CLRETHXY), HOMLG SUM
ETHANOL
ETHION
ETHYL METHANESULFONATE
ETHYL ACETATE
ETHYL BENZENE
ETHYL BENZENE
ETHYL ETHER BY GAS CHROMATOGRAPH
ETHYL METHYL- DIOXOLANE
ETHYL PARATHION
ETHYLBENZENE
ETHYLBENZENE, DRY WEIGHT
ETHYLENE CHLOROHYDRIN
ETHYLENE DIBROMIDE (1,2 DIBROMOETHANE)
ETHYLENE GLYCOL
ETHYLENE GLYCOL
ETHYLENE GLYCOL DINITRATE
ETHYLENE OXIDE
ETHYLENE THIOUREA (ETU)
ETHYLENE, DISSOLVED (C2H4)
ETHYLHEXYL
EXPLOSIVE LIMIT, LOWER
EXPLOSIVES, COMBINED TNT + RDX + TETRYL
FERRICYANIDE
FLUORANTHENE
FLUORANTHENE, DRY WEIGHT
FLUORENE
FLUORENE, DRY WEIGHT
FLUORIDE - COMPLEX
FLUSILAZOLE
FOAMING AGENTS
FORMALDEHYDE
FORMIC ACID
FREON 113 (1,1,1-TRIFLOURO-2,2-
FREON, TOTAL
FUEL, DIESEL, #1
FURFURAL
GAMMA, TOTAL
GAMMA, TOTAL COUNTING ERROR
GAMMA-BHC
GASOLINE, REGULAR
GERMANIUM, TOTAL (AS GE)
GLYPHOSATE, TOTAL
GOLD, TOTAL (AS AU)
GROSS BETA
GUAFENSIN
GUANIDINE NITRATE
GUTHION
HALOGEN, TOTAL ORGANIC
HALOGEN, TOTAL RESIDUAL
HALOGENATED HYDRO- CARBONS, TOTAL
HALOGENATED ORGANICS
HALOGENATED TOLUENE
HALOGENS, ADSORBABLEORGANIC
HALOGENS, TOT ORGAN-ICS BOTTOM SEDIMENT
HALOMETHANES, SUM
HEPTACHLOR
HEPTACHLOR EPOXIDE
HEPTACHLOR, DRY WEIGHT
HEPTANE
HERBICIDES, TOTAL
HEXACHLOROBENZENE
HEXACHLOROBENZENE, DRY WEIGHT
HEXACHLOROBIPHENYL
HEXACHLOROBUTADIENE
HEXACHLOROBUTADIENE
HEXACHLOROBUTADIENE, DRY WEIGHT
HEXACHLOROCYCLO- PENTADIENE
HEXACHLOROCYCLOHEXANE (BHC) TOTAL
HEXACHLOROCYCLOPENTADIENE, DRY WEIGHT
HEXACHLOROETHANE
HEXACHLOROETHANE, DRY WEIGHT
HEXACHLOROPENTADIENE
HEXADECANE
HEXAHYDROAZEPINONE
HEXAMETHYL- PHOSPHORAMINE(HMPA)
HEXAMETHYLBENZENE
HEXANE
HEXAZIMONE
HMX-1,3,5,7-TETRA ZOCINE
HYDRAZINE
HYDRAZINES, TOTAL
HYDROCARBON, TOTAL RECOVERABLE
HYDROCARBONS NITRATED
HYDROCARBONS NITRATED, TOTAL
HYDROCARBONS, AROMATIC
HYDROCARBONS, TOTAL GAS CHROMATOGRAPH

HYDROCARBONS,IN H2O,IR,CC14 EXT. CHROMAT
HYDROGEN CYANIDE
HYDROQUINONE
HYDROXYACETOPHENONE
HYDROXYQUINOLINE TOTAL
HYDROXYZINE
INDENE
INDENO (1,2,3-CD) PYRENE
INDENO (1,2,3-CD) PYRENE, DRY WEIGHT
INDIUM
IODINE 129
IODINE RESIDUAL
IODINE TOTAL
ISOBUTYL ACETATE
ISOBUTYL ALCOHOL
ISODECYLDIPHENYL- PHOSPHATE
ISO-OCTANE
ISOOCTYL 2,4,5-T
ISOOCTYL SILVEX
ISOPHORONE
ISOPHORONE, DRY WEIGHT
ISOPIMARIC ACID
ISOPRENE
ISOPROPALIN WATER, TOTAL
ISOPROPANOL
ISOPROPYL ALCOHOL (C3H8O), SED.
ISOPROPYL ETHER
ISOPROPYLBENZENE
ISOPROPYLBIPHENYL, TOTAL
ISOPROPYLIDINE DIOXYPHENOL
ISOTHIAZOLONE
ISOTHIOZOLINE, TOTAL
ISOXSUPRINE
KELTHANE
KEPONE
LANTHANUM, TOTAL
LEAD
LEAD TOTAL RECOVERABLE
LEAD 210, TOTAL
LEAD SLUDGE SOLID
LEAD SLUDGE TOTAL
LEAD, POTENTIALLY DISSOLVD
LEAD, DISSOLVED (AS PB)
LEAD, DRY WEIGHT
LEAD, TOTAL DRY WEIGHT (AS PB)
LEAD, TOTAL (AS PB)
LINDANE
LINOLEIC ACID
LINOLENIC ACID
M - ALKYLDIMETHLBENZYLAMCL
MALATHION
MB 121
MERCAPTANS, TOTAL
MERCAPTOBENZOTHIAZOLE
MERCURY
MERCURY, POTENTIALLY DISSOLVD
MERCURY, DISSOLVED (AS HG)
MERCURY, TOT IN BOT DEPOSITS (DRY WGT)
MERCURY, TOTAL (AS HG)
MERCURY TOTAL RECOVERABLE
MERCURY, DRY WEIGHT
METALS TOXICITY RATIO
METALS, TOTAL
METALS, TOX PRIORITY POLLUTANTS, TOTAL
META-XYLENE
METHAM SODIUM (VAPAM)
METHANE
METHANOL, TOTAL
METHOCARBAMOL
METHOMYL
METHOXYCHLOR
METHOXYPROPYLAMINE
METHYL METHANESULFONATE
METHYL ACETATE
METHYL BROMIDE
METHYL BROMIDE, DRY WEIGHT
METHYL CHLORIDE
METHYL CHLORIDE, DRY WEIGHT
METHYL CYANIDE (ACETONITRILE)
METHYL ETHYL BENZENE
METHYL ETHYL KETONE
METHYL ETHYL SULFIDE
METHYL ISOBUTYL KETONE (MIBK)
METHYL MERCAPTAN
METHYL METHACRYLATE
METHYL NAPHTHALENE
METHYL PARATHION
METHYL STYRENE
METHYLAMINE
METHYLENE BIS-THIOCYANATE
METHYLENE CHLORIDE
METHYLENE CHLORIDE, DRY WEIGHT
METHYLENE CHLORIDE, SUSPENDED
METHYLHYDRAZINE
METRIBUZIN (SENCOR), WATER, DISSOLVED
METRIOL TRINITRATE, TOTAL
MIREX
MOLYBDENUM DISSOLVED (AS MO)
MOLYBDENUM, TOTAL (AS MO)
MONOCHLOROACETIC ACID
MONO-CHLORO-BENZENES
MONOCHLOROBENZYLTRIFLUORIDE
MONOCHLORODEHYDRO- ABIETIC ACID
MONOCHLOROTOLUENE
N PENTANE
N, N- DIMETHYLFORMAMIDE
N, N'DIETHYL CARBANILIDE
N, N-DIMETHYL FORMAMIDE
NAPHTHALENE
NAPHTHALENE, DRY WEIGHT

NAPHTHENIC ACID
NAPROPAMIDE (DEVRINOL)
N-BUTYL ACETATE
N-BUTYL-BENZENE SULFONAMIDE (IN WAT)
N-BUTYLBENZENE (WHOLE WATER, UG/L
NEPTUNE BLUE
N-HEPTADECANE
NIACINAMIDE
NICKEL
NICKEL TOTAL RECOVERABLE
NICKEL SLUDGE SOLID
NICKEL SLUDGE TOTAL
NICKEL, POTENTIALLY DISSOLVD
NICKEL, DISSOLVED (AS NI)
NICKEL, SUSPENDED (AS NI)
NICKEL, TOTAL (AS NI)
NICKEL, TOTAL PER BATCH
NICKEL, TOT IN BOTTOM DEPOSITS (DRY WGT)
NICOTINE SULFATE
NITROBENZENE
NITROBENZENE, DRY WEIGHT
NITROCELLULOSE
NITROFURANS
NITROGEN, ORGANIC, DISSOLVED (AS N)
NITROGLYCERIN BY GAS CHROMATOGRAPHY
NITROGUANIDINE
NITROSODIPHENYLAMINE
NITROSTYRENE
N-NITROSO COMPOUNDS, VOLATILE
N-NITROSO COMPOUNDS, VOLATILE
N-NITROSODIBUTYL- AMINE
N-NITROSODIETHYL- AMINE
N-NITROSODIMETHYL- AMINE
N-NITROSODIMETHYLAMINE, DRY WEIGHT
N-NITROSODI-N-PROPYLAMINE
N-NITROSODI-N-PROPYLAMINE, DRY WEIGHT
N-NITROSODIPHENYL- AMINE
N-NITROSODIPHENYLAMINE, DRY WEIGHT
N-NITROSOPYRROLIDINE
N-PROPYLBENZENE
O - CHLOROBENZYL CHLORIDE
OCTACHLORO- CYCLOPENTENE
OCTYLPHENOXY POLYETHOXYETHANOL
OIL, PETROLEUM ETHER EXTRACTABLES
OIL/GREASE CALCULATED LIMIT
OLEIC ACID
ORDRAM (HYDRAM)
ORGANIC ACTIVE IN- GREDIENTS (40CFR455)
ORGANIC COMPOUNDS, CHLOROFORM EXTRACT.
ORGANIC HALIDES, TOTAL
ORGANIC PESTICIDE CHEMICALS (40CFR455)
ORGANICS, GASOLINE RANGE
ORGANICS, TOT PURGE-ABLES (METHOD 624)
ORGANICS, TOTAL
ORGANICS, TOTAL TOXIC (TTO)
ORGANICS, VOLATILE (NJAC REG. 7:23-17E)
ORGANICS-TOT VOLTILE (NJAC REG.7:23-17E)
ORTHENE
ORTHOCHLOROTOLUENE
ORTHO-CRESOL
ORTHO-XYLENE
O-TOLUIDINE
OXALIC ACID
P,P'-DDE - DISSOLVED
P,P'-DDT - DISSOLVED
PALLADIUM, TOTAL (AS PD)
P-AMINOBIPHENYL
PANTHALIUM, TOTAL
PARABEN (METHYL AND PROPYL)
PARACHLOROMETA CRESOL
PARA-DICHLOROBENZENE
PARAQUAT
PARATHION
PCB - 1262
PCB, TOTAL SLUDGE, SCAN CODE
PCB, TOTAL, SCAN EFFLUENT
PCB-1016 (AROCHLOR 1016)
PCB-1221 (AROCHLOR 1221)
PCB-1232 (AROCHLOR 1232)
PCB-1242 (AROCHLOR 1242)
PCB-1248 (AROCHLOR 1248)
PCB-1254 (AROCHLOR 1254)
PCB-1260 (AROCHLOR 1260)
PCBS IN BOTTOM DEPS. (DRY SOLIDS)
P-CRESOL
P-DIMETHYLAMINO- AZOBENZENE
PEBULATE (TILLAM)
PENTACHLOROBENZENE
PENTACHLOROETHANE
PENTACHLOROPHENOL
PESTICIDES, GENERAL
P-ETHYLTOLUENE
PETROL HYDROCARBONS, TOTAL RECOVERABLE
PHENACETIN
PHENANTHRENE
PHENANTHRENE, DRY WEIGHT
PHENOL, SINGLE COMPOUND
PHENOLIC COMPOUNDS, SLUDGE TOTAL, DRY WEIGHT
PHENOLIC COMPOUNDS, UNCHLORINATED
PHENOLICS IN BOTTOM DEPOSITS (DRY WGT)
PHENOLICS, TOTAL RECOVERABLE
PHENOLS
PHENOLS, CHLORINATED
PHENOXY ACETIC ACID

PHENYLPROPANOLAMINE
PHENYLTOLOXAMINE
PHORATE
PHOSPHATED PESTICIDES
PHOSPHOROTHIOIC ACID 0,0,0-TRIETHYL ESTR
PHTHALATE ESTERS
PHTHALATES, TOTAL
PHTHALIC ACID
PHTHALIC ANHYDRIDE
PLATINUM, TOTAL (AS PT)
POLONIUM 210
POLYACRILAMIDE CHLORIDE
POLYBROMINATED BIPHENYLS
POLYBROMINATED DIPHENYL OXIDES
POLYCHLORINATED BIPHENYLS (PCBS)
POLYMETHYLACRYLIC ACID
PROPABHLOR (RAMROD) DISSOLVED
PROPANE, 2-METHOXY- 2-METHYL
PROPANIL
PROPENE, TOTAL
PROPRANE, TOTAL
PROPYL ACETATE
PROPYLENE OXIDE
PROPYLENGLYCOL, TOTAL
PURGEABLE AROMATICS METHOD 602
PURGEABLE HYDRO- CARBONS, METH. 601
PYRENE
PYRENE, DRY WEIGHT
PYRETHRINS
PYRIDINE
QUARTERNARY AMMONIUM COMPOUNDS
QUINOLINE
RADIATION, GROSS BETA
RADIATION, GROSS ALPHA
RADIOACTIVITY
RADIOACTIVITY, GROSS
RADIUM 226 + RADIUM 228, TOTAL
RADIUM 226, DISSOLVED
RADIUM 228, TOTAL
RARE EARTH METALS, TOTAL
RATIO OF FECAL COLIFORM TO FECAL STREPOC
R-BHC (LINDANE) GAMMA
RDX, DISSOLVED
RDX, TOTAL
RESIN ACIDS, TOTAL
RESORCINOL
RHODIUM, TOTAL
ROTENONE
ROUNDUP
RUBIDIUM, TOTAL (AS RB)
SAFROLE
SAMARIUM, TOTAL (AS SM IN WATER)
SELENIUM, ACID SOLUBLE
SELENIUM SLUDGE SOLID
SELENIUM, POTENTIALLY DISSOLVD
SELENIUM, DISSOLVED (AS SE)
SELENIUM, DRY WEIGHT
SELENIUM, SLUDGE, TOTAL DRY WEIGHT
SELENIUM, TOTAL (AS SE)
SELENIUM, TOTAL RECOVERABLE
SEVIN
SEVIN (CARBARYL) IN TISSUE
SILVER
SILVER TOTAL RECOVERABLE
SILVER IN BOTTOM DEPOSITS (DRY WGT)
SILVER, DISSOLVED (AS AG)
SILVER, IONIC
SILVER, POTENTIALLY DISSOLVED
SILVER, TOTAL (AS AG)
SILVER, TOTAL PER BATCH
SILVEX
SODIUM CHLORATE
SODIUM DICHROMATE
SODIUM DIMETHYL-DITHIOCARBAMATE, TOTAL
SODIUM PENTACHLORO- PHENATE
SODIUM POLYACRYLATE, TOTAL
SODIUM-O-PPTH

STRONTIUM 90, TOTAL
STRONTIUM, DISSOLVED
STRONTIUM, TOTAL (AS SR)
STYRENE
STYRENE, TOTAL
SULFABENZAMIDE
SULFACETAMIDE
SULFATHIAZOLE
SULFOTEPP (BLADAFUME)
TANNIN AND LIGNIN
TCDD EQUIVALENTS
TELLURIUM, TOTAL
TERBACIL
TERBUFOS (COUNTER) TOTAL
TETRA SODIUM EDTA
TETRACHLORDIBENZOFURAN,2378-(TCDF) SED,
TETRACHLOROBENZENE
TETRACHLOROETHANE, TOTAL
TETRACHLOROETHENE
TETRACHLOROETHYLENE
TETRACHLOROETHYLENE
TETRACHLOROETHYLENE, DRY WEIGHT
TETRACHLOROGUAIACOL (4CG) IN WHOLE WATER
TETRAHYDRO-3,5-DIMETHYL-2-HYDRO-1,3,5-TH
TETRAHYDROFURAN
TETRAMETHYLBENZENE
THALLIUM IN BOTTOM DEPOSITS (DRY WGT)
THALLIUM, POTENTIALLY DISSOLVD

THALLIUM, ACID SOLUBLE
THALLIUM, DISSOLVED (AS TL)
THALLIUM, TOTAL (AS TL)
THALLIUM, TOTAL RECOVERABLE
THC, DRY & 02
THEOPHYLLINE
THIOCARBAMATES
THIOCYANATE (AS SCN)
THIOSULFATE ION(2-)
THORIUM 230
THORIUM 232
TIN
TIN, DISSOLVED (AS SN)
TIN, TOTAL (AS SN)
TIN, TOTAL RECOVERABLE
TITANIUM, DISSOLVED (AS TI)
TITANIUM, TOTAL (AS TI)
TITANIUM, TOTAL DRY WEIGHT (AS TI)
TOLUENE
TOLUENE, DISSOLVED
TOLUENE, DRY WEIGHT
TOLUENE-2,4 -DIISOCYANITE
TOLYTRIAZOLE
TOTAL ACID PRIORITY POLLUTANTS
TOTAL BASE/NEUTRAL PRIORITY POLLUTANTS
TOTAL PESTICIDES
TOTAL PHENOLS
TOTAL POLONIUM
TOTAL PURGEABLE HALOCARBONS
TOTAL TOXIC ORGANICS (TTO) (40CFR413)
TOTAL TOXIC ORGANICS (TTO) (40CFR433)
TOTAL TOXIC ORGANICS (TTO) (40CFR464A)
TOTAL TOXIC ORGANICS (TTO) (40CFR464B)
TOTAL TOXIC ORGANICS (TTO) (40CFR464C)
TOTAL TOXIC ORGANICS (TTO) (40CFR464D)
TOTAL TOXIC ORGANICS (TTO) (40CFR467)
TOTAL TOXIC ORGANICS (TTO) (40CFR468)
TOTAL TOXIC ORGANICS (TTO) (40CFR469)
TOTAL TOXIC ORGANICS (TTO) (40CFR465)
TOTAL VOLATILE PRIORITY POLLUTANTS
TOXAPHENE
TOXAPHENE, DRY WEIGHT
TOXICITY
TOXICITY, CERIODAPHNIA ACUTE
TOXICITY, CERIODAPHNIA CHRONIC
TOXICITY, PIMEPHALES ACUTE
TOXICITY, PIMEPHALES CHRONIC
TOXICITY, CHOICE OF SPECIES
TOXICITY, FINAL CONC TOXICITY UNITS
TOXICITY, SALMO CHRONIC
TOXICITY, SAND DOLLAR
TOXICITY, TROUT
TOXICS, PERCENT REMOVAL
TRANS-1,2-DICHLORO- ETHYLENE
TRANS-1,3-DICHLORO PROPENE
TREFLAN (TRIFLURALIN)
TRIBUTHYLAMINE
TRIBUTYLTIN
TRICHLOROBENZENE
TRICHLOROBENZENE 1,2,4 TOTAL
TRICHLOROETHANE
TRICHLOROETHENE
TRICHLOROETHYLENE
TRICHLOROETHYLENE, DISSOLVED
TRICHLOROETHYLENE, DRY WEIGHT
TRICHLOROFLUORO- METHANE
TRICHLOROGUAIACOL
TRICHLOROPHENATE- (ISOMERS)
TRICHLOROPHENOL
TRICHLOROTOLUENE
TRICHLOROTRIFLUORO- ETHANE
TRIETHANOLAMINE
TRIETHYLAMINE
TRIFLURALIN (C13H16F3N3O4)
TRIHALOMETHANE, TOT.
TRIMETHYL BENZENE
TRINITROTOLUENE (TNT), DISSOLVED
TRINITROTOLUENE (TNT), TOTAL
TRIPHENYL PHOSPHATE
TRITHION
TRITIUM (1 H3), TOTAL
TRITIUM, TOTAL
TRITIUM, TOTAL COUN-TING ERROR (PC/L)
TRITIUM, TOTAL NET INCREASE H-3 UNITS
TUNGSTEN, DISSOLVED
TUNGSTEN, TOTAL
U-236 TOTAL WTR
URANIUM, POTENTIALLY DISSOLVD
URANIUM, 235 TOTAL
URANIUM, 238 TOTAL
URANIUM, NATURAL, DISSOLVED
URANIUM, NATURAL, TOTAL
URANIUM, NATURAL, TOTAL (IN PCI/L)
URANIUM, TOTAL AS U308
URANYL-ION
UREA
VERNAM (S-PROPYLDI-PROPYLTHIOCARBAMATE)
VINYL ACETATE
VINYL CHLORIDE
VINYL CHLORIDE, DRY WEIGHT
VOLATILE COMPOUNDS, (GC/MS)
VOLATILE FRACTION ORGANICS (EPA 624)
VOLATILE HALOGENATED HYDROCARBONS
VOLATILE HALOGENATED ORGANICS (VHO), TOT
VOLATILE HYDROCARBONS
VOLATILE ORGANICS DETECTED
XANTHATES
XC POLYMER IN DRILLING FLUIDS
XYLENE

XYLENE, PARA- TOTAL
ZINC
ZINC TOTAL RECOVERABLE
ZINC IN BOTTOM DEPOSITS (DRY WGT)
ZINC SLUDGE SOLID
ZINC SLUDGE TOTAL
ZINC, DISSOLVED (AS ZN)
ZINC, DRY WEIGHT
ZINC, POTENTIALLY DISSOLVED
ZINC, TOTAL
ZINC, TOTAL (AS ZN)
ZIRCONIUM, TOTAL

FACT SHEET

STATE WATER RESOURCES CONTROL BOARD

ORDER NO. 2006-0003

STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS

The State Water Resources Control Board (State Water Board) adopted Resolution 2004-80 in November 2004, requiring staff to work with a diverse group of stakeholders (known as the SSO Guidance Committee) to develop a regulatory mechanism to provide a consistent statewide approach for reducing Sanitary Sewer Overflows (SSOs). Over the past 14 months, State Water Board staff in collaboration with the SSO Guidance Committee, developed draft statewide general waste discharge requirements (WDRs) and a reporting program. The WDRs and reporting program reflect numerous ideas, opinions, and comments provided by the SSO Guidance Committee.

The SSO Guidance Committee consists of representatives from the State Water Board's Office of Chief Counsel, several Regional Water Quality Control Boards (Regional Water Boards), United States Environmental Protection Agency (USEPA), Region IX, non-governmental environmental organizations, as well as publicly-owned sanitary sewer collection system agencies. The draft WDRs, reporting program, and associated documents result from a collaborative attempt to create a robust and rigorous program, which will serve as the basis for consistent and appropriate management and operation of sanitary sewer systems.

During the collaborative process, several key issues regarding the draft WDRs were identified. These include:

- Is there a need for statewide collection system requirements?
- Should these systems be regulated under a National Pollutant Discharge Elimination System (NPDES) permit issued pursuant to the Federal Clean Water Act or under WDRs issued pursuant to the California Water Code (the Porter-Cologne Water Quality Control Act or Porter-Cologne)?
- Should the regulatory mechanism include a prohibition of discharge and, if so, should the prohibition encompass only SSOs that reach surface waters, ground water, or should all SSOs be prohibited?
- Should a regulatory mechanism include a permitted discharge, an affirmative defense, or explicit enforcement discretion?
- Should the regulated facilities include publicly-owned facilities, privately owned facilities, satellite systems (public and private), and/or private laterals?

- Should all SSOs be reported, and if not, what should the reporting thresholds be; and what should the reporting timeframes be?
- How will existing permits and reporting requirements incorporate these new WDRs?
- How much will compliance with these new WDRs cost?

The WDRs and Reporting Program considered the comments of all stakeholders and others who commented on the two drafts circulated to the public. These documents also incorporate legal requirements and other revisions to improve the effectiveness and management of the regulatory program. Following is a discussion of the above issues, comments received on the drafts and an explanation of how issues were resolved.

The Need

As California's wastewater collection system infrastructure begins to age, the need to proactively manage this valuable asset becomes increasingly important. The first step in this process is to have a reliable reporting system for SSOs. Although there are some data systems to record spills and various spill-reporting requirements have been developed, inconsistent requirements and enforcement have led to poor data quality. A few Regional Water Boards have comprehensively tracked SSOs over the last three to five years, and from this information we have been able to determine that the majority of collection systems surveyed have had SSOs within this time period.

Both the San Diego and Santa Ana Regional Water Boards have issued WDRs over the last several years to begin regulating wastewater collection systems in an attempt to quantify and reduce SSOs. In fact, 44 out of 46 collection system agencies regulated by the San Diego Regional Water Board have reported spills over the last four and a half years, resulting in 1467 reported SSOs. Twenty-five out of 27 collection system agencies subject to the Santa Ana Regional Water Board's general WDRs reported SSOs between the years of 1999-2004. During this time period, 1012 SSOs were reported.

The 2004 Annual Ocean and Bay Water Quality Report issued by the Orange County Environmental Health Care Agency shows the number of SSOs increasing from 245 in 1999 to 399 in 2003. While this number indicates a concerning trend, the total annual spill volume from these SSOs has actually decreased dramatically, as has the number of beach closures due to SSOs. It is likely, therefore, that the rise in number of SSOs reflects better reporting, and not an actual increase in the number of SSOs.

This information also suggests that the Santa Ana Regional Water Board's WDRs, which contain sanitary sewer management plan (SSMP) requirements similar to those in the proposed statewide general WDRs, have been effective in

not only increasing the number of spills that are reported but also in mitigating the impacts of SSOs that do occur.

Data supports the conclusion that virtually all collection systems have SSOs and that implementation of a regulatory measure requiring SSO reporting and collection system management, along with required measures to limit SSOs, will greatly benefit California water quality. Implementation of these requirements will also greatly benefit and prolong the useful life of the sanitary sewer system, one of California's most valuable infrastructure items.

NPDES vs. WDRs

Porter-Cologne subjects a broader range of waste discharges to regulation than the Federal Clean Water Act. In general, the Clean Water Act prohibits the discharge of pollutants from point sources to surface waters of the United States unless authorized under an NPDES permit. (33 U.S.C. §§1311, 1342). Since not all SSOs result in a discharge to surface water, however, not all SSOs violate the Clean Water Act's NPDES permitting requirements. Porter-Cologne, on the other hand, covers all existing and proposed waste discharges that could affect the quality of state waters, including both surface waters and groundwater. (Wat. Code §§13050(e), 13260). Hence, under Porter-Cologne, a greater SSO universe is potentially subject to regulation under WDRs. In addition, WDRs under Porter-Cologne can address both protection of water quality as well as the prevention of public nuisance associated with waste disposal. (***Id.*** §13263).

Some commenters contend that because all collection systems have the potential to overflow to surface waters the systems should be regulated under an NPDES permit. A recent decision by the United States Court of Appeals for the 2nd Circuit, however, has called into question the states' and USEPA's ability to regulate discharges that are only "potential" under an NPDES permit. In ***Waterkeeper Alliance v. United States Environmental Protection Agency*** (2005) 399 F.3d 486, 504-506, the appellate court held that USEPA can only require permits for animal feedlots with "an actual addition" of pollutants to surface waters. While this decision may not be widely followed, especially in the area of SSOs, these are clearly within the jurisdiction of the California Water Code.

USEPA defines a publicly owned treatment works (POTW) as both the wastewater treatment facility and its associated sanitary sewer system (40 C.F.R. §403.3(o)[1]). Historically, only the portion of the sanitary sewer system that is owned by the same agency that owns the permitted wastewater treatment facility has been subject to NPDES permit requirements. Satellite sewer collection systems (i.e. systems not owned or operated by the POTW) have not been

[1] The regulation provides that a POTW include sewers, pipes, and other conveyances only if they convey wastewater to a POTW.

typically regulated as part of the POTW and, therefore, have not generally been subject to NPDES permit requirements.

Comments were received that argued every collection system leading to a POTW that is subject to an NPDES permit should also be permitted based upon the USEPA definition of POTW. Under this theory, all current POTW NPDES permits could be expanded to include all satellite sewer collection systems, or alternatively, the satellite system owners or operators could be permitted separately. However, this interpretation is not widely accepted and USEPA has no official guidance to this fact.

There are also many wastewater treatment facilities within California that do not have discharges to surface water, but instead use percolation ponds, spray irrigation, wastewater reclamation, or other means to dispose of the treated effluent. These facilities, and their satellite systems, are not subject to the NPDES permitting process and could not be subject to a statewide general NPDES permit. POTWs that fall into this category, though, can be regulated under Porter-Cologne and do have WDRs.

In light of these factors, the State Water Board has determined that the best approach is to propose statewide general WDRs at this time.

Prohibition of Discharge

The Clean Water Act prohibits the discharge of wastewater to surface waters except as authorized under an NPDES permit. POTWs must achieve secondary treatment, at a minimum, and any more stringent limitations that are necessary to achieve water quality standards. (33 U.S.C. §1311(b)(1)(B) and (C)). Thus, an SSO that results in the discharge of raw sewage to surface waters is prohibited under the Clean Water Act.

Additionally, California Water Code section 13263 requires the State Water Board to, after any necessary hearing, prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge. The requirements shall, among other things, take into consideration the need to prevent nuisance.

California Water Code section 13050 (m), defines nuisance as anything which meets all of the following requirements:

a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.

c. Occurs during, or as a result of, the treatment or disposal of wastes.

Some SSOs do create a nuisance as defined in state law. Therefore, based upon these statutory requirements, the WDRs include prohibitions in Section C. of the WDRs. Section C. states:

C. PROHIBITIONS

1. Any SSO that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.

2. Any SSO that results in a discharge of untreated or partially treated wastewater, which creates a nuisance as defined in California Water Code section 13050(m) is prohibited.

Furthermore, the State Water Board acknowledges the potential for more stringent water quality standards that may exist pursuant to a Regional Water Board requirement. Language included in Section D.2 of the WDRs allows for these more stringent instances.

D. PROVISIONS

2. It is the intent of the State Water Board that sanitary sewer systems be regulated in a manner consistent with the general WDRs. Nothing in the general WDRs shall be:

(i) Interpreted or applied in a manner inconsistent with the Federal Clean Water Act, or supersede a more specific or more stringent state or federal requirement in an existing permit, regulation, or administrative/judicial order or Consent Decree;
(ii) Interpreted or applied to authorize an SSO that is illegal under either the Clean Water Act, an applicable Basin Plan prohibition or water quality standard, or the California Water Code;
(iii) Interpreted or applied to prohibit a Regional Water Board from issuing an individual NPDES permit or WDRs, superseding the general WDRs, for a sanitary sewer system, authorized under the Clean Water Act or California Water Code; or
(iv) Interpreted or applied to supersede any more specific or more stringent WDRs or enforcement order issued by a Regional Water Board.

Permitted Discharge, Affirmative Defense, and Enforcement Discretion

Commenters from the discharger community have requested inclusion of an affirmative defense to an SSO on the grounds that certain SSO events are unforeseen and unavoidable, such as SSOs due to extreme wet weather events. An affirmative defense is a mechanism whereby conduct that otherwise violates WDRs or a permit will be excused, and not subject to an enforcement action, under certain circumstances. Since many collection system industry experts believe that not all SSOs may be prevented, given certain circumstances (such as unforeseen vandalism, extreme wet weather, or other acts of God), many

collection system owner representatives believe this should formally be recognized by including an affirmative defense for these unavoidable SSOs.

Previous informal drafts of the general WDRs included affirmative defense language, which was contingent upon appropriate development and implementation of sanitary sewer management plan (SSMP) requirements, as well as a demonstration that the SSO was exceptional and unavoidable. Other stakeholders, including USEPA and the environmental groups opposed the concept of an affirmative defense for SSOs. They argued that its inclusion in the WDRs would undermine the Clean Water Act and inappropriately limit both Regional Water Board and third party enforcement.

After considering input from all stakeholders, and consulting with USEPA, staff is not recommending inclusion of an affirmative defense. Rather, the draft WDRs incorporate the concept of enforcement discretion, and explicitly identify what factors must be considered during any civil enforcement proceeding. The enforcement discretion portion of the WDRs is contained within Sections D. 6 and 7, and is consistent with enforcement discretion provisions within the California Water Code.

Facilities Subject to WDRs

Collection systems consist of pipelines and their appurtenances, which are intended to transport untreated wastewater to both publicly-owned and private wastewater treatment facilities. While wastewater treatment facilities are owned by a wide variety of public and private entities, public agencies (state and federal agencies, cities, counties, and special districts) own the vast majority of this infrastructure.

Collection systems that transport wastewater to POTWs could be grouped into four different categories:

1. Publicly-owned treatment works – pipelines and appurtenances that are owned by a public agency that also owns a wastewater treatment facility;
2. Publicly-owned satellites – pipelines and appurtenances that are owned by a public agency that does not own a wastewater treatment facility; and
3. Private laterals - pipelines and appurtenances that are not owned by a public agency, but rather discharge into one of the above types of facilities.
4. Privately owned treatment works – pipelines and appurtenances that are owned by a private entity, which also owns a wastewater treatment facility (often a septic tank and leach field).

The WDRs require all public agencies, which own wastewater collection systems (category 1 and 2 above) to enroll in the WDRs. Privately owned systems (categories 3 and 4) are not subject to the WDRs; however, a Regional Water

Board may at its discretion issue WDRs to these facilities on a case-by-case or region wide basis.

Collection systems discharging into POTWs (categories 1, 2, and 3) represent, by far, the greatest amount of collection system infrastructure within California. Since regulating private entities (categories 3 and4) on a statewide basis would be unmanageable and impractical (because of the extremely large number and lack of contact information and other associated records), staff believes focusing on the public sector is the best option for meaningful and consistent outcomes. The legal authority and reporting provisions contained in the WDR do require limited oversight of private laterals (category 3) by public entities. Given this limited responsibility of oversight, public entities are not responsible or liable for private laterals.

State Water Board staff will notify all known public agencies that own wastewater collection systems, regarding their obligation to enroll under these WDRs. However, because of data inaccuracies, State Water Board staff may inadvertently not contact an agency that should enroll in the WDRs or erroneously contact a public agency that does not own a collection system. Staff will make every effort to accurately identify public agencies. In the event that a public agency is overlooked or omitted, however, it is the agency's responsibility to contact the State Water Board for information on the application process. An agency can find the appropriate contact by visiting the State Water Board's SSO homepage at www.waterboards.ca.gov/sso.

SSO Reporting

SSOs can be distinguished between those that impact water quality and/or create a nuisance, and those that are indicators of collection system performance. Additionally, SSO liability is attributed to either private entities (homeowners, businesses, private communities, etc…) or public entities. Although all types of SSOs are important to track, the reporting time frames and the type of information that need to be conveyed differ.

The Reporting Program and Online SSO Database clearly distinguish the type of spill (major or minor) and the type of entity that owns the portion of the collection system that experienced the SSO (public or private entity). The reason to require SSO reporting for SSOs that do not necessarily impact public health or the environment is because these types of SSOs are indicators of collection system performance and management program effectiveness, and may serve as a sign of larger and more serious problems that should be addressed. Although these types of spills are important and must be regulated by collection system owners, the information that should be tracked and the time required to get them into the online reporting system are not as stringent.

Obviously, SSOs that are large in nature, affect public health, or affect the environment must be reported as soon as practicable and information associated with both the spill and efforts to mitigate the spill must be detailed. Since the Online SSO Database is a web based application requiring computer connection to the internet and is typically not as available as telephone communication would be, the Online Database will not replace emergency notification, which may be required by a Regional Water Board, Office of Emergency Services, or a County Health or Environmental Health Agency.

Incorporating Existing Permits

It is the State Water Board's intent to have one statewide regulatory mechanism that lays out the foundation for consistent collection system management requirements and SSO reporting. While there are a significant number of collection systems that are not actively regulated by the State or Regional Water Boards, some efforts have been made to regulate these agencies on a facility-by-facility or region-by-region basis. General WDRs, individual WDRs, NPDES permits, and enforcement orders that specifically include collections systems are mechanisms that have been used to regulate collection system overflows.

However, because of these varying levels of regulatory oversight, confusion exists among collection system owners as to regulatory expectations on a consistent and uniform basis (especially with reporting spills). Currently, there are a myriad of different SSO reporting thresholds and a number of different spill report repositories. Because of the varying levels of reporting thresholds and the lack of a common database to capture this information, an accurate picture of SSOs throughout California is unobtainable.

In order to provide a consistent and effective SSO prevention program, as well as to develop reasonable expectations for collection system management, these General WDRs should be the primary regulatory mechanism to regulate public collection systems. The draft WDRs detail requirements associated with SSMP development and implementation and SSO reporting.

All NPDES permits for POTWs currently include federally required standard conditions, three of which apply to collection systems. NPDES permits must clarify that the following three conditions apply to that part of the collection system that is owned or operated by the POTW owner or operator. These conditions are:

- Duty to mitigate discharges (40 CFR 122.41(d))
- Requirement to properly operate and maintain facilities (40 CFR 122.41(e))
- Requirement to report non-compliance (40 CFR 122.41(l)(6) and (7))

Understandably, revising existing regulatory measures will not occur immediately. However, as time allows and, at a minimum, upon readopting existing WDRs or WDRs that serve as NPDES permits, the Regional Water Boards should rescind redundant or inconsistent collection system requirements. In addition, the Regional Water Boards must ensure that existing NPDES permits clarify that the three standard permit provisions discussed above apply to the permittee's collection system.

Although it is the State Water Board's intent that this Order be the primary regulatory mechanism for sanitary sewer systems statewide, there will be some instances when Regional Water Boards will need to impose more stringent or prescriptive requirements. In those cases, more specific or more stringent WDRs or an NPDES permit issued by a Regional Water Board will supersede this Order. Finding number 11, in the WDRs states:

> 11. Some Regional Water Boards have issued WDRs or WDRs that serve as National Pollution Discharge Elimination System (NPDES) permits to sanitary sewer system owners/operators within their jurisdictions. This Order establishes minimum requirements to prevent SSOs. Although it is the State Water Board's intent that this Order be the primary regulatory mechanism for sanitary sewer systems statewide, Regional Water Boards may issue more stringent or more prescriptive WDRs for sanitary sewer systems. Upon issuance or reissuance of a Regional Water Board's WDRs for a system subject to this Order, the Regional Water Board shall coordinate its requirements with stated requirements within this Order, to identify requirements that are more stringent, to remove requirements that are less stringent than this Order, and to provide consistency in reporting.

Cost of Compliance

While the proposed WDRs contain requirements for systems and programs that should be in place to effectively manage collection systems, many communities have not implemented various elements of a good management plan. Some agencies are doing an excellent job managing their collection systems and will incur very little additional costs. Other agencies will need to develop and implement additional programs and will incur greater costs. However, any additional costs that a public agency may incur in order to comply with these General WDRs are costs that an agency would necessarily incur to effectively manage and preserve its infrastructure assets, protect public health and prevent nuisance conditions. These General WDRs prescribe minimum management requirements that should be present in all well managed collection system agencies.

In order to estimate the compliance costs associated with the proposed WDRs, staff analyzed costs associated with implementing the Santa Ana Regional Water Board's general WDRs. Twenty-one agencies, which discharge to Orange County Sanitation District, submitted financial summaries for the last five years, representing both pre- and post-WDRs adoption. Operation and maintenance costs, program development costs, as well as capital improvement costs were

considered and fairly accurately represent what can be expected statewide with the adoption of the General WDRs.

After extrapolating the sample to yield a statewide cost perspective, the projected annual cost of implementing the statewide WDRs is approximately $870 million. This total represents $345.6 million in O&M costs and $524.5 for capital improvement projects.

While this sum is substantial, presenting the costs on a per capita or per household basis puts the figure in perspective. Department of Finance estimated the total population for Californians that may be subject to the WDRs to be 30.3 million persons (1/1/05). Dividing the population by the approximate average household size of 2.5 yields 12 million households. The average household in California is assumed to be 2.5 persons. The increased average annual cost (in order to comply with these WDRs) per person is estimated to be $28.74 and $71.86 per household (or $5.99 per month per household)

Given these average costs there will be some communities that realize higher costs on a per household basis and some that realize less cost. Furthermore, larger communities will probably also realize an economy of scale, which is dependent upon a community's size. While larger communities may see lower costs associated with compliance, smaller communities will probably see a higher cost associated with compliance. Costs for compliance in small communities may be as high as $40 per month per household.

Exhibit 2

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD SAN DIEGO REGION

Staff Report

Proposed Administrative Civil Liability Contained in Complaint No. 2000-74 City of Oceanside Sanitary Sewer Overflows

Noncompliance with
Order No. 96-04
General Waste Discharge Requirements
Prohibiting Sanitary Sewer Overflows
by
Sewage Collection Agencies

17 April 2000

by
Rebecca Stewart
Sanitary Engineering Associate
Compliance Assurance Team

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Appendices

1. INTRODUCTION

This report provides a summary of factual and analytical evidence supporting administrative assessment of civil liability in the amount of $346,015 against the City of Oceanside for violations of Order No. 96-04 of the California Regional Water Quality Control Board, San Diego Region (SDRWQCB) as alleged in Complaint No. 2000-74. (See *Appendix A, Complaint No. 2000-74.)*

2. BACKGROUND

The City of Oceanside (City) maintains approximately 450 miles of sewer lines. During a fourteen-day period, from 29 January 2000 to 11 February 2000, overflows from the City's sewage collection system resulted in the discharge of approximately 2,000,000 gallons of raw sewage to Buena Vista Creek and Buena Vista Lagoon. The City is required to properly operate and maintain their sewage collection system in an effort to eliminate sanitary sewer overflows in accordance with requirements contained in Order No. 96-04, *General Waste Discharge Requirements Prohibiting Sanitary Sewer Overflows by Sewage Collection Agencies*. Prohibition A.1 of Order No. 96-04 states that the discharge of sewage from a sanitary sewer system from any point upstream of a wastewater treatment plant is prohibited. Provision B.4 of Order No. 96-04 requires dischargers to implement remedial action after a sewer overflow. These remedial actions include: (a) Interception and rerouting of sewage flows around the sewage line failure; (b) Vacuum truck recovery of sanitary sewer overflows and wash down water; (c) Use of portable aerators where complete recovery of the sanitary sewer overflow is not practicable and where severe oxygen depletion in existing surface waters is expected; and (d) Cleanup of debris of sewage origin at the overflow site. (See *Appendix B, Order No. 96-04.)*

On 17 February 2000, the Regional Board issued Notice of Violation No. 2000-39 to the City of Oceanside in response to the overflows to Buena Vista Creek and Buena Vista Lagoon. (See *Appendix C, Notice of Violation No. 2000-39.)* Notice of Violation No. 2000-39 required submittal of detailed information regarding the spills. The City submitted its report on 1 March 2000 . (See *Appendix D, 1 March 2000 City of Oceanside Letter in response to Notice of Violation No. 2000-39.)* After review of the City's response, another request for information was sent by the Executive Officer on 27 March 2000. (See *Appendix E, 13267 Letter Requesting Additional Information.)* The City submitted the additional information on 5 April 2000. (See *Appendix F, City of Oceanside Letter to John H. Robertus, Executive Officer, SDRWQCB.)*

Buena Vista Lagoon is owned and maintained by the California Department of Fish and Game. Because of the lagoon's unique and highly valued coastal wildlife habitat, the Department of Fish and Game has designated Buena Vista Lagoon to be an ecological reserve. Buena Vista Lagoon is listed on the State's List of "Impaired Water Bodies" [required by subdivision (d) of Clean Water Act

Section 303, 33 USC 1313] for water quality impairments associated with excessive sediment, coliform and nutrient concentrations, which affect the quality of water needed to sustain REC-1, REC-2, and aquatic life beneficial uses. Raw sewage typically consists of waste characterized by high bacteria levels, high concentrations of biochemical oxygen demand (BOD), high levels of the biostimulating nutrients, and an array of heavy metals and synthetic organics. Any discharge of raw sewage to the sensitive habitat of Buena Vista Lagoon compounds the coliform and nutrient impairments.

3. ALLEGATIONS

The following allegations against the City of Oceanside are the basis for assessing administrative civil liability and also appear in Complaint No. 2000-74.

3.1 115,000 Gallon Sanitary Sewer Overflow to Buena Vista Creek and Buena Vista Lagoon

On 29 January 2000, the City reported that a manhole adjacent to Buena Vista Creek was vandalized and resulted in 115,000 gallons of raw sewage being discharged into Buena Vista Creek and Buena Vista Lagoon. The City reported that the spill began at 1130 hours and ended at 1830 hours. None of the 115,000 gallons of raw sewage was recovered from Buena Vista Creek or Buena Vista Lagoon. The City has violated Prohibition A.1 and Provision B.4 of Order No. 96-04.

3.2 1.7 Million Gallon Sanitary Sewer Overflow to Buena Vista Creek, Buena Vista Lagoon

On 31 January 2000 the City reported that a broken 18-inch force main resulted in the discharge of 1.7 million gallons of raw sewage to Buena Vista Creek and Buena Vista Lagoon. Recovery of the 1.7 million gallons of raw sewage was not feasible because the broken pipe was located under the lagoon and adjacent wildlife habitat. The City has violated Prohibition A.1 of Order No. 96-04.

3.3 198,000 Gallon Sanitary Sewer Overflow to Buena Vista Creek and Buena Vista Lagoon

On 11 February 2000 the City reported another break in the 18-inch force main resulting in a discharge of 198,000 gallons of raw sewage into Buena Vista Creek and Buena Vista Lagoon. Recovery of the 198,000 gallons of raw sewage was not feasible because the broken pipe was located under the lagoon and adjacent wildlife habitat. The City has violated Prohibition A.1 of Order No. 96-04.

4. DETERMINATION OF ADMINISTRATIVE CIVIL LIABILITY

Pursuant to California Water Code Section 13385, the Regional Board could assess civil liability pursuant to Article 2.5 (commencing with Section 13323) of Chapter 4 in an amount not to exceed the sum of both of the following:

a. Ten thousand dollars ($10,000) for each day in which the violation occurs.

b. Where there is a discharge, any portion of which is not susceptible to cleanup or is not cleaned up, and the volume discharged but not cleaned up exceeds 1,000 gallons, an additional liability not to exceed ten dollars ($10) times the number of gallons by which the volume discharged but not cleaned up exceeds 1,000.

4.1. Factors to be Considered when Determining Administrative Civil Liability

California Water Code Section 13385(e) requires the Regional Board to consider several factors when determining the amount of civil liability to impose. These factors include: "...the nature, circumstances, extent and gravity of the violation, and with respect to the violator, the ability to pay, and prior history of violation, the degree of culpability, economic benefit or savings, if any, resulting from the violation, and other matters that justice may require."

4.1.1. 115,000 Gallon Sanitary Sewer Overflow to Buena Vista Creek and Buena Vista Lagoon

4.1.1.1. Nature, Circumstance, Extent, and Gravity of Violation

The City's report dated 1 March 2000 states that they maintain an ongoing program of inspecting manholes for security and tampering. The manhole that was vandalized on 29 January 2000 was securely bolted in position requiring the vandals to remove the entire upper concrete portion onto which the steel manhole was bolted. The service road to the manhole was also secured by a locked gate requiring the vandals to remove the manhole assembly, estimated to weigh several hundred pounds, without the use of heavy equipment.

The City's report further stated that the spill began at 1130 hours on 29 January 2000. It took City crews until 1830 hours to repair the manhole and stop the overflow. During the seven hours that the spill was occurring, City staff failed to implement measures to recover or redirect any portion of the spill allowing the entire 115,000 gallons to flow into Buena Vista Lagoon. As a result of this spill, signs warning of sewage contamination were posted along approximately 80 linear feet of Buena Vista Creek at various access points for a total of 5 days. Therefore, a reduction of the maximum civil liability is not warranted.

4.1.1.2 . **Degree of Culpability**

The City of Oceanside took reasonable steps to secure the manhole that is adjacent to a sensitive water body. However, the City made no attempt to recover or redirect any of the spill which constitutes a violation of Provision B.4 of Order No. 96-04.

Order No. 96-04 requires sewering agencies to prepare a Sanitary Sewer Overflow Response Plan. The City of Oceanside submitted a copy of their plan as required by Notice of Violation No. 2000-39. The Sewer Overflow Response Plan does not direct emergency response personnel to recover or redirect spills to minimize the impacts of raw sewage discharges to receiving waters. Therefore, a reduction of the maximum civil liability is not warranted.

4.1.1.3. **Prior History of Violations**

In 1998 the City of Oceanside reported 39 sanitary sewer overflows (14 from private laterals) totaling 42,175 gallons. In 1999 the City reported 41 sanitary sewer overflows (7 from private laterals) totaling 127,040 gallons. Of the spills reported in 1999, 7 resulted in pollution (or contamination) of surface waters. Of the 46 sewering agencies covered by Order No. 96-04, the City of Oceanside discharged the third highest total volume of raw sewage in 1999. As a result of this sewer overflow, the City will not have a reduction in the volume of

sewage spilled in 2000, in contrast to this Regional Board's objective of eliminating sewage spills. Of the 34 sewer overflows that occurred in 1999, one spill of 3,000 gallons entered Buena Vista Lagoon. (See *Appendix G, Sanitary Sewer Overflow History.)*

On 24 March 1998 the Regional Board Executive Officer issued Administrative Civil Liability Complaint No. 98-41 to the City of Oceanside for failing to conduct required pretreatment inspections. The City cited a lack of personnel as the reason the proper number of inspections were not conducted. The City of Oceanside reports that $1,021,000 is allocated for personnel services for the sewer collection and transmission section of the water utilities department for fiscal year 1999/2000. The collections department is allocated 15 permanent full time positions and 1 temporary full time position. As of 15 February 2000, 2 permanent full time positions and 1 temporary full time positions were vacant. The City should examine filling the three full time positions to address their omission regarding recovery and redirection of sanitary sewer overflows. Based on the above information, a reduction from the maximum civil liability is not warranted.

4.1.1.4. Economic Savings

The City of Oceanside incurred nominal economic savings from this sewer overflow event by avoiding the cost of treating 115,000 gallons of raw sewage based on the City's estimate that it costs $1,233 to treat one million gallons of raw sewage. A reduction from the maximum civil liability is not warranted.

4.1.1.5. Ability to Pay and Ability to Continue in Business

At this time, the Regional Board has no information that the City is unable to pay the proposed administrative civil liability or how payment of the proposed administrative civil liability would affect the ability to provide required services. It is not

anticipated that payment of the maximum administrative civil liability for the violations addressed in Complaint No. 2000-74 would pose a significant financial hardship on the City. Therefore, a reduction from the maximum civil liability is not warranted.

4.1.1.7. Other Matters as Justice May Require

Over the course of dealing with the City of Oceanside regarding the sewer overflows detailed in this staff report, the Regional Board has invested an estimated 80 hours to investigate and consider action regarding this matter. At an average rate of $70 per hour, the total investment of Regional Board resources is $5,600.

4.1.2. 1.7 Million Gallon Sanitary Sewer Overflow to Buena Vista Creek and Buena Vista Lagoon

4.1.2.1. Nature, Circumstance, Extent, and Gravity of Violation

On 31 January 2000 the City of Oceanside reported a break in an 18-inch force main immediately north of the New Buena Vista Lift Station resulting in the discharge of 1,700,000 gallons of raw sewage into Buena Vista Creek and Buena Vista Lagoon. The City immediately initiated dissolved oxygen and bacteriological sampling and aeration of the lagoon to increase dissolved oxygen levels to protect aquatic life. Aeration continued until noon on 3 February 2000. As a result of the City's actions, mild temperatures, and frequent storm flows into the lagoon, a fish kill did not result. Signs warning of contaminated water were posted along the Buena Vista Creek, Buena Vista Lagoon and the Pacific Ocean until 8 February 2000, for a total of 8 days.

The California Department of Fish and Game has confirmed that no fish kill in the lagoon occurred as a result of this spill. However, because biostimulatory nutrients contained in raw sewage appear in a particulate state rather than a dissolved state as it occurs in urban runoff, it is expected that large volumes of nutrients have been deposited in

the sediment on the lagoon floor. As temperatures rise there is a strong likelihood that these nutrients will have a negative impact on water quality in the lagoon. These affects will appear in the form of algal blooms which may depress dissolved oxygen levels to the point where, if remedial action is not taken, fish kills will result.

Immediately after stopping the sewer overflow, the City initiated a continuous 24-hour per day construction effort to determine the cause of the overflow and repair the broken pipeline. Because the pipe is submerged below the water table and the Buena Vista Lagoon wetlands wildlife habitation overlies the main, the entire pipe was not excavated for inspection. Due to limited access and angle bends in the pipe, the entire structure was not televised.

The City's investigation concluded that the pipe failed as a result of severe corrosion. A television analysis of accessible portions of the main did not show any leakage. Excavation on either side of the failed section of pipe showed only minor signs of corrosion. As a result of their investigation, the City returned the force main to service on 2 February 2000.

The City continued its evaluation of the pipe and hired a corrosion engineer to assess the condition of the pipe. The corrosion engineer's report was completed on 9 February 2000. The report indicated that the soil where the pipe was buried was very corrosive and that the pipe failure was due to exterior corrosion. The failed section of pipe that was removed showed significant external pitting on the bottom of the pipe with significantly less pitting on the top and sides. Due to the proximity of the pipe to Highway 78 the entire main could not be exposed for analysis. Three excavations along the pipe showed numerous sites with graphitic corrosion. This corrosion was noted on the top and one side of the pipe, which were the only portions of the pipe that were exposed and could be inspected. The original backfill used around the main was stone and also showed signs of corrosion.

In conclusion, the corrosion engineer recommended that the pipe should be replaced.

Bacteriological samples of waters in Buena Vista Creek and Buena Vista Lagoon indicated that public contact was unsafe. Signs warning of contaminated water were also posted 300 feet north and south of the outlet of Buena Vista Lagoon to the Pacific Ocean as a precautionary measure. Recreational use of the lower reach of Buena Vista Creek, all of Buena Vista Lagoon, and a portion of the Pacific Ocean were lost as a result of the sewage spill through 11 February 2000. Therefore, a reduction of the maximum liability is not warranted.

4.1.2.2. **Degree of Culpability**

The City reports that at 0930 hours on Sunday, 30 January 2000, a routine daily inspection of the New Buena Vista Lift Station revealed no operational problems. At 1230 hours on 30 January 2000 an alarm in the City's central operations room indicated that pumps at the New Buena Vista Lift Station were operating in "overcurrent" mode. "Overcurrent" conditions can be triggered by (1) pump impeller or motor failure, (2) a clog within the pumps; or (3) a force main break. City crews diverted wastewater flows to the adjacent old (standby) pump station, which also sends flows through the 18-inch force main to the San Luis Rey Wastewater Treatment Plant. When placed in service, the pumps at the old lift station operated normally without the "overcurrent" condition. City crews concluded that the problem at the New Buena Vista Lift Station was probably pump-related rather than force main related.

At 0830 hours on Monday, 31 January 2000 City crews inspected the pumps at the New Buena Vista Lift Station and could not identify any mechanical problems. A dye test performed on the force main confirmed that an underground leak was occurring from the 18-inch force main. By 0930 hours, all of the flows to the 18-inch force main were diverted to adjacent sewer pipes owned by the Cities of Vista and Carlsbad and transported to the Encina

Wastewater Authority's wastewater treatment plant for treatment and disposal.

The City did not perform as thorough an investigation of the pump station alarm on Sunday 29 February 2000 as was performed on Monday 31 January 2000. By failing to conduct a quick, simple and inexpensive dye test following their conclusion that the problem was probably pump related, the broken force main went undetected for at least 17 hours longer than if the break was discovered during the initial investigation. Therefore, a reduction of the maximum civil liability is not warranted.

4.1.2.3. **Prior History of Violations**

See section 4.1.1.3.

4.1.2.4. **Economic Savings**

The City of Oceanside did incur economic savings from the avoided cost of treating 1,700,000 gallons of raw sewage. The City estimates that the cost of treating sewage at the San Luis Rey Wastewater Treatment Facility is $1,233 per million gallons. Therefore the total cost savings is $2,096. A reduction of the maximum civil liability is not warranted.

4.1.2.5. **Ability to Pay and Stay in Business**

See section 4.1.1.5.

4.1.2.6. **Other Matters as Justice May Require.**

See section 4.1.1.6.

4.1.3. **198,000 Gallon Sanitary Sewer Overflow to Buena Vista Creek and Buena Vista Lagoon**

4.1.3.1. **Nature, Extent and Gravity of Violation**

On 11 February 2000 the City notified the Regional Board that another break in the 18-inch force main had occurred. Original estimates of the spill

volume were at 1,200,000 gallons. A revised estimate, with supporting rationale, indicated that the spill was 198,000 gallons.

Buena Vista Creek, Buena Vista Lagoon, and the beaches north and south of the lagoon mouth were still posted warning of contamination from the spill that began on 30 January 2000. Signs warning of contaminated water remained along Buena Vista Creek, Buena Vista Lagoon and the Pacific Ocean through 22 February 2000. As a result of these spills, beneficial uses of a portion of Buena Vista Creek, Buena Vista Lagoon and the Pacific Ocean were not available to the public for a total of 22 days. Therefore, a reduction of the maximum liability is not warranted.

4.1.3.2. **Degree of Culpability**

The City returned the force main to service on 2 February 2000 even though the section of pipe that had failed days earlier was severely corroded. The City continued to keep the pipe in service after its corrosion engineer recommended replacement of the pipe. Because the City had the option to divert flows to neighboring collection systems for treatment at another facility until replacement of the pipe was completed, reduction in the maximum civil liability is not warranted.

4.1.3.3. **Prior History of Violations**

See section 4.1.1.3.

4.1.3.3. **Economic Savings**

By returning the 18-inch force main to service rather than continuing to divert flow to the Encina Wastewater Authority's wastewater treatment plant, the City of Oceanside did incur an economic savings equal to the amount Encina Wastewater Authority would charge the City for wastewater treatment services.

Encina Wastewater Authority charged the City of Oceanside $1,200 per million gallon for treatment.

The average flow previously diverted to the Encina plant was 2.2 million gallons per day. The City saved $18,333 by not diverting flows to Encina from 2 February 2000 through 11 February 2000. Therefore, a reduction in the maximum civil liability is not warranted.

4.1.3.4. Ability to Pay and Ability to Continue in Business

See section 4.1.1.5.

4.1.3.5. Other Matters as Justice May Require

See section 4.1.1.6.

4.2. Maximum Civil Liability Amount

Pursuant to California Water Code Section 13385 the maximum civil liability that the Regional Board may assess is (a) ten thousand dollars ($10,000) per day of violation; and (b) ten dollars ($10) for every gallon discharged, over one thousand gallons discharged, that was not cleaned up. California Water Code Section 13385(e) requires that, when pursuing civil liability under California Water Code Section 13385, "At a minimum, liability shall be assessed at a level that recovers the economic benefits, if any, derived from the acts that constitute the violation."

4.2.1. 115,000 Gallon Sanitary Sewer Overflow to Buena Vista Creek and Buena Vista Lagoon

The sanitary sewer overflow of 115,000 gallons that occurred on 29 January 2000 occurred for one day. None of the 115,000 gallons was cleaned up. Therefore, the maximum civil liability that can be assessed by the Regional Board is $1,150,000.

4.2.2. 1,700,000 Gallon Sanitary Sewer Overflow to Buena Vista Creek and Buena Vista Lagoon

The sanitary sewer overflow of 1,700,000 gallons began on 30 January 2000 and ended on 31 January 2000, less than 24 hours, i.e., one day. None of the 1,700,000 gallons was cleaned up. Therefore, the maximum civil liability that can be assessed by the Regional Board is $17,000,000.

4.2.3. 198,000 Gallon Sanitary Sewer Overflow to Buena Vista Creek and Buena Vista Lagoon

The sanitary sewer overflow of 198,000 gallons on 11 February 2000 occurred for one day. None of the 198,000 gallons was cleaned up. Therefore, the maximum civil liability that can be assessed by the Regional Board is $1,980,000.

4.3. Proposed Civil Liability Per Violation

The proposed amount of civil liability attributable to each violation was determined by taking into consideration the factors discussed in section 4.1, as well as the maximum civil liability that the Regional Board may assess as discussed in section 4.2.

4.3.1. 115,000 Gallon Sanitary Sewer Overflow to Buena Vista Creek and Buena Vista Lagoon

The discharge was caused by vandalism. However, the City failed to recover any of the 115,000 gallons spilled while working at the site for seven hours. Therefore the proposed civil liability is $0.10 per gallon, over 1000 gallons discharged and not cleaned up for a total of $11,400.

4.3.2. 1,700,000 Gallon Sanitary Sewer Overflow to Buena Vista Creek, Buena Vista Lagoon and the Pacific Ocean

The discharge of 1,700,000 gallons of raw sewage to Buena Vista Creek, Buena Vista Lagoon and the Pacific Ocean resulted from severe corrosion of the sewer main. Failure of the City's weekend crew to identify the broken pipe resulted in the discharge lasting over 17 additional hours. Based on the total amount discharged, approximately 1,376,150 gallons of sewage discharged to Buena Vista Creek, Buena Vista Lagoon and the Pacific Ocean from the time the weekend crew left the Buena Vista Lift Station and the time the weekday crew diverted flow away from the failed 18-inch force main. Therefore, the proposed civil liability for failing to identify the force main break is $0.10 per gallon for the 1,376,150 gallon discharge that could have been prevented for a total of $137,615. Beçause the proximity of the force main to the lagoon would make cleanup of the discharge impossible, no additional civil liability is recommended for failing to recover the discharge.

4.3.3. 198,000 Gallon Sanitary Sewer Overflow to Buena Vista Creek and Buena Vista Lagoon

The discharge of 198,000 gallons of raw sewage to Buena Vista Creek and Buena Vista Lagoon was a result of the City of

Oceanside's attempt at economic savings resulting from not having to pay another sewering agency for wastewater treatment. Routing the raw sewage to the Encina Wastewater Authority's treatment plant until the pipeline had been replaced would have ensured that another discharge to Buena Vista Lagoon would not have occurred. The City of Oceanside previously discharged raw sewage to the Cities of Vista and Carlsbad lines for treatment at the Encina Wastewater Authorities treatment plant from 0930 on 31 January 2000 to 1230 hours on 2 February 2000.

Due to the proximity of the force main to the lagoon, cleanup of the discharge was impossible, therefore, no civil liability is recommended for failing to recover the discharge. Because the discharge of 198,000 could have been avoided, the proposed civil liability is $1.00 per gallon, over 1000 gallons discharged and not cleaned, up for a total of $197,000.

4.4. Comparison of Proposed Civil Liability to SWRCB Guidance to Implement the Water Quality Enforcement Policy, Assessment Matrix

The SWRCB Guidance to Implement the Water Quality Enforcement Policy Contains an Assessment Matrix as seen below. The matrix ranks the Compliance Significance (Discharger) and Environmental Significance (Discharge) as "Minor," "Moderate" or "Major." Based upon the determination of the two categories, a range of civil liability is provided. This matrix assists the Regional Board in determining after a consideration of the factors in section 4.1., whether the proposed administrative civil liability is appropriate.

Assessment Matrix

Compliance Significance (Discharger)	Environmental Significance (Discharge)		
	Minor	Moderate	Major
Minor	$100 - $2,000	$1,000 - $20,000	$10,000 - $100,000
Moderate	$1,000 - $20,000	$10,000 - $100,000	$50,000 - $200,000
Major	$10,000 - $100,000	$50,000 - $200,000	$100,000 to maximum amount

4.4.1. 115,000 Gallon Sanitary Sewer Overflow to Buena Vista Creek and Buena Vista Lagoon

The 115,000 gallon sanitary sewer overflow resulting from vandalism of a manhole occurred through no fault of the City and

ranks as a "Moderate" Compliance Significance (Discharger). The discharge of 115,000 gallons of raw sewage to an impaired waterbody during the rainy season ranks as a "Moderate" Environmental Significance (Discharge). The proposed civil liability of $11,400 is within the matrix range.

4.4.2. 1.7 Million Gallon Sanitary Sewer Overflow to Buena Vista Creek and Buena Vista Lagoon

The 1.7 million gallon sanitary sewer overflow was unlikely and unforeseen. However, the duration of the overflow could have been dramatically reduced if the weekend crew would have performed the same level of investigation as the weekday crew. Therefore, this ranks as a "Moderate" Compliance Significance (Discharge). The discharge of 1.7 million gallons of raw sewage to an impaired waterbody and the Pacific Ocean resulting in the loss of beneficial uses for 22 days ranks as a "Major" Environmental Significance (Discharge). The proposed civil liability of $137,615 is within the matrix range.

4.4.3. 198,000 Gallon Sanitary Sewer Overflow to Buena Vista Creek and Buena Vista Lagoon

The 198,000 gallon sanitary sewer overflow from the second failure of a pipe identified as suffering from corrosion, in very corrosive soil, and inadequately constructed while there was an option to returning the line to services ranks as a "Major" Compliance Significance (Discharger). The discharge of an additional 198,000 gallons of raw sewage to an impaired waterbody, extending the number of days that beneficial uses were denied the public is a "Major" Environmental Significance (Discharge). The proposed civil liability of $197,000 is within the matrix range.

4.5. TOTAL PROPOSED ADMINISTRATIVE CIVIL LIABILITY

The total proposed civil liability in this matter; accounting for all three violations is $346,015. (See *Appendix H, ACL Calculation, for a detailed calculation of the total proposed ACL.)*

California Regional Water Quality Control Board
San Diego Region

STAFF REPORT

on

THE DISCHARGE OF UNTREATED SEWAGE

FROM THE BUENA VISTA PUMP STATION

TO BUENA VISTA LAGOON

ON AUGUST 23, 1994

IN SUPPORT OF

COMPLAINT NO. 95-90

July 6, 1995

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BACKGROUND

On August 22, 1995, the City of Vista (Vista) called the office of the California Regional Water Quality Control Board, San Diego Region (Regional Board) and reported that a contractor had inadvertently ruptured an abandoned, but still connected, force main pipe while drilling wells at the Buena Vista Pump Station (Attachment No. 1). The Buena Vista Pump Station is jointly owned by the Cities of Vista and Carlsbad, the City of Vista being the majority owner. A comprehensive explanation of the events which led to the discharge and the eventual repair of the ruptured line is provided in the August 29, 1994 letter from Wilson Engineering, who acted as consultants for Vista. (Attachment No. 2).

As noted within the consultant's description of the incident, the pump station had a number of abandoned pipes radiating out from the station wall. The abandoned pipe which was hit was approximately six feet out from the pump station wall. Not only was the abandoned line still pressurized, but it was still interconnected to the new 24-inch force main within the pump station compound. Because of this interconnection, an attempt to stop the spill by isolating and closing the old abandoned 16-inch force main at a location outside the pump station compound failed. After this attempt failed, Vista consultants determined that the only way to isolate and repair the ruptured line was to shut the pump station down, and pump all inflowing sewage into the creek and lagoon. Sewage was discharged to Buena Vista Creek and Buena Vista Lagoon for approximately 19 hours (2:50 AM to 10:00 PM on August 23, 1994) while the ruptured line was repaired (Attachment No. 1).

Based on the calculated difference between the volume of sewage which was expected at the Encina Water Pollution Control Facility (EWPCF) versus the volume which was actually received, Vista has estimated the volume of the sewage discharge to the creek and lagoon to be about 4.650 million gallons (Attachment No. 3). After the ruptured force main pipe was repaired and the pump station pumps were put back on line, the sewage discharge to the creek and lagoon was terminated.

As noted earlier, the Buena Vista Pump Station is jointly owned by the cities of Vista and Carlsbad. The pump station is operated by Encina Wastewater Authority (EWA). Although staff understands that there currently is no agreement in place regarding the joint ownership of the Buena Vista Pump Station, the former agreement identified the City of Vista as having an

84.5 percent ownership, with the City of Carlsbad having a 15.5 percent ownership.

The ruptured line may have been abandoned during a major upgrade at that station in 1978-79. However, maps of the 1978-79 upgrade fail to accurately show the abandoned segment of pressurized line. At the time of that upgrade, the Buena Vista Pump Station was owned and operated by the former Vista Sanitation District. The City Council of Vista served as the Board of Directors for this former sanitation district, while staff were provided by the County of San Diego.

ENVIRONMENTAL EFFECTS OF THE DISCHARGE

Monitoring of the lagoon for water quality parameters and fish mortalities was performed by Wilson Engineering and MEC Analytical Systems, Inc. for the City. Personnel from the California Department of Fish and Game (DFG) also conducted water quality and biological assessments of the lagoon after the discharge. The number of dead fish observed and collected by City consultants was 5,552 (Attachment No. 3). The game fish included largemouth bass, bluegill, crappie, catfish, and bullhead. DFG personnel estimate that in addition to the mortalities of fish, approximately 9,600 crayfish and 320,000 freshwater shrimp were killed by the sewage discharge (Attachment No. 4).

The MEC Analytical Systems, Inc. chemical analyses reveal that conditions within a significant portion of the east basin of Buena Vista Lagoon were acutely toxic to aquatic life and contained extremely high levels of fecal coliform bacteria. Narrative summaries of their data are provided in the MEC report entitled "Emergency Response Sampling at Buena Vista Lagoon, Final Report, dated September 30, 1994". Copies of their narrative summaries are provided in Attachment No. 5.

The discharged sewage caused a significant public health risk, requiring the entire lagoon to be posted by the San Diego County Department of Health Services for 21 days. Recreational uses such as fishing, bird watching, and hiking, were lost during those 21 days. Fishing use is believed to have remained depressed in the eastern basin of the lagoon, since the majority of the game fish in that area were killed by the spill.

MITIGATION

Beginning in the afternoon of the day following the sewage discharge (August 24th), engine driven pumps were set up to pump sewage-contaminated lagoon water back into the Buena Vista Pump Station for treatment at the Encina WPCF. During the first day of pump back, only one pump was used and only about 326,000 gallons were pumped back. During subsequent days as many as three pumps were used, pumping a peak of 1,957,000 gallons back into the pump station on Sunday, August 28th (Attachment No. 3).

During the time of the sewage discharge and the subsequent cleanup efforts, Regional Board staff observed the dry-season flow in Buena Vista Creek to be about 1 million gallons per day (1.5 cubic feet per second). As shown in Figure 1, the Buena Vista Pump Station is located near the mouth of Buena Vista Creek. Any discharges into the creek in that location are mixed with creek flows and transported directly into the downstream lagoon. The continuous base flow within the creek served to push the sewage out into the lagoon and thereby reduce the effectiveness of the effort to retrieve the sewage. In fact, when the volume of the base flow within the creek is compared to the total volume of lagoon water which was pumped back to the pump station, there was a net loss of flow into the lagoon only on about half of the eight days on which pumping back occurred. Hence the cumulative volume of lagoon water pumped to the sewer (9.048 million gallons; Attachment No. 3) may imply a greater degree of sewage retrieval than was actually obtained.

Once pumping back was of a sufficient volume to insure that the base creek flow would not push the sewage further into the lagoon (August 27, 1994), one of the pumps was regularly used to recirculate and aerate water within the impacted eastern portion of the lagoon. Pumping back to the pump station was stopped on August 31, 1994 and two pumps were then used to recirculate lagoon waters. Oxygen levels rose to normal levels in early September 1994.

LAWS AND APPLICABLE REGULATIONS

Neither Vista nor Carlsbad have a permit to discharge untreated sewage or other wastes or wastewater containing pollutants into either Buena Vista Creek or Buena Vista Lagoon.

The Regional Board implements the National Pollutant Discharge Elimination System (NPDES) regulations under Chapter 5.5, commencing with Section 13370 of the Porter Cologne Water Quality Control Act (Division 7 of the California Water Code), commencing

with Section 13000. Sections 13376 and 13377 of the California Water Code prohibit the discharge of pollutants to surface waters, except as authorized by waste discharge requirements that implement the requirements of the Clean Water Act and the NPDES regulations. Sections 13376 and 13377 of the California Water Code require any person discharging pollutants or proposing to discharge pollutants to surface waters to apply for coverage under an NPDES permit.

Staff believes that the Cities of Vista and Carlsbad have violated provisions of the law for which the Regional Board may impose administrative civil liability under Section 13385 of the California Water Code.

Under Section 13385 of the California Water Code, the Regional Board could assess civil liability pursuant to Article 2.5 (commencing with Section 13323) of Chapter 5 in an amount not to exceed the sum of both of the following:

(a) Ten thousand dollars ($10,000) for each day in which the violation occurs.

(b) Where there is a discharge, any portion of which is not susceptible to cleanup or is not cleaned up, and the volume discharged but not cleaned up exceeds 1,000 gallons, an additional liability not to exceed ten dollars ($10) times the number of gallons by which the volume discharged but not cleaned up exceeds 1,000 gallons.

Section 13385(e) of the California Water Code, requires the Regional Board to consider several factors when determining the amount of civil liability to impose. These factors include: "...the nature, circumstances, extent, and gravity of the violation, and with respect to the violator, the ability to pay, any prior history of violations, the degree of culpability, economic benefit or savings, if any, resulting from the violation, and other matters that justice may require."

Definitions:

The term "pollution" is defined in Section 13050(l) of the California Water Code as "an alteration of the quality of the waters of the state by waste to a degree which unreasonably affects either of the following: (1) The waters for beneficial uses. (2) Facilities which serve these beneficial uses."

The term "waste" is defined in Section 13050(d) of the California Water Code as including "sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation of whatever nature, including waste placed within containers of whatever nature prior to, and for purposes of, disposal."

The term "pollutant" is defined in Section 502(6) of the Clean Water Act as "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water."

STAFF REVIEW OF FACTORS TO BE CONSIDERED IN DETERMINING AMOUNT OF CIVIL LIABILITY

CONSIDERATIONS REGARDING THE DISCHARGE:

"the nature, circumstances, extent, and gravity of the violation"

The "Nature" of the violation -

The discharge was of untreated sewage, having the typical characteristics of raw municipal sewage, including: high bacteria levels, high concentrations of biochemical oxygen demand (BOD), high levels of the biostimulating nutrients, and an array of heavy metals and synthetic organics.

The "Circumstances" of the violation -

The 4.65 million gallon release of raw sewage was intentionally made by EWA after attempts to isolate a ruptured forcemain pipe failed. The forcemain pipe which was ruptured was a part of an old forcemain which was abandoned in the late 70's. Had all portions of the abandoned forcemain pipe been fully isolated and separated from the new, active forcemain system at the time that the new system was placed in operation, the August 1994 discharge of raw sewage would not have occurred.

The "Extent" of the violation -

The sewage spill killed all aquatic life within the eastern half of the lagoon's East Basin. Because of the greater water depths there, the impacted area of the East Basin was also probably the most productive portion of the lagoon prior to the discharge.

In response to the sewage discharge and the resulting high bacteria levels in the lagoon, water contact recreation such as fishing was prohibited for a period of 21 days. Fishing impacts can be expected to have continued beyond the 21 days that the lagoon was posted, due to the substantial kill of fish and invertebrates in the lagoon.

The "Gravity" of the Discharge -

Buena Vista Lagoon is owned and maintained by the California Department of Fish and Game. Because of lagoon's unique and highly valued coastal wildlife habitat, the Department of Fish and Game has designated Buena Vista Lagoon to be an ecological reserve. The environmental damage assessment should provide compensation for the damages to this valuable resource, which were suffered by the state as the result the illegal sewage discharge.

The discharge of 4.65 million gallons of untreated sewage completely overwhelmed the assimilative capacity of Buena Vista Creek and Lagoon, and caused an extensive kill of both fish and aquatic invertebrates in the lagoon. Although an effort was made to retrieve the sewage from the lagoon, a significant portion of the sewage was not retrieved. Thus, some of the nutrients, heavy metals, and other pollutants which were contained in the sewage have been left within the lagoon where they will provide a source pollutants in the future.

The Water Quality Control Plan, San Diego Basin (Basin Plan) identifies several beneficial uses to be protected in Buena Vista Lagoon, including the following: water contact recreation (REC-1), non-contact water recreation (REC-2), warm freshwater habitat (WARM), wildlife habitat (WILD), preservation of biological habitats of special significance (BIOL), and rare, threatened, or endangered species (RARE). The August 1994 sewage discharge made the waters of the lagoon unsuitable for most, if not all, of these designated beneficial uses.

Total assessment based of "nature, circumstances, extent, and gravity" of the violation -

DFG personnel have calculated that the spill caused damages assessed at $172,754.38 (Attachment No. 4). The DFG assessment includes the monetary value of: (a) the fish loss, (b) the invertebrate loss, (c) the loss of wildlife viewing, and (d) the loss of fishing. Regional Board staff have reviewed these calculations and believe that they are a reasonable monetary representation of the damages which occurred due to the sewage discharge. However, Regional Board staff believe that two adjustments may be warranted in the assessment. Regional Board staff believe that the second part of the fishing loss calculation (for the additional six month period of substandard fishing) might be too high. Since some people may resume fishing in the lagoon, not knowing that all or most of the fish in some areas have been killed, Regional Board staff has dropped the $35,451.00 assessment from the DFG assessment.

The persistence of sewage pollutants in the lagoon presents a potential for long term water quality impacts. The MEC water quality data reveal that algal mats and associated periods of oxygen depression were present in many areas of the lagoon under non-spill conditions. As such, the lagoon may be expected to be uniquely sensitive to any additional loadings of nutrients. Regional Board staff believes that an assessment of at least $5,000 is reasonable for the long term impact from the loading of nutrients and other pollutants to the lagoon from the sewage spill.

CONSIDERATIONS WITH RESPECT TO THE VIOLATOR:

"the ability to pay, any prior history of violations, the degree of culpability, economic benefit or savings, if any, resulting from the violation" -

Ability to Pay

Regional Board staff is not aware of any circumstances which would prevent the Cities of Vista and Carlsbad from paying the proposed administrative civil liability.

Overall effect on liability calculation = none.

History of Violations

Regional Board staff is not aware of any significant discharges from the Buena Vista Pump Station before the August 1994 discharge. However, the August 1994 sewage discharge was largely the result of a past decision to not fully abandon a forcemain pipe.

Also, in a somewhat similar incident occurring in January 1995, a contractor ruptured another Vista sewer line. Although this other line was suppose to be an abandoned sewer line, it was still connected to an active gravity sewer pipe and, as a consequence, spilled raw sewage into Buena Vista Creek when it was ruptured. The inadequate abandonment of sewer pipes may not be limited to that which these two incidences revealed. Further discussion is provided in the following section on "culpability".

Overall effect on liability calculation = none.

Culpability

The sewage discharge occurred when a contractor struck and ruptured an abandoned force main pipe, due to the lack of adequate information on pipe location and the fact that the abandoned pipe was connected and pressurized. Not only was the abandoned line still pressurized, but it was still interconnected to the new 24-inch forcemain within the pump station compound. Ultimately, because of this interconnection, the pump station had to be shut down and approximately 4.65 million gallons of raw sewage were discharged to the creek and lagoon.

Vista and Carlsbad were negligent in their design and construction of the pump station, and in their lack of providing sufficient information to the contractor to avoid the pipe rupture. Staff understands that the contractor was under contract with Vista, and as a consequence, Vista may have had primary oversight responsibility for the contractor's work. However, since the pump station is jointly owned by Vista and Carlsbad, both cities are liable for the spill.

Overall effect on liability calculation = increase amount.

Economic Benefit or Savings

Although staff recognizes that the Cities were actively working on an upgrade to the pump station costing approximately $2.543 million, the spill occurred as the result of a cost-saving practice of leaving old pipes not fully abandoned. The act of

leaving old pipes in the ground in a pressurized, interconnected state was less expensive than separating and isolating the pipes at the time the pump station was upgraded. The cost of not fully abandoning a line must be weighed against the potential environmental and financial consequences that could occur if the line were later ruptured. The significant costs which were eventually incurred by the Vista in responding to the August spill (the pumping and the monitoring costs) and the costs which could be incurred by both cities in the form of an environmental damage assessment, are simply a reflection of the risk that was taken by the Cities when the old forcemain pipe was not adequately abandoned. The cities should get neither credit nor additional financial assessment for the cost savings aspect of the civil liability evaluation.

Overall effect on liability calculation = none.

Responsiveness

In general, the City of Vista provided appropriate response to August 1994 spill. Although the initial effort to retrieve sewage from the lagoon was delayed and less than optimum, efforts to pump back, monitor, and reduce impacts to the lagoon improved during subsequent days. The discharge and lagoon monitoring produced a significant amount of data on lagoon conditions.

Overall effect on liability calculation = none.
(See also discussion under "Economic Benefit or Savings".)

STAFF RECOMMENDATION:

The Regional Board is required to consider the factors listed in Section 13327 and Section 13385(e) of the California Water Code. In this case the major factors affecting the appropriate amount of liability are:

(a) the significant impact of the sewage discharge on the WARM, REC-1, REC-2, and WILD beneficial uses of Buena Vista Lagoon;

(b) the ability of the Cities to pay;

(c) no history of violations;

(d) the culpability of the Cities in failing to properly abandon unused sewer lines and failing to be able to accurately locate such lines; and

(e) the general responsiveness of the Cities and the expense of the monitoring and mitigation efforts;

Table I details the consideration that staff has given to each of these factors in developing the staff recommendation for administrative liability. Staff has utilized the DFG monetary assessment for most of the environmental considerations. Staff believes that the City of Vista's culpability is balanced by the responsiveness that the City of Vista exhibited once the discharge occurred, and hence staff believes that no further adjustment in the amount of civil liability is warranted. Staff therefore believes that the total civil liability should be the same as that calculated for the environmental impacts.

Staff recommends that the amount of Administrative Civil Liability assessed against the Cities of Vista and Carlsbad, together, be $142,302.

Staff recommends that this amount be made due and payable to the State Water Resources Control by September 30, 1995.

ALTERNATIVE SETTLEMENT:

Staff also recommends that the Regional Board consider an alternative settlement. Staff recommends that the Regional Board consider the suspension of payment on all but $25,000 of the liability until September 30, 1995, and if the Cities of Vista and Carlsbad (Cities), together, take the following actions by that date, waive such payment:

a. Contribute the sum of $50,000 to a fund administered by a recognized wildlife protection agency or organization, approved by the Executive Officer, for the purpose of habitat restoration or enhancement in Buena Vista Lagoon; and

b. Reimburse the California Department of Fish and Game a sum of $23,692.84 for the Department's time and resources expended in response to the sewage discharge to Buena Vista Lagoon. (Documentation of DFG time and resources is provided in Attachment No. 4).

If the Cities pursue, and the Regional Board accepts, this option, staff proposes that $25,000 will be due and payable to the State Water Resources Control Board by September 30, 1995.

TABLE I.

DETERMINATION OF ADMINISTRATIVE CIVIL LIABILITY FOR THE AUGUST 1994 DISCHARGE OF UNTREATED SEWAGE INTO BUENA VISTA LAGOON FROM THE BUENA VISTA PUMP STATION

LIABILITY FACTORS	TOTAL AMOUNT*
THE DISCHARGE:	
Fish Loss**	$8,045
Invertebrate Loss**	$33,440
Fishing Loss***	$8,271
Loss of Wildlife Viewing, Hiking, etc.**	$87,546
Pollutant Loading****	$5,000
THE VIOLATOR:	
Ability to Pay	no change
History of Violations	no change
Culpability	increase
Economic Benefit or Savings	no change
Responsiveness	decrease
TOTAL LIABILITY	**$142,302**

*/ The monetary amount of the environmental damages caused by the discharge, and the relative effect of factors regarding the violator on that monetary amount.

**/ This calculation is based on a DFG assessment (Attachment No. 4).

***/ This calculation is based on a portion of the DFG assessment for Fishing Losses (Attachment No. 4).

****/ Discussion of this assessment is provided in text of staff report.

Attachments to July 6, 1995 Staff Report

Attachment Number	Content
1	Spill reports from City of Vista.
2	Wilson Engineering letter explaining events leading to sewage discharge.
3	Day by day summary of mitigation and clean-up effort; prepared by Wilson Engineering.
4	California Department of Fish and Game damage assessment for sewage discharge.
5	Narrative summaries; from MEC Analytical Systems, Inc. report - "Emergency Response Sampling at Buena Vista Lagoon," Final Report, dated September 30, 1994.

Attachment No. 1

TO: Bruce / Greig FROM: Gloria Fulton

DATE: 8-23-94

SUBJECT: Sewage Spill to Buena Vista Lagoon

Mike Hogan of Encina Wastewater Authority (438-3941) called this morning at 0945 to give us additional information. The first notification was left on the office message unit last night at about 6:00 PM this message should now be on your voice mail.

Hogan's message this morning is being faxed us. Hogan said the spill was diverted to Buena Vista Lagoon beginning 2AM and ending 9AM today, in order to clear the area to repair the line. Flow Volume was estimated at 900,000 gallons. and continuing. I asked why it couldn't have been pumped into trucks. Hogan said the trucks can handle only 5000 gals. The pump station handles 5 mgd. I believe the urgency is to make the necessary repairs expeditiously. Posted lagoon and beaches.

Fish & Game was notified this morning and are at the scene.

The contractor was hired by City of Vista ~~Encina Wastewater~~ Authority is responsible for the pump station operation, but was not

cc: BWP
GP

ENCINA WASTEWATER AUTHORITY

A Public Agency

6200 Avenida Encinas
Carlsbad, CA 92009-0171
Telephone (619) 438-3941
Fax (619) 438-3861

FACSIMILE TRANSMITTAL FORM

Ref: 7163

Date 8-23-94 Time of transmission 12:00 a.m. p.m.

Number of pages (including transmittal form) 3

Hard Copy to follow Yes ☑ No ☐

To: Company RWQCB

Individual GLORIA FULTON

FAX number of receiving machine (619) 571-6972

Description and/or additional instructions to receiving party

PRELIMINARY SPILL REPORT AS YOU REQUESTED. I WILL CONTACT YOU DURING THE DAY TO KEEP YOU INFORMED OF THE PROGRESS TO STOP SPILL. A FINAL REPORT WILL BE SUBMITTED ONCE PROBLEM AS BEEN CORRECTED.

From: Company EWA

Individual MICHAEL HOGAN

Transmitted by /

FAX NUMBER OF SENDING PARTY: (619)438-3861

If there is any problem with this transmission, contact sending station at (619)438-3941

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

SEWER OVERFLOW REPORT FORM

1. DATE REPORTED: 082394 (YYMMDD)

2. TIME REPORTED: 6:10PM (specify a.m. or p.m.)

3. REPORTED BY: MICHAEL HICKMAN

4. PHONE: (619) 438-3941

5. RESPONSIBLE SEWER AGENCY:

* ENCINA WASTEWATER AUTHORITY

6. OVERFLOW START: DATE 082394 (YYMMDD)

TIME 2:00AM (specify a.m. or p.m.)

7. OVERFLOW END: DATE (YYMMDD)
(STILL OVERFLOWING)
(AS OF 12:00PM ON 8-23-94) TIME (specify a.m. or p.m.)

8. OVERFLOW VOLUME: 1579000 GALLONS (include units)
← ESTIMATED OVERFLOW AS OF 12:00PM ON 8-23-94.

9. OVERFLOW LOCATION:

a. STREET: JEFFERSON STREET

b. CITY CARLSBAD

c. COUNTY SD

10. OVERFLOW STRUCTURE I.D.:

BUENA VISTA PUMP STATION

11. OVERFLOW CAUSE:

CONTRACTOR WHILE DRILLING A
GROUNDWATER [illegible] A
16INCH RAW SEWAGE FORCE MAIN.

12. PRIMARY AND SECONDARY RECEIVING WATERS:

A. DID THE DISCHARGE REACH SURFACE WATERS? Y/ (Y OR N)

B. IF YES TO PART A, DESCRIBE THE PRIMARY RECEIVING WATER

BUENA VISTA LAGOON

C. IF YES TO PART A, DESCRIBE THE SECONDARY RECEIVING WATER

PACIFIC OCEAN

D. IF NO TO PART A, DESCRIBE THE FINAL POINT OF DESTINATION

13. PUBLIC HEALTH AGENCY NOTIFICATION:

WAS THE LOCAL HEALTH SERVICES AGENCY NOTIFIED? Y/ (Y OR N)

14. AFFECTED AREA POSTING:

WAS THE AFFECTED RECEIVING WATER AREA POSTED TO PREVENT PUBLIC CONTACT? Y/ (Y OR N)

IF YES, HOW MANY DAYS WAS THE AFFECTED AREA POSTED? _/_/
(POSTING STILL IN EFFECT AS OF 8-23-94)

15. REMARKS:

* THE CITY OF VISTA IS THE RESPONSIBLE AGENCY WITH AN AGREEMENT FOR CONSTRUCTION SERVICES WITH [illegible]
CAUSED SPILL.
CITY OF VISTA & CHUCK BRASS
PH-(619) 726-1340 EXT 3641

NOTE: THIS FORM MUST BE RECEIVED BY THE REGIONAL BOARD NO LATER THAN FIVE DAYS AFTER THE OVERFLOW START DATE.

CALIFORNIA OFFICE OF EMERGENCY SERVICES
HAZARDOUS MATERIAL SPILL REPORT

CONTROL#: 003784 RECEIVED BY: WA

OES NOTIFIED

DATE: 8/24/94 TIME: 11:00 COUNTY: SAN DIEGO

NOTIFIED OES: KATHY STONE PHONE#: 619-338-2386

AGENCY: SAN DIEGO COUNTY HEALTH EXT:

SUBSTANCE: RAW SEWAGE QTY: 5,000,000 GALS EST

UN I.D. #: TYPE: ○ CHEMICAL ○ PETROLEUM ◉ SEWAGE ○ VAPOR ○ OTHER

LOCATION: BUENA VISTA PUMP STATION
JEFFERSON X HIWAY 78

OCCURRENCE TIME/DATE: 1330/22aug94

COUNTY:

CITY: CARLSBAD ZIP: 92008 SAN DIEGO

SPILL SITE: ○ PL ○ RD ○ REF ○ S/S ○ MIL BASE ○ RESIDENCE
○ SHP ○ O/F ○ R/R ○ IND PLT ○ AIRPORT ◉ OTHER

WHAT HAPPENED: UPGRADING PUMP STATION - DURING CONSTRUCTION, SEWER FORCE MAIN WAS BROKEN SPILLING RAW SEWAGE TO BUENA VISTA LAGOON, NATURAL BERM AT END OF LAGOON. SPILL DID NOT REACH OCEAN.

WATER INVOLVED: ◉ YES ○ NO WATER WAY: BUENA VISTA LAGOON

CONTAINED: ◉ YES ○ NO CLEAN UP BY: RESPONSIBLE PARTY/ CITY OF VISTA

ON SCENE/NTFD: ◉ FD ○ PD ○ CO.OES ○ CHP ○ CDF
○ SO ◉ CO.HLTH ○ AIR/Q ○ CALTRANS ◉ USCG

CONTROL#: 003784

NRC#:

INJURIES: ○ YES ◉ NO ○ UNKNOWN

FATALITIES: ○ YES ◉ NO ○ UNKNOWN

EVACUATIONS: ○ YES ◉ NO ○ UNKNOWN

PROP 65 RPT: ◉ YES ○ NO NOTIFIED:_____

FAX / NOTIFICATION LIST

◉ OSPR/DFG:	○ SFM P/L:	◉ TOXICS:	○ FRESNO CO:	◉ PARKS&REC:
◉ EPA:	○ DOG:	○ DHS/D.O:	○ VENTURA CO:	◉ RGN:
◉ RWQCB: 9	○ LA FLOOD:	○ OSHA:	○ SFFD:	◉ HAZMAT:
◉ LANDS:	○ PUC:	○ FOOD&AG:	○ SBDO CO HLTH:	○ EMSA:
◉ USFWS:	◉ USCG:	○ MNRLSMGT:	○ FEMA:	◉ FAX TIME:_____
◉ CSTL COM:		○ EB PARKS:		○ OILS#:

8/25

CALIFORNIA OFFICE OF EMERGENCY SERVICES

HAZARDOUS MATERIAL SPILL REPORT UPDATE

CONTROL#: 3784 RECEIVED BY: WA

DATE: 8/24/94 TIME: 11:00 COUNTY: SAN DIEGO

NOTIFIED OES: KATHY STONE PHONE#: 619-338-2386

AGENCY: SAN DIEGO COUNTY HEALTH

SUBSTANCE: RAW SEWAGE QTY: 5,000,000 GALS EST

UPDATED INFORMATION:

LAGOON POSTED BY RESPONIBLE AGENCIES (ENCINA TREATMENT FACILITY) LAGOON IS NOT A RECREATIONAL WATER CONTACT AREA, IT'S A WILD LIFE RESERVE - SPILL CONTAINED AT 2230 HRS ON AUG 23,1994. PRESS CONFERENCE TODAY AT 1300 HRS AT CITY OF VISTA COUNCIL CHAMBER - WILL PROBABLY BE ON CABLE TV

FAX / NOTIFICATION LIST

◉ OSPR/DFG:	○ SFM P/L:	◉ TOXICS:	○ FRESNO CO:	◉ PARKS&REC:
◉ EPA:	○ DOG:	○ DHS/D.O:	○ VENTURA CO:	◉ RGN:
◉ RWQCD:___	○ LA FLOOD:	○ OSHA:	○ SFFD:	◉ HAZMAT:
◉ LANDS:	○ PUC:	○ FOOD&AG:	○ SBDO CO HLTH:	○ EMSA:
◉ USFWS:	◉ USCG:	○ MNRLSMGT:	○ FEMA:	◉ FAX TIME:_____
◉ CSTL COM:		○ EB PARKS:		○ OILS#:

WILSON ENGINEERING

Tel. (619) 438-4422
Fax (619) 438-0175

703 Palomar Airport Road, Suite 300
Carlsbad, California 92009

FACSIMILE COVER SHEET	
TO: Gloria Fulton	FROM: Andrew Oven
COMPANY: Regional Water Quality Control Board	DATE: August 25, 1994
FAX NUMBER: 571-6972	TOTAL PAGES: 5 (Including Cover Sheet)
CC:	JOB NUMBER: 102-012/14

IF ALL PAGES ARE NOT RECEIVED, PLEASE CALL WILSON ENGINEERING AT (619) 438-4422

SUBJECT: Buena Vista Pump Station Sewage Spill

REMARKS: Attached are copies of the initial sewage spill report (August 22, 1994) and the updated report (August 25, 1994).

TRANSMITTED BY: Justine Anderton

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

SEWER OVERFLOW REPORT FORM

1. DATE REPORTED: 9/4/0/8/2/5/ (YYMMDD)

2. TIME REPORTED: 4/:/3/0/P/M/ (specify a.m. or p.m.)

3. REPORTED BY: D/E/X/T/E/R/ /S/ /W/I/L/S/O/N/ / / / / /

4. PHONE: (6/1/9/) 4/3/8/-4/4/2/2/

5. RESPONSIBLE SEWER AGENCY:

C/I/T/Y/ /O/F/ /V/I/S/T/A/ / / / / / / / / / / / / / / / / / / /

6. OVERFLOW START: DATE 9/4/0/8/2/2/ (YYMMDD)

TIME 2/:/3/0/P/M/ (specify a.m. or p.m.)

7. OVERFLOW END: DATE 9/4/0/8/2/3/ (YYMMDD)

TIME 1/0/:/0/0/P/M/ (specify a.m. or p.m.)

8. OVERFLOW VOLUME: 4/7/0/0/0/0/ /G/A/L/L/O/N/S/ (include units)

9. OVERFLOW LOCATION:

A. STREET
I/E/F/E/E/R/S/O/N/ /S/T/R/E/E/T/ / / / / / / / / / / / / / / / / /

B. CITY C/A/R/L/S/B/A/D/ / / / / / / / / /

C. COUNTY S/D/

10. OVERFLOW STRUCTURE I.D.:

B/U/E/N/A/ /V/I/S/T/A/ /P/U/M/P/ /S/T/A/T/I/O/N/ / / / / / /

11. OVERFLOW CAUSE:

W/H/I/L/E/ /D/R/I/L/L/I/N/G/ /A/ /G/R/O/U/N/D/ /W/A/T/E/R/ /
O/B/S/E/R/V/A/T/I/O/N/ /W/E/L/L/ /T/H/E/ /C/O/N/T/E/A/C/T/O/R
H/I/T/ /A/ /1/0/-/I/N/C/H/ /P/I/P/E/ /W/H/I/C/H/ /I/S/ / / / /
P/A/R/T/ /O/F/ /T/H/E/ /A/B/A/N/D/O/N/E/D/ /R/A/W/ /S/E/W/A/GE
FORCE MAIN IN THE STATION COMPOUND.

...2.

12. PRIMARY AND SECONDARY RECEIVING WATERS:

A. DID THE DISCHARGE REACH SURFACE WATERS? Y/ (Y OR N)

B. IF YES TO PART A, DESCRIBE THE PRIMARY RECEIVING WATER

BUENA VISTA LAGOON

C. IF YES TO PART A, DESCRIBE THE SECONDARY RECEIVING WATER

PACIFIC OCEAN

D. IF NO TO PART A, DESCRIBE THE FINAL POINT OF DESTINATION

_/

13. PUBLIC HEALTH AGENCY NOTIFICATION:

WAS THE LOCAL HEALTH SERVICES AGENCY NOTIFIED? Y/ (Y OR N)

14. AFFECTED AREA POSTING:

WAS THE AFFECTED RECEIVING WATER AREA POSTED TO PREVENT PUBLIC CONTACT? Y/ (Y OR N)

IF YES, HOW MANY DAYS WAS THE AFFECTED AREA POSTED? _/_/
POSTING IS STILL IN EFFECT AS OF THE TIME OF THIS REPORT.

15. REMARKS:

CLEAN UP OF THE BUENA VISTA LAGOON IS IN PROGRESS AT THE DIRECTION OF THE DEPT OF FISH AND GAME.

NOTE: THIS FORM MUST BE RECEIVED BY THE REGIONAL BOARD NO LATER THAN FIVE DAYS AFTER THE OVERFLOW START DATE.

Attachment No. 2

WILSON ENGINEERING

DEXTER S. WILSON, P.E.
ANDREW M. OVEN, P.E.
MARK A. BURBRINK, P.E.
STEPHEN M. NIELSEN, P.E.

August 29, 1994 102-012/14

California Regional Water Quality Control Board
San Diego Region
9771 Clairemont Mesa Boulevard, Suite B
San Diego, CA 92124

Attention: Gloria Fulton, Sanitation Engineer

Subject: Buena Vista Sewage Pump Station Sewage Spill

We intend to provide you, in this letter, a summary and explanation of the events which lead up to the sewage spill at the Buena Vista Pump Station on August 22 and 23, 1994. As of July 1, 1994, Pascal & Ludwig Engineers has been hired by the City of Vista to complete improvements to the Buena Vista Pump Station valued at $2.543 million.

On August 22, 1994, Pascal & Ludwig Engineers' dewatering subcontractor was on site and drilling dewatering wells for the project. They were in the process of drilling an observation well to the west of the existing pump station structure when they struck an abandoned force main pipe causing sewage to fill the pump station compound. They notified Encina Wastewater Authority at approximately 1:30 p.m.

Because the pump station compound is designed as a spill containment basin and the pipe break was within the compound, the entire compound was flooded with sewage. No spill was occurring since the main force main was still in operation and discharging to the downstream gravity system, and the electric driven pumps inside the station were able to keep up with the influent flow.

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Attached to this letter is a half-scale drawing of the Piping Plan (Sheet 4 of 71) from the Construction Plans for the Improvement of the Buena Vista Pump Station. To the west of the existing circular pump station, this plan shows the existing 24-inch force main as well as two abandoned 16-inch force mains. Just outside the pump station building, the two abandoned 16-inch force mains originate as three pipes, the southern two of which penetrate the pump station wall. These three pipes were used with various configurations of pumps within the pump station from the construction of the pump station in 1963 through 1983 when the 24-inch force main was constructed and put into operation. Our understanding was that in 1983 when the 24-inch force main was placed into operation the 16-inch force mains were no longer tied to the 24-inch pipe. Therefore, while the piping remained in the ground, our understanding was that it was not pressurized.

The pipe which the dewatering subcontractor hit was the middle of the three abandoned pipes in the vicinity of the pump station exterior wall. This pipe penetrates the pump station wall as a 10-inch ductile iron pipe and then increases to a 16-inch pipe within 14 feet of the exterior wall. It was the 10-inch section which was hit approximately 6 feet from the exterior of the pump station wall.

Since our expectation was that there was no connection between the 24-inch main and the 16-inch piping within the compound, our first approach to stop the flow from the pipe break was to isolate the 16-inch force mains in the Duck Pond area. There is interconnecting piping between the old 16-inch force mains and the new 24-inch force main in the Duck Pond area as shown in the attached Force Main Intertie at Buena Vista Lagoon plan (Sheet 7 of 71), also from the Construction Set for the Improvements to the Buena Vista Pump Station. Our approach was to find Valve V12 and Valves A and B and close them to insure that sewage was not backtracking to the pump station break via the 16-inch force mains.

In the Duck Pond area we were able to locate valve V12 and Valve A. After closing these valves and double checking to make sure they were closed, there was no change in the situation at Buena Vista Pump Station. Flows were still coming

out of the force main break. This was approximately 5:00 p.m. on August 22, 1994. At this point we realized that our only course of action would have to be to divert sewage flow and pump down the pump station compound in order to get to the break and be able to repair it or somehow isolate it.

Pascal & Ludwig Engineers proceeded to mobilize pumps and equipment to divert sewage into the Buena Vista Creek channel and dewater the pipe break area in order to repair the break. The diversion system was in place by approximately 2:30 a.m. and at that point we turned the electric driven pumps off at the Buena Vista Pump Station. This caused the force main to drain into the compound. Since there was still some available storage in the gravity sewer piping upstream of the station, we did not begin pumping sewage into the Buena Vista Creek channel until 2:50 a.m. on August 23, 1994. The sewage diversion to the Buena Vista Creek channel continued for 19 hours until 10:00 p.m. August 23, 1994 when the repair was completed and the motor driven pumps were back on line. During this time, it is estimated that 4.7 million gallons of sewage was diverted to the Buena Vista Creek channel. The sewage plume has remained in the area of the Buena Vista Lagoon, east of the Interstate 5 freeway. This portion of the lagoon has an area of approximately 80 surface acres.

On Wednesday, August 24, 1994, engine driven pumps were set up to draw water from the Buena Vista Lagoon and pump it into the sewer upstream of the Buena Vista Pump Station. The water pumped from the lagoon was to be treated at the Encina Water Pollution Control Facility. The pumping has continued through today and has only been stopped during peak flow periods at the Buena Vista Pump Station in the mid-morning hours and early evening hours. Below is the available data on the volume of lagoon waters pumped into the sewer system.

VOLUME OF LAGOON WATERS PUMPED TO SEWER		
Day	Volume, MG	Cumulative Volume, MG
Wednesday	0.328	0.328
Thursday	0.829	1.157
Friday	1.540	2.697
Saturday	1.773	4.470

Bacterial sampling is being performed in the Buena Vista Lagoon, east of the Interstate 5 freeway. In addition, dissolved oxygen levels are being monitored throughout the eastern portion of lagoon. As this data becomes available we will forward it on to your office.

Please do not hesitate to contact our office if you have any questions about this incident or need additional information for your files

Wilson Engineering

Andrew Oven for

Dexter S. Wilson

DSW:AO:klb
Attachments

cc: Charles Bras, City Engineer, City of Vista
Peter Nieblas, Sanitation Engineer, City of Vista

Attachment No. 3

WILSON ENGINEERING

DEXTER S. WILSON, P.E.
ANDREW M. OVEN, P.E.
MARK A. BURBRINK, P.E.
STEPHEN M. NIELSEN, P.E.

October 13, 1994

102-012/14

City of Vista
600 Eucalyptus Avenue
Vista, CA 92083

Attention: Peter Nieblas, Sanitation Engineer

Subject: Buena Vista Lagoon Spill Mitigation Effort

Attached please find a copy of the Day to Day Summary of the Mitigation and Clean-up at the Buena Vista Sewage Pump Station Spill Site along with a copy of the MEC Analytical Systems, Inc. summary report on their monitoring of the spill. This information is for your use as needed.

If you need any additional information or have any questions please call.

Wilson Engineering

Dexter S. Wilson

DSW:klb
Attachments

cc: Charles Bras, City of Vista
George Solano, City of Vista
Steve Salvati, City of Vista, with Report
Mike Hogan, Encina Wastewater Authority, with Report
Kathy Stone, County of San Diego Health Department, with Report
Cindy Fuller, MEC Analytical Systems, Inc.
Sandy Skoryi, California Department of Fish and Game, with Report
Bill Paznokas, California Department of Fish and Game, with Report
Greg Peters, California Regional Water Quality Control Board, with Report

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DAY BY DAY SUMMARY OF THE MITIGATION AND CLEAN-UP AT THE BUENA VISTA SEWAGE PUMP STATION SPILL SITE

Wednesday, August 24, 1994

On Wednesday the pump back of sewage from the lagoon into the pump station began. The pump back began in the afternoon and 326,000 gallons were returned to the sewer system. The first action meeting was held at 3:00 p.m. Wednesday afternoon. Dissolved oxygen testing in the lagoon started and fecal coliform testing continued. Three pumps were set up Wednesday but only one was operated. One of the pumps was in the channel next to pump station and two pumps were on the north side of the lagoon, opposite the Duck Pond area.

A press conference was held at 1:00 p.m. at the City of Vista.

Thursday, August 25, 1994

Action plan meeting was held at 9:00 a.m. A total of 835,000 gallons were pumped back from the lagoon into the pump station on Thursday. Dissolved oxygen sampling continued Thursday afternoon. The fish clean-up began and 1,891 fish weighing approximately 1,000 pounds were removed from the lagoon. Fecal coliform testing continued.

Friday, August 26, 1994

Action plan meeting was held at 9:00 a.m. The fish clean-up continued with 2,131 fish removed from the lagoon weighing a total of 250 pounds. The size of the fish was greatly diminished on Friday with the average fish weighing 0.12 pound. The pump back continued with 1,608,000 gallons pumped. Morning and afternoon DO testing was done. On Friday the two pumps on the north side of the lagoon were operated continuously for 24 hours and the pump next to the pump station was operated for 6 hours in the middle of the night. One dead bird was found and the autopsy revealed that its death was unrelated to the sewage spill.

Saturday, August 27, 1994

No action plan meeting was held. Fish clean-up continued with 1,200 fish collected for a total weight of 85 pounds. The average fish size was 0.07 pound. Saturday, two pumps continued most of the day but were turned off for a short period of time when high level alarms were experienced at the pump station. During this period of time the third pump began to run 18 hours a day in a recirculation mode when it was not able to pump back into the pump station. 1,943,000 gallons were pumped back on Saturday.

Sunday, August 28, 1994

No action plan meeting was held. The fish clean-up operation was not done Sunday since there were no additional fish that required removal and no new fish kills. All of the fish appear to have been killed immediately after the spill in the Tuesday/Wednesday time frame and the additional fish picked up after that were in a state of decay which indicated they died earlier. Sunday the pump back continued with two pumps turned off for a 5 hour period from 10:00 a.m. to 3:00 p.m. so no pumps would run during that time and the third pump operating only from midnight to 6:00 a.m. The remainder of the time the third pump went into a recirculation mode. 1,957,000 gallons were pumped on Sunday.

Monday, August 29, 1994

Action plan meeting was held at 9:00 a.m. Monday the fish clean-up continued with 269 fish found with a total weight of 4 lbs. On Monday a visual inspection by boat, revealed much better water quality than previously observed. The majority of the remaining sewage plume seemed to be in the far northern channel and the pumps were relocated farther down the northern channel. A decision was made to try to go into a recirculation mode to re-aerate the water with the pumps. The pump at the pump station was moved to the Duck Pond area and recirculated to the concrete apron on the south side of the bridge. The pumps from the northern area were moved down the channel and a recirculation pattern was begun on the north side of the bridge but the foaming indicated a concentrated plume area so the water was redirected into the pump station wet well. 1,641,000 gallons were pumped on Monday.

Tuesday, August 30, 1994

No changes were made to the pumps all day Tuesday. The fish clean-up continued with 26 fish collected with a total weight of 5 lbs. 636,000 gallons were pumped on Tuesday.

Wednesday, August 31, 1994

The pumps on the north side of the lagoon were redirected so that no additional flows were pumped into the sewer system after Wednesday. One of the pumps was redirected and started recirculating down the north side of the bridge abutment, the second pump was redirected to discharge further to the west, down a piece of plywood into the lagoon. This rapidly increased dissolved oxygen level in the spill area. Thirty-five fish were collected with a total weight of 7 lbs.

Thursday, September 1, 1994

The pump recirculation system was unchanged, however, one of the northern pump discharges was moved approximately 1,000 feet to the east from its primary location. Dissolved oxygen levels in the spill area were normal.

Friday, September 2, 1994

No changes were made except the northern pump discharge was again moved to the east. Fecal coliform counts in the spill area were normal.

Saturday, September 3, 1994

No changes.

Sunday, September 4, 1994

No changes.

Monday, September 5, 1994

No changes.

Tuesday, September 6, 1994

No changes.

Wednesday, September 7, 1994

No changes.

Thursday, September 8, 1994

No changes.

Friday, September 9, 1994

Recirculation pumps removed.

Monday, September 12, 1994

Contaminated Area sign removal.

Thursday, September 17, 1994

Gate removed from Duck Pond.

AMOUNT OF SPILL

Start of Spill - Tuesday - 2:30 a.m., August 23, 1994

End of Spill - Tuesday - 10:10 p.m., August 23, 1994

Flow total - Tuesday, August 16, 1994	8.787
Flow total - Tuesday, August 23, 1994	4.137
Spill Total	4.650 MGD

FISH COLLECTION SUMMARY					
	Number of Fish	Cumulative Number of Fish	Lbs. of Fish	Cumulative Lbs. of Fish	Average Weight Per Fish, Lbs.
Thursday	1,891		1,000		0.53
Friday	2,131	4,022	250	1,250	0.12
Saturday	1,200	5,220	85	1,335	0.07
Monday	269	5,491	40	1,375	0.15
Tuesday	26	5,517	5	1,380	0.19
Wednesday	35	5,552	7	1,387	0.19
Overall Average Lbs. Per Fish					0.25

BUENA VISTA SPILL AND LAGOON PUMP-BACK
FLOW DATA

All Flows In Million Gallons

	Wednesday 8/24/94	Thursday 8/25/94	Friday 8/26/94	Saturday 8/27/94	Sunday 8/28/94	Monday 8/29/94	Tuesday 8/30/94	Wednesday 8/31/94
Vista/Carlsbad Meter								
Flow During Pump Back 8/23/94 - 8/31/94	9.089	9.584	10.206	10.504	10.434	10.291	9.253	8.695
Flow Before Pump Back 8/15/94 - 8/20/94	8.761	8.755	8.666	8.731	8.662	8.844	8.787	8.761
Difference	0.328	0.829	1.54	1.773	1.772	1.447	0.466	-0.066
Oceanside Correction								
Flow Before Pump Back	0.170	0.169	0.164	0.175	0.189	0.198	0.174	0.170
Flow During Pump Back	0.1772	0.163	0.096	0.005	0.004	0.004	0.004	0.002
Difference	-0.002	0.006	0.068	0.170	0.185	0.194	0.170	0.168
Total Volume Pumped from Lagoon to Sewer	0.326	0.835	1.608	1.943	1.957	1.641	0.636	0.102
Cumulative Volume Pumped from Lagoon to Sewer	0.326	1.161	2.769	4.712	6.669	8.310	8.946	9.048

Attachment No. 4

PRELIMINARY REPORT ON DAMAGE ASSESSMENT
FOR THE
BUENA VISTA LAGOON SEWAGE SPILL
ON AUGUST 23 AND 24 1994

On August 23 and 24, 1994, 4.75 million gallons of raw sewage was discharged from the City of Vista's Buena Vista pump station to the eastern most basin of the Buena Vista Lagoon which is a Department of Fish and Game Ecological Reserve. The spill resulted in a major fish and invertebrate kill. The spill also resulted in the loss of use of the resources for 21 days. The loss of use by the public for 21 days was due to bacterial levels being elevated and the subsequent public health posting that the entire lagoon was closed for 21 days to all public access. The loss of use includes wildlife viewing, hiking, aesthetic enjoyment and fishing.

The damage assessment incorporates the loss of fish and wildlife as well as the loss of active (fishing) and passive (wildlife viewing, hiking, aesthetic enjoyment) use of the resources associated with the Buena Vista Lagoon. The damage assessment is an estimate of the monetary costs that are associated with the various losses. The damage assessment also includes a continued loss of use as a result of the fish and invertebrate kill (e.g. continued loss of fishing activities in the eastern basin). The following is a monetary breakdown of the losses. Please note that the source of the monetary value for the various losses are in parentheses.

1. FISH LOSS

[Prices below are from a Survey of fish farms located throughout the state . 1) Aquafarms International Inc. Mecca, CA, 2)Bloomfield Industries, Bakersfield, CA, 3) Catfish II, Jamul, CA., 4) County Health Vector Control for Gambusia.].

FISH	NUMBER AND/OR LBS	VALUE PER FISH OR LBS		TOTAL
Largemouth bass	835	$ 5.00 each	=	$ 4175.00
Bluegill	1671	$ 1.17 each	=	$ 1955.00
Crappie	279	$ 2.50 each	=	$ 697.00
Catfish	70 LBS	$ 2.25 per lb	=	$ 157.00
Bullhead	348 lbs	$ 2.25 per lb	=	$ 783.00
Carp	278 lbs	$ 1.00 per lb	=	$ 278.00
Gambusia/misc forage fish	3000++			
		TOTAL	=	$ 8045.00

2. LOSS OF INVERTEBRATES

INVERTEBRATE	NUMBERS	VALUE PER ORGANISM	TOTAL
CRAYFISH	9,600	$ 0.15	$ 1440.00
FRESHWATER SHRIMP	320,000	$ 0.10	$ 32,000.00
		TOTAL	$ 33,440.00

The value of the crayfish was obtained as part of the survey of the fish loss determinations as indicated above. All of the above fish supply companies also grow and sell crayfish.

The freshwater shrimp has been identified by MEC as Palaenometes paludosus. The value per organism was obtained from Dr. Mary Winsten, a professor at Texas A&M University. MEC consulted with Dr. Winsten to assist in the identification of the shrimp killed at the Buena Vista Lagoon spill. In a telephone conversation on October 12, 1994 between Mr. William Paznokas of my staff and Dr. Winsten, Dr. Winsten indicated that this particular shrimp is used extensively for bait in several parts of the U.S. and that the price for this shrimp was $0.10 a piece. Since Dr. Winsten is probably one of foremost authorities in the country on this particular shrimp and since she is the person your consulting company indicated was the expert we have taken her information and utilized it in our damage assessment.

Due to safety constraints and the tremendous number of invertebrates killed, we were unable to collect and count each shrimp and crayfish lost. However, we were able make some visual observations from the shoreline and we utilized this information to estimate the numbers. Our estimations are based on the following:

On August 24, 1994, Fish and Game staff conducted a visual survey of the shrimp and crayfish losses along the entire shoreline of the impacted area including the island shorelines. The impacted area consisted of the entire 1/3 of the eastern most basin of Buena Vista Lagoon. Subsequent to this survey Mr. Paznokas of my staff has revisited the site and estimated the shoreline perimeter of the impacted area to be approximately 3200 feet. On August 24th, Fish and Game staff also conducted a visual count of the dead shrimp and crayfish observed in a 390 linear foot section of the shoreline located along the duck feeding area which is located in the southeastern portion of the lagoon. The results of this survey indicated that there were approximately 100 dead shrimp per square foot and approximately 3 dead crayfish per square foot. Using this data and projecting that similar losses occurred around the effected area, the estimated losses of shrimp are 100 shrimp per square foot multiplied by 3200 linear feet of shoreline for a total of 320,000 dead shrimp. For the crayfish it is 3 per square foot multiplied by 3200 linear feet for a total of 9600 dead crayfish.

It should be noted this is probably a very conservative loss estimate since the total area of lagoon affected was approximately 30 acres and our estimate is based solely on our observations along the shoreline. It also does not take into account other less visible invertebrates that were undoubtedly adversely affected. However, due to health and safety constraints at the spill site, we were unable to observe and collect additional shrimp, crayfish and other invertebrate loss data throughout the remainder of the affected area. Due to these constraints, our loss estimates and subsequently our damage assessment can only be based on our observations along the shoreline. In our opinion the losses were probably much greater.

3. LOSS OF RESOURCE USE

(Please see attached letter and accompanying reference material for determination of monetary values for fishing and wildlife resource use loss.)

The spill resulted in a very significant public health risk throughout the entire lagoon. Due to this risk, the entire lagoon was posted by the County Health Department and closed to public use for 21 days (August 22 through September 11, 1994). Due to the public health closure, the use of the reserve for fishing, hiking, wildlife viewing etc., was lost for 21 days. In addition, due to the significant fish kill that occurred it has been determined that fishing use in the eastern most basin where the spill occurred will be lost for an additional 6 months. The six month time period reflects the time the Department believe necessary to ensure that the lagoon will be ready for restocking if that option is chosen for enhancement. Mr.Terry Forman inland fisheries biologist for the Department indicated that if it is determined that the eastern basin should be restocked, then the restocking program should not occur until the spring of 1995. Utilizing the above information the damage assessment for the loss of these uses are as follows:

a. Fishing loss

Through interviews conducted with the wardens who routinely monitor this area for fishermen and fishing activities it was determined that approximately 15 people utilize Buena Vista Lagoon for fishing on a daily basis. The Department's resource economist has supplied information that identifies the monetary value of a freshwater shoreline fishing day is valued at $26.26 per person per day. Utilizing this information the monetary damage assessment for the loss of fishing activity during the 21 day closure is as follows:

1) 21 days x 15 persons per day x $26.26 = $ 8271.90

For the additional six months of loss of fishing in the eastern most basin of the lagoon, we determined that approximately half of the fishermen or 7.5 persons per day fish in the eastern basin. Utilizing this information, the monetary damage assessment for the loss of fishing activity during the additional six months in the eastern basin is as follows:

2) 180 days x 7.5 persons per day x $26.26 = $35,451.00

b. Loss of wildlife viewing, hiking, etc.

(Please see the attached memo from Mr. Troy Kelly Coastal Ecological Reserve Manager for the Department of Fish and Game for the source of the resource use data. The source of the monetary value of the resource use has been identified above).

In 1993 public use survey was conducted by the Buena Vista Audubon Society. The Department participated in this survey. The results of this survey indicate that the estimated annual use of the Reserve is approximately 30,000 visitor days [one person, one day (or fraction of day) = one visitor day. This works out to be 82 persons per day utilizing the Reserve in one form or another. The monetary value of one use day has been determined by the Department's resource economist to be $50.84 per person, per day. Utilizing this information the monetary damage assessment for the loss of resource use activities such as wildlife viewing, hiking, etc., during the 21 day closure is as follows:

1) 21 days x 82 persons per day x $50.84 = $87,546.48

4. TOTAL DAMAGE ASSESSMENT

Taking into account the loss of fish and invertebrates, the loss of fishing and wild life viewing, hiking, etc., the total monetary damages are as follows;

Category	Monetary Value
FISH LOSS(please note this does not include Gambusia) gambusia data to follow.	$8045.00
INVERTEBRATE LOSS	$33,440.00
FISHING LOSS	$43,722.90
WILDLIFE VIEWING ETC. LOSS	$87,546.48
	$172,754.38

As previously indicated in a memo dated September 21, 1994 to Mr. Craig Mansen, General Counsel, Legal Affairs Division, my staff has indicated that the City of Vista is very amenable to a voluntary settlement. The settlement would be in the form of trust fund set up by the City with the Department of Fish and Game and The Regional Water Quality Control Board as the trustees. I strongly recommend that we pursue this settlement in the amount indicated above. Please note that this does not include our staff costs for responding to the spill and our ongoing involvement in the damage assessment. The City is well aware of these costs(approximately 25,000 dollars) and are also aware that these costs will be paid separately and directly to Sacramento.

This concludes the damage assessment Report. If you have any questions, or need additional information, please contact Mr. Bill Paznokas at (619) 525-4187.

PRELIMINARY REPORT

ON

COST RECOVERY FOR THE BUENA VISTA LAGOON SPILL

On August 23 and 24, 1994, 4.75 million gallons of raw sewage was discharged from the City of Vista's Buena Vista pump station to the eastern most basin of the Buena Vista Lagoon which is a Department of Fish and Game Ecological Reserve. The spill resulted in a major fish and invertebrate kill. The spill also resulted in the loss of use of the resources for 21 days. The loss of use by the public for 21 days was due to bacterial levels being elevated and the subsequent public health posting that the entire lagoon was closed for 21 days to all public access. The loss of use includes wildlife viewing, hiking, aesthetic enjoyment and fishing.

Several Fish and Game personnel responded to the spill. Fish and Game personnel that participated in the spill clean-up, site assessment and damage assessment are listed below.

1) Bill Paznokas (ESD)
2) Tim Dillingham (Region 5 Coastal Wildlife Management)
3) Terry Foreman (Region 5 inland fisheries)
4) Troy Kelly (Region 5 Coastal Wildlife Management)
5) Warden Sandy Skoryi (OSPR)
6) Warden Brett Gomes (Region 5 Wildlife Protection)
7) Warden John Laughlin (Region 5 Wildlife Protection)
8) Larry Sitton (Region 5)
9) Bob Schlichting (Region 5)
10) Robin Lewis (OSPR)
11) Randy Botta (Region 5 Inland Wildlife Management)
12) Eric Burres (Region 5)
13) Loretta Crumbie (Region 5 San Diego Dispatch).

The costs to the Department for responding to the spill and for the damage assessment includes staff time, mileage, per diem costs and equipment. The following is a breakdown of these costs:

A. STAFF TIME

1. Wardens

The cost recovery rate per hour for wardens is $36.88. This rate is calculated by adding the hourly rate and the maintenance rate. The hourly rate equals the monthly salary x .00869191. The maintenance rate equals the hourly rate x .2370. The monthly salary for the three wardens who worked this spill is $3431.00 I have attached a copy of the cost recovery formula sheet for additional information.

WARDENS	HOURS
Warden Sandy Skoryi	30
Warden Brett Gomes	50
Warden John Laughlin	8
TOTAL	88

Total cost recovery for wardens time is 88 hours x $ 36.88 = $3245.44.

2. Biologists

The cost recovery rate per hour for biologists is $44.65. This rate is calculated by adding the hourly rate and the maintenance rate. The hourly rate equals the monthly salary x .00857047. The maintenance rate equals the hourly rate x .2370. The monthly salary for the biologists who worked this spill is $4118.00 I have attached a copy of the cost recovery formula sheet for additional information.

BIOLOGISTS	HOURS
Bill Paznokas	151
Tim Dillingham	61
Terry Foreman	32
Troy Kelly	82
Larry Sitton	8
Bob Schlichting	8
Robin Lewis	9
Randy Botta	22
Eric Burres	30
Terry Stewart	8
TOTAL	411

Total cost recovery for biologists time is 411 hours x $ 44.65 = $18,351.15.

In addition to the staff costs already incurred, the Department projects that additional staff time will be necessary to complete the assessment and to finalize this case. The City will need to reimburse the Department for the on-going staff time spent on the remainder of the spill response and assessment. We do not predict this additional time to be significant.

B. MILEAGE

Mileage logs for all of the Fish and Game personnel identified above were reviewed and a total of 5375 miles were logged in response to the Buena Vista spill. The cost recovery charge per mile is $0.31. Utilizing this information, the total recovery charge for mileage is 5375 x $0.31 = 1666.25

C. PER DIEM

Mr. Troy Kelly, Coastal Ecological Reserve Manager for the Department responded to the spill from his headquarters in New Port Beach. His per diem costs for responding to the spill totaled $320.00.

D. EQUIPMENT

Miscellaneous equipment (e.g. dip net for collecting specimens, tape, markers, film, etc.) costs totaled $110.00.

The total cost to the Department to date is as follows:

Category	Cost
Staff time (Wardens)	$3,245.44
Staff time (Biologists)	$18,351.15
Mileage	$1,666.25
Per Diem	$320.00
Equipment	$110.00
Total =	$23,692.84

This concludes the cost recovery report. The City of Vista should be sent a bill for $23,692.84 for the Department's time and resources expended in response to the Buena Vista Lagoon sewage spill on August 23 and 24, 1994.

EMERGENCY RESPONSE SAMPLING AT BUENA VISTA LAGOON

Final Report

MEC ANALYTICAL SYSTEMS, INC.

EMERGENCY RESPONSE SAMPLING AT BUENA VISTA LAGOON

Final Report

Submitted To:

City of Vista
600 Eucalyptus Avenue
Vista, California 92085

Submitted By:

MEC Analytical Systems, Inc.
2433 Impala Drive
Carlsbad, California 92008

September 30, 1994

TABLE OF CONTENTS

INTRODUCTION

In response to a sewage spill from the Buena Vista pump station, field sampling was conducted at Buena Vista Lagoon in late August and early September 1994. The purposes of this sampling effort were to track the spread of the sewage plume and to document background conditions in unaffected areas of the lagoon. Dissolved oxygen concentrations and fecal coliform counts were used as indicators of sewage contamination.

Buena Vista Lagoon is located in northern San Diego County between the cities of Oceanside and Carlsbad. Highway 78 lies to the north, while Interstate 5 separates the inner lagoon (east of the freeway) from the outer lagoon (west of the freeway) (Figure 1). Hill Street and the Atchison, Topeka, & Santa Fe Railroad cross the western portion of the outer lagoon. Buena Vista is considered a freshwater lagoon as there is no tidal exchange from the Pacific Ocean.

METHODS

Field sampling was conducted from August 23 through September 16, 1994. Sampling was extensive immediately following the spill with surveys conducted generally once or twice a day. Most sampling took place in the mid-afternoon from 1330 to 1600. On selected days, sampling also was conducted just after dawn. Samples were collected for dissolved oxygen and fecal coliforms, although for certain surveys additional parameters were measured. A summary of the survey dates, times, and parameters measured is found in Table 1.

The sampling effort was focused on the inner lagoon as the spill entered Buena Vista Lagoon from the eastern extreme. Stations were established in the impacted area and in areas far from the source. As the plume spread, some adjustments were made in the location of stations or in the number of stations in a particular area. All stations are mapped by survey in Appendix A.

On August 23, 24, and 25, water samples for coliform analysis were collected and analyzed by Encina Wastewater Authority. Samples were collected from the shore at five stations spread over the entire lagoon (Appendix A). In the laboratory, samples were analyzed for total and fecal coliforms using the membrane filter technique. Data were reported as colony forming units per 100 ml (cfu/100 ml).

More extensive sampling began on August 24. Water samples were collected throughout the inner lagoon by MEC Analytical Systems, Inc. (MEC) from an Avon inflatable boat. A Van Dorn sampler was used to collect water just below the surface and, at some of the deeper stations, at midwater and bottom depths as well. Depth was determined using a weighted tape measure. Samples were analyzed for dissolved oxygen in the field using Winkler titrations, and values were reported in milligrams per liter (mg/l). On August 26, MEC began collecting additional water samples for coliform analysis. Samples were collected by placing the sterilized container directly into the water at the surface. Samples were analyzed for total and fecal coliforms by Sierra Laboratories using the membrane filter technique. Values were reported as most probable number per 100 ml (mpn/100 ml). Samples were collected for coliforms through September 8 and for dissolved oxygen through September 16.

On August 26, 27, and 28, surveys were conducted in both the inner and outer lagoons. Samples also were collected near the weir at the western extreme of the lagoon and from the surfzone of the ocean. Data from these surveys provide information on the background (unaffected) conditions of the lagoon.

On August 28 and 30 and September 2, field measurements of temperature (°C) and salinity (‰) were recorded from a YSI meter (Model 33). On September 2, additional samples were collected for Biochemical Oxygen Demand (BOD), Total Kjeldahl Nitrogen (TKN), and chlorophyll-a. These samples were analyzed by Columbia Analytical Services, Inc. Samples for BOD were analyzed by EPA Method 405.1, and values were reported in mg/l. EPA Method 351.4 was used to measure TKN in mg/l. Samples filtered for chlorophyll-a were analyzed by Standard Method 10200 H, and values were reported in milligrams per cubic meter (mg/m^3).

RESULTS

Results of analyses for dissolved oxygen, coliforms, salinity, temperature, BOD, TKN, and chlorophyll-a are tabulated by survey in Appendix A. Surface values for dissolved oxygen and fecal coliforms are mapped by survey in Figures 1-DO to 21-DO and 1-FC to 17-FC.

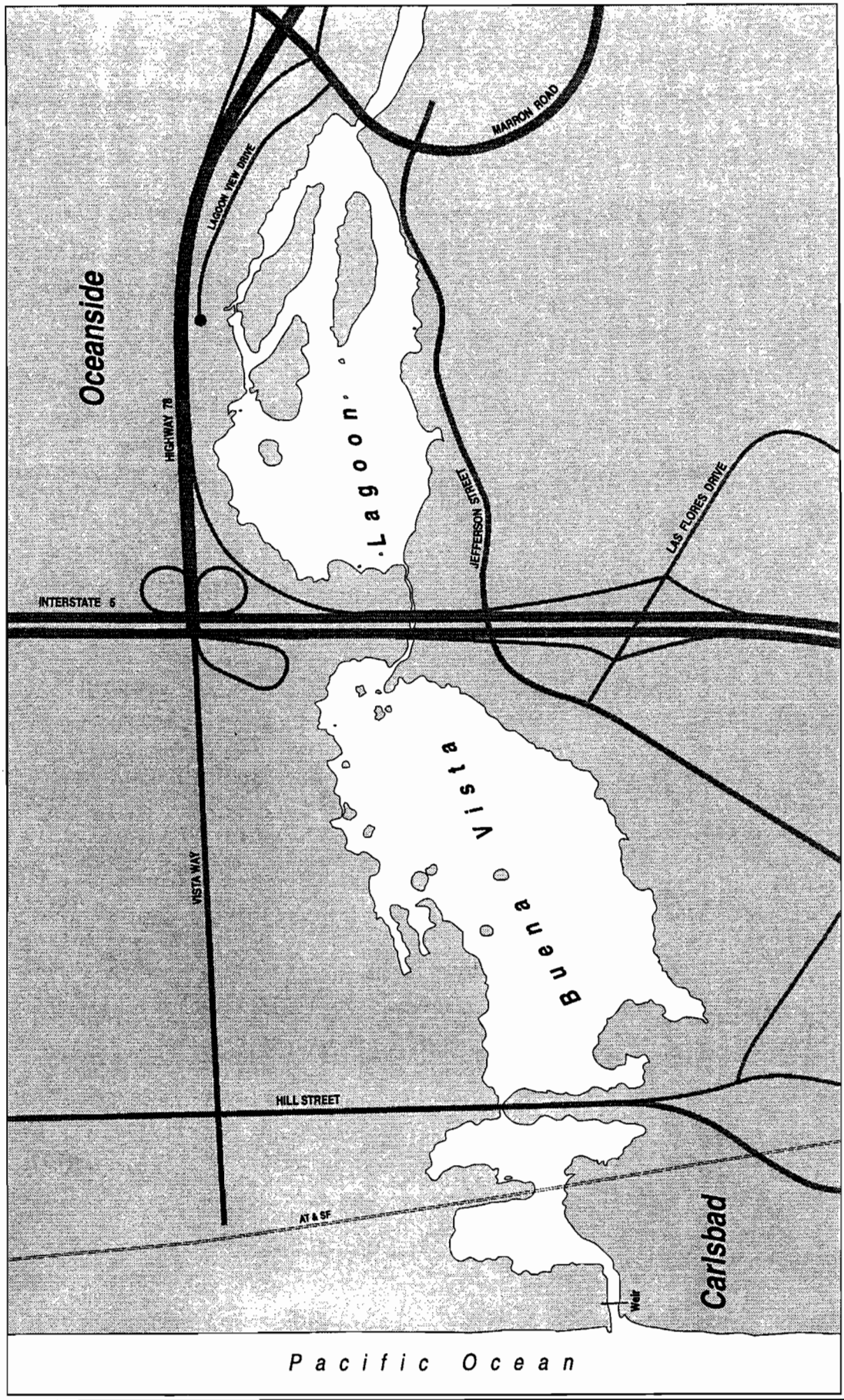

Figure 1. Buena Vista Lagoon

Table 1. Parameters measured for each survey at Buena Vista Lagoon.

DATE	TIME	NUMBER OF STATIONS	PARAMETER
August 23	0800	5	coliforms
August 24	0800	5	coliforms
August 24	1500	23	dissolved oxygen
August 25	0800	5	coliforms
August 25	1330	9	dissolved oxygen
August 26	0630	12	dissolved oxygen
August 26	1330	17	dissolved oxygen
August 26	1825	22	coliforms, dissolved oxygen
August 27	0600	22	coliforms, dissolved oxygen
August 27	1400	22	coliforms, dissolved oxygen
August 28	0600	23	coliforms, dissolved oxygen
August 28	1330	23	coliforms, dissolved oxygen, temperature, salinity
August 29	1500	12	coliforms, dissolved oxygen
August 30	0600	12	coliforms, dissolved oxygen
August 30	1330	14	coliforms, dissolved oxygen, temperature*, salinity*
August 31	1330	10	coliforms*, dissolved oxygen
September 1	1330	8	coliforms*, dissolved oxygen
September 2	0630	8	dissolved oxygen
September 2	1315	8	coliforms*, dissolved oxygen, temperature, salinity, BOD, TKN, chlorophyll-a
September 4	1330	6	coliforms*, dissolved oxygen
September 6	1330	6	coliforms*, dissolved oxygen
September 8	1330	8	coliforms*, dissolved oxygen
September 12	1330	6	dissolved oxygen
September 16	1415	6	dissolved oxygen

* Not measured at every station

Dissolved Oxygen

In the morning of August 24, dissolved oxygen concentrations in the inner lagoon were 0 mg/l in the eastern area and northern channel and 8.9 to 18.1 mg/l in the central and western areas (Figure 1-DO). The values of 0 mg/l dissolved oxygen indicated that the sewage plume occupied the eastern area and northern channel of the inner lagoon at this time. The flowering plant *Ruppia maritima* was observed to the west of the contaminated area in the central and southern channels. Dissolved oxygen concentrations were high in the vegetated area (Figure 1-DO).

On August 25, dissolved oxygen concentrations again were 0 mg/l in the eastern portion and northern channel of the inner lagoon (Figure 2-DO). It was apparent that the thick plant growth of *R. maritima* was preventing the spread of the plume through the central and southern channels. Measurements in the vegetated area were 15.9 to 17.0 mg/l, indicating that this area was a barrier to the spread of the sewage and a buffer in that it could compensate for any reduction in dissolved oxygen.

Just after dawn on August 26, dissolved oxygen was 0 mg/l in the contaminated area, but concentrations in the *R. maritima* and in the center of the inner lagoon had dropped to 1.5 to 5.9 mg/l (Figure 3-DO), indicating heavy use of the oxygen for respiration during the night. By afternoon of the same day, dissolved oxygen in the *R. maritima* and in the center of the inner lagoon had been replenished (Figure 4-DO). Concentrations in the western area of the inner lagoon also were high. In contrast, values were low (0 to 2.4 mg/l) in the northern center of the inner lagoon (Figure 4-DO), indicating that the contamination had spread across the narrow connection of the northern channel. Samples taken that evening showed a similar pattern, with the eastern portion of the inner lagoon clearly affected and the western portion of the inner lagoon and entire outer lagoon clearly unaffected (Figure 5-DO).

On August 27 and 28, monitoring was conducted just after dawn and in midafternoon in both the inner and outer lagoons. As before, dissolved oxygen concentrations were 0 mg/l in the eastern area and northern channel of the inner lagoon (Figures 6-DO to 9-DO). Concentrations were low in the morning and high in the afternoon in the uncontaminated western area of the inner lagoon and the entire outer lagoon and surfzone of the ocean. Dense growth of *R. maritima* was found throughout the entire outer lagoon. (Note that vegetation in the outer lagoon is not indicated in the figures.) In the afternoon of August 28, dissolved oxygen in the northern central area of the inner lagoon measured 2.7 mg/l, showing that conditions in the affected area had not changed.

On August 29, dissolved oxygen concentrations began to increase in the contaminated area. In the eastern region, values ranged from 0.2 to 4.4 mg/l, and the northern central area had a dissolved oxygen concentration of 11.9 mg/l (Figure 10-DO). Dissolved oxygen was still 0 mg/l in the northern channel. The central and western areas remained unaffected. Similar patterns were observed on August 30 (Figures 11-DO and 12-DO). On August 31, dissolved oxygen showed an increase in the northern channel (Figure 13-DO), and on September 1, surface water concentrations were high (8.2 to 16.8 mg/l) throughout the inner lagoon (Figure 14-DO).

Dissolved oxygen had decreased in all areas by the early morning of September 2 (Figure 15-DO) and then was replenished through photosynthesis by the afternoon of the same day (Figure 16-DO). Dissolved oxygen concentrations remained high (4.2 to 22.9 mg/l) throughout the inner lagoon from September 4 to 16 (Figures 17-DO to 21-DO).

The Economic and Fiscal Impact of Carlsbad's Beaches: A Survey and Estimate of Attendance

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I would like to thank Steve Jantz, members of the Beach Preservation Committee, and Richard Dennison and Denny Stoufer from California State Parks for help with this project.

Executive Summary

This study was commissioned by the City of Carlsbad to analyze beach tourism. It presents the results of a comprehensive survey of beach visitors in high season, an estimate of beach attendance and total spending related to beach tourism in the City and the region.

- 83% of beach visitors were not City residents, though half lived within 20 miles. 26% came from outside California.
- Among amenities, beach cleanliness was rated most important (82% said it was very important), while 43% said wide beaches were very important and 55% said parking was very important.
- Respondents ranked Lifeguard services, Carlsbad Village, and other amenities lower.
- If Carlsbad's beaches eroded 50% (were half as wide), beach attendance would drop by 28%.
- 40% of visitors stay overnight; 58% of people staying overnight responded that the beach was "very important" for their trip/vacation.
- The typical visitor spent $66 per person per day, 2/3 ($44) of which is spent in Carlsbad. Overnight visitors spent far more than day-trippers. Lodging was the largest spending category at $26 per person per day (averaged over all visitors).
- Beach tourism generates $94,000 in sales tax revenues and $1.4 million in Transient Occupancy Tax.
- For the State as a whole, beach tourism generates just under $2 million in sales tax revenues and parking fees.
- This study also developed a methodology to count people at the beach—just under 600,000 people attend Carlsbad's beaches in high season.
- Since most of the beach is operated by State Parks, the cost to the City of Carlsbad is minimal, while the beach generates millions in revenue and income for Carlsbad's citizens. Maintaining beach width and cleanliness should be a clear goal for the City, since respondents indicated that narrowing of the beach would lead to lower attendance and that cleanliness was critical.
- This study provides an estimate of attendance and suggestions for future work. The most cost effective way to collect data would be to work with State Parks, which already collects attendance data for approximately 90% of visitors.
- The estimates provided in this report are extremely conservative. This reports attendance estimate is significantly lower than the official estimates provided by State Parks. Also, the report only considers the economic impact from people who are actually on the beach. The existence of the beach also increases property values (and hence property taxes), employment, and other economic activity.

I. Introduction

This study was commissioned by the City of Carlsbad, specifically the Beach Preservation Committee, to analyze beach tourism at beaches within the City's limits. The study will present the results of a comprehensive survey of beach visitors in high season. It also presents an estimate of beach attendance at these beaches in high season. The results of the survey and of the attendance estimate will also be used to estimate total spending related to beach tourism in the City and the region.

Although the beach represents a continuous strip of sand, except for a narrowing between Cannon Road and Palomar Airport Road, it is, in fact, divided into several beaches with different jurisdictions. The northern part of the beach, from the Oceanside border to the Army-Navy Academy is bordered by a largely residential area, though some condos here are rented in the summer. This part of the beach is less populated though one can still find several dozen people on the beach in high season, as well as walkers in the morning. As one moves south from the Army-Navy school to the northernmost lifeguard tower, near Carlsbad village, the beach population becomes increasingly denser. The southern part of this reach is, along with Ponto, the most densely populated part of the beach. Here, a number of commercially rented condos have been built along with a hotel. Public access is also available along with reasonable parking.

Starting with the northernmost lifeguard tower (#28) near Carlsbad Village Drive, the beach is run by the California State Parks system and lifeguard towers, run by the State, are posted periodically down to the lagoon ("warm water"). Beach goers cluster around access points and parking. From just south of the lagoon to tower #11 the beach population is sparse and many areas are eroded and have only private access. From tower #11 down, the population again increases. Many people here are campers camping at South Carlsbad State park. The population clusters near lifeguard towers, especially #9, #8, and #6, which also correspond to access points. From tower #4 south, the visitor population shifts again to locals, who park nearby. The population between tower #2 and tower #1 is very dense at "Ponto" beach, most likely due to easy parking and a wide beach. The beach continues into Encinitas with no clear dividing line except for a small sign.

II. Beach Survey

In order to obtain information on the types of visitors coming to Carlsbad's beaches, their behavior, and their preferences, I created a survey instrument and presented a preliminary four page instrument, consisting largely of closed-end questions, to Steven Jantz, Associate Engineer for Carlsbad. I next met with the Beach Preservation Committee and a number of City officials as well as officials from California State Parks. I made a number of modifications to the scope and purpose of the survey based on the feedback from the visit to Carlsbad. The resulting survey instrument was tested in mid-June on 40 beach visitors. Subsequently, a small number of changes were made and the final instrument was used for the survey.

Surveys were conducted in June, July and August, including the July 4th weekend. Every effort was made to create as representative a sample as possible and respondents were given no information which might bias the results. Beach visitors were chosen at random[1] and asked to fill out the survey on-site, which yields much higher participation rates than other survey methodologies. The survey was conducted on weekdays, weekends, cloudy days and sunny days, in proportion to the number of people on the beach on those days. The response rate was high—approximately 85% of people asked to participate agreed to do so. This result is encouraging since non-participation can lead to survey bias if non-respondents are different from respondents. Complete results of the survey are presented in Appendix 1 at the end of the report.

On each survey the day, time and location were noted beforehand. To determine location, the beaches were divided into the following reaches:

- **Reach 1a**: From the most northern part of Carlsbad beach (St. Malo) to the south end of the Army Navy Academy (http://www.army-navyacademy.com/).
- **Reach 1b:** From the south end of the Army Navy academy to the first lifeguard tower (#28).
- **Reach 2**: From the first lifeguard tower (#28) to the north end of the Encina Power Station.
- **Reach 3**: From the north end of the Encina Power Station to the north end of Carlsbad State beach.
- **Reach 4**: (S. Carlsbad State Beach) From the north end of S. Carlsbad State beach to the north of Ponto Beach (lifeguard tower #4).
- **Reach 5a**: ("Ponto Beach"): Lifeguard Tower #4 to #2.
- **Reach 5b**: ("Ponto Beach"): From lifeguard tower #2 to the sign for the Carlsbad Encinitas border which is about 20-30 yards south of lifeguard tower #1
- **Reach 5c**: ("Ponto Beach"): From the sign for the Carlsbad/Encintas border halfway to the first set of staircases.

The survey was conducted from Reach 1a to 5b. Since 5c is in Encintas, surveys were not taken, but attendance numbers were estimated. Reach 3 is the longest in terms of distance, but has far fewer people than other reaches since access is quite limited in most places. Reach 1a is also sparsely populated. Reaches 1b and 5b are densely populated on busy days. Reach 1 does not have lifeguards and is not part of State Parks.

The survey was administered to 562 people, more than sufficient for reasonable estimates.

[1] The surveyor zigzagged and chose every nth person to answer the instrument.

III. Results of the Survey

This section presents the results of each survey question. Briefly, here are the main results of the survey:

- 83% of beach visitors were not City residents, though half lived within 20 miles. 26% came from outside California.
- 82% came to the beach by car; 17% walked. Half the people who drove had no difficulty parking and only 9% reported having significant difficulty parking.
- The average stay was just over 3 hours, though there was quite a bit of variation.
- Visitors to Carlsbad's beaches also visit other local beaches, and rate Carlsbad, on average, slightly better than other beaches.
- Among amenities, beach cleanliness was rated most important (82% said it was very important), while 43% said wide beaches were very important and 55% said parking was very important. Lifeguard services, Carlsbad Village, and other amenities scored lower.
- If Carlsbad's beaches eroded 50% (were half as wide), attendance would drop by 28%.
- 40% of visitors were staying overnight; reaches 1 and 4 were most likely to have overnight visitors.
- 58% of people staying overnight responded that the beach was "very important" for their trip/vacation.
- The typical visitor spent $66 per person per day, 2/3 ($44) of which is spent in Carlsbad. Overnight visitors spent far more than day-trippers. Lodging was the largest spending category at $26 per person per day (averaged over all visitors).

IV. Attendance Estimate

Attendance was estimated by counting everyone on the beach and in the water for a particular reach at a particular time. Counts were made on several days in June, July and August. Using the survey results, it was possible to develop a methodology for estimating total attendance in a day. On many beaches in California, attendance is conducted utilizing car counts or lifeguard counts conducted midday, typically about noon. In fact, Carlsbad State beach uses precisely this methodology.

The survey asked not only how long people stayed, but when they arrived. Thus it was possible to create a profile of beach attendance throughout the day. As one would expect, the length of stay was also related to time of arrival, with people arriving earlier tending to stay somewhat longer, on average. Table 1 below estimates arrivals and departures as a percentage of peak attendance (100%). Although the peak varies somewhat by day and weather (specifically if cold winds come in the afternoon), the typical peak is between two and three o'clock. Keep in mind this peak is consistent with a peak arrival time around noon, which I observed. "Peak" here refers not to total attendance for the day, but the maximum attendance at any one time, which is much easier to observe.

Table 1: Peak Attendance on a typical day by time of day

Time	% of Peak	% of peak who arrived earlier	Est Arrivals as % of peak
Before 9 am	10%	0	10%
9-10 am	20%	7.5%	12.5%
10-11 am	33%	16.5%	16.5%
11-noon	60%	27.5%	32.5%
noon-1pm	80%	47.7%	32.3%
1-2pm	95%	63.7%	31.3%
2-3pm	100%	70.7%	29.3%
3-4 pm	95%	71.9%	23.1%
4-5 pm	90%	66.7%	23.3%
5-6pm	70%	81.0%	13.3%

Using the survey data and a model of arrivals and departures, it is also possible to estimate how the beach count at any particular time relates to the total number of people on the beach on a given day. Essentially, one multiplies the beach count at a particular time (e.g., noon-1) by the respective factor in Table 2 (e.g., 2.8). The most reliable counts should be taken between 11 and 4pm, preferably between 1pm and 3pm. For example, if one counts 100 people on reach 1b between noon and 1pm, one should multiply this number by 2.8 to estimate the total number of people on the beach—in this case 280.

Table 2: Ratio of Total Daily Attendance/Beach Count at a particular Time

Time	
Before 9 am	22.4
9-10 am	11.2
10-11 am	6.8
11-noon	3.7
noon-1pm	2.8
1-2pm	2.4
2-3pm	2.2
3-4 pm	2.4
4-5 pm	2.5
5-6pm	3.2

Using the methodology described above and the specific beach counts, I estimated an average attendance on a typical day. While beach attendance did vary depending upon the day and (most importantly) the weather, my counts included a representative sample of weekdays, weekends and sunny and cloudy days in the summer. Table 3 below presents the estimate of total daily attendance. Reaches 1 b (near Carlsbad village) and 5b (Ponto) are the most densely populated, however Reach 4 (S. Carlsbad State Beach) has the most people, though spread out over a much larger area. On a typical summer day, 5430 people visit Carlsbad's beaches.

Table 3: Estimated Average Daily Attendance by Reach in High Season

Reach	Est. Avg. Daily Attendance	% Total
1a	250	5%
1b	1000	18%
2	750	14%
3	330	6%
4	2000	37%
5a	100	2%
5b	1000	18%
5c	250	5%
Total 1a-5b	5430	100%

The high season in summer extends from late May to mid-September, particularly in San Diego County. A reasonable estimate is 110 days. Multiplying the estimate of daily attendance by 110 days yields an estimate for high season attendance of 597,300.

V. Economic Impact

Using the spending data and attendance estimate, one can calculate the economic impact of Carlsbad's beaches for the City and the surrounding region. Table 4 presents the estimate for total spending by category. Average spending is per person per day as reported in the survey. Total spending was estimated by multiplying average spending per day by the number of visitor days. Total spending is just under $40 million.

Table 4: Spending by Category

Category	Avg. Spending	Total Spending
Gas and Auto	$ 7.79	$ 4,652,967
Food from Stores	$ 11.79	$ 7,042,167
Beer, Wine, liquor	$ 4.04	$ 2,413,092
Sit-down Restaurants	$ 11.49	$ 6,862,977
Parking	$ 1.03	$ 615,219
Sundries	$ 3.00	$ 1,791,900
Lodging	$ 26.94	$ 16,091,262
Total	$ 66.08	$ 39,469,584

Table 5 presents spending just for the City of Carlsbad, by category--$26.5 million.

Table 5: Spending in Carlsbad by Category

Category	Avg. Spending in Carlsbad	Total Spending in Carlsbad
Gas and Auto	$ 3.26	$ 1,947,198
Food from Stores	$ 8.03	$ 4,796,319
Beer, Wine, liquor	$ 2.40	$ 1,433,520
Sit-down Restaurants	$ 7.13	$ 4,258,749
Parking	$ 0.67	$ 400,191
Sundries	$ 1.41	$ 842,193
Lodging	$ 21.51	$ 12,847,923
Total	$ 44.41	$ 26,526,093

VI. Fiscal Impact

The beaches are largely maintained by the California State Parks. Reach 1 (not controlled by State Parks) has no lifeguard services and expenditures on public safety are minimal. On the other hand, the spending discussed above does generate substantial revenues--in particular sales tax revenues and Transient Occupancy Tax (TOT) revenues. Using the spending categories above, one can calculate sales taxes to the City of Carlsbad, which represents 1% of all taxable items.[2] Lodging is not subject to sales tax, but is subject to a Transient Occupancy Tax.

For the City of Carlsbad, beach tourism generates $94,000 in sales tax revenues and $1.4 million in TOTs.[3] The data does not allow estimates of increases in property taxes generated by the beach, but it is abundantly clear that the existence of a healthy beach increases property values and hence taxes. In the last fiscal year, the City of Carlsbad generated $28 million in property tax revenues.

For the State of California, beach tourism generates just under $2 million in sales tax revenues and parking fees.

Table 5: Estimated Taxes Directly Generated by Carlsbad's beaches

Local Sales Tax	$	94,409.24
Transient Occupancy Tax	$	1,284,792
Total Carlsbad Taxes	**$**	**1,379,202**
State/Regional Sales Tax	$	1,382,102.92
State Parking	$	615,219.00
Total Direct State Taxes	**$**	**1,997,321.92**

VII. Estimating Future Attendance

This study has devoted a considerable amount of effort to estimating beach attendance at the City's beaches. Given limited resources, there is no perfect way to estimate attendance, but rather a series of compromises based on available data and budget. This section will discuss options for future estimates of beach attendance.

[2] Most food, parking at State Parks and lodging are not subject to sales tax in California.
[3] The sales tax rate for applicable items in Carlsbad is 7.75%; 1% goes to the City. See http://www.boe.ca.gov/news/sp111500att.htm. TOTs are 10% of lodging. Estimated TOTs for the 2005-2006 fiscal year are 10.3 million, see City of Carlsbad, 2005-6 Operating Budget Overview.

A. Using Electronic Counters

The City of Encinitas uses laser counters to estimate the number of people arriving and leaving at various access points. I am currently working with the City of Encinitas to calibrate these counts more accurately and the results of this study this summer will be available shortly. Encinitas is unique in that it has a relatively small number of access points which are sufficiently narrow to use a laser counter. The main exception here is Moonlight beach, which has a counter at the main stairway. I found that most people going to Moonlight beach do not go down the stairs and through the counter. However, there is a fairly stable relationship between those who go through the counter and those that do not. The counters at the northernmost access points (near Ponto beach) tend to significantly over count visitors, possibly because surf boards trip the laser beam in addition to the visitors or possibly due to stair joggers who do not actually go to the beach. There is also one major access point in Encinitas (just south of Carlsbad) which is private—these visitors are not counted by laser counters at present.

The City of Carlsbad's beaches are quite different from Encinitas' in terms of access. While much of Reach 1 and the northern part of Reach 2 also have limited access points suitable for counters, the rest of Carlsbad's beaches are generally less suitable. Further, about half of the people observed entering Reach 1 arrived on the beach through private access points (mostly hotels and condos). Overall, Dr King estimates that only 10-15% of Carlsbad's beach visitors could be measured through counters. While this would provide very interesting data, it would probably not be a good use of the City's resources. However this data would be quite useful for studying attendance patterns, especially if the City used counters that could tell whether visitors were arriving or leaving.

B. State Parks Counts

State Parks does a good job of counting cars that are parked in beach parking lots, both official and unofficial. Their counts include some street parking, though not much north of Carlsbad Village Drive. Lifeguards conduct a count around noon each day and use a methodology to calculate attendance. Visitors who camp are estimated by multiplying camp site attendance by 5.8 in high season. All the data is entered into official forms created by State Parks.

However, the methodology for estimating attendance has not been updated for 25-30 years, according to Richard Dennison, who supervises the counting in Carlsbad for State Parks. The methodology assumes that 1.4 people are in each car, which is lower than what this study's survey data (and other previous studies at beaches in California) indicate. The car count is multiplied by 14 (except at one site) to account for turnover and perhaps cars not counted. The data generated from this study indicates that 14 is to much too high a factor. According to this study's data, the turnover based on a noon count is around three. Even doubling this number and increasing the number of people per car to more reasonable 2.5 or 3 yields a much lower estimate than that obtained by State Parks as detailed below. Indeed, the estimate of beach attendance is about half of State Parks. This is by no means meant to be a criticism of the people at State parks who work in the north San Diego county region. They have been *extremely* helpful to me

throughout this study.[4] Instead, this study indicates that the basic methodology, developed 30 years ago need to be revisited and recalibrated. State Parks also counts camping groups and multiplies by a factor of 5.8 per day in high season. This study did not examine this aspect of their methodology.

Indeed, I believe the city should work more closely with State Parks to estimate attendance for all the City's beaches. Roughly 75% of attendance already falls under their jurisdiction.

C. Periodic Beach Counts

The City could also conduct its own beach counts of people on the beach, as I did. One would not need to count every day, but every attempt should be made to obtain a representative sample. Counts should be made between 1pm and 3pm, which are peak times. Counts at other times are possible, but will be less accurate. The total attendance at a given reach/area can be computed by using Table 2 above.

VIII. Recommendations

This study recommends that the City work with State Parks to accurately estimate attendance. I believe that the car count methodology is reasonably accurate, but needs to be calibrated (downward). Since 80% of the people going to the beach arrive by car, a car count, as conducted by State Parks, would catch most people. One can easily factor in pedestrian visitors by multiplying by the appropriate factor (the survey indicates 1.25. One must also account for people who park in areas not counted. (State Parks does include parking on side streets as well as parking next to the beach.) It is also likely that Reach 1 is undercounted, though State Parks does include some of the parking in this area.

The survey indicates that the average group size is 3.1 people, though it did not specifically ask if all people in one household arrived in the same car. It is likely that some large groups arrived in two or more cars. On the other hand, since the survey focused on households, and multiple households may arrive in one car or van (e.g., family members who do not live in the same house), 3.1 is probably a reasonable number.

However the use of a factor of 14 to multiply the car count by is too high. The survey also indicates that between noon and one, a turnover factor of 2.8 should be utilized. However, this factor does not account for the fact that only 80% arrive by car—one needs to multiply by 1.25. One also needs to estimate the number of cars not counted by car a count, which was beyond the scope of this study. If, for example, only 80% of cars are counted one would multiply by 1.25.

Table 6 compares this study's methodology to the one used by State Parks. For each car, the methodology multiplies by a factor for people per car, people who do not come by car, and cars not counted. The survey from this study provides reliable data on the first two factors, but not the last. Hypothetically, assume that 80% of cars are counted which

[4] In particular, Richard Dennison of State Parks was very helpful.

seems reasonable since the State Parks car counts are fairly comprehensive and include side streets. One should also remember that some cars containing people not going to the beach will be counted, so the adjustment factor could be less than one (or close to one). This methodology also may yield different results are busy days (when most people are on the beach) than on non-busy days (when they may park near the beach but go elsewhere).

Table 6: Two Methods using Car Counts to Estimate Attendance

Factor	State Parks	Our Tentative Suggestion
# Cars	1000	1000
# People per Car	1.4	2.9
People not going by Car		1.25
Cars Not Counted		1.25
Turnover Factor	14	2.8
Total Count Factor incl passengers	19.6	12.7

This study suggests that these factors be calibrated further in conjunction with State Parks. While there is always a temptation to come up with a large number, an accurate number, which is credible and backed by a sound methodology, carries more weight.

IX. Conclusion and Limitations of the Study

This study provides an overview of the composition and preferences of beach visitors to the City of Carlsbad and an estimate of total attendance. It also provides an estimate of the economic and fiscal impact for the City and State. The executive summary at the beginning provides a good overview of this study's findings.

The City of Carlsbad clearly benefits substantially from beach tourism. In particular, a substantial portion of Transient Occupancy Tax revenue is generated by beach tourism and the wider beach should add to property values.

Visitors clearly indicated that clean wide beaches were a prime concern. The City may wish to consider cleaning reach one and perhaps cooperating with State Parks to make sure Ponto is clean. I walked the entire beach many times and did not find it dirty, though the small amount of money it would cost to hire someone to clean reach 1 would likely be worth it. The City has clearly benefited from beach nourishment from SANDAG and it is worthwhile to maintain the beach, since the survey indicated halving the beach width would cause a 29% drop in attendance.

The estimates provided in this report are extremely conservative. This reports attendance estimate is significantly lower than the official estimates provided by State Parks. The previous section explains in some detail the reasons for this discrepancy. The report only considers the economic impact from people who are actually on the beach. However it is

clear from the survey that many people who stay in Carlsbad go because of the beach, but do not go to the beach every day. It is standard practice to only count spending on days when people are actually on the beach, though this methodology in some sense underestimates the true impact of the beach. The existence of the beach also increases property values (and hence property taxes), employment, and other economic activity.

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Appendix 1: Complete Results of Survey

Question 1: How far away from this beach do you live (your primary residence)?

Location	Frequency
In Carlsbad	27.40%
Outside Carlsbad, but within 20 miles	22.90%
Within 60 miles	10.00%
More than 60 miles but in California	13.20%
In the US, but not in California	25.10%
Outside the US	1.40%

Question 2: Including yourself, how many people from your household are here today?

Average response = 3.3 people Median response = 3 people	
Number of People	Frequency
1	18.7%
2	19.4%
3	18.7%
4	25.6%
5-6	12.1%
7-9	3.9%
10-12	1.2%
13 or more	0.4%
Non response	0.0%

Question 2a: Of these people, how many are under 16?

Average response = 1.3 people Median response = 1 person	
Number of People	Frequency
0	34.9%
1	23.7%
2	25.4%
3	9.3%
4	3.9%
5-6	1.2%
7-9	0.4%
10-12	0.0%
13 or more	0.2%
Non response	1.1%

Question 3: How many days this year will you go to a beach in Carlsbad?

Average response = 25.5 days Median response = 9 days	
Number of Days	Frequency
1-3	18.9%
4-7	20.6%
8-10	11.4%
11-14	9.4%
15-21	7.3%
21-28	6.0%
28-50	9.4%
50-100	8.9%
more than 100	7.8%
Non response	0.2%

Question 4: How did you get to Carlsbad Beach today?

Mode of Transportation	Frequency
By car	81.9%
By foot	16.8%
By bicycle	0.4%
By train	0.2%
other	0.7%
Non response	0.0%

Question 4a: If you came by car, how difficult was it to park?

Difficulty in Parking	Frequency
Parking was easy	49.5%
Parking was somewhat difficult	26.5%
Parking was very difficult	8.7%
Non response	15.3%

Question 5: What time did you arrive at the beach today?

Arrival Time	Frequency
Before 9 am	5.5%
9-10 am	9.0%
10-11 am	21.2%
11-noon	21.0%
noon-1pm	18.0%
1-2pm	11.1%
2-4pm	9.2%
After 4pm	4.4%
Non response	0.5%

Question 6: On a typical day, how many hours do you spend at the beach?

Number of Hours	Frequency
Less than 1 hour	17%
2-3 hours	36%
3-5 hours	38%
5-8 hours	8%
more than 8 hours	1%
Total	100%

Question 7: What was your reason for coming to this beach (check one or two)?

Reason	Frequency
To swim	13.8%
So my children could play/swim	30.4%
To surf	8.6%
To hike	0.5%
To hang-out on the beach	45.2%
(other)	1.4%
Non response	0.0%

Other responses: birthday party, bodysurf, bodyboard, camping, kayak, volleyball, read, run, visit family, and lay in the sun.

Question 8: How many days this year will you go to other beaches in California (outside Carlsbad)?

Average response = 11 days Median response = 5.5 days	
Number of Days	Frequency
0	18.7%
1-3	26.5%
4-7	20.8%
8-10	10.5%
11-14	4.6%
15-21	4.8%
21-28	3.6%
28-50	3.2%
50-100	2.5%
More than 100	2.5%
Non response	2.3%

Question 8a: What beach do you go to most often, other than this beach? [See table below question 9 for response.]

Question 9: Please compare the alternative beach you listed above to Carlsbad's beach. We would like you to compare your overall satisfaction including services available at the beach. Please DO NOT consider the time it takes to get to the beach in your rating.

Worse than Carlsbad Same Better than Carlsbad

0% 25% 50% 75% 100% 125% 150% 175% 200%

Average rating = 94
Median rating = 100

Most Popular Responses	Average Rating
Oceanside	82.0
Del Mar	98.8
Moonlight	107.4
La Jolla	100
Mission	88.9
Newport	98.6
Huntington	75
Torrey Pines	88.3
Pacific Beach	109.1

Question 10: Which of the following services and amenities were most important to you in your choice to come to Carlsbad?

Question 10a: Carlsbad Village

Importance	Frequency
Very Important	18.9%
Somewhat Important	26.3%
Not important	44.8%
Non response	9.8%

Question 10b: Lifeguard Services

Importance	Frequency
Very Important	34.5%
Somewhat Important	25.3%
Not important	32.2%
Non response	7.8%

Question 10c: Wide Beaches

Importance	Frequency
Very Important	43.1%
Somewhat Important	38.4%
Not important	11.4%
Non response	7.1%

Question 10d: Availability of Hotels/Condos

Importance	Frequency
Very Important	16.9%
Somewhat Important	10.9%
Not important	59.8%
Non response	12.5%

Question 10e: Cleanliness of Beaches

Importance	Frequency
Very Important	81.9%
Somewhat Important	11.2%
Not important	2.1%
Non response	4.8%

Question 10f: Parking

Importance	Frequency
Very Important	55.5%
Somewhat Important	30.4%
Not important	8.9%
Non response	5.2%

Other responses: bathrooms, food, shower, surf

Question 11: Examining the beach where you are right now, suppose this beach was HALF as wide as it is now. How would that affect your number of visits to this beach?

Effect	Frequency
I would go about the same amount	41.5%
I would go somewhat (10%) less often	9.8%
I would go quite a bit (25%) less often	13.2%
I would go half as much	14.2%
I would still go, but less than half as much.	11.4%
I would not go at all	8.5%
other	0.4%
Non response	1.1%

Other responses: depends on what the city does and how they destroy the beach, I like it the way it is.

Question 12: Examining the beach where you are right now, suppose this beach was TWICE as wide as it is now. How would that affect your number of visits to this beach?

Effect	Frequency
I would go about the same amount	71.7%
I would go somewhat (10%) more often	11.6%
I would go quite a bit (25%) more often.	7.1%
I would go much often (50% or more)	7.5%
other	0.9%
Non response	1.2%

Other responses: would not like it, too long a walk from car, it would mess up the surf, would like it less, like it the way it is.

Question 13: Please check the most appropriate box (all reaches):

Type of trip	Frequency
I'm here on a day trip from my permanent home	54.4%
I'm on a trip/vacation to the area	40.7%
Non response	4.8%

Question 13: Please check the most appropriate box (reach 1):

Type of trip	Frequency
I'm here on a day trip from my permanent home	43.5%
I'm on a trip/vacation to the area	50.0%
Non response	6.5%

Question 13: Please check the most appropriate box (reach 2):

Type of trip	Frequency
I'm here on a day trip from my permanent home	55.3%
I'm on a trip/vacation to the area	40.2%
Non response	4.5%

Question 13: Please check the most appropriate box (reach 3):

Type of trip	Frequency
I'm here on a day trip from my permanent home	56.0%
I'm on a trip/vacation to the area	40.0%
Non response	4.0%

Question 13: Please check the most appropriate box (reach 4):

Type of trip	Frequency
I'm here on a day trip from my permanent home	60.5%
I'm on a trip/vacation to the area	50.0%
Non response	2.6%

Question 13: Please check the most appropriate box (reach 5):

Type of trip	Frequency
I'm here on a day trip from my permanent home	68.2%
I'm on a trip/vacation to the area	27.0%
Non response	4.7%

Question 14: Could you estimate how much you're spending, per person per day on your current trip on the following items and the percentage of this spending that occurs in Carlsbad? If you spent nothing, please put a zero in the box.

Spending Category	Average Spending	Percent Spent in Carlsbad	Average Spent in Carlsbad
Gas & Auto (including rental)	$7.79	41.8%	$3.26
Food from Stores and Take Out	$11.79	68.1%	$8.03
Beer, Wine, and Liquor	$4.04	59.4%	$2.40
Sit-down Restaurants	$11.49	62.1%	$7.13
Parking	$1.03	65.0%	$0.67
Sundries (Sun tan lotion, books, etc)	$3.00	47.0%	$1.41
Lodging	$26.94	79.8%	$21.51

If you are staying overnight in the area - away from your primary residence - please answer questions 15 to 17. Otherwise skip to question 18. (Results for questions 15 to 17 are from respondents only).

Question 15: How many days do you plan to be away from home on your current trip?

Average response = 7.2 days Median response = 6 days	
Number of Days	Frequency
2 days (overnight)	13.0%
3-4 days	17.2%
5-7 days	41.8%
8-10 days	11.7%
11-14 days	7.9%
14-21 days	2.5%
More than 21 days	5.9%

Question 16: How many days will you go to the beach on your current trip?

Average response = 5.5 days Median response = 3.5 days	
Number of Days	Frequency
One day or less	12.0%
2 days (overnight)	15.4%
3-4 days	27.4%
5-7 days	29.5%
8-10 days	5.4%
11-14 days	3.7%
14-21 days	2.9%
More than 21 days	3.7%

Question 17: Where are you staying? (all reaches)

Staying	Frequency
Camping	12.1%
Hotel	26.8%
House or Condo	34.6%
With Friends/Family	26.1%
Other	0.4%

Question 17: Where are you staying? (Reach 1)

Staying	Frequency
Camping	2.0%
Hotel	31.4%
House or Condo	43.1%
With Friends/Family	22.5%
Other	1.0%

Question 17: Where are you staying? (Reach 2)

Staying	Frequency
Camping	3.1%
Hotel	32.8%
House or Condo	34.4%
With Friends/Family	29.7%
Other	0.0%

Question 17: Where are you staying? (Reach 3)

Staying	Frequency
Camping	0.0%
Hotel	15.4%
House or Condo	53.8%
With Friends/Family	30.8%
Other	0.0%

Question 17: Where are you staying? (Reach 4)

Staying	Frequency
Camping	61.7%
Hotel	10.6%
House or Condo	12.8%
With Friends/Family	14.9%
Other	0.0%

Question 17: Where are you staying? (Reach 5)

Staying	Frequency
Camping	2.1%
Hotel	29.2%
House or Condo	31.3%
With Friends/Family	37.5%
Other	0.0%

Question 18: How important is visiting the beach for your trip/vacation?

Importance	Frequency
Very Important	58.0%
Somewhat Important	16.7%
Not important	2.7%
Non response	22.6%

Question 19: How old are you?

Age Group	Frequency
16-19	5.7%
20-24	9.1%
25-34	17.8%
35-44	31.9%
45-54	23.1%
55-64	7.5%
65 or older	3.9%
Non response	1.1%

Question 20: What is your ethnicity? (Note: you may check more than one box here)

Ethnicity	Frequency
White (Caucasian)	82.4%
Hispanic	9.1%
Asian	2.4%
Black (African American)	1.2%
Other	3.6%
Non response	1.4%

Question 21: What is your highest level of Education?

Education Level	Frequency
Did not finish high school	0.7%
High school	8.0%
Some college	30.1%
College degree	37.2%
Post graduate degree	22.6%
Non response	1.4%

Question 22: How many people are in your current household (people you live with and share financial resources)?

Number of People	Frequency
1	10.7%
2	24.6%
3	16.2%
4	29.4%
5-6	15.3%
7-9	1.4%
10 or more	0.7%
Non response	1.8%

Question 23: What would you estimate is the current yearly income of your entire household (before taxes)?

Income Range	Frequency
Less than $9,999	1.1%
$10,000-14,999	1.2%
$15-24,999	2.0%
$25-34,999	5.3%
$35,000-49,999	8.9%
$50,000-74,999	17.4%
$75,000-99,999	14.2%
$100,000-149,999	19.9%
$150,000 or more	21.9%
Non response	8.0%

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Ductile Iron Pipe Case Study: Corrosion Control Performance Monitoring in a Severely Corrosive Tidal Muck

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DUCTILE IRON PIPE CASE STUDY: CORROSION CONTROL PERFORMANCE MONITORING IN A SEVERELY CORROSIVE TIDAL MUCK

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ABSTRACT

With a soil resistivity less than 200 ohm-centimeter, tidal water table fluctuations, and a high potential for MIC (microbiologically influenced corrosion) activity, the Florida Everglades is one of the most corrosive underground environments in the United States. This paper discusses corrosion monitoring data of Ductile Iron Pipe in this harsh environment over a three-year period. In this study, uncoated, standard asphalt shopcoated, and polyethylene encased Ductile Iron Pipe were monitored. The evaluation included the use of electrical resistance type corrosion rate probes buried in the soil adjacent to the pipe and also between the pipe surface and encasement for the polyethylene encased pipe. Included were pipe to soil polarization characteristics determined through the application of a cathodic current to extend pipe service life by effectively reducing corrosion rates. The study illustrates that corrosion protection beyond the standard asphalt shopcoating and annealing oxide inherent to Ductile Iron Pipe may be warranted in such extremely corrosive environments as found in the Everglades.

Keywords: Corrosion, Ductile Iron Pipe, Corrosion of Ductile Iron Pipe, Monitoring, Coupons, Polyethylene Encasement, Cathodic Protection of Ductile Iron Pipe, Everglades

INTRODUCTION

United States Pipe and Foundry Company has been conducting corrosion evaluations for over 70 years. One test site that has been utilized in these studies since July 2000 is a severely corrosive soil environment in the Florida Everglades. This test site not only contains extremely low soil resistivities of less than 200 ohm-cm, it also contains tidal water table fluctuations and a high potential for MIC (microbiologically influenced corrosion) activity. This extreme environment has been shown to cause complete wall penetration in an unprotected 6" ductile iron pipe (DIP) with a 0.20" wall thickness in less than five years.

In the past, corrosion studies in Florida and elsewhere were conducted by burying groups of identical pipe with different types of corrosion protection systems. The test pipes were then excavated and inspected at periodic intervals (e.g., 1, 3, 6, 12, and 24 years). Control pipe such as uncoated, abrasive blasted, and standard asphaltic shopcoated were buried for comparison. While providing valuable information, years of evaluation were required before obtaining enough data to draw conclusions. Since 2000, efforts at the Everglades test site have included non-invasive electrical and electrochemical data through above ground monitoring stations and correlating this data to corrosion activity (or lack thereof) of the buried DIP. This evaluation included the use of electrical resistance type corrosion rate probes buried in the soil adjacent to the pipe and also under the encasement. Pipe to soil potentials were routinely measured utilizing surface copper-copper sulfate reference electrodes as well as buried "permanent" silver-silver chloride and zinc reference electrodes.

Polyethylene encasement is the most commonly used method of external corrosion protection for ductile iron pipe. [1-5] A pilot survey of 21 USA utilities conducted by the American Water Works Association (AWWA) Engineering and Construction Division reported 95% of the utilities polled use polyethylene encasement for corrosion protection of ductile iron pipe.[6] The intent of the polyethylene film is to prevent direct contact of the pipe with the soil and provide an essentially impermeable barrier that restricts the access of additional oxygen to the pipe surface. It provides a uniform environment around the pipe, thereby mitigating local galvanic cells caused by variations in soil composition, pH, aeration, etc.[4,7] Numerous reports, publications, and tests document that polyethylene encasement, when properly installed, has been used successfully since 1958 to protect millions of feet of gray and ductile iron pipe.[1,3,4,5,7,8,9,10] Material specifications and installation instructions for polyethylene encasement are given in national and international standards, including ANSI/AWWA C105/A21.5.[11-15]

One objective of the subject study at the Everglades test site has been to compare pipe to soil (P/S) potentials measured outside the encasement versus those measured inside. Another was to compare corrosion rates using electrical resistance corrosion probes in the soil with rates of probes under polyethylene encasement. Polarization characteristics of direct buried and encased pipe were evaluated to determine the relative benefit of the encasement in reducing cathodic current requirements in the extreme Everglades environment.

All of the corrosion test efforts at the Everglades site, as well as other related engineering by the various ductile iron pipe manufacturers, the Ductile Iron Pipe Research Association (DIPRA), and Corrpro Companies, Inc. has all been directed toward enhanced corrosion control strategies for DIP. One work product based on extensive engineering and research over the last few years has been a risk-based design decision model (DDM^{TM}).[16, 17] This design engineering tool takes into account the likelihood of corrosion and the consequences of a possible corrosion failure to determine corrosion control needs on a section by section basis along a proposed pipeline route. This section-by-section evaluation optimizes the corrosion control approach and controls the costs. The DDM^{TM} provides for a range of corrosion

control methodologies, including polyethylene encasement with or without cathodic protection as project specific conditions warrant.

TEST SITE DESCRIPTION

The test site is located in the Florida Everglades approximately 200 yards from a brackish water coastal waterway. The "soil" is characterized by a high concentration of decaying organic matter (i.e. "muck") with tidal water table fluctuations of brackish water. It has been described as mixed gray and brown tidal muck with fine sand, clay, and decayed organics, saturated. When analyzed in accordance with soil test procedures outlined in Appendix A of ANSI/AWWA C105/A21.5[11], a point count of 23.5 is obtained (the maximum points possible), and the soil is classified as "uniquely severe". Although polyethylene encasement is not recommended for soils classified as "uniquely severe", the Everglades test site was selected for the purpose of obtaining comparison results in a short period of time. The following characterizes the test site based on soils taken at pipe depth:

Saturated resistivity (soil box):	140 to 240 ohm-cm
Redox (mV):	-100 mV to -200 mV
pH:	6.8 to 7.4
Sulfides:	positive reaction
Moisture:	saturated with fluctuating tidal action

Groundwater in the area was analyzed for MIC (microbiologically influenced corrosion) activity utilizing commercially available test kits. These results are indicative of a strong potential for MIC activity:

Aerobic Bacteria (per ml):	>1,000
Acid Producers (per ml):	>1,000
SRB (per ml.):	100-1000
Iron Related Bacteria (per ml):	10-100
Low Nutrient Bacteria (per ml):	>1,000

DESCRIPTION OF STUDY

Objectives

Objectives of the subject three-year study were as follows:

- Compare pipe-to-soil potential readings in the soil versus those under polyethylene encasement
- Compare performance and readings of buried silver/silver chloride and buried zinc reference electrodes versus an on grade copper/copper sulfate reference electrode
- Compare pipe-to-soil potentials of commercially available steel corrosion coupons (probes) with those of production DIP, with and without the standard asphaltic coating
- Compare corrosion rates of probes in the soil with those under polyethylene encasement
- Determine relative cathodic current requirements of production DIP, with and without polyethylene encasement, in this extremely corrosive environment

Test Pipe Description

The test pipe sections were all prepared from production 6" diameter, thickness class 50, ductile iron pipe. Each pipe section was four feet in length with both ends sealed by an epoxy coated cement cap to prevent any internal corrosion. All test pipe sections included the protective annealing oxide formed during the manufacture of DIP. They consisted of uncoated, standard asphaltic shopcoated, and polyethylene encased asphaltic shopcoated pipe. Initial weights and peen pattern surface roughness profiles were measured on each pipe prior to burial.

Above ground monitoring wires were connected to each pipe utilizing thermite welds protected by a mastic sealant. All test leads terminated in above ground test stations. A typical installation is shown in Figures 1 and 2.

Polyethylene encasement film utilized in this study was 8 mil linear low density virgin film manufactured specifically to meet the requirements of ANSI/AWWA C105/A21.5, "Polyethylene Encasement for Ductile-Iron Pipe Systems".[11] Installation was also in accordance with this standard.

Eleven test pipes have been used for the study summarized here. Test pipe designations and their corrosion control treatments are:

- B1, B3 – Uncoated
- S1, S2, S7, S8 – Standard asphaltic shop coated
- P1, P2, P7 – Polyethylene encased, wrapped in a tube per "Method A" of ANSI/AWWA C105/A21.5
- N1, N7 – Polyethylene encased, wrapped with sheet product per "Method C" of ANSI/AWWA C105/A21.5

Pipe-to-Soil Potentials and Reference Electrodes

Pipe-to-soil potentials were measured utilizing:

- Temporary on-grade copper/copper sulfate reference electrodes
- Buried "permanent" silver/silver chloride reference electrodes in the soil and under the encasement
- Buried permanent zinc reference electrodes in the soil

In an effort to minimize the "tenting" effect of the reference electrode under the polyethylene encasement, small (i.e. ~ 1 inch in diameter and 8 inches long) silver / silver chloride reference electrodes were used. These were attached to the pipe utilizing plastic wire ties prior to encasing the pipe. They were located at the 6 o'clock position when buried. Identical reference electrodes were placed outside the encasement in the soil approximately one foot distance from the test pipe. Silver / silver chloride electrodes were chosen due to the salt rich brackish water environment.

One problem which was encountered during the 3 year study was the "permanent" silver /silver chloride reference electrodes failed. Some of these buried electrodes began malfunctioning after only a few months burial with very erratic potentials. None of the buried zinc electrodes have exhibited problems. All potentials presented here that are referenced to silver/silver chloride were obtained with stable reference electrodes. Sufficient redundancy in buried reference electrodes was included in the installation to account for possible malfunctions over time.

Corrosion Coupons

Corrosion coupons utilized in this study were electrical resistance (ER) type probes. The machined test element in these probes was made of pipe grade carbon steel (UNS #K03005). The probes were routinely monitored utilizing a mating ER corrosion meter. Corrosion rates were calculated based on the changes in meter reading over time and the duration between readings.

On the polyethylene encased pipe, the corrosion coupons were located at the midpoint of the pipe at the 12 and 6 o'clock positions and were positioned facing away from the pipe surface. They were attached prior to wrapping the pipe utilizing plastic wire ties. The probes in the soil were positioned at pipe depth approximately one foot away from the test pipe.

Monitoring Frequency

Pipe to soil potentials and coupon corrosion rates were targeted to be monitored approximately every three months. Based on the initial data, eighteen separate sets of readings were obtained over the 3-year period with each set consisting of several hundred measurements. The longest time interval between readings was 154 days and the shortest interval was 20 days.

Electrochemical Studies

Electrochemical studies for select test pipes at the Everglades site were made to determine the corrosion reducing response of DIP caused by the application of a cathodic current. The field data collection typically entailed making one test pipe the cathode in an electrochemical test cell and a separate test pipe (same corrosion control treatment) at the opposite end of the test site the anode. Test pipe to reference electrode potentials were then measured as an applied direct test current between the pipes was incrementally increased. The resulting potentiodynamic tafel (E-logI) scans were analyzed to determine cathodic current requirements at different levels of corrosion rate reduction for different corrosion control treatments. Of particular interest for the subject evaluation was the relative difference in cathodic protection current demand for standard manufacture DIP with the asphaltic shop coat and protective annealing oxide, with and without polyethylene encasement.

The results of the electrochemical studies at the Everglades site established the basis for data collection procedures and analyses for a subsequent extensive research into DIP corrosion rate behavior that included controlled laboratory and field procedures.[16] This extensive research as well as the preceding efforts at the Everglades site demonstrate that, when a cathodic current is warranted for DIP, practicable reductions in corrosion rate can be realized at applied current levels much less than typical industry design practices. Key findings from the overall research for standard manufacture pipe with the protective asphalt shop coating and annealing oxide include:

- A 75% reduction in corrosion rate or four times life extension of DIP can often be realized with 70 millivolts (mV) or less of polarization.
- In many soil environments, 70 mV of polarization can be achieved at current densities of 100 $\mu A/ft^2$.

RESULTS and DISCUSSION

Comparison of Pipe-to-soil Potentials (P/S) Outside Encasement vs. Under Encasement

Commercially available silver / silver chloride "permanent" reference electrodes were buried in the soil adjacent to the test pipe and were also installed at the 6 o'clock position under the encasement. The average P/S potentials of both pipe and coupons measured with a reference electrode under the encasement were approximately 26 mV more positive than comparison potentials measured with the reference electrode in the soil. The P/S readings outside the encasement versus those inside were closer for the tightly wrapped polyethylene encased pipe than for the loosely wrapped encased pipe (an average difference of 17 mV vs. 33 mV). The average potential differences measured over the three-year period were as follows, referenced to the P/S in the soil, based on the electrically stable electrodes:

- Pipe P1 – P/S under encasement was an average of 32 mV more positive
- Pipe P7 – P/S under encasement was an average of 38 mV more positive
- Pipe N1 – P/S under encasement was an average of 16 mV more positive
- Pipe N7 – P/S under encasement was an average of 21 mV more positive
- Probe RC5 on P1, btm. - P/S under encasement was an average of 25 mV more positive
- Probe RC6 on P1, top - P/S under encasement was an average of 27 mV more positive
- Probe RC20 on P7, btm. - P/S under encasement was an average of 35 mV more positive
- Probe RC21 on P7, top - P/S under encasement was an average of 39 mV more positive
- Probe RC7 on N1, btm. - P/S under encasement was an average of 16 mV more positive
- Probe RC8 on N1, top - P/S under encasement was an average of 11 mV more positive
- Probe RC23 on N7, top - P/S under encasement was an average of 21 mV more positive

These data are as expected given the extreme corrosivity of the site soils. They indicate a relative little difference in potentials with references under the encasement versus those outside.

Comparison of Performance and Readings of an On-Grade Copper/Copper Sulfate Reference Electrode to Buried Silver/Silver Chloride and Zinc Reference Electrodes

During each set of readings, buried Ag/AgCl and zinc reference electrode were compared to an on-grade $Cu/CuSO_4$ reference electrodes. The average of these comparisons over the three year period for the electrically stable Ag/AgCl references are shown below:

- Ag/AgCl electrode 1.7, an average of 22 mV more positive than Cu/CuSO4
- Ag/AgCl electrode 3.7, an average of 19 mV more positive than Cu/CuSO4
- Ag/AgCl electrode 4.7, an average of 17 mV more positive than Cu/CuSO4
- Ag/AgCl electrode 6.7, an average of 17 mV more positive than Cu/CuSO4
- Zn electrode 1.8, an average of 1152 mV more positive than Cu/CuSO4
- Zn electrode 3.6, an average of 1132 mV more positive than Cu/CuSO4
- Zn electrode 4.6, an average of 1146 mV more positive than Cu/CuSO4
- Zn electrode 6.6, an average of 1143 mV more positive than Cu/CuSO4

For this environment, direct comparisons over the three-year period of an on-grade $Cu/CuSO_4$ reference electrode revealed the buried Ag/AgCl electrodes averaged 19 mV more positive, and the Zn buried electrodes averaged 1143 mV more positive. Overall, the buried Zn reference electrodes proved to be much more reliable than the buried silver / silver chloride electrodes.

Comparison of P/S Potentials of Commercially Available Steel Coupons vs. those of Ductile Iron Pipe

As part of the study, P/S potentials of the commercially available steel probes were compared over the three-year test period to potentials of adjacent standard asphalt shopcoated and uncoated DIP. The graphical results of these potential measurements are shown in Figures 3 through 6. As can be seen in these figures, Ag/AgCl P/S potentials of all pipe and all probes (except probe RC29) moved toward a common potential between -510 and -575 mV after approximately three years exposure. The P/S potential of Probe RC29 remained approximately 150 mV more negative than the comparison pipe. The reason for this one outlier could not be identified.

Comparison of Corrosion Rates of Probes in the Soil with those Under Polyethylene Encasement

Comparison of corrosion rates obtained on probes in the soil versus those of probes under the polyethylene encasement is shown in Figures 7 through 10**.** Corrosion rates of all probes under the polyethylene encasement are shown in Figure 11. Results can be summarized as follows:

- The corrosion rates of all probes under polyethylene encasement were significantly less than corrosion rates of probes in the soil. Corrosion rates of probes in the soil at times approached 60 mils per year. After approximately three months of initial exposure, corrosion rates of probes under the encasement never exceeded 6 mils per year with corrosion rates of probes at the top of the pipe approaching zero mils per year. After approximately three years exposure, the overall average corrosion rate of all probes in soil was 9.2 mils per year (mpy) and the overall average of all probes under polyethylene encasement was 0.9 mils per year – a decrease in corrosion rate by a factor of 10.
- In general, corrosion rates of probes under polyethylene encasement decreased with time and those of probes in soils increased with time. This indicates the environment inside the encasement promotes polarization of the metal surface even when the surrounding soil environment does not.
- As expected, the corrosion rates of probes under tightly wrapped polyethylene encasement (avg. all probes of 0.6 mpy) were lower than those observed under loosely wrapped encasement (avg. all probes of 1.6 mpy).
- The corrosion rates of probes under the encasement at the 12 o'clock position (avg. all probes of 0.1 mpy) were significantly less than those at the 6 o'clock position of the pipe (avg. all probes of 1.7 mpy). This was expected, as the bottom of the pipe will normally remain wetter during water table fluctuations. This also implies a worst case corrosion rate can be monitored by placing probes at the bottom of the pipe under the encasement.
- Past publications report the corrosion rate of ductile iron pipe under polyethylene encasement is initially high and then rapidly decreases as the oxygen in the water under the encasement is consumed.[4,7] As can be seen in Figure 11, the decreasing corrosion rates of probes under polyethylene encasement in this study is consistent with the past observations. Corrosion rates on probes under polyethylene encasement dropped to low levels after approximately 3 months exposure.

Electrochemical Studies

Figure 12 is a sample of the E-logI scans obtained. Two traces are shown in this figure – test pipe P2 with polyethylene encasement, and test pipe S2 without the encasement. Comparable results were obtained for other test pipes at the Everglades site that had the same corrosion control treatment. The potential (polarization) data presented was collected with a buried stable Ag/AgCl reference electrode within 12 inches of the particular test pipe. In the case of test pipe P2, the electrode was located outside the encasement.

Referencing Figure 12, the data show that as polarization is realized, there is a marked reduction in cathodic protection current demand when polyethylene encasement is used. For example, for the extremely corrosive soils at the Everglades test site, at 70 mV polarization, the current demand is 900 $\mu A/ft^2$ without the encasement. With the encasement, the current is reduced 99% to 5 $\mu A/ft^2$ of the total pipe surface.

Polyethylene encasement conforming to ANSI/AWWA C105/A21.5 has a specified minimum volume resistivity of 10^{15} ohm-centimeter and, as a material, is considered a very effective dielectric. The fact that the applied test current to the encased test pipe, P2, is not zero suggests some insignificant (likely pinhole) damage to the encasement during installation. This is reasonable for the controls at the test site. In real world situations, the value of the encasement in reducing current requirements will depend on the quality of material and the quality of the installation.

It should be noted that the E-logI scans are relatively short-term measurements, requiring 1 to 2 hours for a complete scan. As such, the polarization/current density relationship in Figure 12 is mainly representative of activation polarization. In the case of test pipe S2 without the encasement, this results in a relatively high initial current demand, compared to extensive data for DIP in less corrosive environments. This high current demand is indicative of the extreme environment and the very high corrosion rates without corrosion protection beyond the standard manufacture pipe. Other data, particularly for the Everglades test pipes, has shown that over time concentration polarization tends to dominate for DIP, with a nominal 5 to 10-fold reduction in applied current to maintain modest polarized potentials.

SUMMARY AND CONCLUSIONS

- The average of P/S potentials of both pipe and coupons measured under the encasement were approximately 26 mV more positive than comparison potentials measured in the soil. The P/S readings outside the encasement versus those inside were closer for the tightly wrapped polyethylene encased pipe than for the loosely wrapped encased pipe (an average difference of 17 mV vs. 33 mV).
- For this environment, direct comparisons over the three-year period of an on-grade $Cu/CuSO_4$ reference electrode revealed the buried Ag/AgCl reference electrode averaged 19 mV more positive, and the Zn buried reference electrodes averaged 1143 mV more positive. The buried Zn reference electrodes proved to be much more reliable than the buried silver / silver chloride electrodes.

- This study included a comparison of P/S potentials of commercially available steel corrosion rate probes to potentials of adjacent standard asphalt shopcoated and uncoated DIP. With the exception of one outlier (probe RC29), potentials of the probes and uncoated DIP tended to stabilize to the same range as shopcoated DIP after approximately three years of exposure.
- The corrosion rates of all probes under polyethylene encasement were significantly less than corrosion rates of probes in the soil. After approximately three years exposure, the overall average corrosion rate of all probes in soil was 9.2 mpy and the overall average of all probes under polyethylene encasement was 0.9 mpy – a decrease in corrosion rate by a factor of 10.
- In general, corrosion rates of probes under polyethylene encasement decreased significantly with time and those of probes in soils increased with time. This reinforces the corrosion reducing benefit of the encasement.
- As expected, the corrosion rates of probes under tightly wrapped polyethylene encasement (avg. all probes of 0.6 mpy) were lower than those observed under loosely wrapped encasement (avg. all probes of 1.6 mpy).
- The application of cathodic protection for DIP is complimentary to polyethylene encasement when corrosion conditions and service needs warrant its use. The cathodic current will control pipe corrosion at areas of damage in the encasement, which may occur during typical installations.
- For controlled installation of the test pipes in the Everglades, use of the polyethylene encasement reduces the cathodic protection current demand based on short-term polarization data by 99%. In real world situations, the value of the encasement in reducing current requirements will depend on the quality of installation. As with all polyethylene encasement installations, it is critical to insure materials comply with ANSI/AWWAC105/A21.5.

ONGOING STUDIES

As pipe is excavated from the Everglades test site in the future, actual corrosion rates of the pipe will be measured for correlation to rates obtained from the corrosion probes. Additional studies are currently being conducted to evaluate special ductile iron corrosion rate probes manufactured from production ductile iron pipe, with and without the protective annealing oxide on the surface.

Due to problems encountered with buried “permanent” silver / silver chloride reference electrodes malfunctioning in less than two years burial in this harsh environment, new types of electrodes have been installed and are being evaluated. This includes a small diameter (i.e. < 1” diameter) zinc “button” electrode specially fabricated for placement under polyethylene encasement without creating a significant “tenting” effect under the encasement.

This study was conducted in one of the most corrosive soils (i.e. uniquely severe) in the United States. Similar studies are recommended in soils having a lower corrosivity to establish a range of expected effects. Included are test pipes with various corrosion control treatments such as advanced polyethylene encasement and life extension cathodic protection.

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Figure 1 – Photo of typical test pipe and monitoring station installation. Polyethylene encased pipe are shown.

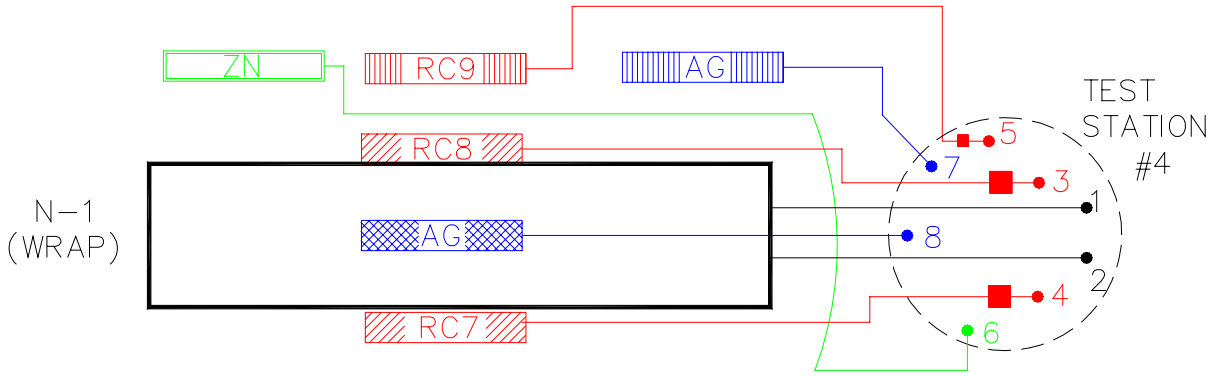

Figure 2 – Typical wiring diagram of test station.

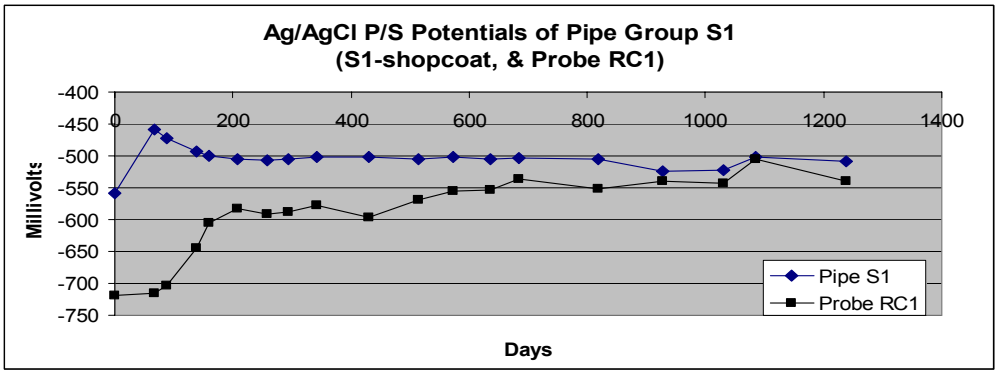

Figure 3 – P/S potential of shopcoated pipe S1 vs. Probe RC1

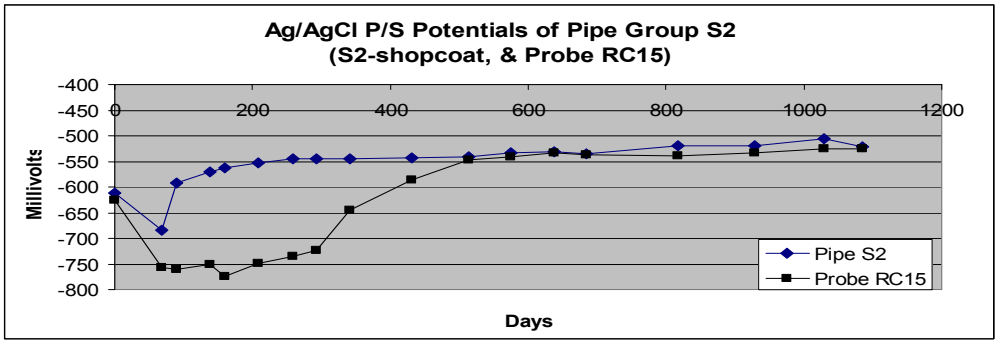

Figure 4 – P/S potential of shopcoated pipe S2 vs. Probe RC15

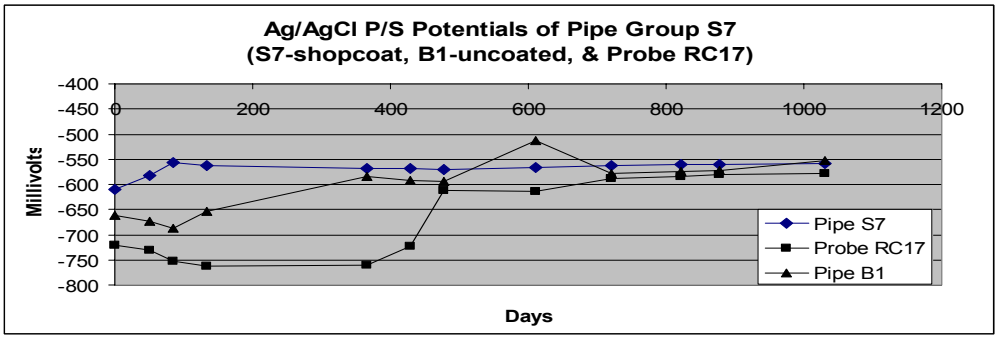

Figure 5 – P/S potential of shopcoated pipe S7 vs. uncoated pipe B1 and probe RC17

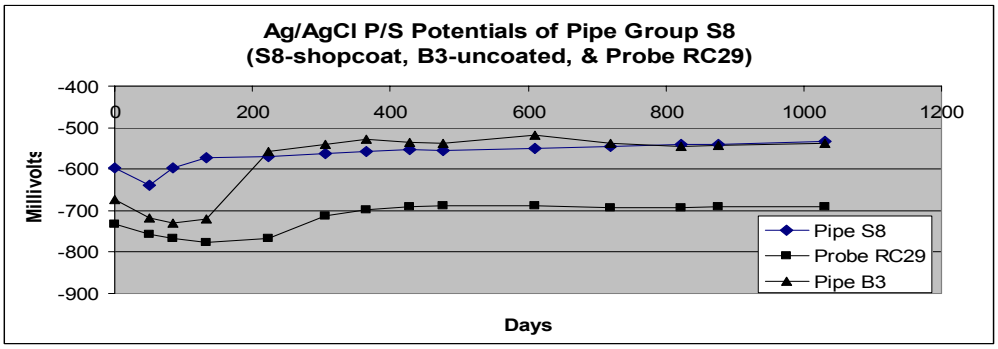

Figure 6 – P/S potential of shopcoated pipe S8 vs. uncoated pipe B3 and probe RC29

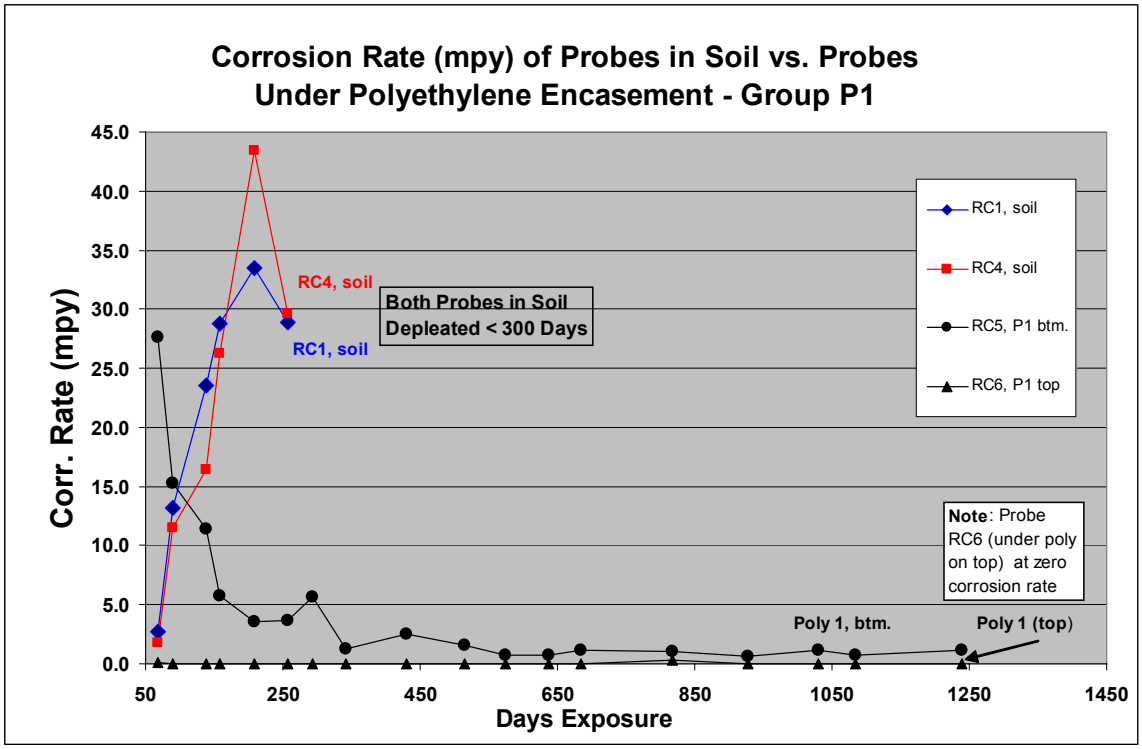

Figure 7 – Pipe P1 Group. Corrosion rates of probes in soil versus corrosion rates of probes under polyethylene encasement.

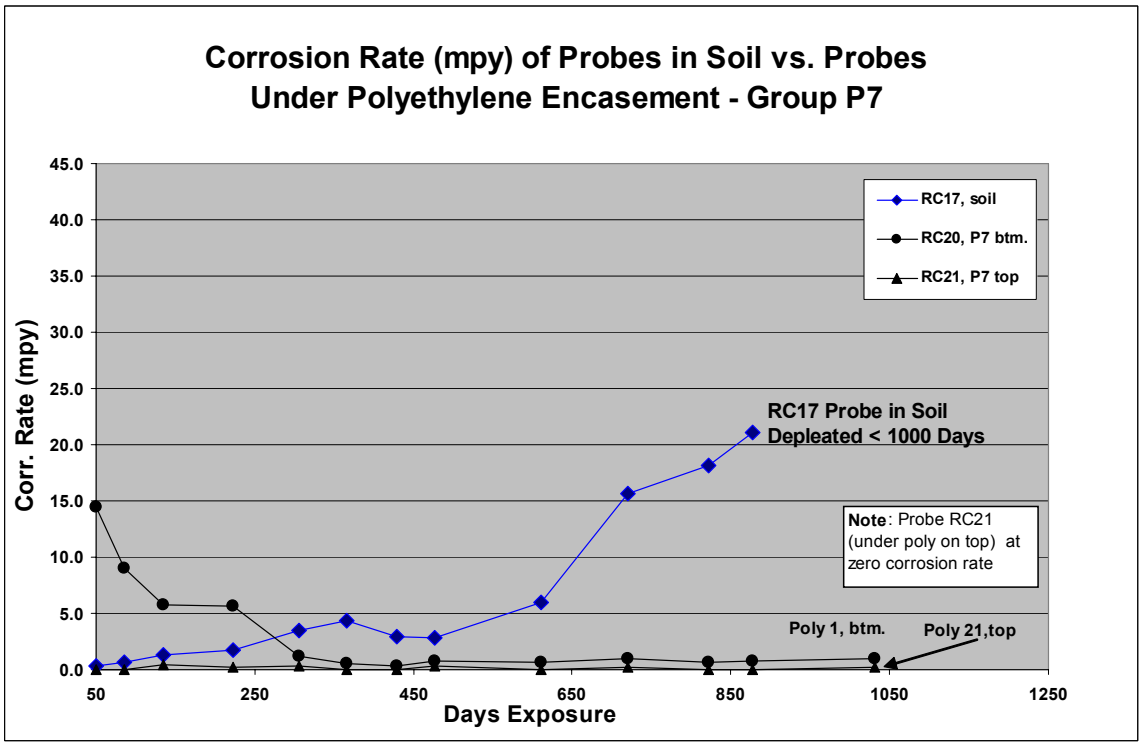

Figure 8 – Pipe P7 Group. Corrosion rates of probes in soil versus corrosion rates of probes under polyethylene encasement.

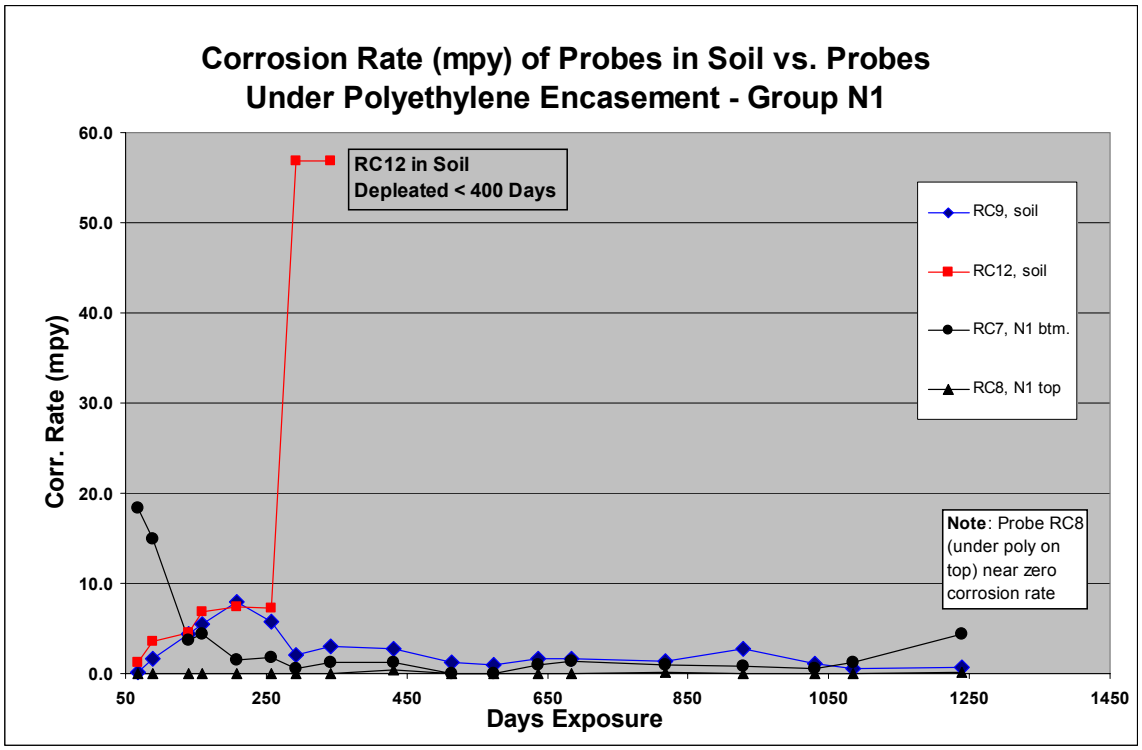

Figure 9 – Pipe N1 Group. Corrosion rates of probes in soil versus corrosion rates of probes under polyethylene encasement.

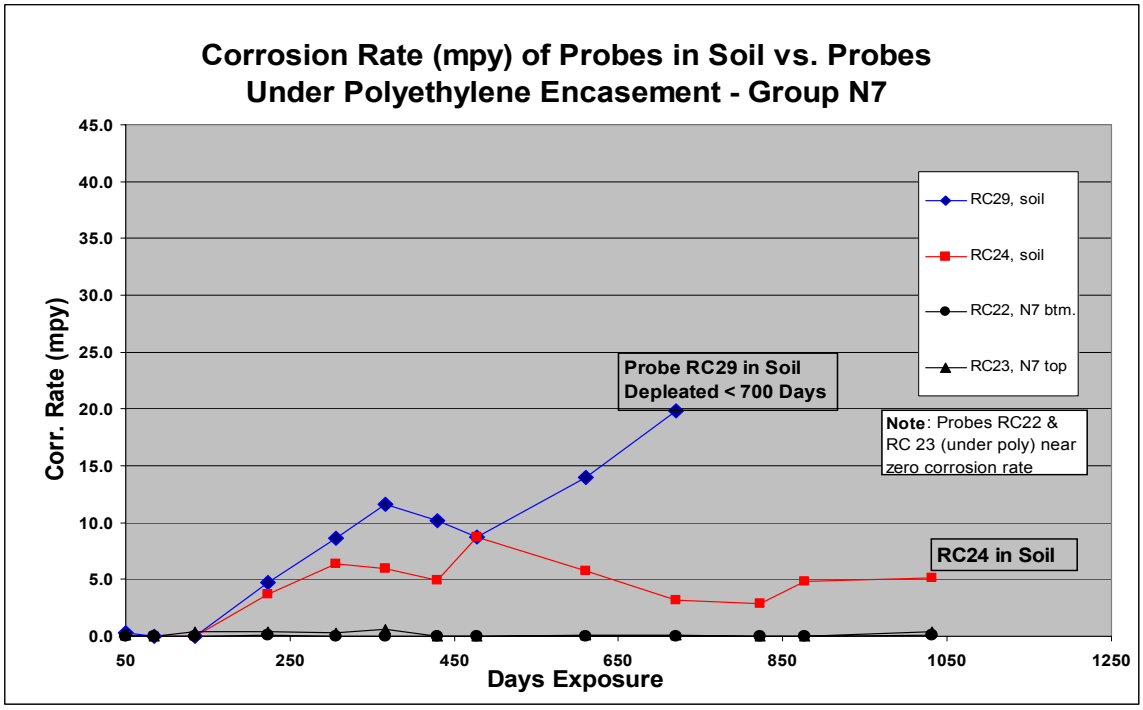

Figure 10 – Pipe N7 Group. Corrosion rates of probes in soil versus corrosion rates of probes under polyethylene encasement.

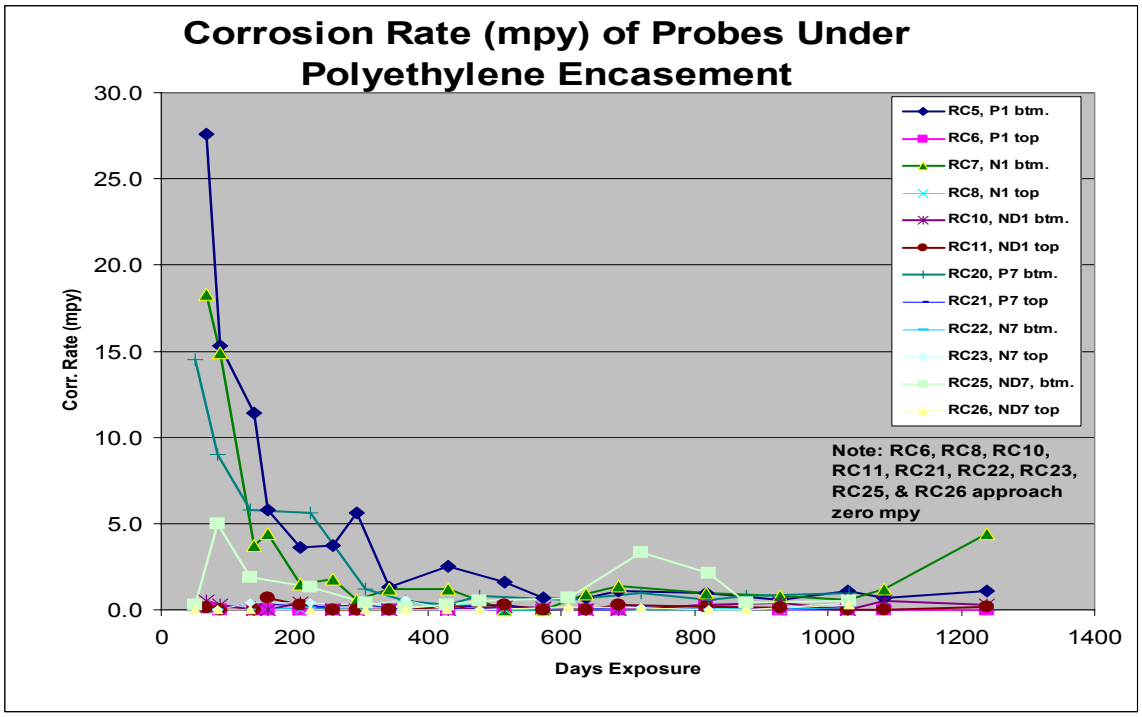

Figure 11 – Corrosion rates of all probes under polyethylene encasement. Most probes under polyethylene encasement on the top of the pipe exhibited near zero rates.

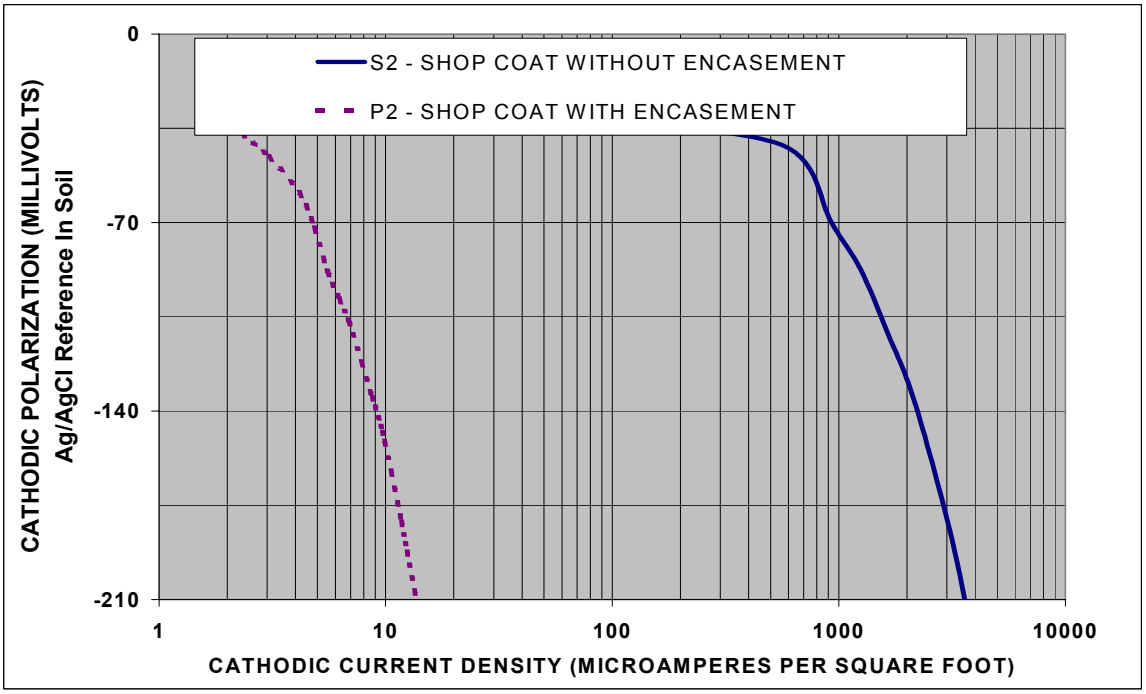

Figure 12 – Representative E-LogI Scans. Polyethylene encasement reduces cathodic current demand by ~99%.

DIP- CORROSION

DUCTILE IRON PIPE RESEARCH ASSOCIATION

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May 14, 2004

Dr. Graham E.C. Bell, P.E.
M.J. Schiff & Associates, Inc.
431 W. Baseline Road
Claremont, CA 91711-1608

RE: Uniquely Severe Environments

Dear Graham:

Your May 10, 2004 email asked that I issue you a letter clarifying what is meant by "uniquely severe environments."

The term "uniquely severe environments" was incorporated in the 1999 revision of ANSI/AWWA C105/A21.5. It states "Research has shown that polyethylene encasement alone is a viable corrosion protection system for ductile-and gray-iron pipe in most environments. However, other options should be considered for environments where all the following characteristics co-exist: (1) soil resistivity ≤500 ohm-cm; (2) anaerobic conditions in which sulfate-reducing bacteria thrive [neutral pH (6.5 to 7.5), low or negative redox-potential (negative to +100 mV), and the presence of sulfides (positive or trace)]; and (3) water table intermittently or continually above the invert of the pipe."

One of the reasons for this classification was due to the fact that DIPRA had observed some corrosion under polyethylene encasement in its Everglades, Florida test site. However, those specimens were installed prior to the development of the current standard procedure for encasement below the water table which calls for circumferential wraps of tape at two-foot intervals. Secondly, the margin for error is smaller and the consequences of a poor installation more severe in this type of environment.

This recommendation is a cautionary one, consistent with DIPRA's historically conservative approach. This is evident since there are pipes in service in similar environments today with no apparent problems being reported, including the first pipeline encased in polyethylene in 1958 located in LaFourche Parish, Louisiana.

These environments are extremely rare, but extremely corrosive. As reported above, the only environment where DIPRA has observed a concern is its Everglades, Florida test site. This test site has the most corrosive natural occurring soils DIPRA has observed. It is an organic muck with a soil resistivity around 100 ohm-cm, extremely high sulfates and chlorides, extremely high active microbiological activity, and a water table that fluctuates above and below the pipe twice a day.

I hope this explanation will be of help to you.

Very truly yours,

Richard W. Bonds, P.E.
Research and Technical Director

California R‹ ¸ional Water Quality ɔntrol Board

San Diego Region

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Gray Davis
Governor

TO: Ms. Marliegh Wood
Staff Counsel

FROM: Michael P. McCann
Supervising Engineer
SAN DIEGO REGIONAL WATER QUALITY CONTROL BOARD

DATE: February 15, 2001

SUBJECT: **RESPONSE TO SUPPLEMENTAL BRIEF IN SUPPORT OF PETITION FOR REVIEW SUBMITTED BY THE CITY OF OCEANSIDE SWRCB/OCC FILE A-1300**

Enclosed is a copy of the SDRWQCB response to the City of Oceanside's supplemental brief in support of petition for review dated November 29, 2000. Please direct any questions regarding this matter to Rebecca Stewart at (858) 467-2966.

cc: Mr. Barry Martin, City of Oceanside, Water Utilities Department, 300 North Hill Street, Oceanside, CA 92054 (with enclosure)

John Lorman Esq., David P. Hubbard, Esq., Procopio, Cory, Hargreaves & Savitch LLP, 300 B Street, Suite 2100, San Diego, CA 92101 (with enclosure)

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN DIEGO REGION

RESPONSE
TO
SUPPLEMENTAL BRIEF IN SUPPORT OF
PETITION FOR REVIEW
SUBMITTED BY
THE
CITY OF OCEANSIDE
SWRCB/OCC FILE A-1300

I. INTRODUCTION

The City of Oceanside (Oceanside) has submitted a supplemental brief to its petition for review of Administrative Civil Liability Order No. 2000-89 which contends that the SDRWQCB failed to fairly and consistently implement the SWRCB Enforcement Policy. Oceanside based this contention on a comparison of the liability imposed by the SDRWQCB for the 3 sanitary sewer overflows addressed in Administrative Civil Liability Order No. 2000-89 with a liability assessed by the SDRWQCB for a week long, 34 million gallon sanitary sewer overflow from the City of San Diego's (San Diego) sewage collection system that occurred in Adobe Falls Canyon. The Adobe Falls Canyon spill resulted in an assessment of civil liability against San Diego in the amount of approximately $3.47 million (of which approximately $2 million was suspended on condition that San Diego complete specified Supplemental Environmental Projects, referred to as SEPs).

Oceanside's contention is based on two points: (1) The SDRWQCB unfairly imposed liability for the February 11, 2000 spill (the third spill in a series of three addressed in Administrative Civil Liability Order No. 2000-89) at a rate of $1.00 per gallon while assessing only $0.10 per gallon for the Adobe Falls Canyon spill; and, (2) the

SDRWQCB denied Oceanside's request to suspend all or part of its assessment in lieu of the successful completion of SEPs while allowing San Diego to perform 8 SEPs.

The SDRWQCB disputes Oceanside's contentions: the supplemental brief, as well as the original petition, has no merit; Oceanside's petition should be dismissed for failure to raise substantial issues suitable for review by the SWRCB.

In its supplemental brief, Oceanside contends that the liability imposed by the SDRWQCB for its sewage spill in February is not consistent with the liability imposed on San Diego for its major spill in February. Other than the coincidental timing of the spills during the month of February, there are significant factual distinctions in the factors to be considered in setting liability between the Oceanside and Adobe Falls Canyon spills. The SDRWQCB used its sound discretion in considering all of the factors related to the spills and the dischargers as required by the provisions of the Water Code authorizing civil liabiiity and prescribing the procedures for administrative assessment thereof.

The SWRCB Enforcement guidance document states "It is the policy of the State Water Board that enforcement actions throughout the State **shall** be consistent, predictable, and fair." The guidance document further states that "where the word "shall" is used ... it is intended that the State or Regional Water Boards exercise their **discretion** in pursuing enforcement action." Oceanside repeatedly implies that the enforcement policy supercedes the regional board's discretion, which is incorrect. In fact the SWRCB Enforcement guidance document expressly states that the Water Code gives the Regional Water Board **substantial discretion in setting ACL amounts**." (Exhibit 1, Page 12). In following that guidance, the SDRWQCB considered the factors required in Water Code §13385 for both the Oceanside and the San Diego sewage spills when setting the ACL amounts for each enforcement action.

There is no regulation or rule that sets the liability amount for sewage spills at $0.10 per gallon or any other amount within the statutory limits set in Water Code §13385. Establishing liability amounts on a case-by-case basis is the responsibility of the Regional Board. As discussed in detail in *Staff Report, Proposed Administrative Civil Liability Contained in Complaint No. 2000-74, City of Oceanside, Sanitary Sewer Overflows, Noncompliance with Order No. 96-04, General Waste Discharge Requirements Prohibiting Sanitary Sewer Overflows by Sewage Collection Agencies*, (Exhibit 2, Page s 9-11) the $1.00 per gallon assessment for the third spill during a 12-day period was based on Oceanside's failure to use reasonable care to avoid additional spills that it should have anticipated from a force main showing the level of corrosive deterioration revealed by its preliminary investigation on the sewage main that caused the prior spill. By discontinuing the high-lining operation Oceanside greatly increased the possibility of another sewage discharge to Buena Vista Lagoon.

II. ANALYSIS OF CONTETIONS

The SDRWQCB unfairly imposed liability against the City of Oceanside for the February 11, 2000 spill at a rate of $1.00 per gallon while assessing only $0.10 per gallon for the Adobe Falls Canyon spill; and the SDRWQCB denied Oceanside's request to suspend all or part of its assessment in lieu of SEPs while allowing San Diego to perform 8 SEPs.

At the SDRWQCB's May 10, 2000 meeting, the Board discussed the $1.00 per gallon liability assessment for Oceanside's February 11, 2000 spill at length (Exhibit 3, Pages 69 to 76.) Board Member Day initiated the discussion regarding the $1.00 per gallon assessment, including the SDRWQCB's scrutiny of Oceanside's decision to discontinue the high-lining operation. The petitioner provided an excerpt of a statement made by Board Member Day during that discussion. The statement reflected Board Member Day's clarification to another Board Member, during that discussion, that the

SDRWQCB did not make recommendations to Oceanside regarding whether to put the line back in service or not, which would be in contrast with California Water Code §13360. At no time during the discussion did any other Board Member express an interest in lowering the $1.00 per gallon assessment.

The SDRWQCB further discussed the merits of keeping a portion of the assessment local through suspension of a portion of any assessed liability contingent on the successful completion of SEPs (Exhibit 3 Pages 66 to 88.) Only until after it became apparent that Oceanside's request to supply money to the Buena Vista Lagoon Foundation as an SEP did not constitute a well defined projected, did the SDRWQCB discontinue their discussion and adopt Administrative Civil Liability Order No. 2000-89, with the $1.00 per gallon assessment for the February 11, 2000 spill. The lengthy discussion regarding the $1.00 per gallon assessment and the possibility of SEPs by the SDRWQCB before adoption of Administrative Civil Liability Order No. 2000-89 clearly indicates that the decision to do so was not capricious and arbitrary as implied in the petition.

Oceanside argues that the ACL against San Diego should have been increased to $1.00 per gallon for a portion if not all of the 34 million gallon discharge. Again, the SDRWQCB used its discretion in determining that it was not appropriate to assess a $1.00 per gallon penalty for a 34 million gallon spill, as the total penalty would be more than half of San Diego's annual operation and maintenance budget for Fiscal Year 2000-01 (Exhibit 4, Page 9). It should be noted that, in light of the Oceanside's appeal for consistent enforcement, the ACL against San Diego included $70,000 for seven days of spillage ($10,000 per day for seven days of violation) (Exhibit 4, Page 11), yet the SDRWQCB did not assess a per day penalty for Oceanside. Had Oceanside been similarly assessed, an additional $30,000 should have been added to the total liability.

However, no-where in the petition does Oceanside ***demand*** adding a $10,000 per day assessment for its three spills to Administrative Civil Liability Order No. 2000-89. Oceanside's contention that the SDRWQCB was not fair when evaluating its spills is quite simply, frivolous.

Besides not assessing a $10,000 per day liability, the SDRWQCB did not assess any liability against Oceanside for the first 323,850 gallons of the January 31, 2000 spill. The SDRWQCB determined that it was fair to forego assessing any per-gallon liability for this portion of the illegal discharge because the first break in the force main was not reasonably foreseeable due to its relatively recent installation. The SDRWQCB imposed liability of $0.10 per gallon only for that volume of sewage discharged after Oceanside crews responded to an alarm, made an incorrect diagnosis, and left the pump station until the weekday crew could come in to evaluate the station.

III. COMPARISON OF OCEANSIDE'S 3 SPILLS TO SAN DIEGO'S 34 MILLION GALLON SPILL

In its supplemental brief Oceanside contends that its three spills and the San Diego spill shared important characteristics. This conclusion overlooks significant differences in the characteristics of these spills. Oceanside argues that the spills came from municipalities with extensive sanitary sewer systems. Oceanside's sewage system is only 1/7th the size of the San Diego system (450 miles vs. 2800 miles respectively). Oceanside argues that "both released raw sewage into sensitive waterways." Oceanside discharged sewage directly into an impaired water body with **no tidal flushing**. San Diego discharged sewage to a tributary of the San Diego River, during high stream flows, approximately 9 miles upstream of the Pacific Ocean, Famosa Slough and Mission Bay. The sewage discharged to the San Diego River mixed with a significant amount of storm

runoff before it reached impaired water bodies (Famosa Slough and Mission Bay.) Testimony received during the public hearing on the Adobe Falls spill indicated that Famosa Slough received contamination from the San Diego River during incoming tides. (Exhibit 5, Page 51) The entrance to Mission Bay also received contamination from the incoming tide. Neither of these impaired water bodies received a direct discharge from the Adobe Falls Canyon spill as Buena Vista Lagoon did from the Oceanside spills.

Oceanside's February 11, 2000 spill extended the contamination and loss of beneficial uses of Buena Vista Lagoon and portions of the Pacific Ocean for an additional 9 days, leaving the total number of days of lost beneficial uses as a result of its 3 sewage spills to 22 days. While the San Diego spill was much larger, it occurred when stream flows were very high. The total number of days beneficial uses were lost, including the 7 days the discharge went undetected, was 11 days. As documented in *Staff Report, Proposed Administrative Civil Liability Contained in Complaint No. 2000-75, City of San Diego, Sanitary Sewer Overflows* (Exhibit 3, page 5), the ratio of wastewater in the total combined stream flows was high only in Alvarado Creek. While the Adobe Falls Canyon spill went undetected for 7 days, bacteriological sampling in downstream receiving waters were within acceptable levels for unrestricted recreational use four days after the spill was discovered and stopped.

The Oceanside's argument that fish kills from the Adobe Falls Canyon spill were extensive is exaggerated. The Adobe Falls Canyon spill did result in a localized fish kill within the natural downstream reaches of Alvarado Creek, affecting an estimated 3,000-foot segment. The only dead fish that were observed by the SDRWQCB were invasive species with a relatively low monetary value compared to the monetary losses incurred in Buena Vista Lagoon as a result of Oceanside's sewage spill as documented by

the California Department of Fish and Game (Exhibit 6, Page 3.) There were no observable lethal effects to aquatic life in the San Diego River or the Pacific Ocean due to this spill. San Diego conducted a biological assessment of the Benthic Marcoinvertebrate (BMI) populations in Alvarado Creek below the spill site in June 2000. The results of their study indicated that the BMI population had fully recovered from the short-term lethal effects of the February, 2000 sewage spill.

It should be noted that San Diego provided the SDRWQCB assessments of both stream flow data in comparison to wastewater flows in Alvarado Creek and the San Diego River as well as nutrient dispersal in the San Diego River, in addition to the biological assessment of Alvarado Creek without being requested to do so. In contrast, Oceanside conducted no investigation to support its argument that since there were no apparent acute, short term impacts from discharging 2 million gallons of raw sewage into an impaired water body with no tidal flushing, no long term effects were expected (Exhibit 3, Page 61.)

Oceanside also contends that because its offer of SEPs was dismissed it expected the SDRWQCB to reject San Diego's offer of SEPs. Accepting or rejecting SEPs is entirely within the SDRWQCB's discretion and the SDRWQCB exercised that discretion when rejecting Oceanside's request. During the May 10, 2000 public hearing Oceanside proposed to give the Buena Vista Lagoon Foundation money to fund invasive plant removal. Oceanside did not submit detailed documentation of the exact scope of work to be performed, nor the exact amount of money that would be needed to complete the task. Board Chairman Baglin indicated that he would not support the adoption of an SEP that was not well defined (Exhibit 3, Page 66, and Page 86 .) Furthermore, Board Member Minan (Exhibit 3, Page 83,) indicated that state procedures required a specific

project and that there was not a reasonable project to consider (Exhibit 3, Page 83). In contrast, San Diego presented detailed documentation reflecting the Regional Board's draft criteria for SEP evaluation for 24 SEPs, from which the SDRWQCB elected to accept 8.

IV. CONCLUSION

Since the May 10, 2000 public hearing the SDRWQCB has imposed civil liability administratively against several dischargers for violations that were very similar to the violations by Oceanside, and in none of these situations did the SDRWQCB choose to suspend any portion of the liability based on SEPs. The following table summarizes the ACL hearings and outcomes since May 10, 2000:

Hearing Date	Agency	Facility	Violation	Lost Beneficial Uses	ACL Assessed	SEPs
5/10/00	City of Oceanside	Sewage Collection System	3 spills 2.03 million gallons	22 days	$346,015	No SEPs
8/30/00	City of Laguna Beach	Sewage Collection System	8 spills 21,400 gallons	29 days	$60,000	No SEPs
9/13/00	Moulton Niguel WD	Sewage Collection System	8 spills 39,000 gallons	47days	$83,300	No SEPs
10/13/00	City of San Diego	Sewage Collection System	1 spill 34 million gallons	9 days	$3,469,900	8 SEPs

As the table indicates, the SDRWQCB assessed civil liability against both the City of Laguna Beach and Moulton Niguel Water District for sewage spills. Both dischargers requested that all or part of the liability imposed on them be suspended if they completed SEPs. In both cases, the requests were denied by the SDRWQCB.

It is the SDRWQCB's goal to administer enforcement in a fair and consistent manner. Consistency does not diminish the discretionary powers given to Regional Boards by the Water Code. While the discharges for which San Diego and

Oceanside were subject to administrative enforcement were similar in that they both involved sewage spills, the similarities between these cases diminishes upon careful examination of the nature and circumstances of each spill, and of the history, circumstances and response of each responsible City.

As previously documented, the SDRWQCB clearly explained its rationale for the assessment of $1.00 per gallon for the third spill in *"California Regional Water Quality Control Board, San Diego Region, Staff Report, Proposed Administrative Civil Liability Contained in Complaint No. 2000-74, City of Oceanside, Sanitary Sewer Overflows, Noncompliance with Order No. 96-04, General Waste Discharge Requirements Prohibiting Sanitary Sewer Overflows by Sewage Collection Agencies"* and *Response to Petition, City of Oceanside, Sanitary Sewer Overflows, SWRCB/OCC File A-1300."* The transcripts of the May 10, 2000 hearing clearly indicate that the SDRWQCB thoroughly discussed the matter and used its discretion in making the $1.00 per gallon assessment for the February 11, 2000 spill and in not accepting an inadequate and undocumented SEPs.

The SDRWQCB recommends that the State Water Resources Control Board dismiss the petition in this matter for failure to raise substantial issues suitable for review, or that the State Water Resources Control Board uphold Order No. 2000-89 in its entirety and reject Oceanside's request to reduce the $1.00 per gallon assessment for the February 11, 2000 spill to $0.10 per gallon and the request to reconsider SEP proposals to offset a portion of the penalty imposed by ACL Order No. 2000-89.

Dated: 15 February 2001

Respectfully submitted.

State of California
Regional Water Quality Control Board
San Diego Region

Rebecca Stewart
Sanitary Engineering Associate
Compliance Assurance Team

LIST OF EXHIBITS

1. SWRCB Enforcement Policy Guidance Document

2. Staff Report, Proposed Administrative Civil Liability Contained in Complaint No. 2000-74, City of Oceanside, Sanitary Sewer Overflows, Noncompliance with Order No. 96-04, General Waste Discharge Requirements Prohibiting Sanitary Sewer Overflows by Sewage Collection Agencies, 17 April 2000

3. Transcript May 10, 2000 SDRWQCB meeting

4. Staff Report, Proposed Administrative Civil Liability Contained in Complaint No. 2000-75, City of San Diego, Sanitary Sewer Overflows, Noncompliance with Order No. 96-04, General Waste Discharge Requirements Prohibiting Sanitary Sewer Overflows by Sewage Collection Agencies, 22 May 2000

5. Friends of Famosa Slough letter dated August 18. 2000

6. California Department of Fish and Game letter dated May 8, 2000

APPENDIX 11.

BUENA VISTA FORCE MAIN **PIPE FAILURE RESPONSE COST** APRIL 1, 2007 - OCTOBER 15, 2007	**PIPELINE REPAIRS**	**ENVIRONMENTAL RESPONSE**	**INVESTIGATION AND REPORTING**	**TOTAL**
PART I DIRECT STAFF				
ITEM	**COST**	**COST**	**COST**	**COST**
CITY STAFF TIME				
VISTA	$ -	$ 28,393	$ 12,563	$ 40,956
CARLSBAD	$ 4,546	$ 3,873	$ 6,782	$ 15,200
	$ -	$ -	$ -	$ -
	$ -	$ -	$ -	$ -
PART II SUPPORT SERVICES				
ITEM	**COST**	**COST**	**COST**	**COST**
CONTRACTORS				
DL HUBBARD CONTRACTORS	$ 3,399		$ -	$ 3,399
VADANIS	$ 224,650	$ -	$ -	$ 224,650
SCHIFF ASSOCIATES	$ -	$ -	$ 36,467	$ 36,467
O'DAY CONSULTANTS	$ -	$ -	$ 1,133	$ 1,133
LANDIS & ASSOCIATES	$ -	$ 500		$ 500
BUREAU VERITAS	$ -	$ 980	$ -	$ 980
WESTON SOLUTIONS	$ -	$ 94,064	$ -	$ 94,064
MERKEL & ASSOCIATES	$ -	$ 87,741	$ 31,422	$ 119,162
	$ -	$ -	$ -	$ -
MUTUAL AID AGENCIES (REIMBURSED)				
LEUCADIA WASTEWATER AUTHORITY	$ -	$ 3,640	$ -	$ 3,640
MUTUAL AID AGENCIES (UNREIMBURSED*)				
ENCINA WASTEWATER AUTHORITY	$ 9,902	$ 21,759	$ 2,551	$ 34,212
CITY OF OCEANSIDE		$ 2,800	$ -	$ 2,800
CITY OF ENCINITAS		$ 3,100	$ -	$ 3,100
VALLECITOS WATER DISTRICT		$ 500	$ -	$ 500
EQUIPMENT AND MATERIALS				
EQUIPMENT	$ -	$ 64,632		$ 64,632
FUEL	$ -	$ 19,811	$ -	$ 19,811
MISC	$ -	$ 26,921	$ -	$ 26,921
OTHER EXPENSES				
SEWER FEES FOR PUMP-BACK (42.3 MG)	$ -	$ 52,875	$ -	$ 52,875
RESPONSE TOTAL TO DATE	$ 242,498	$ 411,588	$ 90,917	$ 745,003

*** Mutual Assistance Agencies have not been reimbursed for their efforts but are compensated by reciprocity.**