

STATE OF CALIFORNIA  
REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL COAST REGION

STAFF REPORT FOR SPECIAL MEETING OF \_\_\_\_, 2006  
Prepared on August 29, 2006

ITEM NO: \_\_\_\_

SUBJECT: **CEASE AND DESIST ORDERS REQUIRING PROPERTY OWNERS AND RESIDENTS IN THE LOS OSOS/BAYWOOD PARK PROHIBITION ZONE TO CEASE AND DESIST FROM DISCHARGING WASTE IN VIOLATION OF BASIN PLAN PROHIBITION**

**KEY INFORMATION**

Locations: Randomly selected addresses throughout the Los Osos/Baywood Park Prohibition Zone, San Luis Obispo County (map of locations: Attachment 1)

Type of Waste: Domestic wastewater

Design Capacity: Approximately 75 to 400 gallons per day (each)

Treatment: Septic tanks (primary sedimentation)

Disposal: Percolation to groundwater via leach fields or seepage pits

Action Proposed: Adopt Cease and Desist Orders

This staff report, attachments, and documents listed in Attachment 3 constitute the Prosecution Staff's comments and evidence for purposes of the Hearing Notices **and Chair's orders**. All documents listed in Attachment 3 are incorporated by reference pursuant to 23 California Code of Regulations §648.3. **Most of the documents listed in Attachment 3 will be made available to the public online by September 29, 2006, at <http://www.waterboards.ca.gov/centralcoast/>, in addition to being available at the Central Coast Water Board office during regular business hours.**

**Any evidence, significant discussion, or document that was not included in the Prosecution Staff's original submissions is identified by bold font to facilitate review by Designated Parties and by the Water Board, per the Chair's August 4, 2006 request.**

**BACKGROUND**

In 1983, the Central Coast Water Board adopted a prohibition of waste discharges from onsite systems (septic systems) in the most densely developed area of Los Osos and Baywood Park, which is now commonly known as the Prohibition Zone. That prohibition took effect in 1988, and remains in effect today. All owners and tenants of occupied improved properties in the Prohibition Zone are discharging waste from their septic systems in violation of this prohibition. These prohibited discharges have degraded groundwater quality and threaten public health. Shallow groundwater

discharges into Morro Bay Estuary along the approximately 2.5 mile shoreline within the Prohibition Zone. In some areas, where shallow groundwater seeps into Morro Bay are accessible for sampling, analyses of these seeps indicate fecal coliform bacteria greatly exceed standards, and DNA testing indicates the largest source of the bacteria is humans. Septic systems discharge to shallow groundwater near these seeps. During wet weather cycles, high groundwater causes septic tank effluent to surface in some areas, presenting a health hazard. The Los Osos Community Services District (LOCSD) periodically operates pumping systems to dewater the most critical areas to prevent flooding of homes and streets.

Connection to a community sewer system is the most practical manner to comply with the prohibition. However, no community sewer system is available. The LOCSD is the current lead agency for constructing a sewer system. LOCSD began constructing a community sewer system in August 2005, but stopped construction in October 2005. LOCSD now intends to redesign the project, with the treatment plant at a new site and possibly using a completely different collection system. **Redesign of the project will likely delay implementation for at least five years. For example, it is now almost a year after the LOCSD stopped construction and the District has still not decided what project to build or where to build it, but has filed for bankruptcy. Siting a treatment plant at a new location, completing environmental review requirements (with attendant likely challenges), obtaining funding, designing a project, advertising for bids, awarding a contract and having construction start again would likely take a solvent District at least four more years (in addition the existing delay of one year). A bankrupt District is less likely to be able to even complete these steps.**

**Local State Assemblyman Sam Blakeslee has proposed legislation, Assembly Bill (AB) 2701, which would authorize to the County of San Luis Obispo to take over the community wastewater project. AB 2701 passed through the state legislature with unanimous approval by both the Senate and Assembly on August 24, 2006, and is currently awaiting the Governor's signature. Assuming it is signed, AB 2701 will become law January 1, 2007.**

**If the County opts to consider constructing and operating a wastewater collection and treatment system, AB 2701 requires the County Board of Supervisors to prepare and submit a proposed assessment to the voters to pay for the facilities. AB 2701 provides that after approval of a benefit assessment, the County Board of Supervisors shall conduct a due diligence review before deciding to proceed with the construction and operation of a wastewater collection and treatment system. The County Board of Supervisors shall consider any relevant factors, including, but not limited to, the prompt availability of reasonable and sufficient financing, status of enforcement actions, the successful development of reasonable project technology and location options, the availability of any necessary permits and other approvals, and the absence of other significant impediments. At the completion of this due diligence review, the County Board of Supervisors shall adopt a resolution declaring its intention to proceed or not proceed with the construction and operation of the wastewater collection and**

treatment system.

**AB 2701 also provides that after a minimum of three years after system operation commences and when the LOCSD and the County mutually apply for, and are granted, a modification to the waste discharge requirements issued by this Water Board, wastewater responsibilities will be transferred back to LOCSD.**

**LAFCO is also considering a petition for dissolution of LOCSD. LAFCO has continued its dissolution hearing until September 21, 2006, to allow AB 2701 to run its course through the legislative process.**

### **PROPOSED CEASE AND DESIST ORDERS**

The proposed Cease and Desist Orders (CDOs), included as Attachment 2, require a randomly selected group of owners and tenants of improved properties within the Prohibition Zone to cease discharging all waste by January 1, 2010, or 60 days after the availability of a community sewer system, whichever is sooner.

If the community sewer system will be available by January 1, 2010, the owner or tenant must submit a statement agreeing to connect to the community sewage treatment plant within 60 days after the sewage treatment plant becomes available, or submit a technical report proposing an alternate method of complying, and monitoring compliance with the requirement to cease their discharge.

If the community sewer system will not be available by January 1, 2010, the owner or tenant must submit a technical report proposing an alternate method of complying, and monitoring compliance with the requirement to cease their discharge.

**This January 1, 2010 date is based in part on LOCSD directors' statements in late 2005 as to how long it would take LOCSD to restart and complete the community wastewater project. Prosecution Staff believes that January 1, 2010, is still attainable. However, if AB 2701 becomes law, the County will need time to prepare and submit a proposed assessment to the voters and to conduct its required due diligence review before it carries out the wastewater project. County staff's June 19, 2006 report to the Board of Supervisors suggests this assessment vote and due diligence process may extend through September 2007. This will have a material impact on the ability of the CDO recipients to meet the January 1, 2010 deadline, assuming the selected method of compliance is hooking up to the system. Therefore, staff recommends the inclusion of language in the individual CDOs to give the Executive Officer the authority to amend the January 1, 2010 deadlines, if necessary, so that they are reasonably related to the County's progress in constructing and making a community wastewater system available to the affected dischargers. More precisely, the proposed Cease and Desist Orders now state:**

**“These January 10, 2010 compliance dates may be revised by the Executive Officer to be reasonably related to progress in constructing a wastewater system for the community.”**

The proposed language does not specifically mention the County, to allow for the possibility of another entity building a project in a timely manner. If LAFCO decides to dissolve LOCSD, responsibility for the community wastewater system would fall to the County, in which case this language would also apply.

Prosecution Staff also recommends changes to interim compliance requirements. The original draft of the proposed Cease and Desist Orders included a bimonthly septic tank pumping requirement to reduce pollutant loading until a community wastewater system is in place. Many Designated Parties questioned staff’s anticipated pollutant loading reduction and were concerned that frequent septic tank pumping would disrupt proper septic system function, and possibly exacerbate Los Osos’ seawater intrusion problem. Prosecution Staff previously provided detailed responses and concluded that these concerns did not justify removal of the bimonthly septic tank pumping requirement. Prosecution Staff only reconsidered the proposed requirement after the local Air Pollution Control District expressed concerns about air-pollution impacts resulting from increased diesel truck emissions. Prosecution Staff and the Air Pollution Control District have not made significant progress on the air pollution or California Environmental Quality Act analysis to date, so Prosecution Staff’s recommendation continues to require initial pumping rather than bimonthly septic tank pumping.

Prosecution Staff are recommending interim compliance requirements to pump out the septic system and obtain an inspection report within three months of order adoption, and if necessary, complete recommended repairs to the septic system by February 1, 2007. More precisely, the proposed Cease and Desist Orders state:

**“By three months after the date of this Order, the Discharger shall (1) have the contents of the Septic System pumped or certify that the Septic System has been pumped within the previous three years, and (2) obtain a report by the County of San Luis Obispo or a septic tank pumper that either describes recommended repairs to the Septic System or states that no repairs are necessary. If the Discharger disagrees with any repair recommendation, the Discharger shall provide justification to the Executive Officer no later than four months after the date of this Order explaining why the repairs are not necessary. Unless Water Board staff agrees, in writing, that any recommended repair is not necessary, the Discharger shall provide documentation no later than February 1, 2007, that the Discharger has complied with these pumping, inspection and repair requirements.”**

**This interim requirement should result in improved water quality, especially in areas with high groundwater, by improving septic system function until a community sewer system is available.**

## **PROPERTY OWNERS AND TENANTS RECEIVING CEASE AND DESIST ORDERS**

Central Coast Water Board Prosecution Staff randomly selected 50 properties from a list of improved properties in the Prohibition Zone<sup>1</sup>. On January 27, 2006, the Executive Officer sent proposed CDOs to those property owners and tenants and notified them of the Central Coast Water Board's hearing to consider adoption of the CDOs<sup>2</sup>.

After issuing the proposed CDOs, staff found that five of the randomly selected properties are located in either the Monarch Grove neighborhood, which has a regulated community sewer system, or the Bayridge Estates neighborhood, which has a community septic system that is already subject to a Cease and Desist Order through LOCSO. Staff sent letters to the owners and tenants of those five properties withdrawing their CDOs<sup>3</sup> on February 6-8, 2006. Staff later learned that one CDO recipient (a tenant) was a contractor who was working on the community sewer project, but moved out of state when construction stopped, prior to issuance of the CDO. Staff withdrew the CDO for that person on February 23, 2006 (the CDO remains proposed for the property owner).

A map of the 45 properties that are subject to the proposed CDOs is shown in Attachment 1.

Staff intends to continue proposing similar orders to randomly selected groups until all improved property owners and tenants in the Prohibition Zone have received an enforcement order. Staff intends to propose similar orders for much larger groups after this hearing for the initial group. **Prosecution Staff is considering several other potential individual enforcement alternatives to speed up this process. Some of those potential alternatives are discussed briefly here.**

## **INDIVIDUAL ENFORCEMENT ALTERNATIVES**

### **1. Cleanup and Abatement Orders (CAOs)**

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<sup>1</sup> Staff used the most recent County Tax Assessor information to generate a mailing list of property owners in the Prohibition Zone. A computer-generated set of random numbers was then applied to the mailing list. In cases where the Assessor information indicated that the property owner does not live at the property, staff checked voter registration lists, which are sorted by address, to find tenants' names. Properties were taken in numerical order of the random numbers. In other words, property owners and tenants of those properties receiving the lowest random numbers received the first group of CDOs.

<sup>2</sup> The hearing was originally scheduled for March 23, 2006. However, on February 28, 2006, the Board Chairman issued a Revised Hearing Notice and Pre Hearing Order that rescheduled the hearing to April 28, 2006.

<sup>3</sup> The draft Cease and Desist Order numbers rescinded are R3-2006-1006, -1010, -1011, -1022, and -1035.

California Water Code Section 13304 provides that any person who has discharged or discharges waste into waters of this state, which includes groundwater, in violation of waste discharge requirements or another order or prohibition issued by a Water Board, or threatens to create, a condition of pollution or nuisance, shall upon order of the Water Board, clean up the waste or abate the effects of the waste.

All of the septic system discharges in the Prohibition Zone violate this Water Board's Basin Plan prohibition, therefore all persons responsible for those discharges are subject to CAOs. The primary advantage of CAOs is that they may be issued by the Executive Officer. This means that CAOs could be issued to all responsible parties in the Prohibition Zone simultaneously, as the CAOs need not be individually heard and approved by the Water Board, as with Cease and Desist Orders. The CAO recipients could request an administrative hearing. Such hearings could be handled by an administrative officer, such as your advisor Michael Thomas. CAOs also provide a strong basis for further enforcement action, including administrative civil liability, if necessary.

Prosecution Staff has contact information and is prepared to issue Cleanup and Abatement Orders to all parties responsible for septic system discharges in the Prohibition Zone.

## 2. Administrative Civil Liability

California Water Code Section 13350 provides that any person who (1) violates any cease and desist order or cleanup and abatement order issued by the Water Board, or (2) violates any waste discharge requirement, waiver condition, certification, or other order or prohibition issued by the Water Board, or causes or permits waste to be deposited where it is discharged, in the waters of the state, and creates a condition of pollution or nuisance, shall be liable civilly. The Water Board may impose civil liability of up to \$5,000 for each day the violation occurs or up to \$10 for each gallon of waste discharged.

Persons responsible for septic system discharges in the Prohibition Zone currently meet this second condition, thus are liable civilly under Section 13350. The administrative process for issuing civil liability would be similar to that of the proposed CDOs. The Executive Officer would issue an Administrative Civil Liability (ACL) Complaint to a group of randomly selected parties within the Prohibition Zone. Unless the party waived its right to a hearing, the Water Board would have to conduct a hearing within 90 days of the complaint being served. This ACL option would not be much faster than CDOs. Alternatively, the courts may impose civil liability through the judicial process. Section 13350 provides that the courts may impose civil liability of up to \$15,000 for each day the violation occurs, or up to \$20 for each gallon of waste discharged. The court, rather than the Water Board, would weigh the appropriate factors and determine a liability amount. The Water Board can only refer a matter to the Attorney

General to pursue judicial civil liability after holding a noticed hearing. (Section 13350(g).)

### 3. Referral to the Attorney General

The Water Board could also refer the matter to the Office of the Attorney General to enforce the Basin Plan prohibition in one or more civil actions. If the Water Board pursues this alternative, the Attorney General's Office might sue the entities who are the subject of the proposed individual CDOs for relief similar to that requested in those orders, as well as pursue other available legal and equitable remedies against these or other parties. In addition, the Attorney General's Office may evaluate whether and how to sue additional entities who have similar objective characteristics and common transactional facts regarding the violation of the Basin Plan prohibition. If such a referral were made, Prosecution Staff anticipates that it would work with the Attorney General's Office to construct a reasonable offer of compromise to those entities interested in settling the matter rather than litigating their respective liability for the illegal discharges. If no CDOs or similar actions were pending or impending before the Water Board, *ex parte* and other restrictions would not apply and the Water Board could direct the settlement and litigation process. If such restrictions did apply, Prosecution Staff and the settling parties could jointly propose a negotiated settlement to the Water Board for approval in a public meeting, if the Water Board does not want to delegate approval authority over the settlement.

Prosecution Staff recommends that the Water Board direct all questions regarding this option to its advisors.

### **RESPONSE TO COMMENTS**

The persons named in the draft CDOs and Central Coast Water Board Prosecution Staff are deemed 'Designated Parties.' **LOCSB is also a Designated Party.** The original deadline for Designated Parties to submit written comments and evidence was April 5, 2006. The deadline for all other interested persons to submit written comments was April 12, 2006.

Prosecution Staff anticipated that CDO recipients would have questions and concerns, and therefore held an informational workshop on February 15, 2006. Fifty to sixty people attended the workshop. It was also televised on the local public access channel. The workshop provided Designated Parties a good opportunity for questions and answers. Prosecution Staff also received several phone calls, letters, and emails from Designated Parties.

As mentioned previously, many Designated Parties' comments related to the originally proposed interim bimonthly septic tank pumping requirement. Prosecution Staff is not recommending the bimonthly septic tank pumping requirement at this time, so the evidence supporting that requirement is not

included here. The following responses focus on Designated Parties' comments related to the remaining requirements of the proposed Cease and Desist Orders.

### **Prohibition Zone Boundaries are Based on Solid Scientific Evidence**

The appropriateness of the Prohibition Zone is well established. The Regional Board adopted the Prohibition Zone in 1983, and that action is not an issue before the Water Board in this matter. However, since several Designated Parties continue to argue that the Prohibition Zone is "not based on science," here is a brief chronology of some of the significant scientific studies supporting establishment of the Prohibition Zone:

In an October 1969 memo, the California Department of Water Resources wrote:

"...groundwater has had some nitrate impairment from sewage disposal to septic tank leach field systems, especially in the Morro Bay area. This is evidenced by nitrate concentrations exceeding 45 mg/L [as nitrate] in wells...30S/10E-13A1, -13A6, and -13B2 (Los Osos subarea)..."

The Department of Water Resources' October 1973 *Los Osos-Baywood Ground Water Protection Study* concluded:

"Percolation of domestic waste water effluent has degraded ground-water quality. The increase in NO<sub>3</sub> concentrations in parts of the area is a reliable indicator of the extent of degradation. The highest reported concentration was over 90 mg/L [as nitrate] in Well No. 30S/10E-13G2 near Cuesta-by-the-Sea."

In October 1979, State Water Resources Control Board's *Geohydrology and Water Quality – Baywood-Los Osos Groundwater Basin* concluded:

"The shallow groundwater in the Los Osos basin has been and is being degraded by nitrates (NO<sub>3</sub>)...The primary source of the NO<sub>3</sub> is effluent percolating down from individual sewage treatment leachfields...The agricultural and dairy activities do not appear to contribute significant amounts of NO<sub>3</sub> to the groundwater...The area affected by high NO<sub>3</sub> degradation is increasing both vertically and horizontally...Additional use of leachfields for effluent disposal can only increase the magnitude of the NO<sub>3</sub> problem."

In April 1983, Brown and Caldwell Consulting Engineers' *Los Osos/Baywood Park Phase I Water Quality Management Study* stated:

"Background nitrate concentrations in groundwater, in areas of little or no development, are less than 25 milligrams per liter (mg/L) as NO<sub>3</sub>. Groundwater samples with concentrations in excess of 45 mg/L as NO<sub>3</sub>,



the maximum contaminant level (MCL) for this constituent, definitely indicate contamination. A significant number of samples from wells throughout the central portion of the urban development area show nitrate concentrations in excess of 45 mg/L as NO<sub>3</sub>.

“There are no naturally occurring geologic, hydrologic, or ecologic processes which could cause the nitrate contamination found in the shallow groundwater.

“The distinct correlation of high nitrate levels in shallow groundwater with the area of urban development establishes conclusively that wastewater discharge is the cause of high nitrate contamination.

“As the population of the planning area increases, discharge of wastewater to the groundwater table will also increase, causing increased nitrate contamination of the groundwater. Population growth will also cause increased water demands on the groundwater system. The combination of increased water demands and increased wastewater discharge will cause groundwater quality to degrade at a rate in excess of the rate of increase in population.”

These studies and other evidence culminated in September 1983 with Water Board Resolution No. 83-13, which established the Los Osos Prohibition Zone. The Resolution findings state, in part:

“...the Los Osos/Baywood Park area soil permeability is rapid and there are substantial areas with high groundwater; and,

“...the majority of lots are too small to provide adequate dispersion of individual sewage disposal system effluent; and,

“...Los Osos-Baywood Park/Phase I Water Quality Management Study” cites conditions which constitute contamination and pollution as defined in Section 13050 of the California Water Code; and.

“...chemical analyses of wells in Los Osos/Baywood Park indicates 38% of the shallow wells tested in the Phase I study, taking water from the Old Dune Sands deposits portion of the aquifer, contain nitrate concentrations which exceed State Health Department Drinking Water Standards of 45 milligrams per liter; and,”

“...bacterial analyses of 42 wells tested in the Phase I study resulted in 26 wells indicating total coliform in violation of State Health Drinking Water Standards, and 2 wells indicating fecal coliform in violation of Basin Plan limits for groundwater; and,”

“...surface water bacterial analyses tested in the Phase I study indicated total and fecal coliform levels exceeding Basin Plan recommended limits for water contact recreation (REC-1); and,”

“...a Regional Board staff report finds beneficial uses of Los Osos ground and surface waters are adversely affected by individual sewage disposal system discharges, there appears to be a trend of increasing degradation, and public health is jeopardized by occurrences of surfacing effluent; and,”

The appropriateness of the Prohibition Zone is verified by several scientific studies and evidence since 1983 that point to septic systems as the primary source of groundwater contamination, and emphasize the need to discontinue septic system discharges.

In May 1986, consulting firm Engineering Science submitted its *Draft Phase I – Sewerage Planning Study* to San Luis Obispo County Engineering Department. The study stated:

“...the nitrate problem is real and will continue to be real as long as septic tank systems are used for disposal of domestic waste.”

In August 1987, the Water Board’s *Staff Report, Water Quality Data, Los Osos/Baywood Park*, concluded:

“...analysis of the data examined for this report clearly shows that the quality of the shallow ground water in much of the Los Osos/Baywood Park area is being changed by the urbanization of the area. The preponderance of evidence shows increasing mineralization of ground water over time. In the more densely developed area of Los Osos/Baywood Park, only one well suggests a downward trend for nitrate concentrations. Of even more concern is the fact that some of the wells are showing relatively steep increases in mineralization in recent years. Since water quality in the undeveloped area 25 years ago had lower mineral concentrations than any of the groundwater existing under the developed areas now, staff attributes the changes which have occurred to the increasing residential development densities. The staff report prepared for the original hearing four years ago showed that, of the sources identified (urban irrigation, commercial and residential sewage, agricultural irrigation), residential waste water contributed more than 80% or the nitrogen in the Los Osos/Baywood shallow groundwater basin. No evidence to change that conclusion exists today.”

In 1988, U.S. Geological Survey stated in its *Hydrogeology and Water Resources of the Los Osos Valley Ground-water Basin*:

**“Shallow ground water in the urbanized part of the basin is contaminated with nitrates. The contamination apparently has resulted from recent large increases in the number of residents in the Los Osos area and the exclusive use of septic systems for disposal of urban wastewater.”**

**In July 1994, a Los Osos Technical Advisory Committee (TAC) reported to the County Board of Supervisors that septic systems were not the source of Los Osos’ groundwater contamination. In a response dated October 24, 1994, Water Board Senior Water Resource Control Engineer, Jay Cano, wrote:**

**“While the Technical Advisory Committee’s July 7, 1994 memo...concludes that septic tanks are not the cause of the Los Osos ground water problems, the data do not support that conclusion. The data plainly show that nitrate concentrations in liquid collected below seepage pits/leachfield are many times the drinking water limit. The report simply ignores the obvious.”**

**Norm Hantzche, P.E., of Questa Engineering Corporation, provided an independent review of the TAC’s conclusions at the request of Water Board members. In a February 1995 memo, Mr. Hantzche wrote:**

**“Contrary to the conclusion of the TAC, the monitoring results provide overwhelming evidence that the nitrate-nitrogen from septic systems in Los Osos/Baywood Park is contaminating the groundwater in the area. The TAC concluded that virtually all of the nitrogen in septic system effluent is removed in the soil, and attributed the documented groundwater nitrate contamination immediately beneath the leachfield test sites to ‘unknown off-site sources.’ In reading the report it appears to me that this conclusion was reached due, at least in part, to a lack of technical understanding of certain groundwater/contaminant flow principles and a failure to critically examine all aspects of the data and the sampling methodology.”**

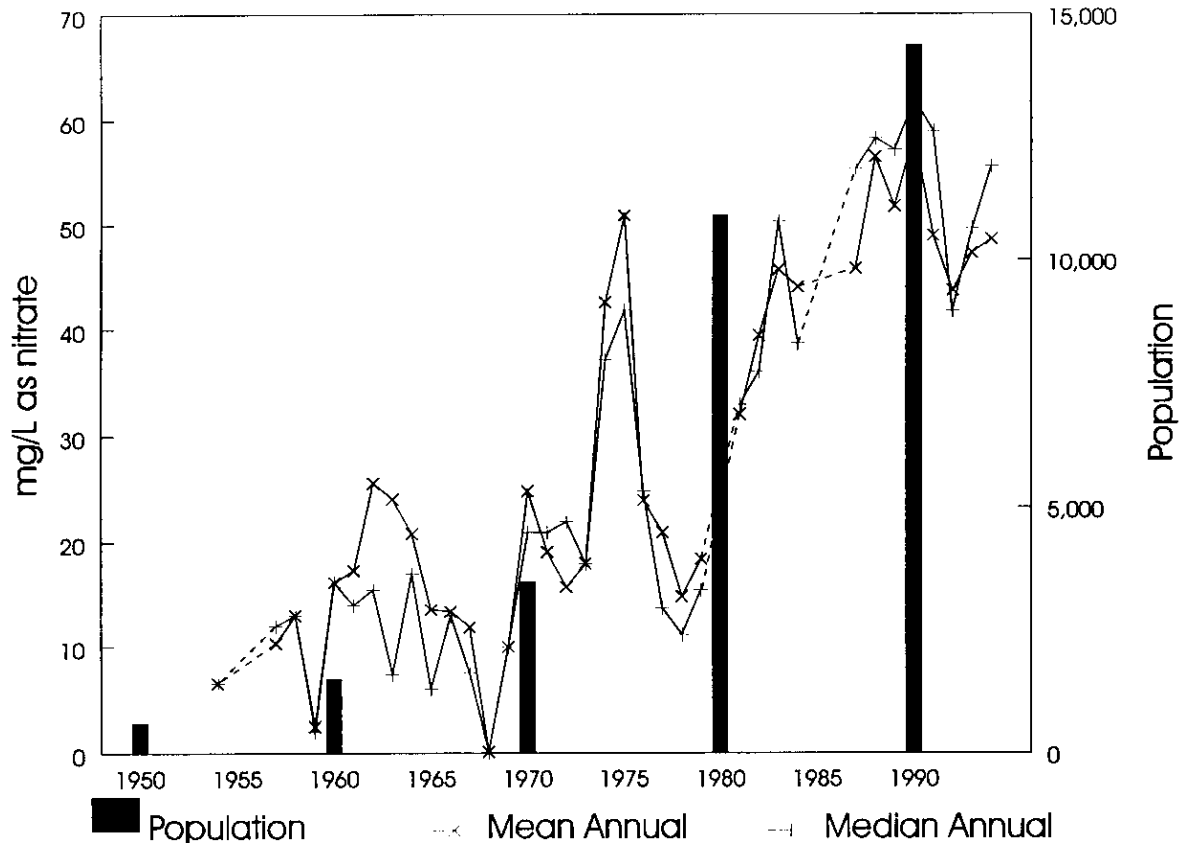
**“There is a considerable amount of useful information that has come from the monitoring efforts of the study; but, I strongly disagree with the conclusion that these data point to something other than septic systems as the primary source of groundwater-nitrate contamination...Diverting attention and study efforts to ‘natural’ sources would, in my opinion, be seriously misguided.”**

**In 1987, Dr. Roy Spaulding of the University of Nebraska analyzed nitrate isotopes in a limited number of Los Osos groundwater samples for the County of San Luis Obispo. Dr. Spaulding concluded that the isotopes present were most closely related to agriculture. UC Davis soil science professor Dennis Rolston later refuted his conclusions. In a February 1995 memo, Dr. Rolston wrote:**

**“The report that Fogg and I submitted to the State and Central Coast Board last year, however, shows that the del N-15 from septic leach lines and pits from a location near Davis and in the Salinas Valley ranged between +5 and +10 with a mean of +8.2. The samples from Los Osos had del N-15 values ranging between +6 and +10 with means of +8 on one sampling date and +7.8 on another sampling date. Thus, you can see that the del N-15 values of nitrate from Los Osos groundwater are very close to measured values below septic tank leachate sources in our report. Thus, I disagree with Spaulding and believe that the data do indeed point to septic tank effluent as a primary source of nitrate in groundwater in Los Osos.”**

**“...it does not appear that nitrate in the groundwater from Los Osos could be from geologic sources unless mixed with a high loading from some kind of animal source. Thus, without the presence of animal sources such as feedlots, dairies, or large manure applications to land, the del N-15 values tend to point toward septic tank effluent.”**

**In March 1995, international wastewater engineering firm Metcalf & Eddy submitted its *Los Osos Wastewater Study, Task F – Sanitary Survey and Nitrate Source Study* to the County of San Luis Obispo. The report also disputes Dr. Roy Spaulding’s isotope study conclusions. Metcalf & Eddy’s study is important for other reasons. It investigated all potential nitrate sources, including septic system effluent, natural sources such as soil organic matter, vegetation, and inflowing groundwater, geological sources, agricultural and horticultural fertilizers, animal wastes and soil disturbance from construction and weed abatement, and found that, “individual septic systems appear to be the major contributor of nitrate to shallow groundwater.” The study established a statistically significant correlation between population growth and groundwater contamination, as illustrated in Figure 1 below.**



**Figure 1: Average annual nitrate concentrations and population, Los Osos Wastewater Study, prepared by Metcalf & Eddy, 1995**

**Metcalf & Eddy concluded:**

**“Based on these findings, continued use of existing conventional onsite wastewater systems is not justified in portions of the community having small lots (high density of onsite systems) and depths to groundwater less than 30 ft. This includes most of the community except Bayview Heights, the Martin Tract, and vacant areas.”**

In December 1995, Water Board staff prepared *Assessment of Nitrate Contamination in Ground Water Basins of the Central Coast Region, Preliminary Working Draft*, which includes Los Osos groundwater nitrate data extending back to 1954. The report includes a series of nitrate contour maps demonstrating significant increases in the lateral extent of groundwater contamination beneath the urbanized area of Los Osos since 1954.

In March 2002, Kitts, Moline, Schaffner, Samadpour, McNeill, and Duffield released their final report, *Identifying the sources of Escherichia coli Contamination to the Shellfish Growing Areas of the Morro Bay Estuary*. They found that,

“Fecal coliform counts from Pismo and 3<sup>rd</sup> St. Dock seeps were consistently above the recreational contact standard, independent of season...(p. 22)”

Figure 9 of the report shows the contact standard of 200 MPN/100 mL, with most of the seep samples having fecal concentrations far exceeding the standard. The highest single source of E. coli bacteria present in groundwater seeping into Morro Bay near the Baywood commercial district originates from humans.

“...Humans contributed most at Pismo Seep. (p. 25)

“...the contribution from human sources in the seeps was clearly larger than for the bay and Los Osos Creek. (p. 32)”

Table 11 indicates the following percentages of known sources of E. coli bacteria in the grouped seep data:

Birds	13%
Domestic (e.g., dogs/cats)	8%
Livestock	0%
Wild	3%
Human	40%

More recently, in June 2006, hydrogeologist Cleath and Associates prepared the *Task 3 Los Osos Upper Aquifer Water Quality Characterization*, for LOCSD. This study detected pharmaceuticals in the shallow aquifer. Carbamazepine, an anti-seizure drug often used for mental disorders, was detected in three of the five wells sampled. Sulfamethoxazole, an antibiotic, was detected in all wells sampled. NDMA, a byproduct of ion-exchange water treatment and which is commonly found in shampoo and other toiletries, was detected in excess of California Notification Levels in two wells. Dr. John Vargo of the University of Iowa laboratory that analyzed the samples, states:

“The presence of these two pharmaceuticals is an indication that there is a source(s) of contaminants that has leached, or is presently leaching, into the groundwater source. These chemicals will only be found in human wastewater sources. They do not occur naturally nor are they used in agriculture. The two detected pharmaceuticals are highly soluble in water and do not have a tendency to bind in soil, as many organic chemicals do. Considering that these pharmaceuticals have been found at low levels in most of the groundwater samples you submitted, it is likely there are other chemical contaminants present in the water as we only tested for a select group.”

### **All Septic System Discharges in the Prohibition Zone are Contributing to Water Quality Degradation**

In Section III.D of its April 4, 2006 submittal, LOCSD argues that the Water Board did not inspect each septic system or determine the “depth of aquifer, proximity of leach field to streams, proximity to leach field to other leach fields, etc.” to determine whether the septic systems are working “as designed and operated.” Several other Designated Parties made a similar argument.

First, this information is not necessary in this case because the proposed Cease and Desist Orders are for violations of a complete prohibition of discharges from septic systems. There is no dispute that the subject properties’ owners or tenants are discharging from their septic tanks and violating this prohibition. Septic system discharges are illegal in the Prohibition Zone, whether or not the systems are operated properly or working as designed.

Second, Water Board staff could inspect every septic system and provide site-specific information (separation to groundwater, septic system density, etc.) for each property to demonstrate that every property in the Prohibition Zone does not meet Basin Plan criteria. However, such information is really only important in that it is used for siting and design of individual septic systems to determine if that system is acceptable for areas where septic systems are appropriate, i.e., areas *without* a septic system prohibition. Due to septic system density and hydrogeology, septic tanks are not appropriate throughout the Prohibition Zone, with minor exceptions for the Bayview Heights and Martin Tract areas (but only if a sewer system is in place to reduce total waste loading to the basin).

Further, site-specific information clearly is not required in this case because there is a wealth of monitoring data and other information that demonstrates existing septic systems have actually degraded water quality and that continuing discharges are preventing restoration of groundwater quality.

LOCSD’s groundwater monitoring program consistently demonstrates that groundwater nitrate concentrations exceed the drinking water standard all over town, including higher ground areas of town where there is significant separation to groundwater (greater than 50 feet). Contour maps provided by LOCSD illustrate that the areas of highest nitrate concentration correlate to areas with greatest septic system density.

Prosecution Staff is performing additional analysis of the correlation between septic system density and groundwater nitrate concentrations. We used census data and GIS technology to determine dwelling unit density within a 500-foot radius of all of LOCSD's groundwater-monitoring wells. We correlated that density to the nitrate concentration found in each well. Figure 2 illustrates this

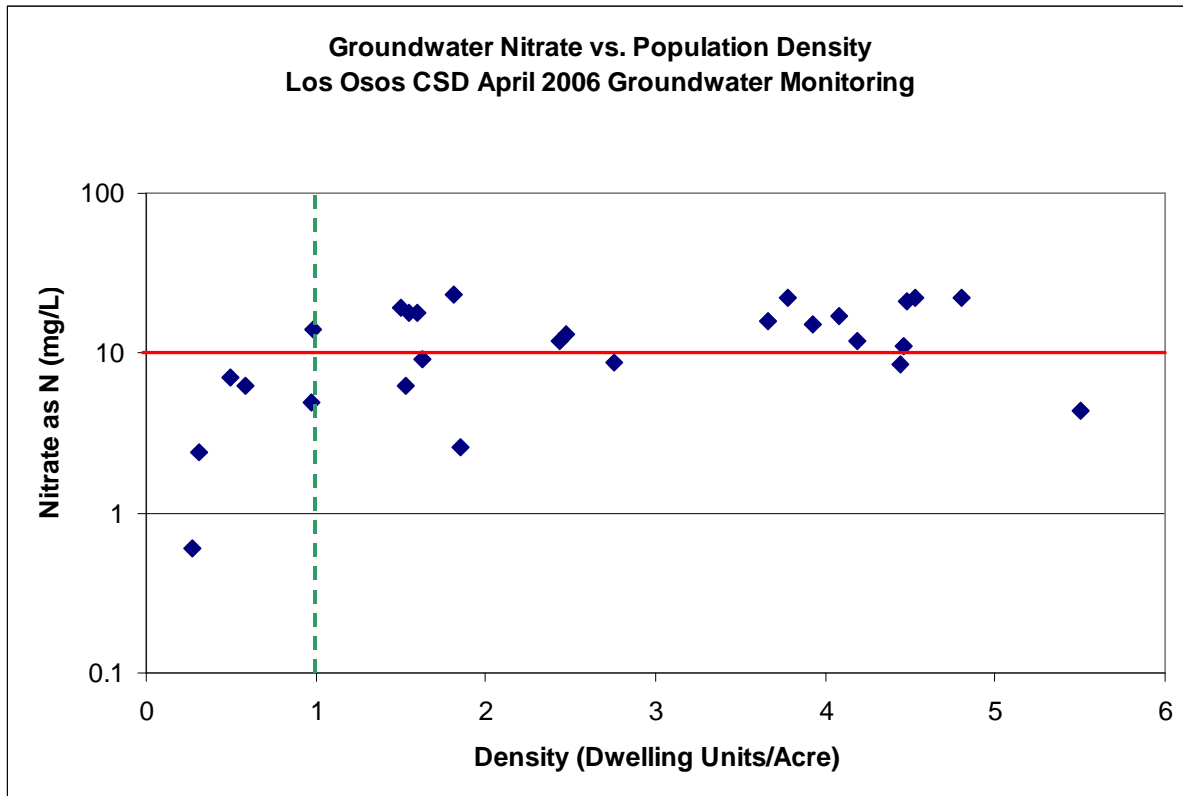


Figure 2: April 2006 groundwater nitrate concentrations versus population density, Los Osos

correlation for LOCSD's most recent groundwater monitoring event in April 2006. Only one of the six monitoring wells (or 17%) where density is one dwelling unit per acre or less exceeds nitrate drinking water standards. On the other hand, nitrate exceeds the drinking water standard in 15 of the 21 wells (or 71%) where density is greater than one dwelling unit per acre. For density greater than one dwelling unit per half acre, 11 of the 14 wells (or 79%), exceed the standard and only one (7%) of the wells' concentration is significantly less than the standard. These data strongly suggest that septic system density and nitrate concentrations are directly related. Since the Prohibition Zone boundaries are largely based on septic system density, this is further evidence that the Prohibition Zone boundaries are appropriate.

Nitrate concentrations in groundwater immediately beneath 41 of the 45 properties that received Cease and Desist Orders exceed the drinking water standard. Those



properties that are outside of the area where nitrate exceeds the drinking water standard still contribute to water quality degradation. Those properties are either immediately upgradient of and contributing nitrogen to these highly contaminated areas, or are located close to the Bay where shallow groundwater is flushed to the Bay.

Water quality degradation by septic systems is not limited to nitrate in groundwater. Shallow groundwater seeps into Morro Bay Estuary along the approximately 2.5-mile shoreline within the Prohibition Zone. Analyses of these seeps indicate fecal coliform bacteria greatly exceed standards, and DNA testing indicates the greatest known source of these bacteria is humans. During wet weather cycles, high groundwater causes septic tank effluent to surface in some areas and drain into Morro Bay Estuary. There is no question that septic systems in the Prohibition Zone are degrading water quality.

In testimony to the State Water Resources Control Board on November 16, 2005, LOCSD Vice-President John Fouche stated, "We know we need the sewer. Water quality is of the utmost importance. That is not even a question."

Whether an individual property is close to the Bay or further inland, all septic system discharges in the Prohibition Zone are contributing to pollution of groundwater or Morro Bay, and should be subject to CDOs.

### **Appropriate Design for a Community-wide Treatment Plant is Not Relevant**

LOCSD has argued that studies authorized by the Federal EPA and the SWRCB conclude that the RWQCB's preferred sewage system is not the best or only method for ameliorating the groundwater in Los Osos, and asserts that Water Board staff is relying on outdated science in this process. This argument fails for two reasons. First, this entire line of argument is irrelevant because the CDOs are not based on the availability of a project that staff "supports." The Water Board did not design the approved project or select it. Once LOCSD selected its project, the Water Board supported the LOCSD's effort to proceed with its approved project. The community's representatives designed it, and the Water Board approved it because it met all applicable standards. The community has now stopped the project and there is no other project in sight. The CDOs are necessary to ensure that interim measures are taken to protect the environment until any approved wastewater treatment plant is available or until the community implements some other means to comply with the prohibition if no plant is on-line by 2010. Even if staff agreed that the Tri-W project was flawed, which it does not, staff would support interim environmental protection and a deadline for complying with the prohibition.

Second, LOCSD's irrelevant arguments regarding outdated science are incorrect. Water Board staff has considered all studies that LOCSD suggests staff has disregarded and none of them are relevant to this case. The first study LOCSD refers to is the *Review of Technologies for the Onsite Treatment of Wastewater in California*, prepared by UC Davis Department of Civil and Environmental Engineering for the State Water Resources Control Board in August 2002. That study rated the performance of

dozens of various onsite wastewater technologies. In summary, only 14 of the 37 technologies for which performance data were available are rated to treat domestic wastewater to less than 10 mg/L total nitrogen—the minimum performance necessary to eventually restore Los Osos' groundwater to drinking water standards. And of those 14 technologies (e.g., sequencing batch reactors, membrane bioreactors, and wetlands), all are complex treatment systems that require significant operation and maintenance. None are commonly applied to individual properties for these reasons. Indeed, one of the most highly rated technologies in the study is membrane bioreactors—the central technology of the community wastewater project that LOCSD stopped.

Another commenter, Ann Calhoun, said that Dr. John Alexander has an effective on-site nitrogen removal system that has been proven to this "RB staff's satisfaction." Staff met with Dr. Alexander a few years ago and he indicated that his system would not be applicable to residential use. Staff understands that the system is not commercially available. Approximately 15 years ago, Dr. Alexander pilot tested his galvanic agglutinator at the Morro Bay/Cayucos Wastewater Treatment Plant. The system did not function effectively. Dr. Alexander claimed that that particular failure was due to the limited size of the project (pilot test was conducted with a 55 gal drum). **In, Engineering Science's May 1986 Draft Phase I – Sewerage Planning Study analyzed agglutinator performance data provided by Dr. Alexander and concluded:**

**“the data presented are suspect, since they appear to violate all the laws of chemistry...The results obtained thus far for the Alexander system on domestic wastewaters are at best inconclusive and strongly suggest that it may not be applicable to CSA 9 [Los Osos], certainly not without considerable research and demonstration as to its reliability both as a process and as a piece of equipment” (p. 9-12).**

Contrary to Ms. Calhoun's claim, the system has not been proven to staff's satisfaction.

### **Atmospheric Deposition of Nitrogen by the Morro Bay Power Plant is Not a Significant Contributor of Nitrogen to Los Osos Groundwater**

LOCSD has suggested that atmospheric deposition of nitrogen by the Morro Bay Power Plant somehow discredits the basis of the Prohibition Zone. This is obviously a red herring argument, but is so outrageous that it calls for a response. In 2002, Tetra Tech estimated nitrogen loading to Morro Bay resulting from atmospheric deposition of air discharges from the Morro Bay Power Plant and compared that loading to estimates from other sources of nitrogen loading to Morro Bay, such as agriculture and urban stormwater runoff from the Chorro Creek and Los Osos Creek watersheds<sup>4</sup>. The study states, “It appears that the current contribution of nitrogen from the power plant is less than one percent of the total nitrogen load to the [Morro Bay] estuary.” The Morro Bay watershed is 48,000 acres and only a small fraction of its runoff could recharge Los Osos groundwater, so it is reasonable to assume that atmospheric deposition

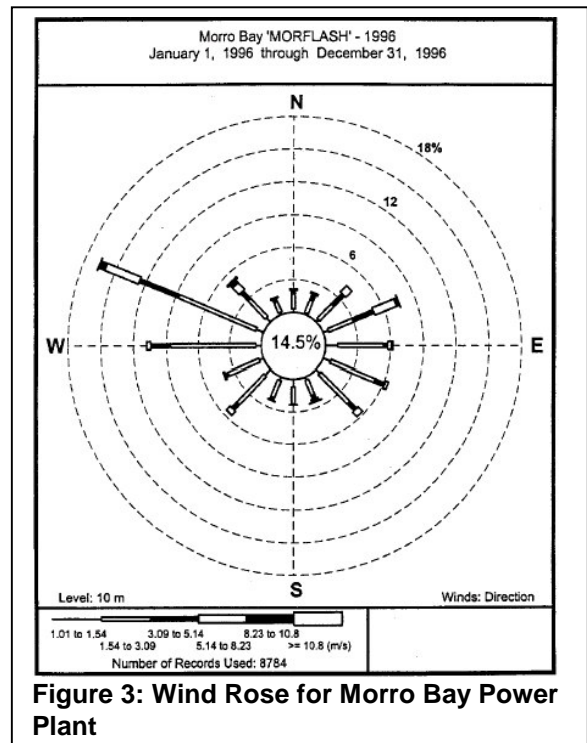
<sup>4</sup> Butcher and Rimelman, Tetra Tech, Scoping Air Deposition of Nitrogen to Morro Bay, June 2002 (Document No. 12a of Prosecution Staff's Master Documents List).

contributes an insignificant amount (much less than 1% of total nitrogen loading) to groundwater beneath Los Osos. The Tetra Tech study concluded, "it appears unlikely that nitrogen deposition from the power plant to the watershed will result in significant loading to Morro Bay. Elevated nitrate loads observed in tributaries entering Morro Bay are most likely attributable to loading from agricultural and residential land uses, particularly septic systems."

Groundwater nitrate concentrations are generally greatest in areas of highest septic system density in Los Osos, with concentrations decreasing at the Prohibition Zone boundaries and beyond. To blame the power plant, one must assume that nitrogen from the stacks somehow selectively travels through the air, deposits, and concentrates in this same area of extremely high septic system density.

**Meteorological data helps illustrates why this is not possible. Figure 3 is a wind rose, which represents wind speed and direction at the Morro Bay Power Plant, and explains where aerial emissions from the Morro Bay Power Plant might eventually be deposited. The wind rose shows that there is little or no wind (wind speed is less than one meter per second) 14.5% of the year, wind blows onshore (eastward towards the Chorro Creek watershed) 39% of the year, blows offshore (westward to the ocean) 30.5% of the year, and blows south-southeast directly towards the Los Osos Prohibition Zone 5% of the year.**

If we did assume that this wind pattern produces approximately 10 mg/L of nitrate as nitrogen in groundwater (actual Los Osos nitrate groundwater concentrations were as high as 22 mg/L in April 2006) in the direction of Los Osos (3.5 miles from the power plant), then it must produce up to 78 mg/L nitrate as nitrogen at a like distance due east ( $10 \text{ mg/L} \times 39\%/5\%$ ), and even higher concentrations in closer areas to the east of the power plant - perhaps 190 mg/L nitrate as nitrogen in the Chorro and Morro Creek watersheds near the plant. Such conditions do not occur. The Central Coast Ambient Monitoring Program (CCAMP) reports that average nitrate concentrations in samples collected near the mouths of Chorro Creek and Los Osos Creek (which receive base flow from shallow groundwater that would be most affected by aerial deposition) are 1.9 mg/L and 2.3 mg/L (both as N), respectively. This is based on over 190 samples collected from Chorro Creek and over 160 samples collected from Los Osos Creek over the course of several years. These values are an order of



**magnitude lower than one would expect if the Morro Bay Power Plant were significantly contributing to Los Osos groundwater nitrate contamination.**

Any suggestion that atmospheric deposition must be considered in this matter is based on a severe misunderstanding of air and water pollution principles.

### **Groundwater Nitrate Concentrations Have Not Decreased Since 1983**

Some Designated Parties have submitted comparisons of groundwater nitrate data from 1983 to data from April 2005, in an attempt to demonstrate that nitrate levels have decreased since 1983. Upon closer inspection, the apparent decrease in values is attributed to the way the data is reported, not actual decreases. The nitrate data from 1983 is reported as nitrate. The nitrate data from 2005 is reported as nitrogen. The difference in values is a result of the difference in molecular weight of nitrate and nitrogen (nitrate is 4.45 times heavier than nitrogen). Correction of the 1983 values demonstrates that nitrate concentrations in groundwater have clearly increased since 1983. Correction of the limited data set provided by the CDO recipients demonstrates that average nitrate concentrations were 30% higher in April 2005 than in 1983. Also, the number of wells that exceed the drinking water standard of 10 mg/L nitrate as nitrogen increased from 9 out of 26 wells in 1983 to 13 out of 26 wells in 2005. This is consistent with the long-term groundwater data set, which demonstrates discernible upward trends in nitrate concentrations in nearly all wells since 1983.

### **ABSENCE OF EXECUTIVE OFFICER ROGER BRIGGS**

**The Prosecution Staff previously advised the Water Board and Designated Parties that Executive Officer Roger Briggs is unavailable for any hearing that occurs between mid-October 2006 and mid-April 2007. There is no legal basis for delaying any hearings related to the proposed individual cease and desist orders as a result of Mr. Briggs unavailability. There are well-recognized procedures for addressing the unavailability of a potential witness that can be utilized by any of the designated parties. Moreover, Mr. Briggs has previously given completed testimony under oath in this proceeding on matters pertaining to the individual cease and desist orders, with all parties completing cross-examination of Mr. Briggs. With the permission of the Water Board, such prior testimony could be utilized by any party that might otherwise have desired Mr. Briggs testimony at the newly scheduled hearings.**

### **CONCLUSION**

None of the arguments put forth by the Designated Parties or Interested Persons refute the basis of the proposed Cease and Desist Orders, which is that every person who disposes of sewage within the Prohibition Zone does so in violation of the Water Board's Basin Plan. Since local government has failed for nearly 20 years to implement a project that would allow residents to comply with the prohibition, compliance now falls to the individuals who are ultimately responsible for the waste discharges. The requirements of the proposed Cease and Desist Orders are reasonable interim

measures to reduce the water quality effects of the ongoing, illegal, septic system discharges.

### **CALIFORNIA ENVIRONMENTAL QUALITY ACT**

These enforcement actions are being taken for the protection of the environment and as such are exempt from the provisions of the California Environmental Quality Act (Section 15321, Chapter 3, Division 6, Title 14, California Code of Regulations). In addition, the subject septic systems are existing facilities and this Order allows no expansion of use beyond that previously existing. These enforcement actions are exempt from the provisions of the California Environmental Quality Act (Section 15301, Chapter 3, Division 6, Title 14, California Code of Regulations).

### **RECOMMENDATION**

Adopt Cease and Desist Orders R3-2006-1000 through –1049 (except –1006, -1010, -1011, -1022, and –1035).

### **ATTACHMENTS**

1. Map of Prohibition Zone Property Owners and Tenants Receiving Cease and Desist Orders
2. Template for Cease and Desist Orders R3-2006-1000 through –1049
3. Central Coast Water Board Prosecution Team Document List