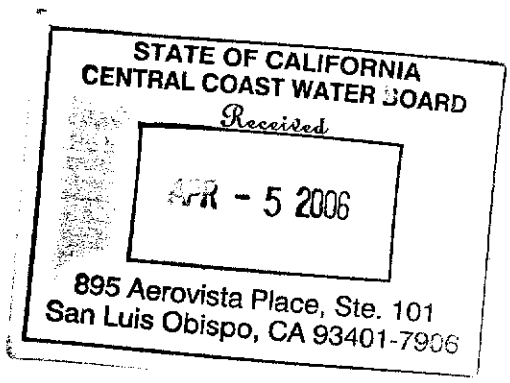
From: Antoinette Gray-Payne
1061 Green Oaks Dr
Los Osos, Ca . 93402
Ceast & Desist Order # R3-2006-1000
To : Calif Regional Water Quality Control Board
Central Coast Region Et Al
895 Aerovista Pl. Suite 101
San Luis Obispo, Ca.93401
Re: CDO R3-2006-1000



1) CDO is not based on fact nor science and may be illegal.
2) IBR paper which was presented by Terry R Bounds at the 1994 Conference for Agricultural Engineers in Atlanta Georgia. For copies call Orenco Systems & Co.at 1-800-348-9843 . Enclosed is Page 1 which was shorten to accommodate a paragraph from page 2 : technical information (Drain field protection) describing the disadvantage of pumping septage too often.
3) IBR B&V Nitrates Study Paraphrase: 6' under operating leach field for 170 homes of Bayridge Estates nitrate concentrations are lower than the ground water beneath. The obvious conclusion is that Septic Systems in lower groundwater areas have a dilution effect to ground water without the danger of liquefaction. Liquidation is equivalent to quicksand To pump septic tanks every 2 months would be detrimental to ground water because of lack of dilution of nitrates.
4) In conclusion, pumping septic tanks every 2 months is detrimental to the proper microbrial diversity which results in thorough digestion.

Documents

Page 1 of Septic tank septage pumping intervals. By T.R .Bounds, P. E.
T.R. Bounds is Vice –President of Orenco Systems Inc. Sutherlin, Oregon

1).Comparison Map of Oct 2005 Ground Water Nitrate Data with Nov 29,2005 Groundwater Nitrate Data
2) Comparison of all wells in the above stated maps showing the difference of 67.1mg/l in less than 60 days. The Oct 2005 Map was chosen by Prosecution as the Map to show at the workshop for CDO recipients on Mar 18, 2006
3) Expert Opinion Statement by Chris Kitts Ph.D.
4) Certificate of Legal Rights swearing to maintain the proper functioning of my septic tank.
5) A Detailed Examination of the San Luis Obispo County nitrate Sampling Program.
6) Affidavit of Wade D. Brim
7) Affidavit of Glenn Stillman
8) Affidavit of John A. Alexander Ph.D., IOM, LFIBA
9) hand written letter from Christopher Allebe joining our defense.
Witnesses:

Glen Stillman BS Environmental Engineering MS in Petroleum Engineering

This paper was first presented by Terry R. Bounds, P.E., at the 1994 conference of the American Society of Agricultural Engineers, in Atlanta, Georgia. This article may describe design criteria that was in effect at the time the article was written. FOR CURRENT DESIGN CRITERIA, call Orenco Systems, Inc. at 1-800-348-9843.

Septic Tank Septage Pumping Intervals

T.R. Bounds, P. E.*

Abstract

When a designer initiates an economic analysis of an effluent sewer—e.g. a septic tank effluent pump (STEP) collection system or a variable-grade collection system—or an on-site management district, the ability to predict tank pumping intervals is necessary for assigning a cost to that function. An arbitrarily short pumping interval may distort this operational cost by a factor of ten or twenty, causing it to appear prohibitive, or, at the very least, resulting in the expensive practice of transporting septage composed primarily of water. Pumping tanks more often than necessary not only wastes money and resources, but increases pressure on already overburdened septage receiving facilities.

In the 1970s effluent sewer systems were relatively rare, and operation and maintenance scheduling, including septic tank pumping intervals, were projected using information from U.S. Public Health Service studies published in 1955. During the 1980s, an eight-year audit of 450 watertight septic tanks in an effluent sewer system at Glide, Oregon, demonstrated respectable correlation with those Public Health Service studies, determining that 12 year pumping intervals predicted 30 years before, for an average size family with an adequately sized tank, were not unreasonably long. In 1991 Montesano, Washington, an effluent sewer community of 1,125 watertight septic tanks, found after monitoring 19% of their system that they too experience similar septage accumulation rates.

Based on the assumption that watertight tanks are an essential ingredient in any effluent sewer or managed on-site district, methods are presented to enable designers, regulators, and operations personnel to size tanks relative to occupancy loading, to achieve adequate hydraulic retention times for settlement of solids, to determine a tank's optimum effluent withdrawal level, and to predict septage pumping intervals.

Keywords

Septic tanks, Septage, Pumping, Interval, Frequency

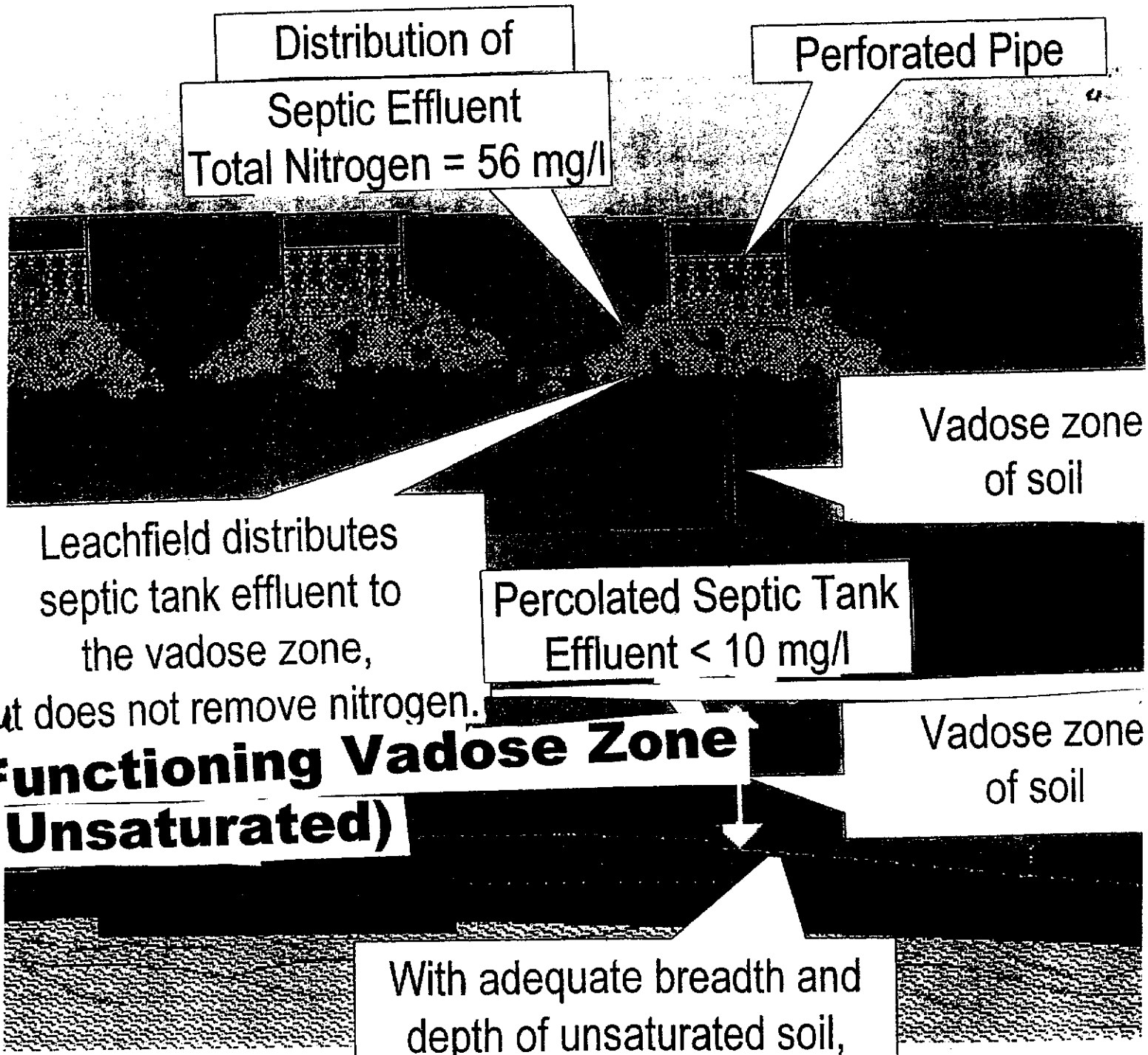
There is a good reason why, in this age of advanced technology, the septic tank is still in use. It works. More than 45% of ultimate treatment can be accomplished in the septic tank. Its anoxic digestion can reduce solids as much as 80%. In short, the energy free septic tank is the most cost efficient primary treatment available for nonindustrial sewage. Eventually, however, a septic tank's undigested solids must be removed and disposed of. When is "eventually?" Opinions vary widely. Estimations based on guesswork or on traditional practices are frequently unreliable. Making accurate predictions of septage pumping intervals, however, is not only possible, it's often essential. When a designer undertakes an economic analysis of an effluent sewer—e.g. septic tank effluent pump (STEP) or variable-grade collection system—and when the manager of an on-site district establishes a maintenance budget, the ability to predict tank pumping intervals is imperative for assigning a cost to that function. An arbitrarily shortened pumping interval may inflate this operational cost causing it to appear prohibitive,

Drainfield Protection

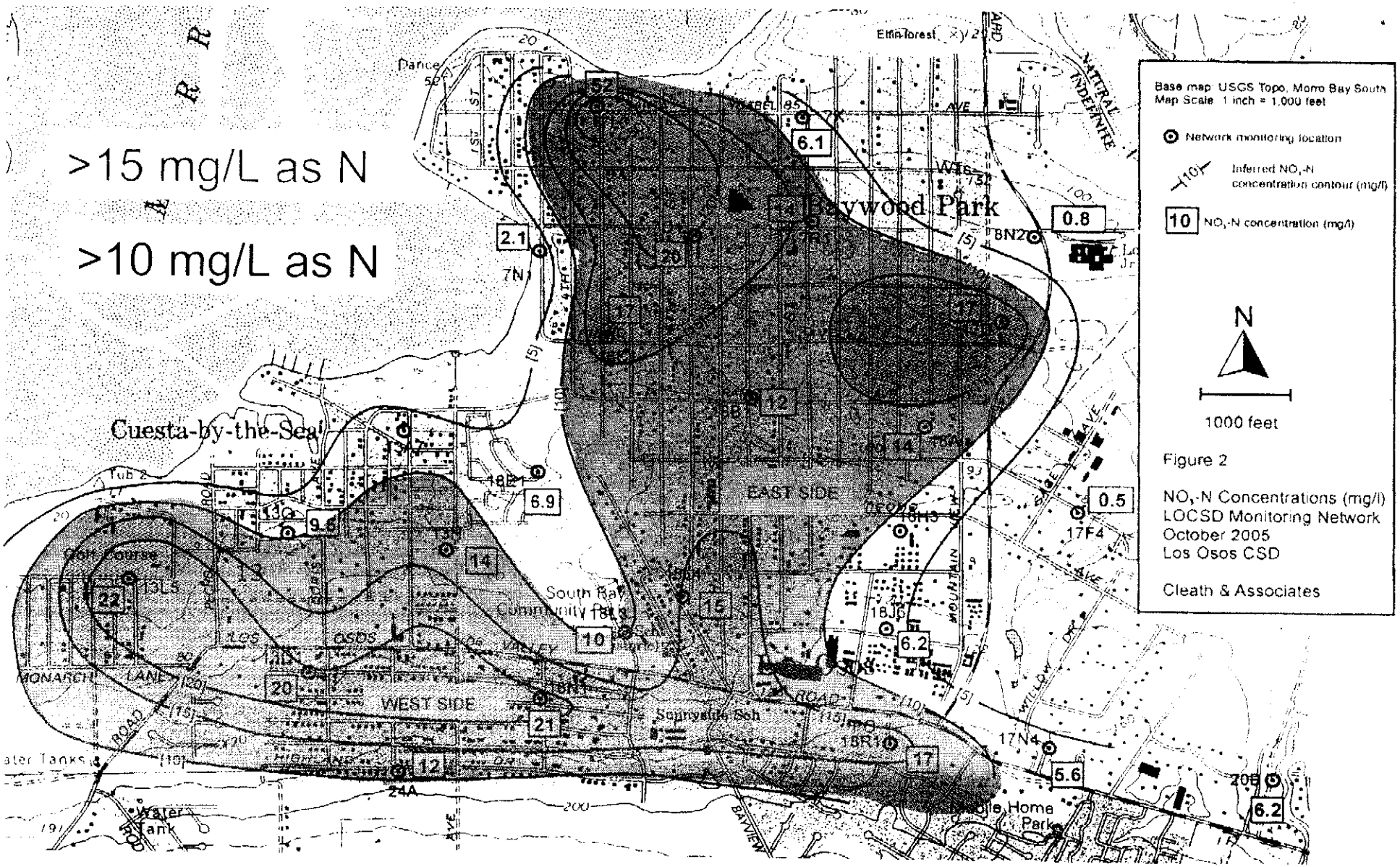
In managed systems, regular monitoring prevents the problems that can result from tanks that go too long without pumping. However, in unmanaged on-site systems, i.e. those systems not part of a district or under a maintenance contract, homeowners may fail to have septage removed in time to prevent solids carryover that can destroy the drainfield. The conservative response is often to recommend frequent septage removal, as often as every two or three years. But that may not allow sufficient time for a tank's microbes to optimize digestion. Philip et al. (1993) suggest that the reduction of sludge volume begins to be optimal only after 2.5 to 3 years, when accumulation of soluble metabolites increases microbial diversity which results in more thorough digestion. Septic tank effluent filters are probably a more efficacious means of protecting drainfields. Not only can filters cut in half the suspended solids discharged daily from the tank, models are available that provide an absolute barrier to solids leaving the tank, even when excessive scum and sludge have accumulated.

*T. R. Bounds, P.E., Vice President, Orenco Systems, Inc., Sutherlin, Oregon.

Simple Schematic of Leachfield



October 2005 Groundwater Nitrate Data



	Test Well #	Oct 2005 Matt		Nov 29, 2005 Rob Miller
1	#7L3	52	-33	19
2	#7K	6.1	+7.1	14
3	#7R1	14	-2	12
4	#8N2	0.8	-0.4	<0.5
5	#7Q1	20	-2	18
6	#18C1	17	-7	10
7	17D	17	+3	20
8	18B1	12	-9.6	2.4
9	18A	14	0	14
10	13A7		0	NA
11	18E1	6.9	+1	7.9
12	18H3		0	NA
13	13L5	22	+6	28
14	13Q1	20	+1	21

Test Well #	Oct 2005 Matt T.		Nov 29 2005 Rob Miller
#24A	12	-1	11
18N1	21	-9	12
18L3	10	+3	13
18L4	15	-5.4	9.6
7N1	2.1	+0.1	2.2 3rd St Production
20B	6.2	-3.7	2.5
#17N4	5.6	-0.4	5.1
18R1	17	-2	15
18J6	6.2	-1.8	4.4
17F4	0.5	0	0.5
13G1	9.6	-0.7	8.9
13H	14	-12.7	1.3

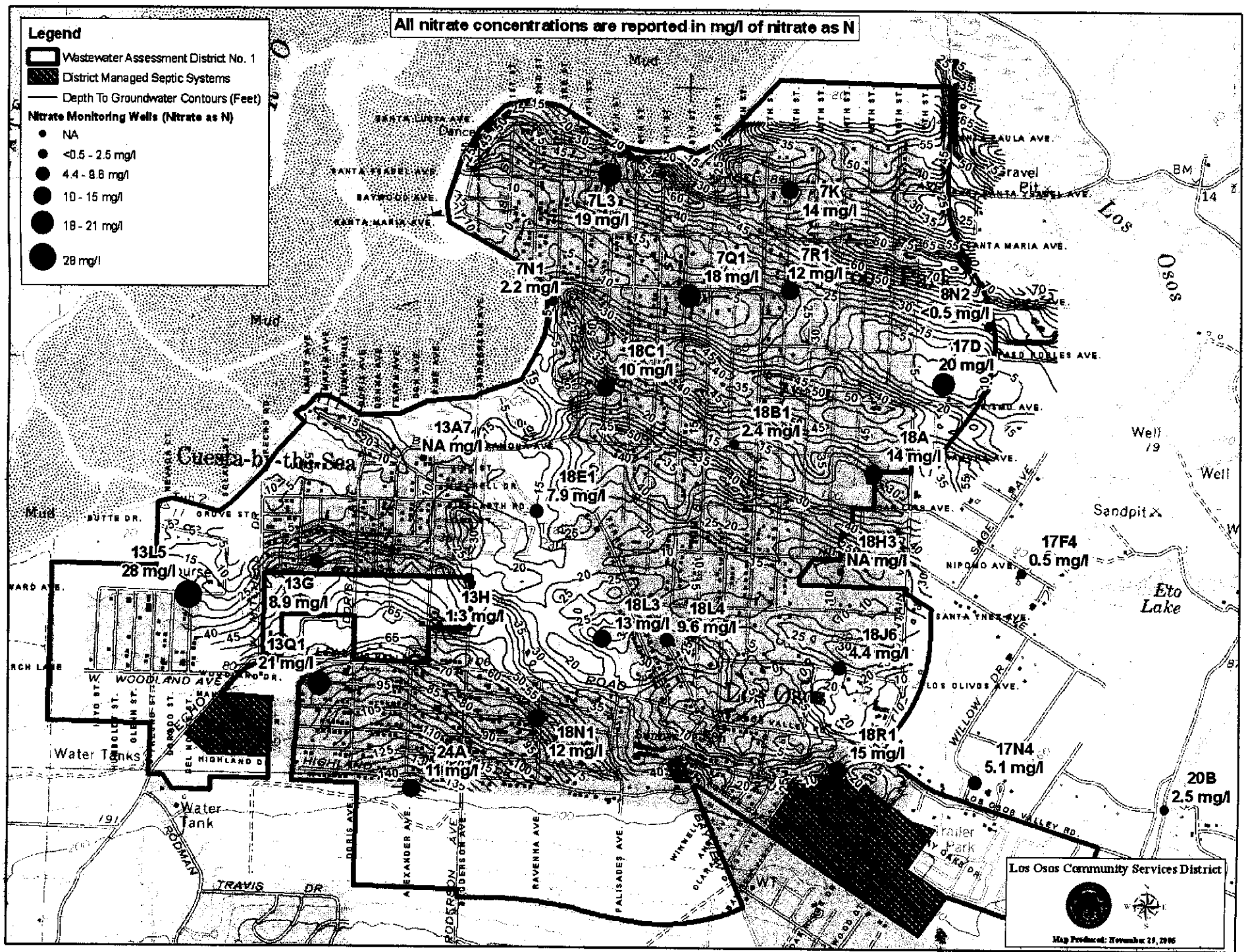
Total increase + 21.2

" decrease -88.3

Discrepancy + 67.1

Apr 05 248.3 (18H3 10)

05 Oct. 325.9
05 28 Nov 238.3
correction 87.6


All nitrate concentrations are reported in mg/l of nitrate as N
Legend
Wastewater Assessment District No. 1
District Managed Septic Systems
Depth To Groundwater Contours (Feet)
Nitrate Monitoring Wells (Nitrate as N)
NA
<0.5 - 2.5 mg/l
4.4 - 9.6 mg/l
10 - 15 mg/l
18 - 21 mg/l
28 mg/l
7L3 19 mg/l
7K 14 mg/l
7N1 2.2 mg/l
7Q1 18 mg/l
7R1 12 mg/l
8N2 <0.5 mg/l
17D 20 mg/l
18C1 10 mg/l
18B1 2.4 mg/l
18A 14 mg/l
13A7 NA mg/l
18E1 7.9 mg/l
18H3 NA mg/l
17F4 0.5 mg/l
13L5 28 mg/l
13G 8.9 mg/l
13H 1.3 mg/l
18L3 13 mg/l
18L4 9.6 mg/l
18J6 4.4 mg/l
13Q1 21 mg/l
18N1 12 mg/l
18R1 15 mg/l
24A 11 mg/l
17N4 5.1 mg/l
20B 2.5 mg/l
Cuesta-by-the-Sea
Los Osos
Eto Lake
Sandpit
Water Tanks
Water Tank
Trailer Park
Los Osos Community Services District
Map Produced: November 29, 2006

Subj: **Expert Opinion Statement for Bruce Paine**
Date: 3/21/2006 3:04:27 P.M. Pacific Standard Time
From: ckitts@calpoly.edu
To: antoinetty@aol.com

Dear Bruce Paine,

As I offered in our phone conversation, 3/20/2006, here is my expert opinion with regard to the study conducted by Cal Poly for the Central Coast Regional Water Quality Control Board titled "Identifying the Sources of *Escherichia coli* Contamination to the Shellfish Growing Areas of the Morro Bay Estuary". This study was not designed to identify problems with leaking septic tanks in Los Osos/Baywood Park. The data collected showed a high proportion of *Escherichia coli* from human origin to be present in 2 freshwater seeps that run into Morro Bay near Los Osos/Baywood Park. However, this is by no means proof of failing septic systems because alternate explanations are also plausible and cannot be ruled out from the information gained in this study.

Chris Kitts

--
****
Christopher L. Kitts, PhD.
Associate Director, EBI
Professor, Biological Sciences Dept.
Cal Poly State University
San Luis Obispo, CA 93407-0401
ph: (805)756-2949 fax:(805)756-1419
****

CERTIFICATE OF LEGAL RIGHTS

FOR CLAIM TO THE MINERALS IN THE EARTH AND THE WATER FLOWING (TO A DEPTH OF 500 FEET) UNDER THE REAL PROPERTY AT:

1061 Green Oaks Dr. Los Osos

APN # 074-407-013

THIS IS A RESPONSIBILITY I ASSUME GLADLY. I SWEAR MY SEPTIC SYSTEM WILL REMAIN FUNCTIONING PROPERLY AND I WILL NURTURE THESE VALUABLE ELEMENTS, PROTECTING THEM, TO THE BEST OF MY ABILITY, FROM ANY HARM, ESPECIALLY BY ANY ILL-INTENDED PERSON(S).

SIGNED: Antoinette Gray Payne NOTARY:

DATE: 3-13-06

WITNESS: Melissa Tucker

DATE: 3-13-06

CALIFORNIA JURAT WITH AFFIANT STATEMENT

State of California

County of San Luis Obispo } ss.

☒ See Attached Document (Notary to cross out lines 1–6 below)
☐ See Statement Below (Lines 1–5 to be completed only by document signer[s], *not* Notary)

Antoinette Gray-Payne
Signature of Document Signer No. 1

Signature of Document Signer No. 2 (if any)

Subscribed and sworn to (or affirmed) before me on this
13th (Date) day of March (Month) 2006 (Year) by
(1) Antoinette Gray-Payne
Name of Signer

☒ Personally known to me
☐ Proved to me on the basis of satisfactory evidence to be the person who appeared before me (.) (,)

(and
(2) _____,
Name of Signer

☐ Personally known to me
☐ Proved to me on the basis of satisfactory evidence to be the person who appeared before me.)

Bonita
Signature of Notary Public

SM01 BONITA GRANT SM01
COMM. #1481284
NOTARY PUBLIC-CALIFORNIA
SAN LUIS OBISPO COUNTY
My Comm. Expires April 6, 2008

Place Notary Seal Above

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document.

Further Description of Any Attached Document

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Document Date: 3/13/06 Number of Pages: 1

Signer(s) Other Than Named Above: NONE

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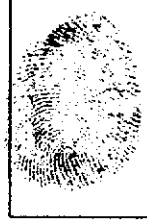
Top of thumb here	Top of thumb here



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A DETAILED EXAMINATION OF THE SAN LUIS OBISPO COUNTY NITRATE SAMPLING PROGRAM (1982-1997)

Citizens for Affordable Wastewater Systems
Wade D. Brim PE
September 6, 1997

October 19, 1997

EXECUTIVE SUMMARY
HIGH NITRATES ARE AN ARTIFICTION OF THE THE COUNTY NITRATE SAMPLING PROGRAM

Although there may be areas of high levels of nitrate in the shallower portions of the Los Osos Ground Water Basin, the high levels reported in the last 15 years are the result of improper site selection and sampling methods

On January 15, 1980 the consulting firm of Brown and Caldwell began the only complete "Water Quality Management Study" yet performed in this ground water basin.
In the process of evaluating water quality they found it necessary to fill in gaps in the distribution of data by installing additional "observation wells". These wells were not installed according to State of California Water Well Standards. They have no proper sanitary seal and after a period of time surface water can reach the ground water through the well. Samples bailed from such wells tend to represent the well and not the basin. The longer they are in place the more surface water will penetrate and the more water must be removed to get a valid sample. The County in sampling such wells, bails about 1/6 of the volume of water in the bore hole. Thus the method of sampling used by the county guarantees that the result will be inaccurate. These Wells were first sampled in June of 1982. In 1983 the County established a program to continue monitoring some of the wells used by Brown and Caldwell. Six of these B&C wells were retained. The basis for selection of sampling points has never been clearly explained. Some wells have been dropped. The remaining sampling points appear to be heavily weighted toward wells with high nitrate levels within the prohibition zone and low nitrate levels outside of he prohibition zone.

The appropriateness of the county well selection which tends to bias any statistical analysis has been frequently challenged. The program includes at least six sampling points with know local "point sources" of contamination. They should not be used as evidence of any general condition even in the shallow ground water. There is no evidence in the record of such contamination in the deeper aquifer of the ground water basin and ample evidence that surface water infiltration at improperly constructed and/or abandoned wells is the cause of such contamination in the shallow aquifer.

Eliminating these six wells from the county sampling program means that there is no well in the county sampling program showing nitrates in excess of the maximum contaminant levels for nitrates in drinking water

The author recommends that these wells be immediately sealed and abandoned according to State of California Well Standards and all records for the subject wells be expunged from the records.
New properly constructed observation wells, properly sealed and large enough to allow pumping of valid ground water samples should be installed at least 50 feet from each of the subject wells and extending at least 50 feet into the ground water to determine if indeed any change has taken place since June 1982.
He further recommends that Resolution 83-13, and any other action taken by the Central Coast Regional Water Quality Control Board or other agency, based on these data be seriously reconsidered; perhaps rescinded.

Wade D. Brim PE
Citizens for Affordable Wastewater Systems

EXPER, MUNICIPAL WELLS

DETAILED EXAMINATION OF THE SAN LUIS OBISPO COUNTY NITRATE SAMPLING PROGRAM

Wade D. Brim PE

Although there may be areas of high levels of nitrate in the shallower portions of the Los Osos Ground Water Basin, it is clear that the high levels reported in the last 15 years are the result of improper site selection and sampling methods used by County Engineering to collect the data.

On January 15, 1980 the consulting firm of Brown and Caldwell[1] (B&C) began the only complete "Water Quality Management Study" yet performed in this ground water basin.
In the process of evaluating water quality they found it necessary to fill in gaps in the distribution of data by installing additional "observation wells". Permits were taken by County Engineering in March of 1982 and are marked "exempt" on the records of County Environmental Health, which is apparently the "enforcing agency" in this county..

The wells were installed in June and July of 1982. They were not constructed according to State of California Water Well Standards[2] (Part I, sections 1 & 2) for "observation or monitoring wells"; nor do they conform to the definition of "Test Wells", "test holes or exploratory holes" under those same regulations.

Figure 2 shows a properly constructed observation well and a typical B&C well described in different parts of that report as sampling well, observation well and test well. The typical well used is 30S/10E-13Q1. Driller's report and log for this well is included in the appendix. The well was bored through firm stratified clay and sand material including at least two layers of gravel. Water was encountered at 90 feet and the boring terminated at 100 ft. The casing is 11/2 inch schedule 40 PVC perforated in the lowest 3 feet (presumably capped) The bottom of the bore hole was gravel packed from for 5 feet with # 20 Monterey sand. The casing terminates at about one foot below ground level with a slip cap. The bore hole terminates about 2 inches below the ground surface in a steel collar with loose fitting depressed lid. The Driller's Report describes a surface "sanitary seal" of one foot depth for each well and an additional "seal against pollution" from 8 feet to 12 feet of bentonite pellets independent of any specific strata. The remainder of the bore hole was backfilled with unconsolidated native material removed from the hole.
These wells do not have the proper 20 foot sanitary seal as defined under section 9, nor any sealing of gravel stringers between the surface and the ground water. After a period of time contaminated surface water can reach the ground water through the well. The winter of 1982/83 was very wet and the water quality samples taken before and after the heavy rainfall and runoff show that this is precisely what happened in each of these wells.

Samples bailed from these wells (following the procedure used by the County (see appendix for description) usually remove only about one sixth of the water in the bore hole and therefor tend to represent the well and not the groundwater. The longer such wells are in place the more surface water will penetrate and the more water must be removed to get a valid sample. In other words the method of sampling used by the county guarantees that the result will be incorrect. This is reflected in the erratic fluctuations in nitrates with time and rainfall rather than a steady increase or decline characteristic of changes in ground water from cultural changes.

Since 1983 the County has established a program to continue monitoring some of these wells.[3] The basis for selection of sampling points has never been clearly explained. As time went by some wells have been dropped without any explanation for doing so. Remaining sampling points appear to be heavily selected from wells with high nitrate levels within the prohibition zone and low nitrate levels outside of the prohibition zone.

The appropriateness of the county well selection which tends to bias any statistical analysis, has often been challenged. Six of these "wells" are listed below with a detailed explanation of why they are not valid sampling points representative of general conditions. Each of these six can be shown to have local point-sources of surface contamination. They are listed below with the reasons they should not be used as evidence of any general condition. These contentions are supported by the data from the CCRWQCB[4] data base as noted under each well listed below..

30S10E-13L5: This is an **observation well** installed by Brown and Caldwell next to the Golf course. After examining the data, they found that salt spray and subsequent over watering and fertilizing of the golf course greens and fairways lead to high nitrates, extremely high chlorides and TDS which did not represent conditions in the basin.
When this well was first sampled (06/18/82) the nitrate level was 35.44 mg/l (as NO_3) which is below the maximum Contaminant Level (MCL). A year and a half later (10/15/83) the nitrates had increased to 76.64 mg/l and seven months later (05/15/84) had increased to 111 mg/l. without any change of population or land use in the vicinity.

30S10E-13Q1: This **observation well**, located near the West end of Woodland, like the one above is subject to salt spray. Up gradient 1300ft is a horse boarding ranch with approximately 80 equine beasts on 5 acres of barren soil. Additional horses are located about 150 feet to the West of the well.
When this well was first sampled, the nitrate level was 47 mg/l (06/15/82) which is just above the Maximum Contaminant Level (MCL) of 45 mg/l. A year and a half later (10/15/83) nitrates had increased to 88 mg/l . For the next ten years while being sampled by the County the nitrates varied erratically from 64 mg/l to 107 mg/l
Brown and Caldwell stated that these two wells should be eliminated from Correlation analysis (p5.26)
30S10E-13H1 This is a private well in Cuesta by the Sea, not in use, 44 feet deep with no seal, shown on the sampling station listing as "gray water near by, easily contaminated from surface." (see Table 1 Location 9) The implication is that it is either used to dispose of gray water or is subject to surface inflow from gray water. This well should have been considered "abandoned" according to Part III sections 21-23 of Water Well Standards (WWS). The fact that the county has continued to use this and other wells in violation of these regulations and Chapter 7 of the California Water Code is creating a severe hazard of contamination to the ground water.
30S11E-18R1 This is an irrigation well 50 feet deep, without seal, installed in 1954 . This well produced reasonably good water (NO_3 well below MCL) until 1977. Between 1979 and 1981 A subdivision of 149 homes (Bayridge Estates) was developed in the upslope area to the South. All surface drainage terminated in a collection basin about 100 feet south of this well. In addition all sewage was collected in a battery of septic tanks adjacent to the collection basin. When that system was installed, nitrates in the well increased from no (0.0 mg/l) nitrates in 1977 to 30mg/l in 1981. Since that time both of these county operated systems have overflowed and nitrate (as NO_3) have reached as high 93 mg/l. This is not a general condition of high nitrates down slope of a subdivision. It is clearly a point source surface contamination easily identified from information in the CCRWQCB database). Present owners complain of Mosquitoes from collection basin.
30S11E-7Q1 This County well was constructed before 1959 without sanitary seal. The casing has rusted through and the well head has been submerged several times by standing surface water. The county abandoned the well in 1978 and has been left open to further surface water contamination.

The casing on this well should have been replaced and a sanitary seal provided years ago or properly abandoned by State Well Standards no later than 1979.

Elimination of these five wells from the nitrate database changes demonstrably the nitrate "contours" used by the county and the CCRWQCB to prove a generalized nitrate problem. Furthermore since the county program began in 1982, this means that **300 invalid data points** have been added which strongly skew the database. This information is in both the county and the CCRWQCB libraries..

30S11E-7L3 This observation well, when first sampled by B&C (06/15/82) showed nitrate levels at 19.05 mg/l, less than half the MCL. Sixteen months later (10/15/83) nitrates were measured at 85.5 mg/l. this is the highest nitrate ever reported for this well and is more than 4 times the original value, with no change in population or land use. Over the next ten years the reported nitrate figures varied erratically between 85.5mg/l and 35.9 mg/l

Eliminating these six wells from the county sampling for the last quarter of 1996 and the first 2 quarters of 1997 means that there is no well in the county sampling program showing nitrates in excess of the maximum contaminant levels for nitrates in drinking water I think the reports of high nitrate levels based on Sampling and reporting by the County Engineering department over the past 15 years, need to be reexamined. The reports are misleading. They imply a condition of high nitrate levels throughout the Los Osos Ground Water Basin which probably does not exist

By contrast let us examine two wells which remain on the sampling program within the prohibition zone.

30S11E-7N1 This is the CSA9 Third Street production well for which we have very complete and accurate data (see Table 1 location 17). It was reconstructed in August 1957 apparently to State Well Standards. It is sealed to 56 feet and perforated from 61 to 83 feet. It was tested by PG&E in August 1957 at 133 GPM against 223 feet of head. Standing water level in 1957 was 5 feet below the well head. In 1997 static water level was 4 feet.

This well is located down gradient from the densest populated area, very close to the bay. Nitrates in this well had never exceeded 8mg/l (as nitrate* see note below) until February 1982 when the county first started monitoring this well as part of the "Baywood Park Ground Water Study." At that time the nitrates appeared to jump from 7 mg/l to 22 mg/l. Currently nitrates are about 9 mg/l as nitrate.

30S11E-18J6 This is listed as an observation well is actually a deep well adjacent to the bay at Pasadena Ave. with an obstruction at 40 feet. It exhibits the generally poorer mineral quality of the deeper aquifer . Total Dissolved Solids (TDS), Electrical Conductivity, sulfates and bicarbonates are all about 5 times as high as well 7N1. Why this well is included is not clear.

FINDINGS:

1. All of the observation wells installed by Brown and Caldwell in June of 1982 appear to have provided satisfactory data the year they were installed. Since they had no standard seals they should have been abandoned according to state well standards. They were not filled and abandoned as required, but were retained by the county and sampled for the next 14 years. After heavy rainfall in the winter of 1982-83 they were sampled by the County and nitrates were found to have all increased between 200% and 400%. They were sampled by bailing 4 times the inner casing volume (about 1 gallon) . The bore hole volume is about 6.5 gallons (assuming a voids ratio of 25%)

2. Two of these observation wells were found by B&C to be subject to local special conditions of point source contamination. **The Professional Consulting Engineers (B&C) did not use the data from these wells and stated that they should not be used.** County deliberately chose to ignore this advice. Two additional improperly abandoned shallow wells were acknowledged by the County to be contaminated by surface water containing septic wastes or gray water but were selected for use anyway.. A Third private well without sanitary seal was contaminated by installations permitted by the county and now owned and operated by them.
3. Although some of these wells seem to have dropped below the Maximum Contaminant Level (MCL) occasionally since 1953 all of these wells and only these wells have been retained on the sampling program. None of these wells should have been retained as representative of nitrate conditions in the ground water basin.
4. There are properly constructed shallow municipal and private wells within the prohibition area which produce excellent water of high mineral quality which meets all public health standards. Thus the upper aquifer is not generally contaminated.

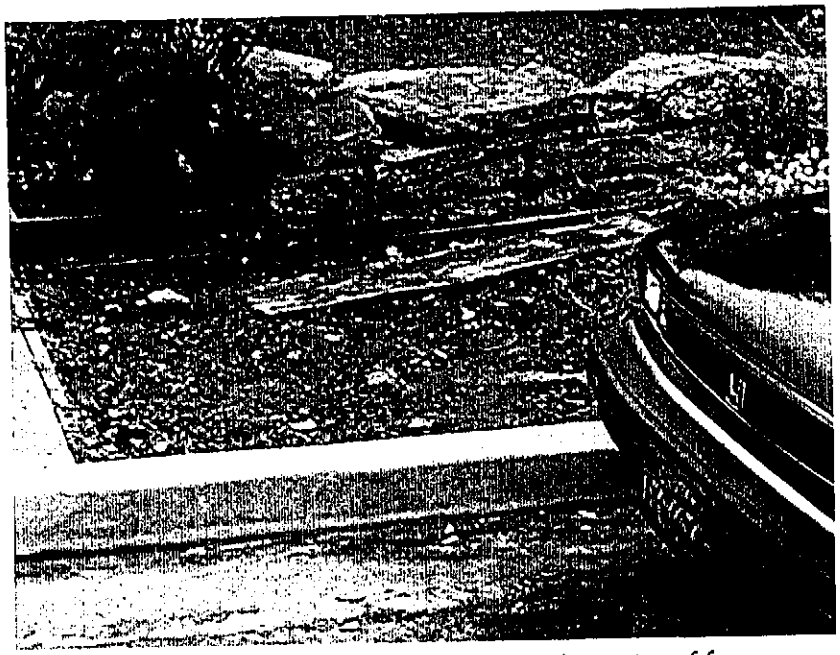
CONCLUSIONS:

1. All sampling done from the B&C "observation wells after 1982 was sampling trapped surface water from the annulus of the well; not groundwater. All of these well should have been backfilled and abandoned according to State Well Standards.
2. All of the current high nitrate sampling wells on this program, with the exception of 30S11E/18R01 which is still in use, are in violation of State Well Standards because they have been improperly abandoned and are contributing to contamination of the ground water by direct introduction of surface water
3. Whether deliberately or through ignorance; **every data point showing nitrates in excess of the MCL from 14 years of this program is invalid.**
4. Degradation of well 30S11E-18R1 resulted from action permitted by the County and is now being degraded by facilities owned and operated by the county. It is the responsibility of the county to correct this problem.
5. Once the invalid sampling data has been eliminated, **the remaining data does not support a conclusion of general high nitrate concentrations in the ground water basin**. It appears to be an artifact of improperly collected data.

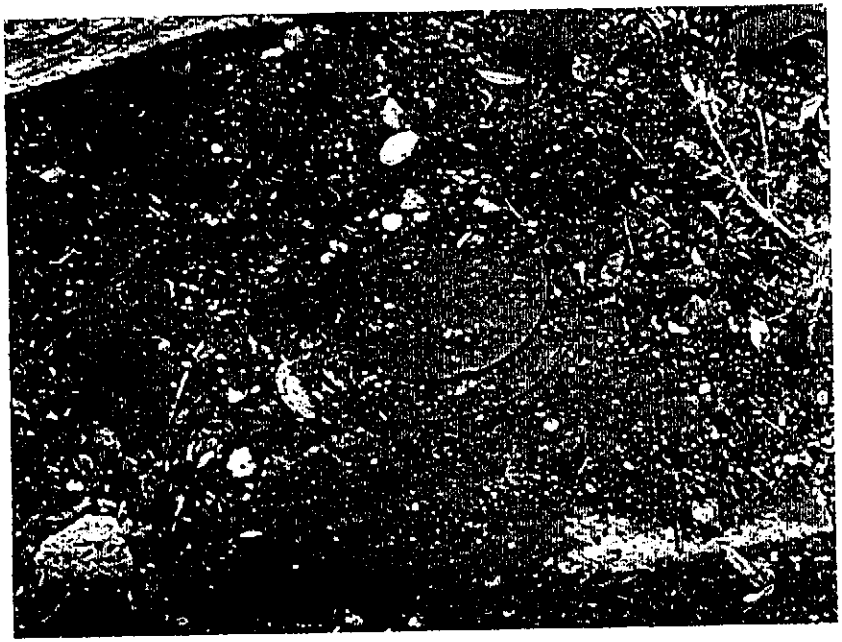
RECOMMENDATIONS:

1. Since **there are no valid nitrate records from the wells cited in this report** all of these six wells should be properly abandoned according to State Well Standards as required by law.
2. **All records from 1983 through 1997 should be expunged from the record** with the information listed herein cited in the record as the reason therefor. No use of this data should ever be made statistical or otherwise.
3. New properly constructed wells with proper seals should be installed at least 50 feet from the current wells to continue the Brown and Caldwell monitoring program to determine if there is any increase or decrease in nitrates in the shallow portions of the basin. At least some of these wells should extend at least 50 feet into the upper aquifer. Stratigraphic data should be collected with great care to supplement current meager data.
4. If Well 3011E-18R1 is still in use for domestic purposes it should be replaced by the county with a new well, properly constructed to State Standards and the existing well properly back filled with grout and abandoned.

Well located to left of car bumper in lower planter area.



Closer view of well; circular well cover in center of frame.



Close-up view of well cover.

Well cover removed; illegal well as it is below grade and hole in cap.

41128 #305/10E-13906 @ 333 Woodland Dr.

Well located in center of frame under a few feet of iceplant.

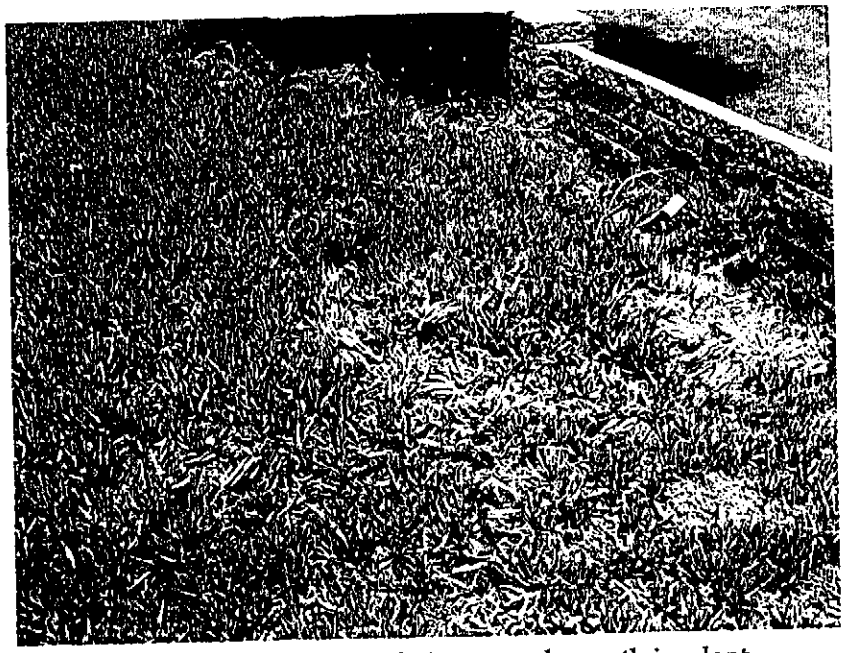
View of metal well cover.

Well cover removed; illegal well as it is below grade and hole in cap.

Area of well subject to periodic flooding; potential well contamination.

41128 #30S/11E-18J06 West of 1298 Los Olivos Ave. (open field)

State (Monitoring) Well # 30S/11E-18B01 located at NE corner of 10th Street and Ramona Avenue

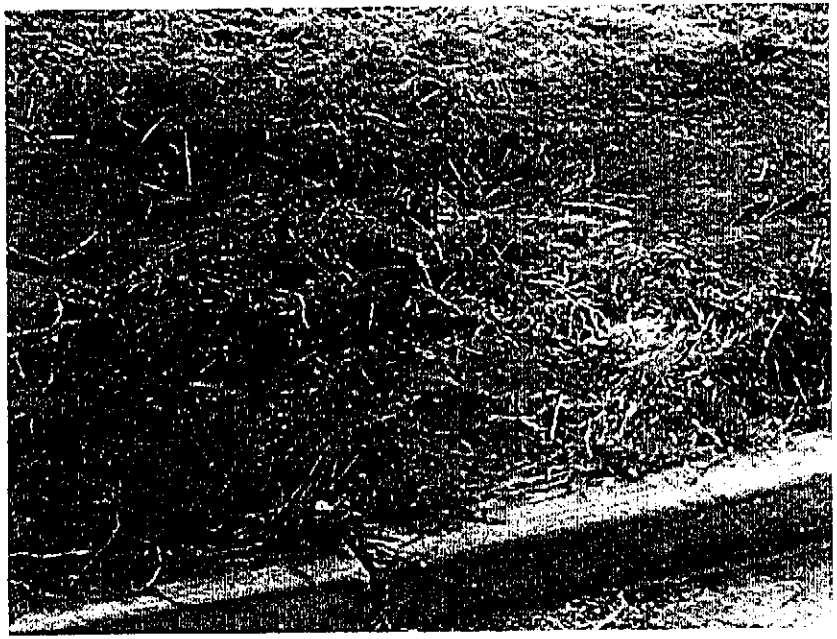


Well located in center of picture underneath iceplant.

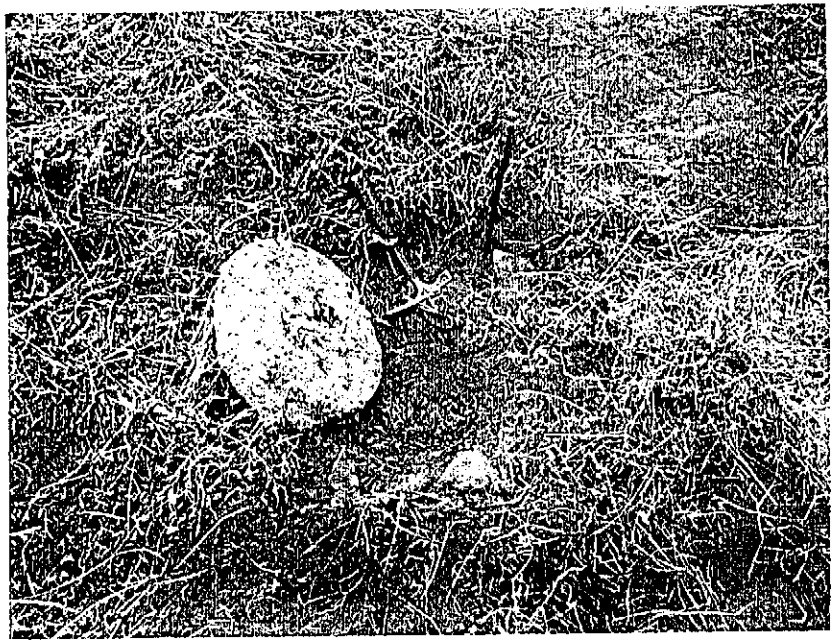
Closer view of well location.

Iceplant removed; note depth of well lid below iceplant.

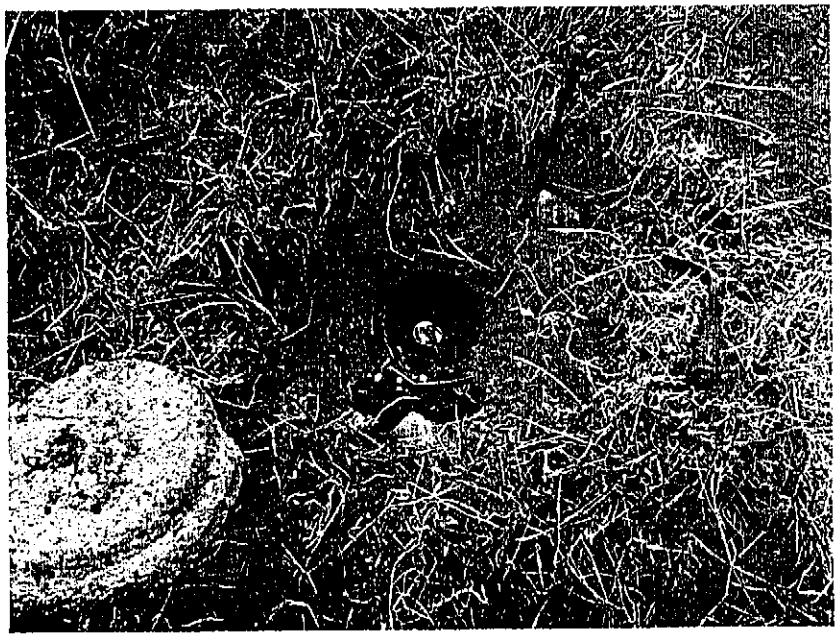
Well cover removed; illegal well as it is below grade and hole in cap.



Well is located under vegetation; screwdriver marks location.



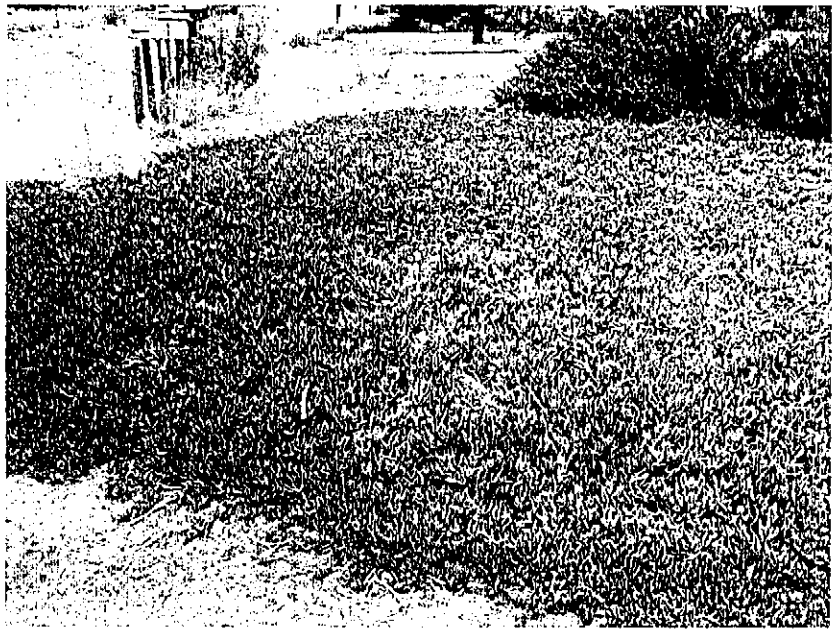
Well cover is located under concrete.



Well cover removed; illegal well as it is below grade and hole in cap.

A picture tells a 1000 words.

41128 #305/10E-13L05 NW Corner of Howard Ave. & Del Norte St.



Well is located left from center of frame.

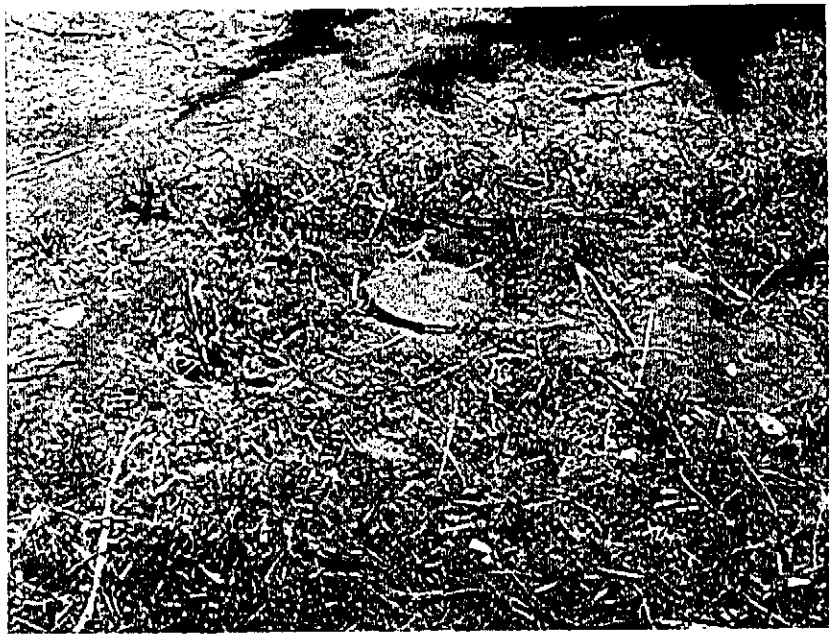
Close-up of well location depicted by top of hammer.

Iceplant is removed; note depth of well cover.

Well cover removed; illegal well as it is below grade and hole in cap.

41128 #305/11E 07R01 NE Corner of 12th St. & El Moro Ave

Well is located in northwest greenbelt of street.



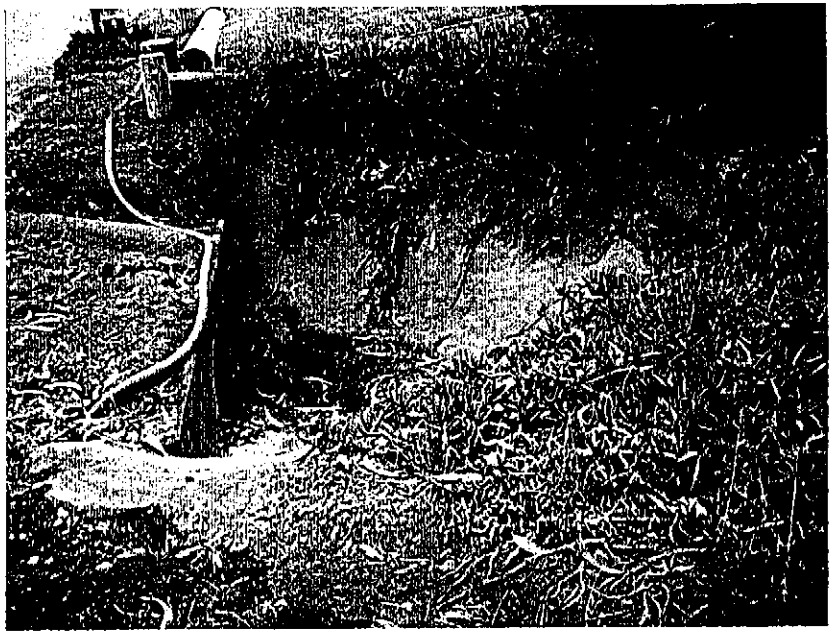
Close-up of well; illegal well as it is below grade and had hole in cap.

#30S/11E-07L03

NW Corner of 5th and San Ysabel Ave

Runoff from horse stable; collected sample at SE corner of Sea Horse Lane and Highland Drive

Looking south a couple of hundred yards from horse stable;
Note: analytical results show runoff is major surficial nitrate source.



Sample point for stable runoff is in culvert; culvert located at lower left-hand corner of the previous frame.

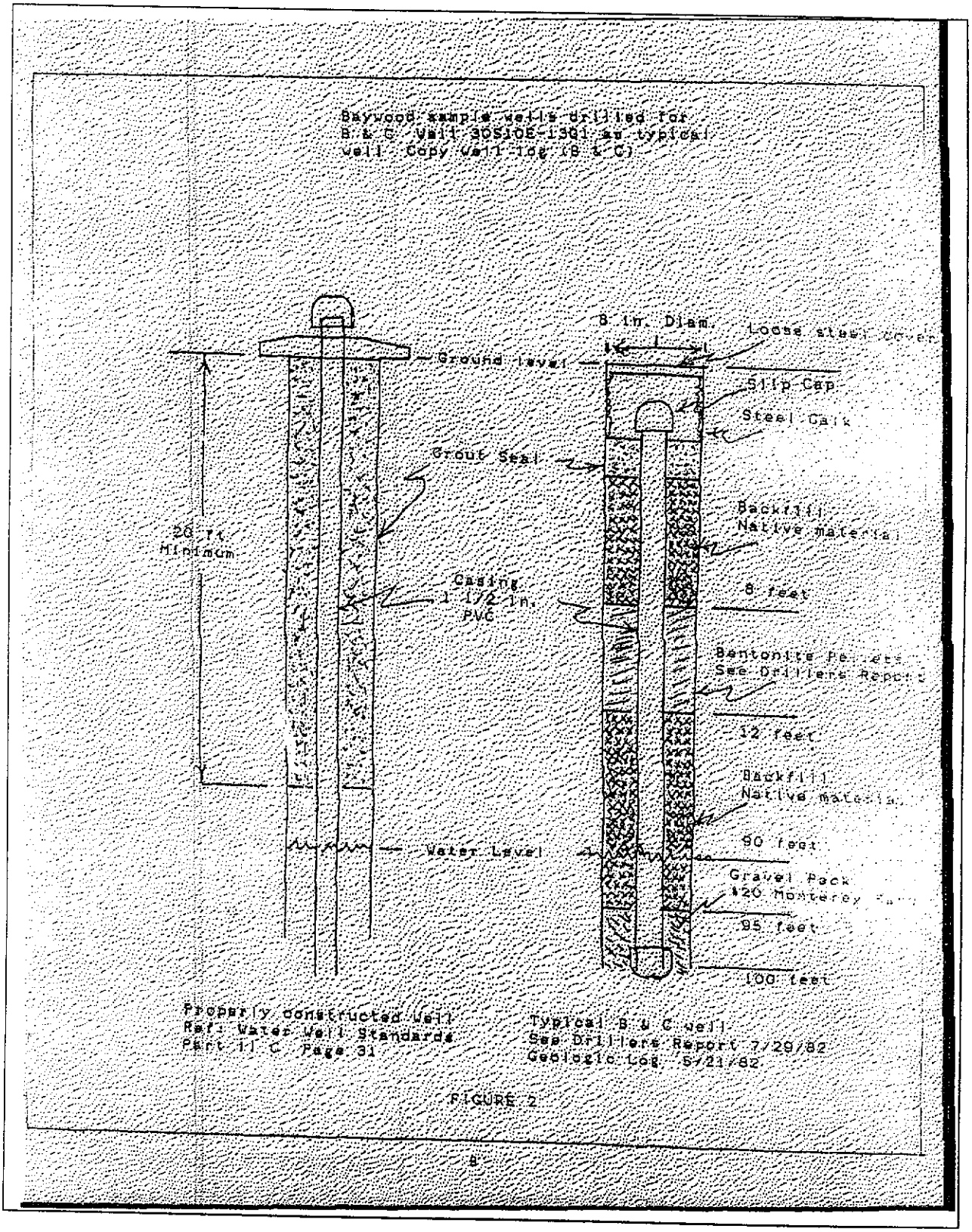
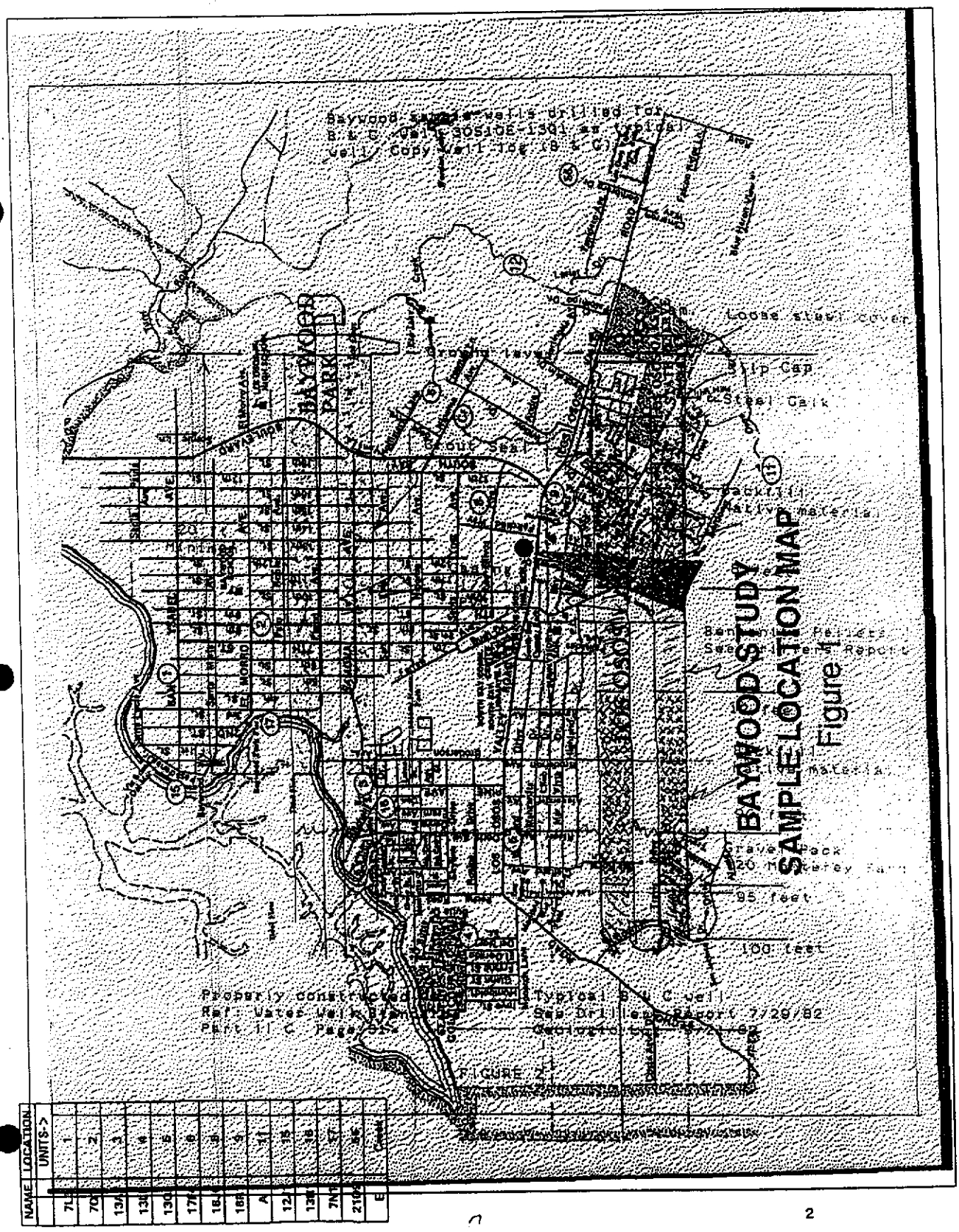

Baywood sample wells drilled for
B & C Well 30S10E-13Q1 as typical
well. Copy well log (B & C)
8 in. Diam.
Loose steel cover
Ground level
Slip Cap
Steel Calk
Grout Seal
Backfill
Native material
20 ft.
Minimum
Casing
1 1/2 in.
PVC
8 feet
Bentonite Pellets
See Drillers Report
12 feet
Backfill
Native material
90 feet
Water Level
Gravel Pack
#20 Monterey Sand
95 feet
100 feet
Properly constructed well
Ref: Water Well Standards
Part II C. Page 31
Typical B & C well
See Drillers Report 7/29/82
Geologic Log 5/21/82

FIGURE 2

8


BAYWOOD STUDY
SAMPLE LOCATION MAP
Figure 1
Baywood sample wells drilled for
B & C Well 30S10E-13Q1 as typical
well. Copy Well log (B & C)
BAYWOOD PARK
Loose steel cover
Slip Cap
Steel Gate
Grout Seal
Backfill
Native material
Benthic Pellets
See Drillers Report
Gravel Pack
20 Monterey Sand
95 feet
100 feet
Properly constructed
Ref: Water Well Standards
Part II C Page 91
Typical B & C well
See Drillers Report 7/29/82
FIGURE 2
NAME
LOCATION
UNITS->
1
2
3
4
5
6
8
9
11
15
16
17
55
Creek
7L
7Q
13A
13B
13C
17R
18L
18R
A
12J
13R
7N
21Q
E

2

TABLE 2
GROUND WATER MONITORING WELL DATA

Well Numbers	Address	Well Depth in feet	Screen interval in feet	Casing Diameter in inches	Surface Elevation Above MSL* in feet	Groundwater Elevation above MSL* in feet 4-6-92
30S/10E-						
12J1	Pasadena Drive**	389	349-389	1.5	6.5	-2.0
13A7	Pine Street	40	30-40	8.0	11.6	7.0
13H1	Mitchell**	44	36-44	8.0	14.04	8.1
1315	Howard/Del Norte**	35	32-35	1.5	29.98	7.18
13Q1	Woodland/Rieger**	100	97-100	1.5	98.61	8.71
30S/11E-						
7N1	CSA9A# 3rd St.**	80	7-80	8.0	9.13	9.1
7L3	CSA9A S Ysabel/5th	45	43-45	1.5	43.32	9.54
7K2	CSA9A S Ysabel/12th	65	62-65	1.5	92.80	40.7
7Q1	CSA9A 8th St**	ND	29-75	8.0	23.96	22.3
7R1	CSA9A El Moro/12th	30	27-30	1.5	58.75	40.9
8N2	So Bay Blvd N	45	42-45	1.5	97.75	66.1
8N3	So Bay Blvd S	90	87-90	1.5	97.75	29.0
18D2	Core-Ramona	88	73-88	6.0	29.90	3.1
18E1	Shores-Ramona	100	40-60	6.0	37.73	12.7
18L3	CSA9A Palisades Ave	55	52-55	1.5	83.47	43.9
18H3	Harrison-Nipomo	110	50-100	6.0	107.56	47.8
18L4	CSA9A 2060 Ferrell	25	22-25	1.5	101.13	88.28
18N1	Manzanita/Ravena	90	87-90	1.5	106.82	25.2
18R1	Bender-Garage**	50	40-50	8.0	168.64	159.34
	13th Street***	68	58-68	4.0	92.00	38.0
	14th Street***	67	57-67	4.0	112.00	56.0
BEV	Bayridge Estates***	38	18-38	4.0	207.00	175

3900-042table1.qpb

* MSL Mean Sea Level
\# CSA9A County Service Area 9A
** Currently Active Groundwater Sampling Sites
*** Test Sites For This Study
ND No Data
The data in the table is provided by San Luis Obispo County Engineering Department

AFFIDAVIT OF WADE D. BRIM, P.E.

I, Wade D. Brim, herein declare that:

1. I reside at 764 Mar Vista Drive, Los Osos. I am a Registered Engineer of the State of California (CE13743) and I am certified as a Water Treatment Operator Grade IV, by the California Department of Health Services #02187.
2. I have a Bachelor of Science in Civil Engineering from University of Connecticut, dated February 1950, and have taken numerous post graduate courses and professional seminars included the Ground Water School run by the U.S. Geological Survey.
3. I retired in 1986 after thirty-three years of professional experience with the State of California, twenty three of these with the Department of Water Resources
4. From 1968-1986 I was Chief, Civil Engineering Section, Southern Field Division, Department of Water Resources (DWR) where I was responsible for Dam and Aqueduct safety monitoring for the portion of Department's water project facilities South of the San Joaquin Valley. This included twelve miles of tunnel through the Tehachapi Mountains and the San Bernardino Mountains, more than 100 miles of open aqueduct, 4 major dams and reservoirs, 40 miles of large diameter high pressure (over 1800 feet of head) pipeline, and all appurtenant structures. I supervised all aspects of water quality monitoring and control; development of water treatment systems, and regulatory interface with State, County and local agencies and contractors.
5. From 1963-1968 I was an Associate Engineer, in the Water Quality Section, Southern District DWR My duties included providing advice to the Water Pollution Control Boards and providing "Protection Projects" for several threatened coastal ground water basins barriers against seawater intrusion and other contamination problems.
6. I started my career with the State of California, in 1953 as a Junior Civil Engineer (entry level) with the Division of Highways, where I worked in the hydrogeology and hydraulics section. I was an expert witness on the hydrology of San Francisco Bay. I left as an associate Engineer in 1963 to accept a position with DWR.

7. Prior to that, I worked for four years as a Civil Engineer for the Alaska Road Commission, for the U.S. Army Corps of Engineers, and in private industry under contract to that agency both in this country and abroad.

8. I was approached by Matthew Nasuti, and he requested that I review, investigate and comment on four public statements made by the Los Osos Community Services District ("CSD") regarding its proposed Sewer Project.

STATEMENT NO. 1

9. The first CSD statement provided to me is one that is set out in its Internet Web Site ("www.losososcsd.org"):

> "Every credible study of Los Osos nitrate contamination conducted over the last twenty years has concluded that septic tanks discharge is the principal source of nitrate contamination (in the groundwater)."

10. My review of the literature reveals that, although several studies over the last 30 years did posit that conclusion; a critical examination of such reports indicates that the conclusion is based on a series of unfounded assumptions taken from earlier reports. No credible study supports such a conclusion backed up by reliable data to establish such a connection. There was a 1995 Metcalf & Eddy report. The Metcalf & Eddy report however is of dubious merit. Metcalf & Eddy's report was unanimously rejected by the County's 12 person Technical Advisory committee appointed by the Board of Supervisors and by the Board of Supervisors themselves in a 4-1 vote. The contract which authorized this study was a "sweetheart deal" extension of an existing contract with the County of San Luis Obispo. It was never even advertised for bid. It is simply a self validating tool to convince government agencies to hire Metcalf & Eddy to design and assist in the construction of a large sewer project.

11. Contrary reports include:

A. The San Luis Obispo County Nitrate Technical Advisory Committee's 1992 - 1994 study and report;

B. The October 6, 1982 letter report of Los Osos County Chemist Percy Garcia, who refuted the claims that urbanization in the area was resulting in a correlated increase

in groundwater nitrate levels; and

C. My own 1997 report, analyzing the County nitrate monitoring well program.

12. In conclusion, this First Statement of the CSD has no factual basis. There is no reliable evidence that septic systems, in general, in Los Osos, are a source of the nitrates being detected, and there is no evidence at all that they are a "primary" source of the nitrates. The CSD may assume this, but they cannot form a scientific opinion. There is no factual data that has been currently generated to support such an opinion. In fact the CSD is serving water to the public from a well in the "Upper aquifer", which has produced excellent quality water for nearly 50 years with no evidence of excessive nitrates

STATEMENT NO. 2

13. The CSD sent out a general mailing pursuant to Proposition 218 regarding the proposed Assessment District Vote in 2001. According to law, this must be a truthful and unbiased statement. The statement was:

> "Nitrate levels in shallow groundwater and wells will be made safe" (by the Sewer Project).

14. My investigation has revealed two definite sources for the nitrates being detected in the upper regions of the groundwater aquifer underlying Los Osos. The first source is extensive acreages of agricultural lands lying Easterly of the community, plus five horse farms/stables. One farm that has a dense populations of horses and no residual vegetation, lies uphill in close proximity to residential areas and to monitoring and water supply wells. The second source is a large amount of surface water runoff from the surrounding water shed, inundating and flowing into old improperly abandoned wells, including those installed in 1982 for Brown & Caldwell (B&C). I have personally inspected 10 "suspect" wells in the community. These are wells which the county as sampled four times each year since 1982 and published the data as indicating nitrates in the ground water. Four of these wells were B&C wells out of ten which were auger drilled by County Engineering under permit from DWR and the Coastal Commission. When first drilled they all reached good quality ground water . Only

one showed high nitrates near the EPA maximum contaminate level. But they were not constructed in conformity with State Well Standards and the next time they were sampled and every time thereafter, the showed greatly increased Nitrate levels and remained that way for the next 18 years.

15. My review of the nitrate data from the County and the RWQCB data bases indicates that the pattern of nitrate concentrations with time is not consistent with a ground water basin subjected to a systematic change such as increasing population or septic tank discharge. In fact the nitrate levels from each well are so erratic, both with respect to time and in comparison with other chemical factors (such as chlorides) that they seem to indicate problems with data collection and analysis or some local point source contamination. *Any statistical analysis of these data will be badly skewed (distorted) by the sheer number (more than 500) of erroneously high readings from these suspect B&C wells.* Most of them are located down gradient from surface nitrate sources, they are mostly below the ground surface (which means you have to dig down to find them) and they all were installed without sanitary seals or any barrier that would prevent infiltration of surface water. The remaining wells are old irrigation or domestic wells which are no longer used for their original purpose and should have been abandoned and backfilled with cement slurry to protect the ground water . Some are even missing solid covers. These wells, which have been used over the years by the County of San Luis Obispo for its nitrate sampling, are not measuring nitrates in the ground water, but surface water infiltration and are in fact instead direct conduits for surface nitrates to flow directly into the groundwater. The continued use of these wells, improperly abandoned or constructed in violation of " State of California Well Construction Standards," constitutes a serious threat to the ground water basin and the waters of the state contained therein. Attached to this Affidavit is a true and correct copy of my September 6, 1997 report cited in 11C above, which was provided to both the County and RWQC.

16. One of the wells that I examined which is no longer used by the County for monitoring but has not been properly abandoned and backfilled, is the Chevron well (30S/11E-18Q01)

which is directly responsible for the current costly contamination of the Los Osos ground water with MTBE.

17. However, another of the Wells I examined is the CSD Third Street production which is in the upper aquifer and from which the District serves water to the public under jurisdiction of County and State health departments. It is located within forty feet of the Bay in an area that is most subject to surface water flooding. This well was redrilled in 1957 with a proper sanitary seal. Nitrate levels at that time were 18mg/l (just over one third of the MCL). On May 8,2001 nitrate levels were 17 mg/l.

18. Besides inspecting these wells and seeing the direct proof of this, there is an indirect source of proof. Los Osos did not have a significant nitrate problem until 1983 the year after the Brown & Caldwell wells were installed. It is not a coincidence. These wells are a significant cause of the problem and it is incredible to me that the County and State of California would permit, what are now illegal wells, to continue to contaminate groundwater supplies. These wells should have been sealed off long ago. No valid evidence exists that the CSD Sewer Project will have any impact in lowering groundwater nitrate levels. The CSD is operating under the false premise that the septic systems are the primary cause of the nitrates indicated by the monitoring program. If the septic tanks were the source, requiring only part of the community to abandon their septic systems is illogical. The fact is that unless and until the current illegal wells are sealed off, and the contamination they caused is pumped out, nothing will improve groundwater nitrate levels. In addition, the disturbance of shallow ground surface by the trenching stripping and backfilling of many miles of pipe line, to say nothing of the distribution of vast quantities of dust from such operation will in all probability distribute even more nitrates over the basin and into the bay

STATEMENT NO. 3

19. The CSD sent out a general mailing pursuant to Proposition 218 regarding the proposed Assessment District Vote in 2001. According to law, this must be a truthful and unbiased statement. The statement was:

"Seawater intrusion into deeper groundwater levels will be made safe." (by implementation of the Sewer Project)

20. I have studied and am very familiar with seawater intrusion problems in coastal ground water basins. If there is seawater intrusion in the deeper aquifer, which is not at all certain, the Sewer Project, in its current form, is not designed to have any impact on either the lower aquifer or any seawater problem it might have. There are several ways to have an impact on deep aquifer seawater intrusion. The first is to slow the rate of intrusion by curtailing pumping of the lower aquifer for drinking water purposes. This is not likely to happen in Los Osos as the CSD is proposing a "full build-out" of the community which could increase the population by up to 100%. The Sewer Project would therefore facilitate more pumping of groundwater to serve the huge population increase and would cause an aggravation of any seawater intrusion problem, instead of any mitigation.

21. A second way to impact saltwater intrusion is to actually inject or directly recharge the lower aquifer, but that also is not part of the current Sewer Project design. No certifiable proof has ever been offered that the current sewerage plan can recharge even the upper aquifer and meet Title 22 requirements.

22. In conclusion, this Third Statement of the CSD is without any factual basis. There is no evidence that the CSD Sewer Project will curtail any saltwater intrusion or directly recharge the lower aquifer. In fact, the Project should significantly accelerate any saltwater intrusions that might be occurring, and would further drain the low aquifer.

STATEMENT NO. 4

23. The CSD sent out a general mailing pursuant to Proposition 218 regarding the proposed Assessment District Vote in 2001. According to law, this must be a truthful and unbiased statement. The statement was:

"The Morro Bay Estuary will be protected" (by implementation of the Sewer Project)

24. I am very familiar with the coastal hydrogeology in this area and all the work conducted to

date by the various regulatory agencies. A mathematic model might be created which would show a statistical likelihood that some of the upper aquifer water underlying Los Osos, could be under sufficient hydraulic head that it could be pushed into the Morro Bay area. The problem with this, is that certain people then jump to the conclusion that nitrates in the upper aquifer are entering the Bay itself. There is insufficient data to make this leap. The Los Osos ground water data shows that nitrate levels generally and in some cases substantially decline as one approached Morro Bay. In addition, any residual amounts of nitrates that may be in the aquifer water when it encounters the brine waters of Morro Bay, would have to pass up through 20 to 30 feet of anaerobic bay mud and would surface as nitrogen gas before they actually entered the Bay. There is no evidence that this is occurring and it is highly unlikely that it is. The wide spread and lush riparian growth at the edges of the bay provides plenty of evidence that surface waters, probably high in nitrates and other nutrients are reaching the fringes of the Bay, but there is no conceivable scenario under which this can be attributed to septic systems in the community.

25. There is also a claim by the CSD that the Sewer Project will address standing water in Los Osos that is a source of surface nitrates entering Morro Bay. This admission by the CSD of surface water nitrates entering the bay should be noted, but there is no evidence that this standing water is being caused by septic systems backing up, and there is no perennial riparian growth typical of rising water. This standing water occurs only in periods of high rainfall and clearly results from uncorrected storm runoff flooding, but drainage and flood control are not a part of this proposed Project. A Drainage Plan could cost an additional twenty million dollars. The Los Osos community is semi-agricultural and has several horse farms within the community as well as high natural nitrate levels in the surface soils. These are clear and obvious sources for the surface nitrates that the Sewer Project cannot and is not going to address.

26. In conclusion, this Fourth Statement of the CSD has no factual basis. There is insufficient evidence that the CSD Sewer Project will have any impact at all on nitrate levels in Morro

Bay. Someone from CSD may speculate as to this, but they cannot form a scientific opinion as there is no factual data that has been currently generated which would support such an opinion.

CONCLUSION

27. After reviewing the "goals" of the CSD's proposed Sewer Project, I find no scientifically valid evidence that the Sewer Project will be able to achieve any of the goals for which it is being designed, except the political one of permitting expansion of the population of the community. The most likely scenario is that $100 million will be expended, significant physical disruption will occur in the town, a significant number of low income, retirees and disabled persons in the Prohibition Zone will face tremendous financial burdens, the community will have to find a home for an endless supply of sewage sludge that the treatment plant will generate, the community will be stuck with a sewage treatment plant in the middle of its downtown business district, and in the end, there will be no detectable improvements in groundwater quality, and no improvements in surface water quality in Morro Bay.

I have personal knowledge as to the above matters and if called upon, I could and would competently testify thereto. After being duly sworn, I swear under penalty of perjury, that the foregoing is true and correct and that this affidavit was executed on August 17, 2001 in Los Osos, California.

aug 17, 2001

WADE D. BRIM, P.E.

Subscribed and sworn to before me this 17th day of August 2001

Notary Public in and for the City of Los Osos, County of San Luis Obispo, State of California

BONITA GRANT
COMM. #1258078
NOTARY PUBLIC-CALIFORNIA
SAN LUIS OBISPO COUNTY
My Comm. Expires March 24, 2004

AFFIDAVIT OF R. GLENN STILLMAN

I, R. Glenn Stillman, herein declare that:

1. I am Vice-President and Principal Engineer with Alaska Petroleum Environmental Engineering, Inc. that has an office in Garden Grove, California.

2. I have a Bachelor of Science in Chemical Engineering from the University of Illinois-Chicago, a Masters of Science in Petroleum Engineering from the University of Alaska-Fairbanks, and have completed all course work at the University of Alaska-Fairbanks for a Masters of Science in Environmental Engineering. I have worked in the environmental, construction and petroleum industries for over 20 years. Since March 1991, I have held California Contractor's License 615579. The classifications under this license are General Engineering "A", Hazardous Substance Removal and Remedial Actions Certificate ("HAZ"), Asbestos Certification, and C-57 (Well Drilling).

3. During my career, I have designed and drilled hundreds of wells including oil production wells, injection wells, potable water wells, water and waste disposal wells, groundwater remediation wells, and groundwater monitoring wells. I have also inspected and sampled hundreds of wells. Finally, I have been involved in the plugging and abandonment of scores of these wells. I am familiar with United States Environmental Protection Agency (USEPA) and State of California requirements for the proper installation of various wells, and the requirements for their closure. I have worked in the past with various California Regional Water Quality Control Boards, including those at Los Angeles, Santa Ana, San Diego, San Francisco Bay Area, Lahontan, and North Coast Regions.

4. I was retrained by the Law Office of Matthew J. Nasuti to investigate and potentially provide expert testimony in a federal lawsuit regarding the proposed Los Osos sewer project (hereafter referred to as the "Sewer Project"). My investigation has resulted in the following conclusions:

5. There is nitrate contamination at various locations in the upper aquifer under Los Osos in concentrations that exceed the Maximum Contaminant Level (MCL) as promulgated by the USEPA. The MCL for nitrate reported as nitrogen is 10 milligrams per liter (or 45

milligrams per liter for nitrates reported as nitrates).

6. Based on my investigation, neither the California Regional Water Quality Control Board-Central Coast Region (RWQCB), the County of San Luis Obispo, nor the Los Osos Community Services District (hereafter collectively referred to as the "Agencies") has adequately investigated the sources of the groundwater contamination. The Agencies contend that the nitrate contamination is due to the lack of separation (i.e., distance) between residential/business sewage treatment systems (i.e., septic tanks, cesspools and leach fields) and groundwater. In order to "correct" the nitrate problem, the Agencies have mandated the construction of a $100,000,000+ sewage treatment plant that would replace the existing residential/business systems in the area of what is been specified as the "Prohibition Zone". However, the Agencies have not proposed a plan for addressing the existing nitrate contamination (i.e., from "suspect" systems) or contamination that is being introduced into the upper aquifer from sources outside of the Prohibition Zone. As a result the Sewer Project is premature and potentially unnecessary.

7. Some of these "suspect" septic systems appear to be within the Prohibition Zone while some of them appear to be outside of it. As a result, the nitrate "problem" will not be solved by a partial Sewer Project that only encompasses a part of the community, as there will always be a "source" of nitrate contamination present. Other "sources" in Los Osos such as the golf course (that are notorious for over fertilizing) and the horse stables are not even taken into consideration.

8. A prime example of a "suspect" septic system is the one that was installed in 1981 in a residential neighborhood inside the Prohibition Zone called Bayview Estates; for whatever reason this neighborhood was excluded from the Sewer Project by the Agencies. All of the houses in this residential neighborhood are on a hillside; their sewage gravity flows to a series septic tanks located on the north side of Bay Oaks Drive. The septic tanks are located in an area subject to flooding/ponding. The evidence of this is set forth in Exhibit A which contains true and correct copies of photographs that I took. This sewage is pumped to a leach field on top of the hillside. There is a potable water well (State well #30S/11E-18R01) located less than 150' north from these septic tanks at 1301 Los Osos Valley Road; the real estate office located on this

property is visible in the pictures. This potable well has been sampled from 1954 through 1993; the nitrate concentrations were always less than the MCL until after the Bayview Estates system was installed in 1981. Shortly thereafter, the nitrate concentration dramatically increased, and has exceeded the MCL since 1983. A true and correct copy of the Agencies nitrate data for this well is contained in Exhibit B. This data clearly shows that the Bayview Estates treatment system is inside the Prohibition Zone, has impacted the upper aquifer and has been excluded from the Sewer Project. Apparently, the RWQCB has issued numerous Notice of Violation's to Bayview Estates.

9. There does not appear to be any "rhyme or reason" as to how the Agencies established the boundaries for the Prohibition Zone. I could not find any Agencies documentation that set forth their criteria. The location of the Prohibition Zone (area requiring the Sewer Project), the Los Osos Groundwater Basin (area of the aquifer), and the Hydraulic Basin Boundary (area of the watershed that feeds the groundwater basin) are depicted on a true and correct area map contained in Exhibit C. The Agencies have nitrate data for about 100 groundwater wells in the Los Osos Groundwater Basin; nitrate concentrations that exceed the MCL have at some time, or during the last sampling event, been detected in 34 wells. Some of these wells are in areas that have been designated by the Agencies as being outside the Prohibition Zone. Because huge areas of potential nitrate sources are not being addressed by the Sewer Project, the Project's ability to reduce nitrates in the upper aquifer is questionable.

10. There is the high likelihood that some of the homes in Baywood Park/Los Osos are discharging their sewage into improperly designed/maintained septic systems, or into septic systems that are located too close to existing groundwater. As a result, it is very likely that these specific sites are contributing nitrate into the upper aquifer.

11. Other solutions exist which may be both superior to the Sewer Project, and much more cost effective. Some of these solutions were proposed by James Kriessl-USEPA in his report evaluating the Los Osos situation. Regarding the Agencies contention that the residential treatment systems fail due to insufficient depth of separation from the upper aquifer, there

are experts who have provided contrary information. Specifically, John Timothy Winneberger, Ph.D. was retained by the South Central Coast Regional Commission under Resolution 76-4. Dr. Winneberger's evaluation is entitled "Recommendations to the South Central Coast Regional Commission for Management of On-Site Wastewater Disposal at Baywood, San Luis Obispo County, California", dated November 26, 1976. Therein Dr. Winneberger states: "Experts in the technology of subsurface wastewater disposal know that disposal fields exist and function quite acceptably under groundwater." A true and copy of a portion of Dr. Winneberger's report is contained in Exhibit D. If needed, a way to "correct" the suspect septic systems is to increase the separation zone to groundwater. It is feasible, on an economic and engineering basis, to extract "clean" water from the upper aquifer and pump it into the lower aquifer. That would both directly recharge the lower aquifer (i.e., used for drinking water purposes) and deal with any potential saltwater intrusion; another issue of concern to the Agencies, that they allege will be corrected by the Sewer Project. The upper aquifer extraction/lower aquifer injection option would lower the upper aquifer thereby improving the efficiencies of all septic systems, reduce the potential for saltwater intrusion into the lower Aquifer while at the same time recharge the drinking water supply. Compared to a Sewer Project with an estimated cost of $100,000,000 which will not correct all of these problems, the extraction/ injection option is a low cost, effective solution. Another simple solution is to extract nitrate contaminated groundwater for agricultural use, etc.. This will remediate the upper aquifer, as well as increase the separation distance where it is needed the most (i.e., where there is shallow water and high nitrate concentrations).

12. A major source of the nitrate contamination is the groundwater monitoring wells that were installed in 1982 as part of Agencies environmental assessments to determine the source of the nitrate contamination. Earlier this month, I personally inspected almost 20 of these well sites; true and correct photographs of accessible groundwater monitoring wells are included as Exhibit E.

13. The vast majority of these wells have elevated nitrate analytical results, which were used by

the Agencies to justify the necessity for the construction of the Sewer Project. All of the groundwater monitoring wells are "illegal" as they were improperly installed and do not meet the requirements as set forth in "California Well Standards, Bulletin 74-90, supplement to Bulletin 74-81", California Department of Water Resources, June 1991. True and correct pertinent sections of 74-81 and 74-90 and have been "highlighted" and are attached as Exhibits F and G, respectively. As stated above, the groundwater monitoring wells were either installed by the County and/or the Agencies' consultant Brown & Caldwell in 1982; therefore, the well installation was required to meet the minimum standards as set forth in 74-81.

14. A true and correct copy of the May 25, 1982 "Water Well Driller"s Report" for State well # 30S/10E-13Q01 ("13Q01" located at 333 Woodland Drive of which there is a photograph in Exhibit D) is attached as Exhibit H. The methodology used to complete this well is similar to all of the groundwater monitoring wells that were installed. In this driller's report it is stated that:

(1) a sanitary seal was placed from the surface to a depth of one foot, and

(2) that surface strata was "sealed against pollution" from eight to 12 feet below ground surface.

All of the groundwater monitoring wells are "illegal" for the following reasons:

1. Monitoring wells are required to have a minimum surface seal of 20 feet [74-81, page 29, Section 9.A.]; 13Q01 only has a seal from the surface to one foot and from 8 to 12 feet. All wells were similarly constructed.

2. The top of these wells are below ground (pictures in Exhibit D). In addition, the PVC caps on the wells have holes drilled in them, and the caps were loose during my site inspection. I could literally unscrew a cap just by using my thumb and forefinger without any effort. "Openings into the top of the well...shall be protected against entrance of surface water or foreign matter by installation of watertight caps or plugs" [74-81, page 36, Section 10.A].

3. The wells are "abandoned" and should be "destroyed" (i.e., legally removed

by drilling out and cementing the hole) as they have not been sampled in over one year and do not meet the criteria to be considered "inactive". An "inactive" well is one that "the owner demonstrates his intention to use the well again...As evidence of his intentions for continued use, the owner shall properly maintain the well in a way such that:

i. The well has no defects which will allow the impairment of quality of water in the well or in the water-bearing formations penetrated.

ii. The well is covered such that the cover is watertight and cannot be removed except with the aid of equipment or the use of tools.

iii. The well is marked so that it can clearly been seen.

iv. The area surrounding the well is kept clear of brush or debris."

15. Review of the photographs contained in Exhibit D clearly show that none of the groundwater monitoring wells used by the Agencies for nitrate sampling meet the definition of "inactive". It should also be stressed that these were the well construction standards that were in place in 1981; they are subsequently more stringent (i.e., 74-90). Under the 1981 and the 1990 standards, these wells would be considered no more than simply "funnels" that allow surface contamination to enter a well and contaminate the groundwater; they are illegal wells and provide false and misleading analytical results.

16. The analytical results obtained from the groundwater monitoring wells are false and misleading and this is clearly shown by comparing results just after the wells were installed in 1982, and again after the winter rains in 1983. The annual rainfall from 1982 to 1983 increased almost by a factor of two (17.9 to 35.1 inches), correspondingly the nitrate concentrations increased by a factor of 1.6 (about 36 to 56 ppm nitrates reported as nitrates). This is shown on the nitrate graph, a true and correct copy is contained in Exhibit I. This shows that the groundwater monitoring wells are direct conduits for nitrates into the upper aquifer, and have been since their installation in 1982.

17. All of the data used by the Agencies to support their position requiring the Sewer Project is based on inaccurate data. The Agencies even acknowledged this fact about two years after

the groundwater monitoring wells were installed; in a December 14, 1983 "internal memo" from the Regional Water Quality Control Board it is stated that contamination is due to "poorly constructed monitoring wells...and agrees there is a potential for contamination from surface runoff". While the discussion refers to human bacteria, where there is human or other animal wastes there is nitrates. A true and correct copy of this memo is attached as Exhibit J. Some of the wells were eliminated from the Agencies sampling program due to their acknowledgment that these were "poorly constructed monitoring wells"; a true and correct correspondence documenting this is contained in Exhibit K.

18. After my inspection of the wells, in order to more definitively prove that the groundwater monitoring wells are nitrate conduits, I collected surficial soil samples immediately adjacent to six of the wells. In addition, I collected one "background" soil sample to determine what the nitrate concentration is in an undeveloped area outside of the Prohibition Zone, and one in an area that is subject to run-off from a large horse stable. A true and correct copy of the analytical report and a table detailing the nitrate results are contained in Exhibit L. The MCL for nitrate as nitrogen is 10 ppm. The average nitrate concentration of the soil samples collected by the groundwater monitoring wells is 10.2 ppm; this concentration exceeds the MCL. It has already been shown that these wells are illegal, which the Agencies have already admitted to, and are conduits for the nitrates to enter the upper aquifer. The background soil nitrate concentration is more than ½ of the MCL, and the horse stable effluent is a major source of nitrate that is directly deposited into Morro Bay via the storm drain system.

19. The water sampling methodology used by the Agencies is also questionable. The available information that I could find is that three to four casing volumes of water were removed from a well prior to collecting a sample for analysis. Standard sampling methodology specifies this volume, however, field screening for certain parameters is also required (e.g., water temperature, pH, conductivity at a minimum); this screening data was not found. These field parameters are measured until they stabilize; upon stabilization it is assumed that "fresh" formation water has entered the well (i.e, water representative of the upper aquifer).

It is at this time that a water sample is collected.

20. Based upon evaluation of the information contained in the previously mentioned driller's report, the Agencies were probably not sampling "fresh" formation water. They were sampling runoff into these illegal wells from the surficial nitrates that were shown to be present from my soil sampling. An eight inch diameter auger was used to bore a hole to a depth of 100 feet; groundwater was encountered at 90 feet. A 1.5 inch diameter PVC pipe was used for the casing; the casing was perforated/slotted (i.e., to let water into the PVC pipe from 97 to 100 feet). Using simple mathematics, and some assumptions (e.g., no water is coming in from the surface or from the annular space above the sand pack, and four well volumes are purged by the Agencies prior to sampling, etc.), the volume of water inside the borehole and the casing can be calculated. Based upon this evaluation, the maximum theoretical volume of water removed from the formation is only about one quart. The Agencies indicated that only three to four well volumes were purged, and the wells are illegal and there is surface water entry. Therefore, the sample results are representative of the nitrate laden surface water that has entered the well for almost the last 20 years, not from the upper aquifer that was supposed to be sampled.

21. A two-step approach to mitigation is normally recommended:

(i) Locate the source(s) for the contaminant and prevent new releases; and

(ii) If needed, pump out and either treat or dispose/recycle the contaminated water.

22. In conclusion, I have multiple concerns about the data used by the Agencies to support their contention that the Sewer Project is necessary to protect the upper aquifer. Their data was derived from illegal wells that clearly have nitrate contaminated soil entering them. These wells may not have been adequately purged prior to sampling and the water that was being sampled is nitrate contaminated surface water that entered the well, or formation water that has been contaminated by surface effluent.

23. The proposed Sewer Project will not solve the problem as only part of the community is being required to be connected to sewers, and it will not remediate areas outside of the Prohibition Zone, such as Bayview Estates where there is definitive analytical documentation

that its treatment system has impacted the upper aquifer with nitrates. The Sewer Project does not call for the abandonment of the illegal wells (the nitrate "funnels"), or for conducting remedial work on the upper aquifer as was previously discussed above (i.e., extraction of clean water and injection into the lower aquifer, extraction of nitrate contaminated groundwater for agricultural use, etc. which will increase the separation and remove contaminated water). My fear is that the community will spend $100,000,000 + and see no appreciable improvement in groundwater quality. The Agencies have made no guarantee that the Sewer Project will correct the problem. If funds have to be expended, a number of more cost-effective solutions based upon sound engineering have been "on the table" for years and they should not have been disregarded.

24. Based upon my evaluation of the nitrate data and prior to expending in excess of $100,000,000 on a Sewer Project that will not correct the problem, a two step remedial project should be implemented. If implemented, it will remove the contaminated water from the illegal wells and/or provide valid data that can be assessed to determine if there even is a nitrate problem in Los Osos. If successful, the savings to the community would be about $99,855,000. The proposed scope of work is:

1. Pump the Brown & Caldwell illegal wells: $ 45,000

The cost includes all equipment and personnel to purge the wells to collect and analyze a representative water sample of the upper aquifer. If nitrates are detected above the MCL, that well will be pumped for a duration of one week. The purged water will be used for irrigation purposes at a local farm. For cost estimating purposes, I assumed that all 10 wells will require one week of pumping.

2. Abandonment of the ten Brown & Caldwell illegal wells and drilling of replacement wells: $100,000

The cost includes all equipment and personnel to abandon the wells pursuant to the requirements in 74-90. Ten wells will be drilled about 50 feet from the illegal wells to obtain valid data. The cost includes disposal of all the drill cuttings at a local landfill, although a local farm would probably accept the soil as it is non-hazardous. For cost estimating

purposes, I assumed that all wells will be drilled to a depth of 100 feet, and that four calendar quarters of groundwater monitoring are conducted.

25. There is insufficient scientific data to support the drawing of the Prohibition Zone boundaries. I have heard and read conflicting rationales for the boundaries. Sorrell Marks - RWQCB claims that all properties outside of the Prohibition Zone are all ½ acre lots, this is not true. In addition, lot size apparently does not matter to the RWQCB which claims that vertical separation between septic system and groundwater is all that matters. Ms. Marks then claims that homes high up on the hill would be too expensive to hook up with sewers (but this does not address all the expensive homes on the valley floor that are not in the Prohibition Zone). It has been claimed that systems outside the Prohibition Zone all have more than 30 feet separation between their septic systems and groundwater, but that is not true for many of the homes. In short, I have found no scientific basis for the specific boundaries that the Agencies used to establish the Prohibition Zone.

I have personal knowledge as to the above matters and if called upon, I could and would competently testify thereto. I swear under penalty of perjury, that the foregoing is true and correct and that this affidavit was sworn to and executed on August 21, 2001 in Garden Grove, California.

R. GLENN STILLMAN

AFFIDAVIT OF JOHN A. ALEXANDER, Ph.D., IOM, LFIBA

I, John A. Alexander, herein declare that:

1. I am a resident of Cayucos, California. I have a bachelor of science degree in structural engineering from the University of California - Berkeley, and a doctorate degree in environmental engineering from Occidental University in St Louis, Missouri. I was the 152nd person inducted in the World Who's Who Hall of Fame. I have served as a science advisor at the Presidential level, and in 2001 I was elected "Scientist of the Year" by the International Biographical Centre.

2. In 1942, I was commissioned as one of the first Seabee officers and oversaw the construction of several Naval bases in the Pacific theatre, including in the Aleutian Islands. After the war, I started John A. Alexander Construction and completed over 3000 buildings in and around California. Our company invented "tilt-up" concrete construction.

3. I am also the founder of John Alexander Research, Inc., A&W Smelter & Refiners, Inc., and Water Science Technologies, Inc. I created these companies in order to help address world problems and shortages in affordable and safe housing, in order to improve recycling and resource recovery, and to help eliminate the severe shortages that exist around the world in clean drinking water. The catalyst for many of these companies was the April 21, 1961 speech by President John F. Kennedy who said "If we could ever competitively get fresh water from salt water, that would greatly benefit humanity and dwarf any other scientific accomplishment."

4. I am a co-author of Water Reuse - Second Edition published in 1980 by the Water Pollution Control Federation. I also co-created the first Abalone Farm in the United States, which is located on my property in Cayucos. I have been involved in marine research to save the Pismo clam, and to build house structures using marine resources. I have been researching algae, including seaweed, and the growth of other valuable marine life. I have a small research center in the Central Valley which is investigating means of removing selenium and salt contamination from agricultural surface water.

5. I have been involved in the Los Osos sewer controversy for 30 years. I am not convinced that there is a problem with a majority of the septic tanks currently in service there. It appears that the underlying soil is properly recycling the nitrogen loading that it is experiencing.

6. During the past 10 years, there has been continuous research regarding and a steady trend is developing against massive sewer projects. This trend has the support of many environmental groups which have witnessed the ecological damage that results from sewer projects and the large residential developments that they permit along the coast. There is also a growing problem with finding a home for the sludge that is produced, and finally there are a multitude of problems associated with disposing of the treated effluent waters, which in the case of Los Osos may be as high as 1.5 million gallons a day.

7. I have been asked by the main citizens' group to advise on alternatives to the sewer and large conventional sewage treatment plant being proposed by the Los Osos Community Services District. I have been donating my time, as this is an important project which threatens to hurt a lot of low income families if the Sewer Project goes forward in its present form.

8. It would take a large number of pages to explain all the options and alternatives and their justification. Suffice it to say that septic tank technology is currently equal to or superior to that of a sewage treatment plant. In addition, there is sound chemistry that exists to support relatively inexpensive systems which will remove nitrates from groundwater and surface waters. These include galvanic agglutination and soil percolation. There is a plant operating down the coast in the City of Grover Beach that removes nitrates using ion exchange technology. Several California water districts, such as Arroyo Grande and Garden Grove have a different solution. Where they have minor amounts of nitrates, they are simply diluting the nitrates by mixing them with additional fresh water until safe concentrations are reached (i.e. concentrations under the EPA Maximum Contaminate Level "MCL" of 45 mg/l) and then they are selling it to their residents. With current technologies, the nitrate problems present in the Los Osos groundwater can be treated for less than 10% of the costs of this Sewer Project.

9. Years ago, I discussed emerging technologies with Ken Jones of the Central Coast Regional Water Quality Control Board who told me:

"Nothing will be used in my district unless it has had 25 years of use elsewhere"

It is that mentality which still exists at the Regional Board and the result is a massive sewer project that is both not needed and is beyond the budgets of many of the residents of Los Osos.

10. The problem in San Luis Obispo County is not nitrates in groundwater, as that can be solved, and solved inexpensively. The problem is that the County and State bureaucracies only have experience with sewer projects and conventional treatment plants.

11. There are numerous, low-cost solutions available to the Community of Los Osos. These include the following:

A. If there is a true separation problem with some of the septic tanks, then the upper aquifer could easily be lowered to increase separation and percolation;

B. Any upper aquifer waters found to have trace nitrates could be sold or pumped to water local farmland, thus reducing groundwater pumping by those farms. It needs to be remembered that water contaminated with nitrates at concentrations in excess of the MCL, may not be safe to drink, but such water has a ready market with local farmers who would benefit from and would presumably pay for such water for their crops;

C. Any upper aquifer waters found to be of drinking water quality, could be injected directly into the lower aquifer, thus recharging it and thus also addressing any salt water intrusion problems that may exist.

I have personal knowledge as to the above matters and if called upon, I could and would competently testify thereto. I swear under penalty of perjury, that the foregoing is true and correct and that this affidavit was executed on August 14, 2001 in Cayucos, California.

John A. Alexander

JOHN A. ALEXANDER, Ph.D, IOM, LFIBA

John Alexander Research
Specializing in environmental solutions

WARNING

There is overwhelming evidence that centralized sewage plants using bacteria to reduce solids have become a dangerous threat to the whole world. At one time this type of sewage system was considered the ultimate in sewage disposal. That was before we had our present population and before wonder drugs. The typical facility would partly treat sewage and count on dilution to finish the disposal programs. As the saying goes "Dilution is not the solution to pollution."

Ironically, our wonder drugs and the conventional sewage systems are major contributors to the pandemic situations facing the world. Misuse of wonder drugs has created immunization of some of the most deadly bacteria known. We now have pandemic situations with no known cures and 60% mortality. If we fail to halt the scourge more than half a billion people could die.

We must stop funding incubators for the dreaded pathogens. The medical world is trying desperately to halt the pandemic, yet we are still constructing sewage plants that encourage the spread of deadly pathogens.

Experts have been trying for years to revert back to decentralized sewage facilities. The threat of earthquakes, floods and sabotage is reason enough to go back to individual treatment, such as septic tanks and leach lines. With the introduction of the new breed of mutating drug resisting pathogens it is criminal to force obsolete bacteria growing sewage plants on to the public.

Do not let them take out your septic tanks and leach lines!! They are rapidly becoming the first line of defense against the greater scourge the world has ever faced. Hopefully, the medical profession will ultimately find a cure but can we take the chance?? Technology exists to dramatically control the spread of the vicious pathogens. The technology designed to eliminate the worlds fresh water shortage is inexpensive and promises to be our best line of defense against spreading disease.

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Consult your Health Dept. Beware of the recommendations of any with financial gain by keeping the obsolete, expensive status quo.

John A. Alexander

John A Alexander Phd
President –JAA Research company
Cayucos, Ca 93430