CALIFORNIA COASTAL COMMISSION
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Th16.5a

Appeal filed:	6/16/2008
49th day:	8/4/2008
Staff report prepared:	6/26/2008
Staff report prepared by:	Mike Watson
Staff report approved by:	Dan Carl
Hearing date:	7/10/2008

APPEAL STAFF REPORT
SUBSTANTIAL ISSUE DETERMINATION ONLY

Appeal number.....**A-3-MRB-08-031, Main Street Well Abandonment**

Applicants.....Equilon Enterprises, Sara Heikkila

Appellants.....Marla Jo Bruton, Richard Sadowski, and Linda Stedjee

Local government .....City of Morro Bay

Local decision .....Coastal Development Permit (CDP) Application Number CP0-124 approved by the Morro Bay Planning Commission on May 19, 2008.

Project location .....1840 Main Street and various locations within and west of the Highway One right-of-way at the intersection of Atascadero Road in the City of Morro Bay (APNs 065-182-003, 065-182-004, 066-332-003, and 068-324-019).

Project description.....Abandonment of 68 groundwater monitoring wells. The wells will be filled with a mixture of concrete slurry and soil and abandoned in place.

File documents.....Final local action notice for City of Morro Bay CDP Number CP0-124; Morro Bay certified Local Coastal Program (LCP); CDP Appeal Number A-3-MRB-08-031.

Staff recommendation ...**No Substantial Issue**

A.Staff Recommendation

1. Summary of Staff Recommendation

The City of Morro Bay approved a CDP for the abandonment of 68 groundwater monitoring wells used to monitor and assess the progress of a Regional Water Quality Control Board (RWQCB) required cleanup of methyl tertiary-butyl ether (MtBE) contaminated soil and groundwater originating from a now defunct gasoline service station at 1840 Main Street in the City of Morro Bay. The monitoring wells are to be abandoned because the RWQCB has determined that the MtBE contamination has been abated at the site, and has further directed the Applicants to destroy the wells. The Appellants contend that the remediation effort, including the drilling of the MtBE monitoring wells, has caused the City's groundwater to become contaminated with nitrates, and that the monitoring wells should not be destroyed because they could serve to monitor resolution of this condition as well as other potential

contaminated groundwater that may impact nearby City wells. The RWQCB has indicated that the wells have served their purpose, that they have not resulted in the cross-contamination alleged by the Appellants, and that the issue of nitrates in the City's water supply is a separate issue being independently investigated. In other words, the MtBE issue requiring the wells in the first place has been resolved and potential City groundwater contamination is not related to the MtBE monitoring wells. Although there may need to be additional investigation related to the City's water supply independent of what occurs with these wells, these Applicants have resolved their issues with respect to the RWQCB-required MtBE cleanup, and the CDP for the abandonment of the monitoring wells is the conclusion of that effort. There is nothing in the LCP that would require these wells to be kept in place to help with a separate, independent, water supply monitoring (and potential remediation) effort.

Thus, the appeal contentions do not raise a substantial issue with respect to the City's CDP approval. Staff recommends that the Commission find that no substantial issue exists with respect to the grounds on which the appeal was filed, and that the Commission decline to take jurisdiction over the coastal development permit for the project.

2. Staff Recommendation on Substantial Issue

Staff recommends that the Commission determine that no substantial issue exists with respect to the grounds on which the appeal was filed. A finding of no substantial issue would mean that the City's decision in this matter would be final (conversely, a finding of substantial issue would bring the project under the jurisdiction of the Commission for hearing and action).

Motion. I move that the Commission determine that Appeal Number A-3-MRB-08-031 raises no substantial issue with respect to the grounds on which the appeal has been filed under Section 30603 of the Coastal Act.

Staff Recommendation of No Substantial Issue. Staff recommends a **YES** vote. Passage of this motion will result in a finding of No Substantial Issue and adoption of the following resolution and findings. If the Commission finds No Substantial Issue, the Commission will not hear the application de novo and the local action will become final and effective. The motion passes only by an affirmative vote by a majority of the Commissioners present.

Resolution to Find No Substantial Issue. The Commission hereby finds that Appeal Number A-3-MRB-08-031 does not present a substantial issue with respect to the grounds on which the appeal has been filed under Section 30603 of the Coastal Act regarding consistency with the certified Local Coastal Program and/or the public access policies of the Coastal Act.

Report Contents

B.Findings and Declarations

The Commission finds and declares as follows:

1. Project Location

The remediation site is located at 1840 Main Street on the northeast corner of the intersection of Main Street and Atascadero Road in the City of Morro Bay, and is the site of a former Shell Service Station (see Exhibit A). The former service station facility included three 12,000 gallon underground gasoline storage tanks. State Highway 1 is located west of the site, across Main Street. Highway 41 (Atascadero Road) is located immediately south of the site. West of Highway 1 is Morro Bay High School, the City's Sanitary Sewer System, and four groundwater wells used by the City during seasonal periods of high water demand and during State Water Project delivery shutdown. Sixty-eight MtBE monitoring wells have been drilled in various locations on-site, within the State Highway 1 right-of-way, and areas west of the highway (i.e., in the vicinity of the High School and the City groundwater wells).

From a hydro-geologic standpoint, the site is located in the southwest portion of the Morro Hydrologic Sub-area (Morro Basin) of San Luis Obispo County. The Morro Basin encompasses an area of 810 acres, extending from the coastline to the convergence of the Morro and Little Morro Valleys. Morro Creek, a stream with headwaters in the Santa Lucia range, is the primary stream draining Morro Basin. Basin recharge is by infiltration of precipitation and from tributary watersheds upstream on the Morro and Little Morro Creeks. Under natural conditions, groundwater flows to the west in the Morro Basin and discharges into Estero and Morro Bays. Water quality in the Morro Basin up gradient of the

"narrows" area (i.e., the area generally east of Highway 1) is generally poor due to elevated nitrate levels cause by agricultural activity. The water quality down gradient of the "narrows" is generally acceptable in times of high groundwater levels, but is susceptible to seawater intrusion during times of drought and/or groundwater pumping during drought.

2. Project Description

The proposed project would allow for 68 groundwater monitoring wells, that have been used to monitor and assess MtBE contaminated soil and groundwater originating from a defunct gasoline service station site at 1840 Main Street in the City of Morro Bay, to be abandoned in place. The monitoring wells are to be abandoned because the RWQCB has determined that the MtBE contamination has been abated at the site, and has further directed the Applicants to destroy the wells. In accordance with State well abandonment standards, the well boxes and PVC well casings would be removed, and then each well would be backfilled with concrete slurry and soil to ensure that the wells are capped and there is no cross contamination of the groundwater from outside sources. See Exhibits B and D for additional project information, and see Exhibit D for the RWQCB's May 9, 2008 report on this matter.

3. City of Morro Bay CDP Approval

On May 19, 2008, the Morro Bay Planning Commission approved CDP Application Number CP0-124 (see Exhibit B for the City's approval documents). Notice of the City's CDP action was received in the Coastal Commission's Central Coast District Office on June 2, 2008. The Commission's ten-working day appeal period for this action began on June 3, 2008 and concluded at 5 p.m. on June 16, 2008. One appeal was received during the appeal period (see below).

4. Appeal Procedures

Coastal Act Section 30603 provides for the appeal to the Coastal Commission of certain CDP decisions in jurisdictions with certified LCPs. The following categories of local CDP decisions are appealable: (a) approval of CDPs for development that is located (1) between the sea and the first public road paralleling the sea or within 300 feet of the inland extent of any beach or of the mean high tide line of the sea where there is no beach, whichever is the greater distance, (2) on tidelands, submerged lands, public trust lands, within 100 feet of any wetland, estuary, or stream, or within 300 feet of the top of the seaward face of any coastal bluff, and (3) in a sensitive coastal resource area; or (b) for counties, approval of CDPs for development that is not designated as the principal permitted use under the LCP. In addition, any local action (approval or denial) on a CDP for a major public works project (including a publicly financed recreational facility and/or a special district development) or an energy facility is appealable to the Commission. This project is appealable because it involves development that is located seaward of the first public road.

The grounds for appeal under Section 30603 are limited to allegations that the development does not conform to the certified LCP or to the public access policies of the Coastal Act. Section 30625(b) of the

Coastal Act requires the Commission to conduct a de novo CDP hearing on an appealed project unless a majority of the Commission finds that "no substantial issue" is raised by such allegations. Under Section 30604(b), if the Commission conducts a de novo hearing and ultimately approves a CDP for a project, the Commission must find that the proposed development is in conformity with the certified LCP. If a CDP is approved for a project that is located between the nearest public road and the sea or the shoreline of any body of water located within the coastal zone, Section 30604(c) also requires an additional specific finding that the development is in conformity with the public access and recreation policies of Chapter 3 of the Coastal Act. This project is located between the nearest public road and the sea, and thus this additional finding would need to be made if the Commission approves the project following a de novo hearing.

The only persons qualified to testify before the Commission on the substantial issue question are the Applicant, persons who made their views known before the local government (or their representatives), and the local government. Testimony from other persons regarding substantial issue must be submitted in writing. Any person may testify during the de novo CDP determination stage of an appeal.

5. Summary of Appeal Contentions

The Appellants contend that the remediation effort, including the drilling of the monitoring wells, has caused the City's groundwater to become contaminated with nitrates, and that the monitoring wells should not be destroyed because these wells could serve to monitor resolution of this condition as well as other potential contaminated groundwater that may impact nearby City wells. According to the Appellants, nitrates have leaked from the sanitary sewer lines (which also pass through the boundary of the groundwater aquifer), and are being drawn into the City's potable water supply during extraction/pumping of the City's water wells. The Appellants do not reference any specific policies of the certified LCP in relation to these contentions. The most obvious LCP policy implicated is LCP Standard 17.52.090 that prohibits the discharge of any materials or compounds into the City's water supply, and thus the Commission has generally construed the Appellants' contentions to be in relation to this LCP Standard. Please see Exhibit C for the complete appeal document.[1]

[1] The City has indicated that it does not believe that the Appellants have standing to make an appeal because the Appellants did not participate in the local hearing process for this coastal permit (as required by Coastal Act Section 30801) and did not appeal the Planning Commission's decision to the City Council (as required by California Code of Regulations (CCR) Sections 13111 and 13573). The Appellants contend that they provided written comments to the City in advance of the hearing on the well closure, and that the City should have noticed them regarding the Planning Commission hearing. They further maintain that they were not informed of any potential local remedies for challenging the City's coastal permit decision and, when inquiring about same, were advised by the City that the project was not appealable to the Coastal Commission and any challenge to it should be taken up with the Regional Water Quality Control Board. In terms of notice, the City contends that they satisfied their noticing requirements by posting the site; publishing notice of the hearing in the San Luis Obispo Telegram-Tribune newspaper ten days in advance of the hearing; providing notice on the City's website; and noticing all owners of property within 300 feet and all occupants of property within 100 feet of the subject site.

Bracketing for a moment the questions of whether the Appellants should have been individually noticed and whether their written comments on the issue as opposed to the application before the City per se satisfy participation requirements, the City's pre-hearing notice incorrectly indicates that the City's decision on the well abandonment project is not appealable to the Coastal Commission when it is, and this same information was allegedly provided to these Appellants. As a result, the faulty notice quiets the lack of participation

6. Substantial Issue Determination

A. Applicable LCP Policies

LCP Standard 17.52.090 (Liquid or Solid Wastes). *No discharge at any point into any public sewer, private sewage disposal system, or stream, or into the ground, of any materials of such nature or temperature as can contaminate any water supply, interfere with bacterial process in sewage treatment, or otherwise cause the emission of dangerous or offensive elements, shall be permitted, except in accord with standards approved by the California Department of Public Health or such other governmental agency as shall have jurisdiction of such activities.*

B. Analysis

The RWQCB is the lead regulatory agency for overseeing corrective action and cleanup of releases from leaking underground storage tank systems and other similar sources. The RWQCB issued a report on May 9, 2008 indicating that as a result of remedial action and natural attenuation, groundwater and MtBE-impacted soil in the vicinity of the leak has been cleaned / removed and the need for further investigation or cleanup action has been eliminated (see Exhibit D). The RWQCB indicates that the wells have not resulted in the cross-contamination alleged by the Appellants. With regard to preserving the monitoring wells for use in detecting other potential contaminants in the groundwater basin, the RWQCB indicated that there was not a good technical reason to halt the abandonment of the wells. The monitoring wells, which are owned by the Applicant, have served the purpose for which they were installed. The RWQCB cannot order or require the owners to continue to maintain, be financially responsible, and operate the wells in order to monitor for something other than that which they were installed. Thus, in order to ensure that the monitoring wells could not be tampered with or act as a conduit for contamination of the groundwater and the City's potable water source, the RWQCB directed the Applicants to destroy all monitoring wells.

With regard to the nitrate issue raised by the Appellants, the RWQCB notes that this is a separate and distinct issue that is being investigated and, should it be warranted, remediation and clean up will be separately pursued. RWQCB staff indicates that there is little evidence that the two issues are linked.[2] The Appellants maintain that sewage and nitrates are making their way into the groundwater table via breaches in the sewer lines.[3] However, not only is this a separate issue disconnected from the current application, but examination of the hydrological dynamics of the groundwater basin suggest otherwise. According to the City and RWQCB, the MtBE issue was first brought about by detection of MtBE at the City's waste water treatment facility. MtBE that had leaked from the service station holding tanks was determined to be migrating with the groundwater and entering into the City's waste water infrastructure. This was apparently due to the ambient pressure of the groundwater surrounding the waste water lines

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argument (for "good cause" per Coastal Act Section 30801) and eliminates the required exhaustion of local appeals (per CCR Section 13573(a)(3)). In other words, based on the evidence provided, the Commission cannot conclusively determine that these appellants do not have standing, and, to err on the conservative side to ensure maximum participation as required by the Coastal Act, finds that these Appellants do have standing to file an appeal of the City's action in this case.

[2] Personal communication from Burton Chadwick, RWQCB, to Mike Watson, Coastal Commission planner.

[3] The nitrate allegedly being bioxide, a common form of nitrate that is used in waste water pumping facilities to reduce odors.

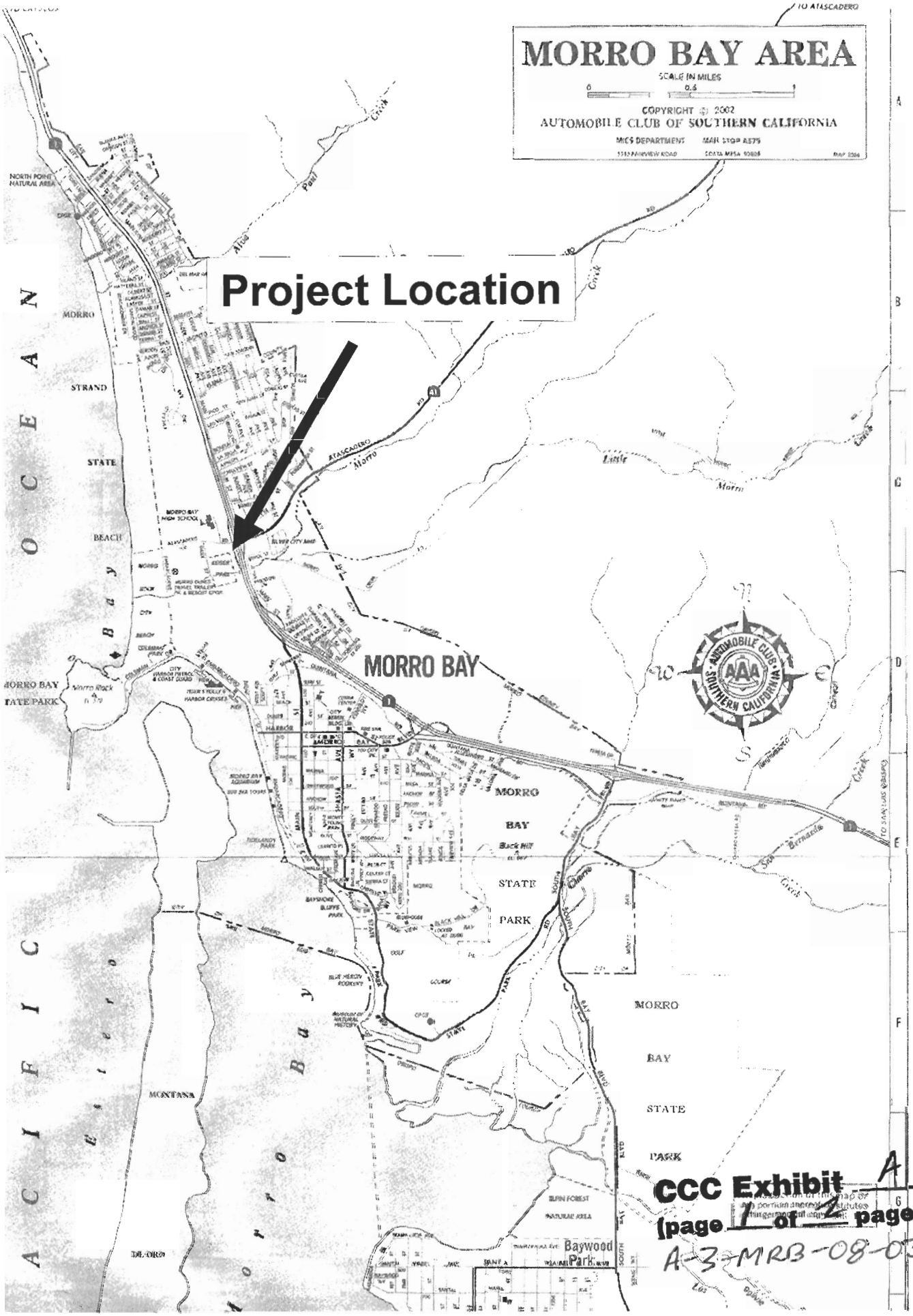
being greater than that of the pressure of the effluent passing through the pipelines. Under these conditions, it is unlikely that sewage (and thus nitrates) is moving the other direction into and contaminating the groundwater.

With respect to the Appellants claim that the excavation and drilling have breached the aquifer or somehow caused the groundwater to become cross contaminated with nitrates, the RWQCB explains that both MtBE and nitrates are highly soluble and follow similar hydrological paths. If the Appellants hypothesis were to hold, the tests that showed nitrates in the City's production wells would also be expected to have shown MtBE in the water. However, this was not the case. Although most, if not all, of the 68 MtBE monitoring wells identified the presence of MtBE at some point in time, the City production wells never were contaminated with MtBE. Accordingly, it appears unlikely that the remediation effort (i.e., excavation of soils) or drilling of the MtBE monitoring wells breached the aquifer and/or somehow cross-contaminated the City's production wells with nitrates.

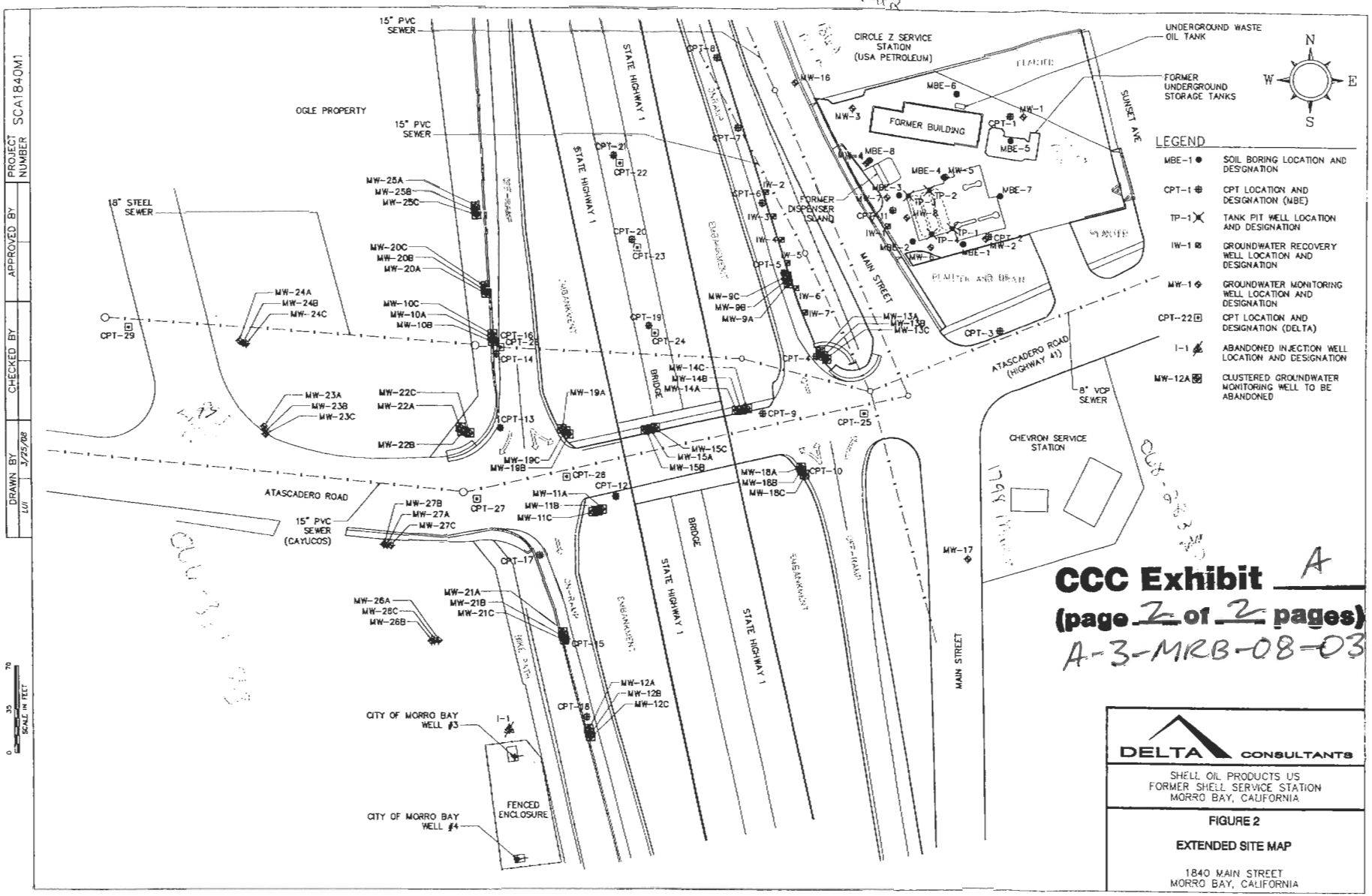
In fact, recent studies indicate that the source of the nitrates appears to be from agricultural runoff. In this respect, the City contracted with Cleath and Associates in December 2007 to identify the source of the nitrates in the water. Isotope tests (a test similar to a DNA test) performed on the water confirmed that the source of the nitrates was fertilizers from agricultural land upland of the well site. The results of the isotope tests, and the absence of fecal coliform and other typical waste water byproducts in the City's production wells, appear to indicate that the nitrates did not originate from breaks in the nearby sewer line, as suggested by the Appellants.

In sum, the Appellants raise a series of contentions that are valid concerns with regards to ensuring groundwater protection in Morro Bay, but these issues appear to be unrelated to the current project that is the culmination of an MtBE contamination episode at this location. The RWQCB has indicated that the monitoring wells have served their purpose in that regard, that they have not resulted in the cross-contamination alleged by the Appellants, and that the issue of nitrates in the City's water supply is a separate issue being independently investigated. In other words, the MtBE issue requiring the wells in the first place has been resolved, and potential City groundwater contamination is not related to these wells. Although there may need to be additional investigation related to the City's water supply independent of what occurs with these wells, these applicants have resolved their issues with respect to the RWQCB and the CDP for the abandonment is the conclusion of that effort. There is nothing in the LCP that would require these wells to be kept in place to help with this separate, independent effort.

Thus, the appeal contentions do not raise a substantial issue with respect to the City-approved project's conformance with the certified City of Morro Bay LCP. The Commission finds that no substantial issue exists with respect to the grounds on which the appeal was filed, and declines to take jurisdiction over the coastal development permit for the project.



CCC Exhibit A
(page 1 of 2 pages)
A-3-MRB-08-031



DRAWN BY: LW 3/25/08
CHECKED BY:
APPROVED BY:
PROJECT NUMBER: SCA1840M1

CCC Exhibit A
(page 2 of 2 pages)
A-3-MRB-08-031

DELTA CONSULTANTS

SHELL OIL PRODUCTS US
FORMER SHELL SERVICE STATION
MORRO BAY, CALIFORNIA

FIGURE 2

EXTENDED SITE MAP

1840 MAIN STREET
MORRO BAY, CALIFORNIA

City of Morro Bay

Morro Bay, CA 93442 • 805-772-6200
www.morro-bay.ca.us

REGULAR COASTAL DEVELOPMENT PERMIT,

CASE NO: CP0-124

THIS PERMIT IS HEREBY APPROVED AND ISSUED FOR:

SITE ADDRESS: 1840 Main Street

APPLICANT: Equilon Enterprises

APN: 068-324-019 LEGAL: Lots: Pt of 15 & 16; Block: 8; Tract: Rancho Morro Y Cayucos

DATE APPROVED: May 19, 2008 APPROVED BY: PLANNING COMMISSION

APPROVED BASED UPON ATTACHED FINDINGS ***(Findings and Conditions of Approval Attached)***

CEQA DETERMINATION: Class 1 Categorical Exemption

DESCRIPTION OF APPROVAL: A request for approval of a Coastal Development Permit for the removal of sixty-eight groundwater monitoring wells at and/or near the project site. The applicant has completed the groundwater assessment and monitoring plan. The work plan was in response to the MTBE leak at the request of the City of Morro Bay and California Regional Water Quality Control Board (RWQCB).

THIS APPROVAL IS CONDITIONAL AND IS VALID *ONLY IF CONDITIONS (ATTACHED) ARE MET* AND *ONLY AFTER THE APPLICABLE APPEAL PERIOD. Failure to comply with the conditions of this permit shall, at the discretion of the Public Services Director pursuant to Municipal Code Section 17.60.150, render this entitlement null and void.*

PERMIT EFFECTIVE DATE & INFORMATION APPLICABLE TO YOUR PROJECT IS OUTLINED FOLLOWING THE BOX CHECKED BELOW:

☒ **YOUR PROPERTY IS LOCATED IN THE CITY OF MORRO BAY JURISDICTION, THERE IS AN APPEAL PERIOD OF TEN (10)** ***Calendar days*****, WITHIN WHICH TIME YOUR PERMIT IS APPEALABLE TO THE CITY COUNCIL**

☒ **YOUR PROPERTY IS LOCATED IN THE COASTAL COMMISSION APPEALS JURISDICTION.** This City decision is appealable to the California Coastal Commission pursuant to the California Public Resource Code, Section 30603. The applicant or any aggrieved person may appeal this decision to the Coastal Commission within TEN (10) *Working days* following Commission receipt of this notice. Appeals must be in writing and should be addressed to: California Coastal Commission, 725 Front Street, Ste. 300, Santa Cruz, CA 95060, Phone: 408-427-863. If you have any questions, please call the City of Morro Bay Public Services Department, 772-6261.

IF NOT APPEALED, YOUR PERMIT WILL BE EFFECTIVE: May 30, 2008

ATTEST: Mike Prater **DATE: May 20, 2008**

Mike Prater, Planning Manager
FOR: Bruce Ambo, Public Services Director

THIS IS A DISCRETIONARY APPROVAL AND DOES NOT CONSTITUTE A BUILDING PERMIT

CCC Exhibit B
(page 1 of 7 pages)
A-3-MRB-08-031

AGENDA ITEM:_____

ACTION:_____

CITY OF MORRO BAY
PLANNING COMMISSION

May 19, 2008

PROJECT SUMMARY
Abandon monitoring wells

FILE NUMBERS:
CP0-124

SITE ADDRESS/ APN(S)
1840 Main Street.
068-324-019

APPLICANT/ AGENT:
Equilon Enterprises
Delta Consultants
911 S. Primrose Avenue, Ste K
Monrovia, CA 91016
Office: 626.256.6662

ATTACHMENTS:
1. Findings, Exhibit A
2. Conditions, Exhibit B
3. Graphics/Plot Map, Exhibit C
4. Background/Site Activity, Exhibit D

Issue Summary:

A request for approval of a Coastal Development Permit for the removal of sixty-eight groundwater monitoring wells at and/or near the project site. The applicant has completed the groundwater assessment and monitoring plan. The work plan was in response to the MTBE leak at the request of the City of Morro Bay and California Regional Water Quality Control Board (RWQCB).

Staff Recommendation:

The Planning Commission should *CONDITIONALLY APPROVE THE PROJECT* by adopting a motion including the following action(s):

1. Adopt the Findings for Approval included herein as Exhibit "A";

2. Approve the Coastal Permit subject to the Conditions of Approval included herein as Exhibit "B".

Site Description

The site, located at the northeast corner of the intersection of Main Street and Atascadero Road in Morro Bay, the site was a former Shell Service Station. The former service station facilities consisted of three 12,000-gallon gasoline underground storage tanks (USTs), one 550-gallon waste oil UST, two fuel dispenser islands, and a station building. A Circle Z Station (USA Petroleum; former Circle K Service Station) is located adjacent to the site on the north, a private residence is located adjacent to the site on the northeast, a vacant lot is located east of the site, across Sunset Avenue, and a Chevron Service Station is

located south of the site, across Atascadero Road. State Highway 1 is located west of the site, across Main Street. Access to the site is provided from Main Street on the west, Atascadero Road on the south, and Sunset Avenue on the east.

Project Description:

The RWQCB with the concurrence from the City of Morro Bay has lifted the requirements to continue to monitor the surrounding area with a "no further action" letter issued because the results have passed all requirements. The work plan prepared by Delta lays out the methodology for completing the activities. Equilon Enterprises LLC dba SHELL Oil Products US (SHELL) has been directed to abandon 68 monitoring and recovery wells associated with the former Shell Service station located at 1840 Main Street in Morro Bay. DELTA Consultants (DELTA) is coordinating the well destruction activities on behalf of SHELL. Below is a summary of the field activities anticipated.

Pre-destruction [tentatively scheduled for June 2-6 & June 9-13]: DELTA and a drilling sub-contractor will break out the well boxes and clear the 68 locations to ensure the absence of subsurface utilities with air knife technology to a minimum depth of approximately 8 feet below ground surface (bgs).

Destruction [tentatively scheduled for June 9-13 & June 16-20 & June 23-27]: DELTA and a drilling sub-contractor will return to each existing well location (one at a time) and properly destroy the well in accordance with the State Well Standards. The wells will be destroyed by the over-drill method. A truck mounted or limited access drill rig equipped with hollow stem augers will over drill each location to the total depth of the well. The PVC well casing will be removed intact and the borehole backfilled with Portland cement using a tremie pipe to just below the surface. The location will be matched to the existing surface.

In the case where it is not feasible to over-drill due to potential sub-surface conflicts or over-head restrictions, the well will be destroyed by the pressure grout method. The well casing will be backfilled from bottom to top (tremie method) with Portland cement and pressure applied (minimum pressure of 25 pounds per square inch) to the wellhead to ensure the casing and annular space is sealed. The location will be matched to the existing surface.

During air knife and drilling activities an exclusion zone will be identified with orange fencing, cones and caution tape. A minimum of level D personal protection equipment will be required for personnel working within the exclusion zone. Only authorized personnel will be allowed into the exclusion zone during air knife and/or drilling activities.

DELTA has obtained an encroachment permit form CalTrans for 45 wells located in the State right-of way and is awaiting encroachment permit approval from the City of Morro Bay for the wells located in the City right-of-way. DELTA is awaiting well destruction permit approval from the County of San Luis Obispo.

Traffic control will be used for the locations in the public right-of-way and all applicable agencies and stakeholders will be notified once the schedule is finalized. This will include Mr. Fred Collins of the Northern Chumash Tribal Council and Dr. John Parker who was the archaeologist previously involved in the well installation work. In addition, DELTA will be sure to incorporate any additional requirements described in the aforementioned permits.

Permitting Requirements:

Due to the fact that some of the wells are located within the California Coastal Commission Appeal Jurisdiction this project requires a Regular Coastal Development Permit to allow for the abandonment of monitoring wells.

City Zoning Ordinance determines "development" to include change in the intensity of use of water or of access thereto (City Zoning Ordinance section 17.12.199.E). Furthermore the Coastal Act requires Coastal Development permits where "development" includes construction or alteration of the size of any structure or municipal utility (Public Resources Code Division 20 California Coastal Act section 30106).

Environmental Review:

This project falls under existing facility demolition Guidelines Article 19 section 15301 (CEQA exempt-Class 1 Categorical Exemption). The abandonment of well facilities no longer needed to monitor groundwater activities.

The area of proposal wells and pipelines has unknown potential for archeological resources. However, the property has been delineated and evaluated for archeological resources and further monitoring of the property and vicinity will occur.

Public Notice:

Notice of this item was posted at the site, published in the San Luis Obispo Telegram-Tribune newspaper on May 9, 2008 and all property owners of record within 300 feet and occupants of 100 feet of the subject site were notified of this public hearing and invited to attend and voice any concerns they may have regarding this application.

Conclusion:

Approval of the abandonment of these wells is being sought under RWQCB action to the property owner. This project served to evaluate the groundwater resources and MTBE to ensure the City's groundwater was not threatened nor the environment in the coastal zone. The abandonment of these facilities would be consistent with the General Plan and Local Coastal Plan.

Report prepared by: Mike Prater, Planning Manager

EXHIBIT A:
FINDINGS FOR APPROVAL

A request for Coastal Development Permit approval for the abandonment of groundwater monitoring wells at and around the project site.

California Environmental Quality Act (CEQA)

The project is Categorically Exempt from the requirements of the California Environmental Quality Act (CEQA) under the Class 1 exemption for the *"Existing Facility"* (State CEQA Guidelines Section 15301).

Coastal Development Permit Findings

The proposed project is consistent with the Local Coastal Program and has completed the objectives to better understand the resources in this area to ensure improved water resource management.

EXHIBIT B:
CONDITIONS OF APPROVAL

A request for Coastal Development Permit approval for the abandonment of groundwater monitoring wells at and around the project site.

STANDARD CONDITIONS

1. Permit: This permit is granted for the land described in the staff report, referenced above, and all attachments thereto, and as shown on the attached exhibits, and on file with the Public Services Department.

2. Inaugurate Within Two Years: Unless the construction or operation of the structure, facility, or use is commenced not later than two (2) years after the effective date of this approval and is diligently pursued thereafter, this approval will automatically become null and void; provided, however, that upon the written request of the applicant, prior to the expiration of this approval, the applicant may request up to two extensions for not more than one (1) additional year each. Said extensions may be granted by the Public Services Director, upon finding that the project complies with all applicable provisions of the Morro Bay Municipal Code, General Plan and Local Coastal Program Land Use Plan (LCP) in effect at the time of the extension request.

3. Changes: Minor changes in the project may be approved by the Public Services Director. Any substantial change, as so deemed by the Public Services Director, will require approval by the Planning Commission.

4. Compliance with the Law: All requirements of any law, ordinance or regulation of the State of California, City of Morro Bay and any other governmental entity shall be complied with in the exercise of this approval.

5. Compliance with Conditions: By issuance of building permits for the proposed use or development, the owner or designee accepts and agrees to comply with all Conditions of Approval. Compliance with and execution of all conditions listed hereon shall be required prior to obtaining final building inspection clearance. Deviation from this requirement shall be permitted only by written consent of the Public Services Director and/or as authorized by the Planning Commission. Failure to comply with these conditions shall render this entitlement, at the discretion of the Director, null and void. Continuation of the use without a valid entitlement will constitute a violation of the Morro Bay Municipal Code and is a misdemeanor.

6. Compliance with Morro Bay Standards: This project shall meet all applicable requirements under the Morro Bay Municipal Code, and shall be consistent with all programs and policies contained in the Zoning Ordinance, certified Coastal Land Use Plan and General Plan for the City of Morro Bay.

7. Hold Harmless: The applicant, as a condition of approval, hereby agrees to defend, indemnify, and hold harmless the City, its agents, officers, and employees, from any claim, action, or proceeding against the City as a result of the action or inaction by the City, or from any claim to attack, set aside, void, or annul this approval by the City of the

applicant's project; or applicants failure to comply with conditions of approval. This condition and agreement shall be binding on all successors and assigns.

8. Construction Hours: Pursuant to MBMC Section 9.28.030 (I), noise-generating construction related activities shall be limited to the hours of seven a.m. to seven p.m. daily, unless an exception is granted by the Public Services Director pursuant to the terms of this regulation.

9. Archaeology: In the event of the unforeseen encounter of subsurface materials suspected to be of an archaeological or paleontological nature, all grading or excavation shall immediately cease in the immediate area, and the find should be left untouched until a qualified professional archaeologist or paleontologist, whichever is appropriate, is contacted and called in to evaluate and make recommendations as to disposition, mitigation and/or salvage. The developer shall be liable for costs associated with the professional investigation and implementation of any protective measures.

10. Sediment or Debris Provisions: Sedimentation control measures shall prevent sediment or debris from entering the creek, roadway or estuary.

STATE OF CALIFORNIA – THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *Governor*

CALIFORNIA COASTAL COMMISSION

CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060-4508
VOICE (831) 427-4863 FAX (831) 427-4877

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT

Please Review Attached Appeal Information Sheet Prior To Completing This Form.

SECTION I. Appellant(s)

Name: RICHARD E.T. SADOWSKI AND MARLA JO BRUTON
Mailing Address: 490 JAVA STREET
City: MORRO BAY Zip Code: 93442 Phone: 805-772-2610
805-795-1125 (CELL)

SECTION II. Decision Being Appealed

1. Name of local/port government: CITY OF MORRO BAY, CALIFORNIA

2. Brief description of development being appealed:
1840 MAIN STREET, MORRO BAY CALIFORNIA
REF. CPO-124, CPO-108.1
LEGAL: LOTS: Pt of 15 & 16; BLOCK: 8; TRACT: RANCHO MORRO Y CAYUCOS

3. Development's location (street address, assessor's parcel no., cross street, etc.):
1840 MAIN STREET, MORRO BAY CALIFORNIA
APN 068-324-019

4. Description of decision being appealed (check one.):

RECEIVED
JUN 06 2008
CALIFORNIA
COASTAL COMMISSION
CENTRAL COAST AREA

☒ Approval; no special conditions
RS ☒ Approval with special conditions:
☐ Denial

Note: For jurisdictions with a total LCP, denial decisions by a local government cannot be appealed unless the development is a major energy or public works project. Denial decisions by port governments are not appealable.

TO BE COMPLETED BY COMMISSION:

APPEAL NO: _____

DATE FILED: _____

DISTRICT: _____

CCC Exhibit 6
(page 1 **of** 47 **pages)**
A-3-MRB-08-031

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 2)

5. Decision being appealed was made by (check one):

- ☐ Planning Director/Zoning Administrator
- ☐ City Council/Board of Supervisors
- ☒ Planning Commission
- ☐ Other

6. Date of local government's decision: MAY 19, 2008

7. Local government's file number (if any): —

SECTION III. Identification of Other Interested Persons

Give the names and addresses of the following parties. (Use additional paper as necessary.)

a. Name and mailing address of permit applicant:

(1) Equilon ENTERPRISES - CPO-124

~~JOHN DEFRENZA~~ (2) JOHN DeFrenza
20301 SW Birch St, Suite 101 E
CPO-108 NEWPORT Beach, Ca 92660

b. Names and mailing addresses as available of those who testified (either verbally or in writing) at the city/county/port hearing(s). Include other parties which you know to be interested and, should receive notice of this appeal. → Water Rate-Payers & Stakeholders in the Morro Basin Well fields for City of M.B.

(1) Ø

(2) Ø

(3) Ø

(4) Ø

(NO PUBLIC COMMENT Received at 5/19/08 Planning Commission Meeting)

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(page 2 of 41 pages)
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APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 3)

SECTION IV. Reasons Supporting This Appeal

PLEASE NOTE:

- Appeals of local government coastal permit decisions are limited by a variety of factors and requirements of the Coastal Act. Please review the appeal information sheet for assistance in completing this section.
- State briefly **your reasons for this appeal.** Include a summary description of Local Coastal Program, Land Use Plan, or Port Master Plan policies and requirements in which you believe the project is inconsistent and the reasons the decision warrants a new hearing. (Use additional paper as necessary.)
- This need not be a complete or exhaustive statement of your reasons of appeal; however, there must be sufficient discussion for staff to determine that the appeal is allowed by law. The appellant, subsequent to filing the appeal, may submit additional information to the staff and/or Commission to support the appeal request.

1) INSUFFIENT NOTICE TO CONCERNED CITIZENS AND STAKEHOLDERS WITH REGARDS TO DRINKING WATER QUALITY SUPPLY.

2) MISREPRESENTATION BY MORRO BAY SENIOR PLANNER THAT THIS PROJECT IS OUTSIDE THE CCC APPEALS JURISDICTION.

3) REF. "APPEAL of COASTAL PERMIT for 1840 MAIN STREET, MORRO BAY, CALIFORNIA (ATTACHMENT)

4) REF. THE "MORRO BASIN NITRATE STUDY" ISSUES AND CONCERNS

Exhibit C
(page 3 of 47 pages)
A-3-MRB-08-031

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 4)

SECTION V. Certification

The information and facts stated above are correct to the best of my/our knowledge.

Signature of Appellant(s) or Authorized Agent

Date: JUNE 5, 2008

Note: If signed by agent, appellant(s) must also sign below.

Section VI. Agent Authorization

I/We hereby
authorize _____
to act as my/our representative and to bind me/us in all matters concerning this appeal.

Signature of Appellant(s)

Date: _____

CCC Exhibit C
(page 4 of 47 pages)
A-3-MRB-08-031

On May 19, 2008, the Morro Bay Planning Commission approved a project for 1840 Main Street (Case No. CP0-124). The City Planner in charge stated that the project was outside the CCC appeals jurisdiction. However, much of the project work involves the closure of MTBE monitoring wells that do lie in the CCC's jurisdiction. They are located west of Main Street, in close proximity to the ocean.

We are appealing those monitoring well closures on the grounds that they may be contributing to serious nitrate pollution of nearby Morro Bay drinking water wells, that they are needed to help verify the source of the nitrates. The monitoring wells lie directly above the aquifer that supplies the Morro Basin drinking water wells.

The 68 monitoring wells to be closed were drilled as part of the mitigation effort for MTBE contamination from a Shell service station formerly located at the 1840 Main Street site. The work also included significant excavations on that site. Mitigation began in 2000, and was completed in 2002. A recently issued study done by Cleath and Associates, the "Morro Basin Nitrate Study" includes data that we believe was never before shown to members of the public.

Data shows that in November, 2002, major spikes in the nitrate levels in Morro Basin drinking water wells began. These wells are, located in close proximity to the areas where mitigation work took place. These spikes continue to occur each November, far exceeding safe drinking water levels.

The City began using State water in 1998. The Morro Basin drinking water wells are used only in November, when State Water is shut down for maintenance.

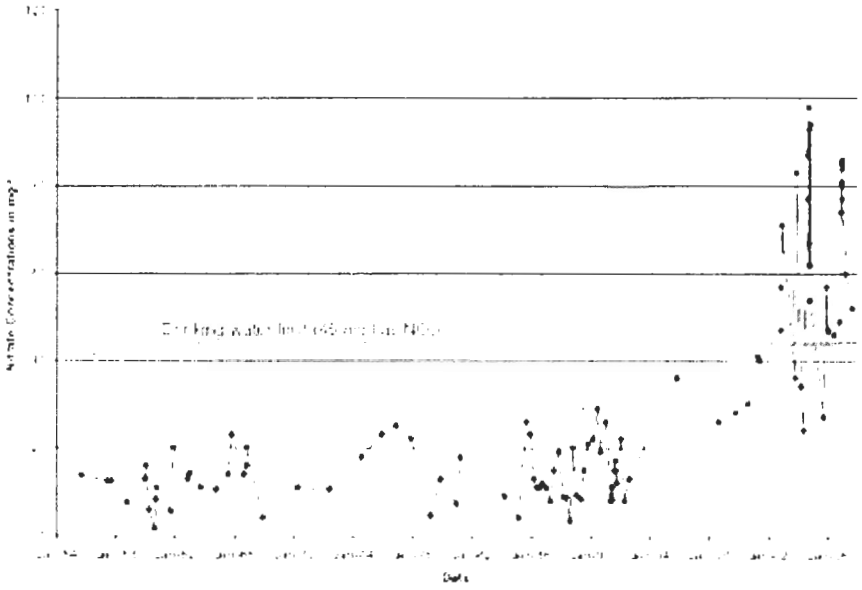

Figure 4
Well MB-3
Nitrate Concentrations
Morro Basin Nitrate Study
City of Morro Bay

Cleath & Associates

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The Cleath study claimed the nitrates in the drinking water wells come from farming operations. However, we believe that no credible evidence was presented to support that theory. We believe that the nitrates come from sewage, exfiltrated from Morro Bay's dilapidated wastewater collection system. A separate report detailing our analysis and findings that support this belief is available on request.

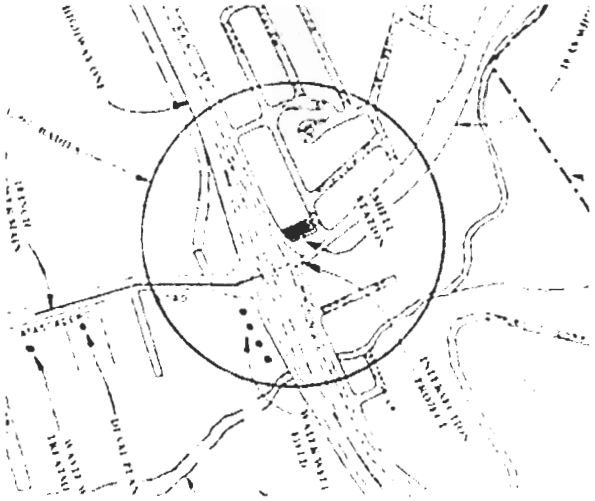
We have viewed video inspections of miles of Morro Bay's collection system lines, and have issued separate reports on their condition. A brief discussion of findings is provided in this document (Attachment A). The complete set of reports is also available, on request.

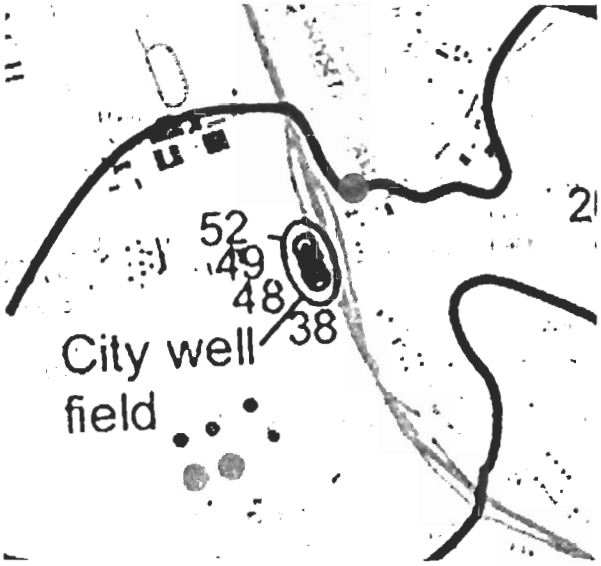
We believe that the nitrate level spikes that began in 2002 are a direct result of some of the MTBE mitigation work. We believe that the excavations at the 1840 Main site, and possibly the drilling of some of the MTBE monitoring wells, breached

the boundaries of the Morro Basin aquifer that supplies the wells, allowing groundwater contaminated with sewage to be pulled into the wells during the times they are pumping.

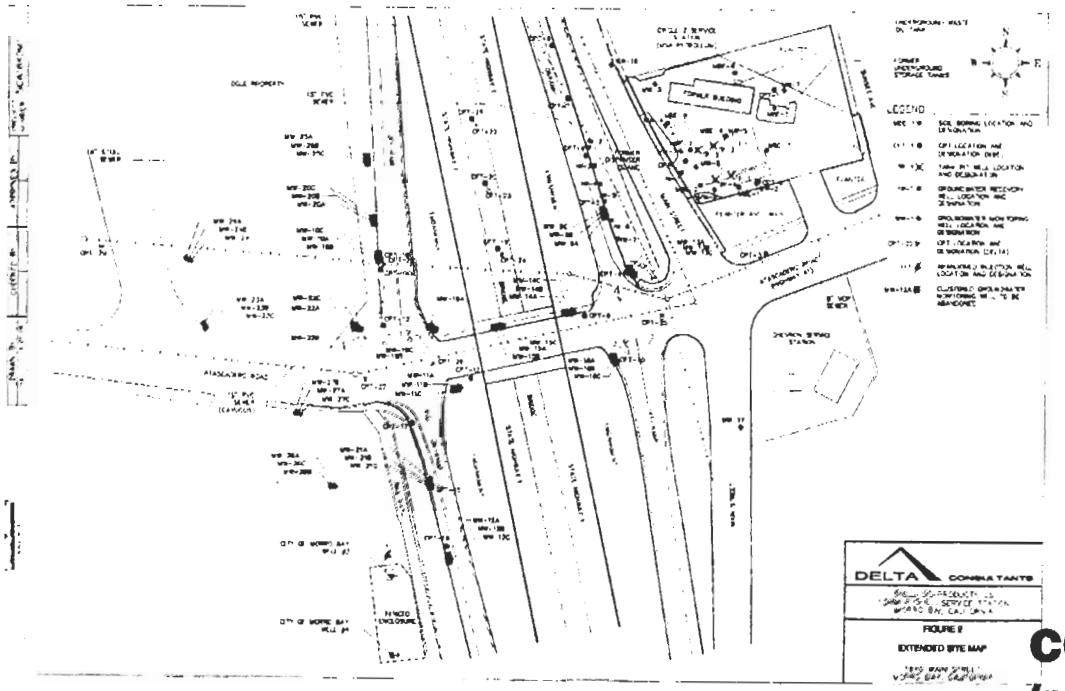
The map on the left, below, is from a City report, "The City of Morro Bay and MTBE". The 1840 Main Street site is marked by the rectangle shaded in red. The Morro Basin drinking water well field is marked by the blue dots. The map on the right is from the Cleath study. On this map, the 1840 Main Street site is marked by the blue dot. The black lines indicate the boundaries of the Morro Basin aquifer.

We believe it is clear that the 1840 Main site, where the extensive excavations, as well as some of the MTBE monitoring well drilling took place, lies directly on the aquifer boundary.





The following diagram shows the positions of the 68 MTBE monitoring wells, visible as clusters of black dots.. A larger version of this diagram is included in this appeal document (Attachment B). In this diagram, the 1840 Main Street site is shaded in red. Only the northernmost two Morro Basin drinking water wells in the well field are included on the map. The fenced enclosure where they are located is shaded in blue.



CCC Exhibit C
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It is well known that unless monitoring wells are properly cased and sealed as they are drilled, they can serve as conduits for aquifer cross-contamination. We have no evidence that the MTBE mitigation consultants took such measures.

We are concerned that closure of the 68 monitoring wells at this time is premature, and should not be permitted, for the following reasons:

1. The issue of the true source polluting the Morro Basin drinking water wells is disputed. As previously noted, we believe the nitrates come from sewage. This viewpoint is supported by such evidence as the fact that isotope studies done by Cleath and Associates produced data that we believe clearly rules out fertilizer as a source, while providing significant evidence that sewage is a likely cause (see Attachment C).
2. The wells may be serving as conduits for contaminated ground water to enter the aquifer. This needs to be determined through appropriate testing (see item 3, below). If the wells are contributing to aquifer contamination, well closing must done properly, or they may continue to do so.
3. Prior to their closure, the monitoring wells will provide a valuable means to extract samples that will prove the true source of the nitrates. The wells, while drilled for the purpose of monitoring the MTBE plume, will be equally effective in tracking a plume of sewage-contaminated ground water pulled toward the wells when they are pumping.
4. The negative declaration for the 1840 Main project, completed in 2005 (SCH2005071022) was based on false information (See Attachment D). No waterways were listed, yet Little Morro Creek lies in close proximity to the site. In addition, only one school was listed as being in close proximity to the site. Morro Bay High School is closer to the site than Del Mar Elementary. In fact, some of the MTBE monitoring wells are located adjacent to the school's driveway.
5. The CEQA document prepared for the project, case number UPC-071/CPO-108 includes the following information:
   - Page 13: "7. Hazards/Hazardous materials", item b, 'Would the project" "Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.?". "NO" has been checked. We submit that there is a strong possibility that the 2000 – 2002 MTBE remediation work breached of the aquifer boundaries, meaning that this item should be checked, "YES". (See Attachment E)
   - Page 13: "7. Hazards/Hazardous materials", item ~~b~~ c, 'Would the project" "Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances or waste within one-quarter mile of an existing or proposed school?". Many of the MTBE monitoring wells are located within one-quarter mile of Morro Bay High School. (See Attachment E) YES
   - Page 14: "8. Hydrogeology/Water Quality". Item a, "Would the project" "Violate any water quality standards or waste discharge requirements?" "NO" has been checked. We submit that if the monitoring wells have not been properly cased and sealed, and are serving as conduits for sewage-contaminated ground water to pass into the aquifer, then this item should be checked, "YES". (See Attachment F)

NOTE:
IN 1999 MTBE CONTAMINATION WAS ORIGINALLY DISCOVERED AT THE MORRO BAY/CAYUCOS WASTEWATER TREATMENT PLANT. FURTHER INVESTIGATION REVEALED THAT THE 1840 MAIN ST. SHELL/EQUILON SITE WAS THE SOURCE OF THE MTBE CONTAMINATION. THE MTBE CONTAMINATION WAS CONVEYED TO THE WASTEWATER TREATMENT PLANT VIA I&I FROM THE MAIN SEWER LINE LOCATED WITHIN THE MORRO BASIN AQUIFER. PART OF THE CORRECTIVE ACTION WAS THE MAIN SEWER LINE BE REPAIRED BY SLIP-LINING.

Attachment A

The sample of Morro Bay wastewater collection lines reviewed included approximately 8,065 feet, or approximately 1.52 miles of pipe. Table 1, below, provides a summary of findings. Defects were identified by Richard Sadowski, certified CWEA Grade IV Wastewater Collection System Operator, one of the appellants of the 1840 Main Street project.

Table 1: Findings From Independent Review of Sample Tapes

Type of Defect/Problem	Total # of Occurrences
Offset Joints	589
Separated Joints	163
Dislocated joints	16
Cracked areas	59
Major breaks	2
Root Intrusion in joints	About 369 feet of pipe affected
Significant structural damage*	2
Bellies/Dips (sagging pipes)	45
Areas of debris	8
Areas of grease buildup	11 (7 are in sewer main connections)
Areas of significant H_2S gas	6
Bad lateral connections	5
Areas where lateral connections are too close together	1
Manholes with missing pan	2

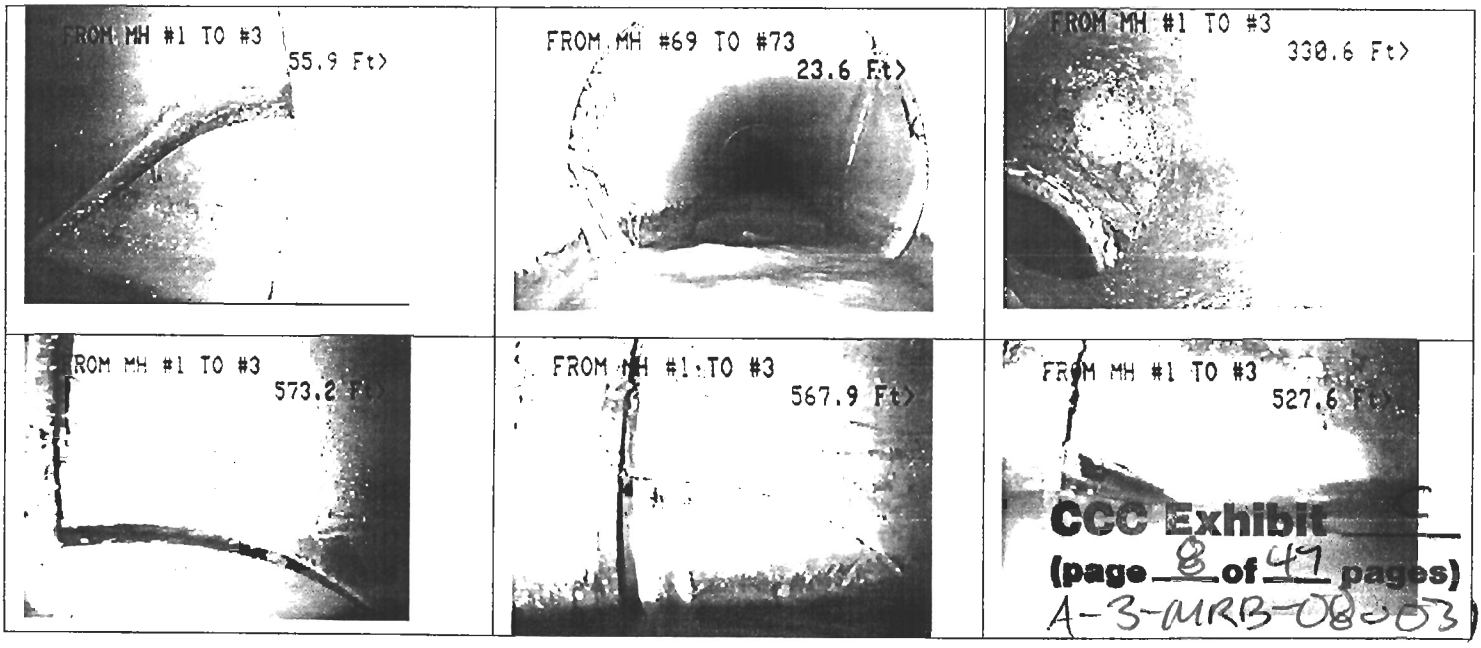
*type unspecified

Most of the lines lie above, and in close proximity to the water table, allowing for significant exfiltration of sewage into the ground water.

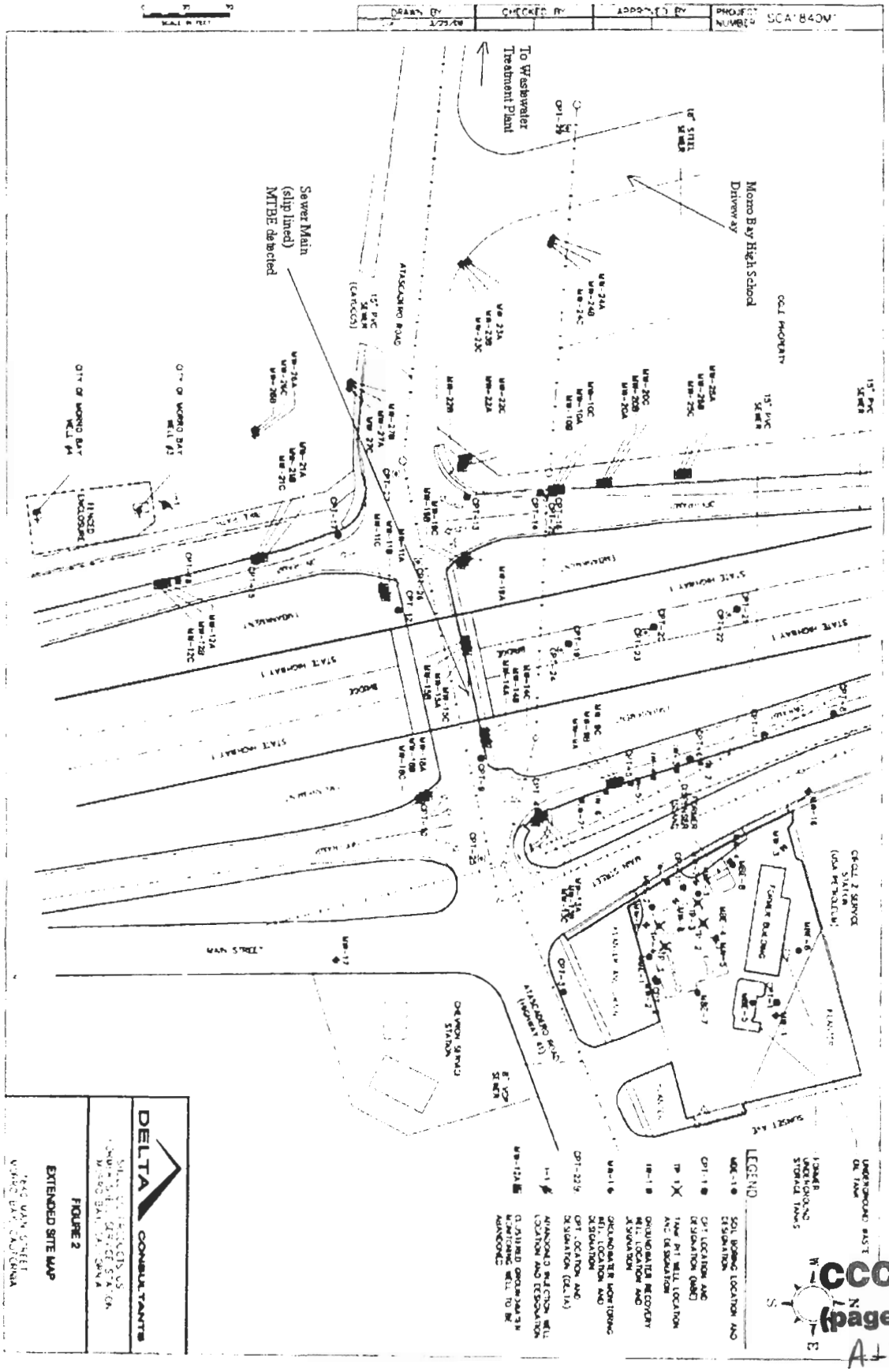
If we look only at offset joints, we find that, given our totals of 589 offsets, with 8,065 feet of pipe inspected, we have on average an offset joint every 13.7 feet.

If we now take the number of separated joints, 163, and adjust for the fact that 49 joints have both separation and offset, we now have 114 more defective joints.. Adding this figure to the 589 joints with offset, we now have a total of 703 defective joints. Now, given our total 8,065 feet of pipe inspected, we have an average of one defective joint every 11.4 feet.

Following are examples of some of the damage we found.



Attachment B



Attachment C

The value ranges noted on the left side of this chart are from a paper entitled, "Nitrate Forensics", by by William E. Motzer, Ph.D. Values given for tested samples from our wells, and for the tested fertilizer sample come from the Morro Basin Nitrate Study.

Table A

Expected Values for Various Sources		Actual Values found in Morro Bay Wells				Actual Value for the Fertilizer Sample Tested
$\delta^{15}N$ (‰) value ranges defined in "Nitrate Forensics"		$\delta^{15}N$ (‰) in well MB-3	$\delta^{15}N$ (‰) in well MB-4	$\delta^{15}N$ (‰) in well MB-14	$\delta^{15}N$ (‰) in well MB-15	$\delta^{15}N$ (‰) in fertilizer sample tested
Commercial fertilizer	−4 to −4	10.0	8.8	7.1	7.9	0.7
Animal or human waste	> −10					
Precipitation	−3					
Organic nitrogen in soil	−4 to −9					

The values from our wells are also a very close match to isotopic values for sewage, as documented in a paper titled "Ground-water Quality Impacts from On-site Septic Sytems ", by Dennis McQuillan

McQuillan Study Values:

sewage from septic systems: **7.6 to 12.1**

sewage at a primary sewage plant: **7.2 to 12.1**

Morro Basin Well Values: **7.1 to 10.0**

Standard Values for Commercial Fertilizer: **- 4 to + 4**

In addition, no evidence was provided, or is known that there has been any sudden increase in fertilizer use by Morro Valley farmers, in 2002, or at any other time.

Attachment D

Document Details Report
State Clearinghouse Data Base

SCH#	2005071022
Project Title	Mixed Use Retail / Office Building wtih Drive Thru Endcap
Lead Agency	Morro Bay, City of

Type	**Neg** Negative Declaration
Description	Two story multi-retail building with second story towers for storage or office use and a drive thru endcap.

Lead Agency Contact

Name	Mike Prater		
Agency	City of Morro Bay		
Phone	(805) 772-6261	*Fax*	
email			
Address	955 Shasta Avenue		
City	Morro Bay	*State* CA	*Zip* 93442

Project Location

County	San Luis Obispo		
City	Morro Bay		
Region			
Cross Streets	Sunset Avenue and Main Street		
Parcel No.	068-324-019		
Township	*Range*	*Section*	*Base*

Proximity to:

Highways	1
Airports	
Railways	
Waterways	
Schools	Del Mar Elementary
Land Use	Mixed Use / MCR / R-4 (SP) / Mixed Use Area F

Project Issues	Aesthetic/Visual; Air Quality; Archaeologic-Historic; Drainage/Absorption; Geologic/Seismic
Reviewing Agencies	Resources Agency; Department of Fish and Game, Region 3; California Coastal Commission; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, District 5; Department of Health Services; Native American Heritage Commission; Regional Water Quality Control Board, Region 3

Date Received	07/07/2005	*Start of Review*	07/07/2005	*End of Review*	08/05/2005

CCC Exhibit C
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Note: Blanks in data fields result from insufficient information provided by lead agency.

slopes, located across Main Street and the Highway 1 onramp, would not be affected by the proposed project. Therefore, no significant impacts would occur in association with landsliding or other forms of slope failure.

b. The project site is currently paved. Natural topsoil material was likely removed during grading and removal for the service station. Therefore, no impacts would occur in association with loss of topsoil. However, demolition and soil excavation activities would result in temporary exposure of surficial soils to wind and water erosion, especially if completed during the rainy season (i.e., November 15th to April 15th). Impacts would be potentially significant but feasibly mitigated.

c. See response to a-ii and a-iv.

d. It is unclear whether expansive soils are present beneath the project site. However, no permanent structures that might be adversely impacted by expansive soils would be constructed as part of the project. Therefore, potential expansive soil impacts would be less than significant.

e. Neither septic tanks or alternative wastewater disposal systems are proposed in association with the project; therefore, no impacts would occur.

Mitigation and Residual Impact:

1 A water truck shall be used for dust suppression to prevent wind erosion during soil excavation and demolition activities. If these activities are completed during the rainy season (i.e., November 15th to April 15th), an erosion control plan identifying measures such as silt fences, hay bales, and/or straw wattles shall be prepared and implemented during construction to prevent surface water induced erosion of on-site soils. In addition, areas remaining unpaved subsequent to demolition shall be revegetated or covered with gravel immediately following demolition activities to prevent further erosion.

Implementation of this mitigation measure would reduce potentially significant erosional impacts to a level of less than significant.

Monitoring: This measure shall be included as a note on the project grading plan. The Public Services Department shall review and approve the grading plan, and if construction occurs during November 15th to April 15th, the erosion control plan prepared by the applicant/property owner, prior to land use clearance for grading. The Department shall monitor implementation of proper dust suppression and erosion control measures during demolition and soil excavation activities, and subsequently until completion of revegetation.

7.HAZARDS/HAZARDOUS MATERIALS Would the project:	Significant	Unknown Potential Significant	Potential Significant And Mitigated	Not Significant	Impact Reviewed in Previous Document
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				X	
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				X	
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X	
d. Be located on a site which is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment?				X	
e. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X	
f. Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				x	

Environmental Setting

Attachment F

Methyl tertiary butyl ether (MTBE) has been detected in subsurface soils and groundwater in the vicinity of the subject Shell service station. MTBE is a gasoline additive that has been used extensively across the United States since approximately 1992. MTBE is highly soluble in groundwater and capable of migrating off-site up to one mile from leaking UST sites. Early subsurface soil and groundwater sampling completed at the old Shell station indicated that the highest concentrations of MTBE was present along the northern portion of the USTs, located in the southwest portion of the site. Soil contamination appeared to be confined to the perimeter of the Shell Station; however, MTBE-impacted groundwater had migrated approximately 100 feet off-site to the southwest, to the vicinity of the SH 1 northbound onramp. An interim groundwater remediation system was constructed under the emergency permit followed by a permenant remediation system which is currently operating.

Soil and groundwater remediation had also been established under the emergency permit. Soil that appeared to be impacted with petroleum hydrocarbons during UST (and associated piping) removal had been excavated and disposed off-site. Groundwater remedial activities include installation of additional monitoring wells, groundwater pump and treat, soil vapor extraction, and installation of an injection well to form a hydraulic barrier.

Impact Discussion:

a & b. The proposed project would not create a significant hazard to the public or the environment, as reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment would not occur.

c & d. The project site is located approximately one-quarter mile east of Morro Bay High School. Removal of contaminated soils has already occurred under the emergency permit. Therefore, impacts would be less than significant.

e. The proposed project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Therefore, impacts would be less than significant.

f. The proposed project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Therefore, impacts would be less than significant.

8. HYDROLOGY/WATER QUALITY Would the project:	Significant	Unknown Potential Significant	Potential Significant And Mitigated	Not Significant	Impact Reviewed in Previous Document
a. Violate any water quality standards or waste discharge requirements?				X	
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X	
c. Substantially alter the existing drainage pattern on the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on or off-site?				x	
d. Substantially alter the existing drainage pattern on the site or area, including through the alteration of the course of a stream or substantially increase the rate or amount of surface runoff in a manner, which would result in flooding on- or off-site?				X	
e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?			X		
f. Otherwise substantially degrade water quality?			X		
g. Place housing within a 100-year flood hazard area as mapped on a federal flood hazard boundary or flood insurance rate map or other flood hazard delineation map?				X	
h. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X	

The "Morro Basin Nitrate Study": Issues and Concerns

Richard E. T. Sadowski and **Marla Jo Bruton**
B. S. Mechanical Engineering; CWEA Grade IV Wastewater Collection System Operator
Investigative Journalist

With technical assistance from Brian Stedjee

April, 2008

Table of Contents

Background

In early March, 2008, a rash of newspaper articles and television news spots told of concerns that Morro Bay's wells were being contaminated by nitrates from fertilizers used by local farmers. Cited as evidence was the "Morro Bay Nitrate Study", done for the City by Cleath & Associates and published in December, 2007.

We were concerned that the study appeared to have failed to appropriately consider and study the possibility that Morro Bay's own sewage, exfiltrating from damaged lines, was a major factor in the nitrate contamination of the wells, and noted an apparent lack of rigor in the water testing procedures used by the consultants.

Our own qualifications for undertaking a review and critique of the Cleath study include expertise in mechanical engineering (including fluid dynamics), wastewater collection system management, wastewater treatment methods, State and Federal clean water laws, and investigative journalism. Our expertise does not include chemistry.

We gratefully acknowledge the technical assistance we received from chemist Brian Stedjee, who reviewed the study and provided technical information related to those portions that we were not qualified to analyze. Technical information provided by Mr. Stedjee has been incorporated into our discussions of isotopes and isotopic analysis, zeolite, and ion exchange, chemical makeup of various nitrogen compounds, including fertilizers, depletion of chloride and sulfide ions, ability for exfiltrated wastewater to carry nitrates from solid waste into the soil, and the absence of a connection between methyl tertiary butyl ether (MTBE) and nitrogen .

Summary of Findings

We believe that the findings presented in the "Morro Bay Nitrate Study" are based, in large part, upon invalid assumptions, inadequate study of major potential nitrate contamination sources, and in some cases, faulty "science". We believe that the study totally fails to establish any reasonable proof that agricultural operations are the primary source, or even a significant source, of the nitrates in Morro Bay wells.

The Executive Summary of the study states, in part,

> *"The purpose of the study was to evaluate potential sources of dissolved nitrate contamination in ground water at the well field along Highway 1. Potential sources include agricultural and turf fertilizers, private septic system discharges, sewer exfiltration, animal operations, and miscellaneous sources. The results of this study indicate that the main source of nitrate contamination in ground water at the City's Highway 1 well field is from nitrogen fertilizer applications associated with vegetable farming operations in the lower Morro Valley."*

We disagree, based upon what we believe are major weaknesses and errors in the study, including:

- **Failure to consider the possible impact of Bioxide use at Cayucos Lift Stations**. The consultants failed to include in the study (probably because they were unaware of it) a major potential source of nitrate contamination: the Bioxide used to treat wastewater in Cayucos lift stations. Excess Bioxide could have entered the ground water through exfiltration from the Main Street trunk line. Bioxide is composed primarily of calcium nitrate – a commonly used synthetic fertilizer.
- **Insufficient study of sewer exfiltration as a cause of well contamination.** Sewer exfiltration was not appropriately examined and considered as a major source of nitrate contamination. Sewer exfiltration was dismissed as unlikely to be a significant nitrate source based on what we consider completely invalid grounds, and insufficient study. Specific problems include the following:
    - An out-of-context reference to a study, was used to back up the assumption that exfiltration amounts are minimal.
    - The hydrogeology of areas outside the Morro Basin was not discussed or evaluated, in terms of potential for migration of sewage-contaminated groundwater to the aquifer from other parts of Morro Bay.
    - A simplistic conclusion regarding exfiltration when sewer lines are below the water table was taken. It is clear from basic principles of fluid dynamics that exfiltration can and does occur in wet conditions under some circumstances, but this was not considered.
- **Errors and omissions in nitrate isotope studies.** Nitrate isotope studies included in the report neither prove NOR disprove the consultants' assertions and conclusions. Problems we identified include the following:
    - Nitrate isotope values recorded are, at best, inconclusive; are not consistent with nitrate fertilizer.
    - Only the wells were included in the study. Lab reports show no isotopic studies for the samples of water taken from the Morro Valley or from the wastewater collection system; thus no comparison of the Nitrogen and Oxygen isotopic signatures of the samples from the three locations was done.
    - The study contained no discussion of types of nitrogen fertilizers used by the farmers. Nitrates from synthetic nitrate fertilizers will have a different isotopic "signature" than nitrates from fertilizers derived from natural sources, the latter being similar to the isotopic "signature" typical of nitrates in sewage.
    - The study includes questionable statements and assumptions, including the applicability/value of ^{18}O isotope analysis, and a false and misleading statement regarding exfiltration of ^{15}N isotopes.
- **Problems in discussions of agricultural fertilizer applications.** This section of the document includes unsupported and potentially erroneous statements. Problems we identified include the following:

- Failure to cite sources of data used
- An apparently invalid statement regarding an alleged role of MTBE

- **Contradictions between the Cleath study and nitrate level reporting to residents.** Statements regarding the timing of spikes in nitrate contamination of the wells appear inconsistent with Morro Bay's past "state of the water" reports. The Cleath study asserts that nitrate levels in the wells began to exceed standards for drinking water in 2002. However, a review of past reports indicates that no such problem was reported until 2006.

All of these issues will be covered in depth in subsequent sections of this report.

Failure to Consider Possible Impact of Bioxide Use in Cayucos Lift Stations

Bioxide Use Began in 2005

In the minutes of the August 17, 2005 Cayucos Sanitary District Board meeting is item 8: "Consideration to approve Bioxide treatment program for use at lift stations 2 and 5". The minutes indicate that the CSD approved a motion to modify the budget to allow for the implementation of the Bioxide program to control odor problems associated with hydrogen sulfide, commonly referred to as "sewer gas".

The minutes for the CSD's September 21, 2005 Board meeting, describe a report that says,"the Bioxide injections appear to be greatly reducing any odors apparent at the lift stations, and that staff have removed the Biofilters along Main Street in Morro Bay and have discontinued use of Ferrous Chloride at Lift Station 5."

We have confirmed that the Bioxide program is still in place in Cayucos. According to a former employee, Bioxide is injected into the wastewater in the lift stations just as the wastewater is pumped out of the stations and into the force mains. There is also a means for workers to inject additional Bioxide "on demand."

The Bioxide Process

Our research indicates that the Bioxide process involves the application of a nitrate solution to wastewater. The process uses naturally occurring bacteria to biochemically oxidize dissolved sulfide.

Bioxide is primarily composed of calcium nitrate, a synthetic nitrate compound which is also used as a fertilizer. If too much is used, and all of the calcium nitrate is not consumed in the chemical reaction, it will remain in the sewer lines and may exfiltrate into the soil and ground water.

Bioxide Nitrates versus Nitrates from the Farmers' Fertilizers

The Cleath study asserts that the primary source of nitrate contamination of the wells is most likely fertilizer from local farms. We assert that established science indicates that the chemical signature of the nitrates in synthetic nitrogen fertilizers that may be used by the local farmers, and the chemical signature of the calcium nitrates in Bioxide will be essentially equivalent. Indeed, calcium nitrate is sometimes used as a fertilizer. We further assert that the consultants did no testing that would enable them to state with any certainty which of these may be a source of the well contamination.

Detecting Bioxide Nitrates in the Wastewater Lines

We would expect that there is strong potential for excess calcium nitrate from the Bioxide to appear, intermittently, in the Main Street trunk lines - with the timing of its presence dependent upon such variables as lift station pumping schedules, flow levels, and employee intervention to add Bioxide "on demand".. Testing of the water in the Cayucos line would have to be carefully timed, and done repeatedly over time in order to determine a reasonable estimate of the amounts of any excess calcium nitrate left over from the Bioxide process.

There no discussion of any such testing in the Cleath study and, since consultants charge for their work, we consider it reasonable to assume that any and all testing done would be carefully documented in their report.

Insufficient Study of Sewer Exfiltration as a Cause of Well Contamination

Quotes From a Study Were Taken Out of Context

The Cleath report appears to make what we consider an invalid assumption – that our exfiltration rates are minimal. Citing a 2000 study by Amick and Burgess. The Cleath report says:

> *"Despite a hydraulic potential for exfiltration along Main Street when the City well field is pumping, gravity sewer leaks quickly become plugged by sewer film and settleable solids in the sewage, theoretically reaching steady-state leakage rates in approximately one hour. A research study conducted at several locations in Germany, where sewer systems are generally older and in poor condition showed that when system pressure heads are below the sewer pipe crown (typical for gravity sewers) exfiltration rates were minimal"*

We are familiar with the Amick and Burgess study, and surprised that the Cleath consultants chose to quote out-of-context material regarding the German research. In their discussion of that research, Amick and Burgess go on to state:

> *"It was also noted that at lower flows and pressure heads, the exfiltration rate decreases exponentially, most likely from self-sealing from sewer film and settleable solids in the sewage. If the flow and pressure head increases, however, this self-sealing property is broken and the exfiltration rate increases rapidly. "*

Furthermore, in fact, the Amick and Burgess study focuses on the serious negative impacts of exfiltration, such as discharges of pathogens into residential areas, exceeded water quality standards, and risks to the health of the people living adjacent to the impacted streams, lakes, ground water, sanitary sewers, and storm sewers.

Among the examples given is an estimated exfiltration rate between 5, 649 and 6,327 **"gallons per inch diameter per mile length per day"** for one Santa Cruz location tested. This hardly sounds "minimal".

Exfiltration Potential in Morro Bay Sewer Lines

Given the condition of our sewer, we believe that there is significant exfiltration of wastewater from our lines as well, with the potential for that wastewater to flow underground to the aquifer. In prior reports, we have presented extensive evidence of the seriously dilapidated condition of the lines throughout Morro Bay.

We believe it is clear from those reports, and from numerous studies on the risks associated with exfiltration (including those in the Amick and Burgess study, "Exfiltration in Sewer Systems" which was, curiously, cited in an apparent attempt to support the idea that exfiltration was not a major problem here), that major exfiltration of sewage from dilapidated collection systems is a widespread and serious problem. The Albuquerque case study cited by Amick and Burgess "*...concluded that the rate of exfiltration from that sewer system, expressed as a percentage of base flow, is on the order of 10% of average daily base wastewater flow.*"

We believe that the problem is also very serious in Morro Bay. It is important to note that Amick and Burgess make it clear that maximum potential for exfiltration problems exists in areas where the sewer lines lie above the water table, stating that, "*Areas with significant portions of the system above, but in close proximity to, the groundwater table are probably at greatest risk.*" This is the case for most of the lines in Morro Bay and Cayucos.

For an excellent overview of the problem, we highly recommend that concerned readers review the Amick and Burgess study, which is available online at: http://www.epa.gov/nrmrl/pubs/600r01034/600r01034.pdf

Potential for Exfiltrated Sewage to Reach the Aquifer from Areas Distant from the Basin

Content of the Cleath report section on hydrogeology was limited to a discussion of the Morro basin covering topics such as subsurface inflow through the narrows, and stream flow seepage. We found no discussion of hydrogeology related to underground water transport outside of, and in the direction of the basin, from other parts of Morro Bay. The recharge dynamics section of the report also failed to consider the potential for exfiltrated sewage migration to the aquifer from other Morro Bay locations.

Ground water, like surface water, flows from higher elevations (or pressures) toward lower elevations (or lower pressures). Groundwater flow is usually toward a groundwater discharge area, such as a stream.

According to our research, in order to determine the extent to which exfiltrated sewage can travel to the aquifer from various areas of Morro Bay, hydrogeological studies such as testing with tracer compounds and ground water flow modeling are necessary. Groundwater flow modeling is generally used to define the quantity of groundwater available or direction of dissolved contaminant migration. Tracer methodologies involve the use of chemical tracers whose migration can be followed through testing of water samples from various locations.

We reviewed several studies of well contamination to see that techniques other consultants and researchers use, and found extensive use of flow modeling to help determine how contaminants migrate in underground water. One excellent example is "Determining Sources of Water and Contaminants to Wells in a Carbonate Aquifer Near Martinsburg, Blair County, Pennsylvania, By Use of Geohcemical Indicators, Analysis of Antropogenic Contaminants, and Simulation of Ground-Water Flow, by By Bruce D. Lindsey and Michele L. Koch .

With regard to consideration of migration of water to the wells, note the following chapters in the document:

> *Simulation of Ground-Water Flow, Sources of Water and Contaminants to Martinsburg Municipal Wells , Geochemical Indicators, Source of Water , Type of Permeability Sources Based on Simulation of Ground-Water Flow , Conceptual Model , Model Design , Model Calibration , Simulation Results and Sensitivity , Zone of Contribution to Municipal Wells , Relating Simulation Results, Natural Geochemistry, and Anthropogenic Contaminants to Determine Source Areas Limitations of Data and Findings*

This study covers a wide geographic area, and includes thorough research and analysis of means for contaminants to migrate to the wells from areas other than those in the immediate vicinity. We found no indication of any such rigor in the Cleath study.

Indeed, we are convinced that the City of Morro Bay could not possibly afford a study of this scope and quality. However, we believe that more investigation is definitely needed to either confirm or deny that exfiltrated sewage is the major cause of our well contamination. Had some of the money spent on the Cleath study been spent to check for sewage pollution of our groundwater, we believe that we would be much closer to resolving the well contamination problem.

Therefore, we believe it is impossible, based upon their very limited research, for the consultants to state with any certainty whatsoever whether exfiltrated sewage can, or cannot reach the Morro Basin aquifer from various areas of Morro Bay. This includes exfiltrated sewage containing excess calcium nitrate from Cayucos' Bioxide use.

Overly Simplistic Treatment of Potential for Exfiltration in Wet Conditions

In a discussion of exfiltration potential, authors of the Cleath study state,

> *"There was little opportunity for sewer exfiltration in the vicinity of the City well field in 2005 due to elevated water levels"*
>
> and, in the same paragraph,

"Water levels declined in the well field area, compared to 2005, and provided an opportunity for exfiltration from sewer pipes along Main Street".

Although, under most normal conditions, we would not expect exfiltration from sewer lines that are below the water table, it can, and does happen.

During peak daily flows (5-9 am and 5-8 pm approximately) the downtimes between pump cycles at the lift stations are of shorter duration and the pump run times are longer. In wastewater conveyance systems with "severe bellies", or "dips" (low points in the line), this causes minor surcharging in those areas.

As noted in some of our previous reports, Morro Bay's conveyance system is full of "severe bellies", where wastewater tends to collect and stand. During surcharging events, pressure in those areas is increased and may exceed the pressure exerted by water present outside the line. In those situations, exfiltration can and does occur through cracks and other openings above the mean flow line, even though the line is below the water table.

It is important to note that "bellies" in sewer lines tend to form in areas where there is significant exfiltration of sewage. The constant soaking of the soil underlying the line causes the soil, and subsequently the line, to sink.

In addition, the consultants themselves confirm that there is a hydraulic potential for exfiltration along Main Street when the City well field is pumping, although they do then use an out-of-context quote as a basis for the claim that gravity sewer leaks "quickly become plugged by sewer film and settleable solids".

Unsupported Mixing Calculation Assumptions and Conclusions

On page 18, we find Table 5, titled, "Mixing Assumptions for Sewer Exfiltration". Raw data, formulae, and actual calculations are not provided. In addition, beneath the table is this statement, "Mixing requirements assume all ammonia converts to nitrate with no denitrification".

In order for this assumption to be correct, a specific type of bacteria, required for this conversion, must be present. No evidence is presented to establish the presence of these bacteria in the locations and numbers required.

It is further stated that,

"Figure 12 presents the type of water that would be expected (without ion exchange) from mixing 30-55% wastewater (Cayucos, Morro Bay, and WWTP influent sources) with historical ground water at MB-3"

However, no evidence is presented to rule out the presence in the soil of zeolite, a natural ion exchanger.

If zeolite is present in the soil, there will be ion exchange. 48 naturally occurring zeolites are known. Zeolites slowly crystallize in post-depositional environments (shallow marine basins), or form where volcanic rocks and ash layers react with alkaline groundwater.

Also on page 18 is the statement,

"Chloride and sulfate anions are relatively conservative in solution, however an evaluation of the anion mixing results shows that for the 30-55 percent wastewater mixtures to shift toward the composition of nitrate-impacted water at the City well field, there would also need to be a significant depletion in chloride (>50percent) along with enrichment of sulfate and bicarbonate in solution (Figure 13). This would not be part of a natural ion exchange process near the well field"

Chloride and sulfate are both negative ions. If one is depleted, then the other should be depleted as well.

Failure to Appropriately Address the Role of Ammonia and Urea in Exfiltrated Sewage

Nitrogen can be found in nitrate (NO_3-), ammonia (NH_3), or urea (N_2COH_4). Bacteria can produce nitrates from ammonia and urea found in sewage. This may, or may not occur when these compounds are exfiltrated into the soil, depending on type and amount of soil bacteria present, and conditions. We found no discussion of this issue in the study.

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Errors and Omissions in Nitrate Isotope Studies

Basic Principles of Isotopic Nitrate Studies

The consultants used isotopic ratio analysis as a way of identifying nitrate sources. While the unfamiliar terminology may seem daunting, the principle involved is a simple one.

Chemical elements exist in multiple forms with different masses. These different forms are referred to as "isotopes". The difference in mass is due to different numbers of neutrons in the nucleus of the atom. Different isotopes are denoted by mass number, such as ^{12}C and ^{13}C. While isotopes of the same element have the same chemical properties, their masses can affect how they are used in chemical reactions. The consultants used nitrogen and oxygen isotopes as part of their attempt to trace the source of nitrates in the wells.

Nitrogen atoms have seven electrons, and seven protons. There are 2 stable nitrogen isotopes (^{15}N and ^{14}N). Ratios of $^{15}N/^{14}N$ are reported as $\delta^{15}N$. ("δ values", in units of permil = ppt = ‰). The ^{14}N isotope has 7 neutrons in the nucleus. The ^{15}N isotope has 8. The mass of "stable" isotopes does not change. They do not lose or gain neutrons.

Oxygen has 8 protons and 8 electrons. Oxygen isotopes are also used in studies to determine the source of nitrates. There are 3 stable oxygen isotopes (^{18}O,^{17}O,^{16}O), having 10, 9, and 8 protons in their nuclei, respectively. Ratios of $^{18}O/^{16}O$ are reported as $\delta^{18}O$. Ratios of $^{17}O/^{16}O$ are reported as $\delta^{17}O$.

The nitrate ion is made up of one nitrogen atom, and three oxygen atoms, and nitrate ions may contain any of the stable nitrogen and oxygen isotopes. It has been found that nitrates originating from synthetic fertilizers, explosives, and nitric acid have proportionately less ^{15}N in source-area ground water, than does nitrate from sewage contamination. As previously noted, these relative amounts of isotopes can be measured in the form of isotope ratios; in this case, $^{14}N/^{15}N$. An "isotope ratio mass spectrometer" (IR-MS) is used to identify isotopes, in determining the isotopic ratio of a sample.

During biological processes (e.g., assimilation, nitrification, denitrification), the lighter isotope (^{14}N) ends up being concentrated in the products while the heavier isotope (^{15}N) ends up being concentrated in the residual reactants. Hence, during the reaction $NO_3 \rightarrow N_2$, the resulting N_2 has a lower □^{15}N than the residual NO_3.

Isotopic analysis is widely used. Under the right conditions, and if the appropriate scientific methods are followed, it can be a useful tool in determining sources of nitrate contamination. However, there are many complicating factors. For example, as stated by Carol Kendall, author of "Tracing sources of agricultural N using isotopic techniques: the state of the science ",

> *"Biological fractionations can make it very difficult to identify sources and quantify mixing proportions."*

The following table is quoted from "Nitrate Forensics" by William E. Motzer, Ph.DI,

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"TABLE 1
Typical $\delta_{15}N$ and $\delta_{18}O$ Values in Dissolved Nitrate (NO_3–) From Different Nitrate Sources

Potential Contaminant Source	$\delta_{15}N$ (‰)	$\delta_{18}O$ (‰)
Commercial fertilizer	–4 to +4	+18 to +26
Animal or human waste	> +10	–4 to +12
Precipitation	–3	+18 to +60
Organic nitrogen in soil	+4 to +9	+1 to –4

Where: δ (isotope) = values in per thousand (‰)"

We have seen some variations in the ranges presented by various researchers; the variations are generally minimal. This set of expected values is typical.

Testing of Samples

Appropriate samples for testing are critical to the integrity of any scientific study such as the one done by Cleath and Associates. The expression "garbage in, garbage out", more commonly associated with computers, applies equally well to this process. If samples are not taken from the right places at the right time, handled correctly, and tested appropriately, the test results will be invalid.

In the body of the Cleath report, on page 15, is the following table:

Table 4
Nitrate Isotope Results
Highway 1 Well Field

Sample ID	$\delta^{15}N$ (‰)	$\delta^{18}O$ (‰)
MB-15	7.9	16.0
MB-14	7.1	12.9
MB-4	8.8	13.1
MB-3	10.0	13.6

Interestingly, we find a slightly different version in Appendix E: Laboratory Reports for Ground Water and Surface Water:

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LAB NUMBER	SAMPLE DESCRIPTION	$\delta^{15}N$ ‰	$\delta^{18}O$ ‰
40650-1	MB-15	7.9	16.0
40650-2	MB-14	7.1	12.9
40650-3	MB-4	8.8	13.1
40650-4	MB-3	10.0	13.6
40650-5	Ferilizer	0.7	13.8
Analytical Precision (1-sigma)		0.3	0.2

Clearly, the significant data in the Appendix, but not the table in the body of the report, is the data on the fertilizer sample tested by the laboratory. Note that the nitrogen isotope readings from the wells and the reading from the fertilizer sample diverge widely

It has been found that nitrates originating from synthetic fertilizers, explosives, and nitric acid have proportionately less ^{15}N in source-area ground water, than does nitrate from sewage contamination." The data in the above table would, therefore, seem to "fly in the face" of assertions that nitrate contamination in the wells comes from fertilizer. The tested fertilizer sample does, indeed, have a very low ^{15}N value, and is thus consistent with known values for fertilizer. On the other hand, the well water samples have much higher ^{15}N values, suggesting to us that fertilizer cannot be identified as the chief cause of the contamination.

Cleath study authors attempt to justify the data by suggesting possible reasons for the divergence of the data from their assertion that the well contamination is primarily caused by agricultural operations. For example, on page 19, they state,

> *"Another aspect of isotope analysis that results in overlapping ranges of $\delta^{15}N$ for various sources is isotope fractionation. For example, microbial denitrification can enrich the 15N composition of residual dissolved nitrate and lead to nitrate derived from fertilizer having $\delta^{15}N$ values close to sewage nitrogen (Jeffrey et al, 2002). Therefore, the range of $\delta^{15}N$ in nitrate values at the City well field (+7 ‰ to +10 ‰)* **could be** *accounted for by sewer exfiltration without significant ammonia volatilization and denitrification, by a mixture of nitrate input from sewer exfiltration and synthetic fertilizers with ammonia volatilization and/or denitrification. "* (emphasis, ours)
>
> and
>
> *"Isotope fractionation during denitrification also enriches $\delta^{18}O$ of nitrate values. The proportion of $\delta^{15}O$ enrichment to $\delta^{18}O$ enrichment in nitrate residual during denitrification* **has been found on many occasions** *to be 2:1 (e.g. Kendall, 1998)* (emphasis, ours)

Note the use of the terms "*could be*" and "*has been found on many occasions....*" This, we believe, is pure speculation. Despite the speculations by the consultants, and their presentation of various theories to explain why their ^{15}N data does not fall into the expected ranges, we believe that there is insufficient evidence in the report to prove any of their theories true.

To better illustrate the discrepancies, we organized the data in our own tables, comparing the Cleath study data to standard value ranges for different nitrate sources, as found in William Motzer's paper, "Nitrate Forensics".

In this first table, we see the expected value ranges for $\delta_{15}N$ defined in the two left columns, followed by the actual readings from our wells, and from the one fertilizer sample tested.

Table A

Expected Values for Various Sources		**Actual Values found in Morro Bay Wells**				**Actual Value for the Fertilizer Sample Tested**
$\delta_{15}N$ (‰) value ranges defined in "Nitrate Forensics"		**$\delta_{15}N$ (‰) in well MB-3**	**$\delta_{15}N$ (‰) in well MB-4**	**$\delta_{15}N$ (‰) in well MB-14**	**$\delta_{15}N$ (‰) in well MB-15**	**$\delta_{15}N$ (‰) in fertilizer sample tested**
Commercial fertilizer	–4 to +4	10.0	8.8	7.1	7.9	0.7
Animal or human waste	> +10					
Precipitation	–3					
Organic nitrogen in soil	+4 to +9					

Note that there are major discrepancies. Readings for commercial fertilizer should be in the -4 to +4 range. The fertilizer sample does, indeed, fall into the specified range for commercial fertilizer. However, the readings from the wells do NOT.

In this second table, we see a comparison of expected value ranges for $\delta_{18}O$

Table B

Expected Values for Various Sources		**Actual Values found in Morro Bay Wells**				**Actual Value for the Fertilizer Sample Tested**
$\delta_{18}O$ (‰) value ranges defined in "Nitrate Forensics"		**$\delta_{18}O$ (‰) in well MB-3**	**$\delta_{18}O$ (‰) in well MB-4**	**$\delta_{18}O$ (‰) in well MB-14**	**$\delta_{18}O$ (‰) in well MB-15**	**$\delta_{18}O$ (‰) in fertilizer sample tested**
Commercial fertilizer	+18 to +26	13.6	13.1	12.9	16	13.8
Animal or human waste	–4 to +12					
Precipitation	18 to +60					
Organic nitrogen in soil	+1 to –4					

Again, there are discrepancies. None of the values for the wells (or even for the fertilizer) matches the expected range for commercial fertilizer.

Furthermore, in "Ground-water Quality Impacts from On-site Septic Sytems ", Dennis McQuillan cites the following statistics for δ15N (‰) in groundwater from a New Mexico study:

Nitrate Source	Nitrate-N (mg/L) Maximum	$\delta^{15}N$ (‰) range & mean	Number of Samples
Septic systems	53	7.6 to12.1 10.4 mean	12
Primary sewage plant	56	7.2 to12.1 9.4 mean	4

We do not find the divergence from the "Nitrogen Forensics" value range for human waste surprising, as one would expect sewage to contain many other substances.

The range of δ15N (‰) found in our wells was 7.1 to 10, with a mean (arithmetic average) of (10.0 + 8.8 + 7.1 + 7.9)/4 = 8.45. Note that these figures are very similar to those from the new Mexico study, giving credence to the suggestion that the major cause of our nitrate pollution is, in fact, not fertilizer, but sewage.

Clearly, this is insufficient evidence to make any conclusive statement, but equally insufficient, we believe, is the "evidence" that the Cleath study cites as pointing to agricultural operations as the source of the nitrate problem. It is our position that there are many more variables to be studied and considered before anyone can make a definitive statement regarding the source of the nitrates in Morro Bay wells.

That said, we believe that data in our tables A and B, above, and the New Mexico data, provide significant evidence to support our position that the isotopic studies done for the Cleath report do NOT prove that agricultural operations are the main cause of nitrate contamination in the wells – or even that they are part of the cause.

Isotopic Analysis Limited to Samples from Wells

Samples included only report of isotopic studies, and included five samples. Four water samples were taken from wells MB-3, MB-4, MB-14, and MB-15. The fifth was described simply as "fertilizer".

From the laboratory report from Zymax Forensics, found in Appendix E, and from statements in the study, we surmise that these are the only samples subjected to isotopic analysis. It does not appear that any of the samples taken from Morro Creek, Little Morro Creek, or wastewater from Morro Bay and Cayucos lines were included. Therefore, there is no means to compare samples from the three sources to better support determination of likely contamination sources.

Some Questionable Statements and Assumptions

On page 16, under the heading, "Sources of Nitrate Contamination", the list of miscellaneous sources of nitrate contamination includes "native nitrogen fixing plants". Nitrogen fixing plants (or rather the nitrogen fixing bacteria in their roots) probably "load" a lot of organic nitrogen, but not in the form of nitrates.

The following apparent errors raise some serious doubts regarding the reliability of the consultants' application of isotopic analysis.

1, **Misleading statement on exfiltration of nitrate isotopes**

On page 19, it is stated,

"...Furthermore, the composition of sewer exfiltration in the subsurface would not include solid waste which, according to Kendall (1998) is the specific component of sewage which is δ15N enriched."

This statement is false, and we consider it seriously misleading. Water flowing through the solids would carry the nitrates from the waste, and thus, if exfiltrated, carry them into the soil and, potentially, into the ground water. .

2. Doubts Regarding the Applicability/Value of ^{18}O Isotope Analysis

Also on page 19 is a discussion of ^{18}O. The presence of ^{18}O in fertilizer is due to use of the Ostwald process (a process for the industrial production of nitrogen oxide and nitric acid from ammonia and oxygen). Isotopic analysis to detect ^{18}O is sometimes used as a tool for determining the source of nitrates. It appears from their references to synthetic nitrate fertilizer, that the consultants are making the assumption that the farmers are using this type of fertilizer.

We found no statements within the study indicating that the consultants had any discussion with the farmers regarding the types of fertilizer used to provide nitrogen to their crops. If many of the farmers are using fertilizers produced without use of the Ostwald process , then the value of analysis of oxygen istotope ratios as a means of identifying nitrates from fertilizer will be significantly reduced.

3. Seemingly Contradictory Statements Regarding Nitrate Concentrations

On page 20, it is stated,

"...It is interesting that 50-60 percent of the average NO_3 concentration in ground water beneath the agricultural fields in the lower Morro Valley is 80-96 mg/lNo_3, which is at the upper range of concentrations measured in recent years at the well field."

However, on page 1, it is stated,

"Nitrate concentrations in ground water beneath farming operations in the lower Morro Valley have risen from an average of 34 mg/l in 1980 to an average of 160 mg/l in 2007.

If 80-96 mg/l NO_3 is "at the upper range of concentrations measured in recent years at the well field", then we must ask the question: How can nitrate concentrations have risen to an average of 160 mg/l in 2007" ?

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Problems in Discussion of Agricultural Fertilizer Applications

Disconnects Between Data and Conclusions Drawn From it

On page iii of the report, we find this statement:

> *"Most of the limited ground water production at the well field now occurs during the late fall when the State Water Project shuts down for annual maintenance. Lower production reduces the amount of recharge from stream seepage adjacent to the well field, which had historically diluted nitrate concentrations coming into the area from the lower Morro Valley. Without significant dilution from stream seepage, and* ***with increasing nitrogen loading from high intensity farming in the lower Morro Valley, nitrate concentrations at the City well field began exceeding the drinking water standard in 2002, and are still increasing****.*

On page 6, it is stated,

> *"the short mild winters of the central coast allow farming on a year-round basis. The harvested acreage may be several times the farmed acreage due to "multiple cropping".*

However, in Table 2, "Harvested Acreage Adjustments 1997-2007 Morro/Little Morro Creek Valleys", we find the following data given for total "Harvested Acreage (adjusted for multiple crops)

1977	1984	1992	1995	2001	2007
293	601	1069	1505	1319	1314

It is noted that, "harvested acreage adjustments are for fertilizer use estimates only, not for water use. Clearly, these numbers show that the harvested acreage has gone down significantly since 1995, and remained essentially constant since 2001. It has NOT been increasing.

The consultants clearly state that their data is "adjusted for multiple crops". Therefore, we see a problem in the assertion that there is "increasing nitrogen loading from higher intensity farming".

Fertilizer Applications as Sources of Nitrate Contamination

On page 21, within the "Source of Nitrate Contamination" section, under the heading, "Agricultural Fertilizer Applications, we noted the following issues:

Missing Sources

Many numbers are used in the discussions on page 21 without any reference to their source(s). It is our position that a serious scientific study must provide sources for data, and formulae used for any calculations done to support study conclusions.

Apparently Invalid Statement Regarding MTBE and Nitrates

On page 21, it is stated,

> *"The change in recharge dynamics at the City well field is due to reduced well field production following state water deliveries and dissolved MTBE plume detection in groundwater, which has magnified the impact of increased nitrogen loading to the groundwater basin."*

MTBE (methyl tertiary butyl ether) has nothing to do with nitrogen, and nothing to do with nitrogen loading. We believe that, unless the statement quoted above is a VERY badly-constructed sentence, and one that leaves out critical information, it implies a serious lack of understanding of basic chemistry.

Contradictions Between the Cleath Study and Nitrate Level Reporting to Residents

We have seen numerous news reports stating that, in 2006, nitrate levels in Morro Bay wells began to exceed standards for drinking water. In the November 15, 2006 Public Works Advisory Board (PWAB) meeting, it was announced by Bill Boucher that, "the City was having a problem with its drinking water. Tests done today show the Nitrate level at 48 mg/liter and the State and Federal limit for Nitrates is 45 mg/liter."

We have been unable to locate any evidence that any City employee made any such announcement prior to 2006, or that residents were ever provided any warning of such a problem prior to that time. A search of all City Council meeting minutes for the years 2002 through 2005, using the search term "nitrate" found only one reference.

In the September 22, 2003 City Council minutes, we found "*D-1 Approve in Concept a Multi-Party Groundwater Agreement Within the Chorro Valley; (Public Services)*" Recorded comments by Bill Boucher included this statement:

> *"Chorro potable water quality has historically been better than Morro wells, significantly lower in nitrate and salt levels."*

There was no statement recorded regarding nitrate levels in Morro Bay wells exceeding MCL levels.

Yet, on pages 11 and 13, the Cleath study states that nitrate concentrations in Highway 1 wells MB-3 and MB-4 began exceeding the state Maximum Contaminant Level (MCL) for nitrates in 2002. This appears to be a serious contradiction.

Nitrate Data Reported to Residents, 2002 through 2005

We also reviewed the annual water quality report sent to residents in the years 2002 through 2006. In the 2005 report, we found this statement: "Overall, the wells had a risk assessment of low to medium."

Specific nitrate data included in the 2002 -2005 reports was as follows:

				State Water		Well Water			
SUBSTANCE (UNITS)	YEAR SAMPLED	MCL	PHG (MCLG)	AMOUNT DETECTED	RANGE LOW HIGH	AMOUNT DETECTED	RANGE LOW HIGH	VIOLATION	TYPICAL SOURCE
Nitrate (as nitrate, NO_3) (ppm)	2002	45	45	2.86	-	**18.8(a)**	**7.3-41(a)**	No	Runoff and leaching from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
	2003	45	45	3.21	NA	**19**	**13-25**	No	
	2004	45	45	2.8	1.2-4.8	**19**	**2-34**	No	
	2005	45	45	4.44	1.8-7.6	**22.0**	**8.5-32**	No	

(a) Measured at the Kings Street tanks after blending with State Water and/or Desal Water

Note the range of nitrate reported for well water: 2 – 41 ppm. Yet, on page 11 of the Cleath study, we find this:

> *"In 2002, nitrate concentrations in ground water from two of the City's Highway 1 wells (MB-3 and MB-4) began exceeding the state Maximum Contaminant Level (MCL) for drinking water of 45 mg/l NO_3 on a seasonal basis. In the last two years, NO_3 concentrations at the other two Highway 1 wells (MB-14 and MB-15) have also begun exceeding the MCL."*

Note (a) is of particular interest. The "well water" nitrate levels were not measured at the well, and were measured after blending with other water supplies.

On page 13, we find:

> *"Nitrate concentration peaks between 2002 and 2006 coincide with full scale production at the well field, which occurs annually around November during the State water Project shut downs. Historically, nitrate concentrations in November were in decline, rather than peaking"*

It appears that what the consultants are telling us is that nitrate concentrations in well water exceeded standards for safe drinking water every year from 2002 through 2006, and that they were at their worst while we were using the wells. YET, the City's water quality reports to residents said everything was fine.

Conflicting Assertions Regarding Likely Sources of Well Contamination

In the 2005 Annual Water Quality Report, we find the following statements:

> *"The Morro Basin wells are considered most vulnerable to the following activities not associated with any detected contaminants: gas stations, known contaminant plumes."*
>
> *"The Chorro Basin wells are considered most vulnerable to the following activities not associated with any detected contaminants: agricultural drainage, septic systems, wells (agricultural, irrigation), and other animal operations."*

Yet, the Morro Basin wells are the ones that the Cleath study claims have been contaminated by nitrates from agriculture.

Who Knew What, When?

We assume that the City has not employed Cleath & Associates to study our well water since 2002. This seems to us to imply that the consultants must have been given the data for years 2002 – 2006 by someone working for the City. From the September 22, 2003 minutes, it is clear that at least one City employee had some awareness of nitrate levels in Morro Bay wells. Otherwise, we must question how he could make the statement that the Chorro wells contained less nitrate. The note regarding nitrate level measurement for the "2002 Consumer Confidence Report is, we believe, also a significant indicator that staff knew that well water nitrate levels had reached unsafe levels. We can think of no other reason to measure well water nitrate levels "at the King Street tanks after blending with State Water and/or Desal Water"

Is the Data Source Used by Consultants Correct?

One would think that, as soon as City staff learned that the nitrates in the wells had begun to exceed the MCL level, an immediate investigation would have been launched to identify the source of the problem, followed by prompt corrective action. However, we find no evidence of any such actions by our City government.

Therefore, we must conclude that one of the following is true:

1. The Cleath consultants received inaccurate information
2. The consultants made an error
3. City staff responsible for ensuring the quality of well water failed, for some reason, to tell residents and, evidently, the City Council about the problem.

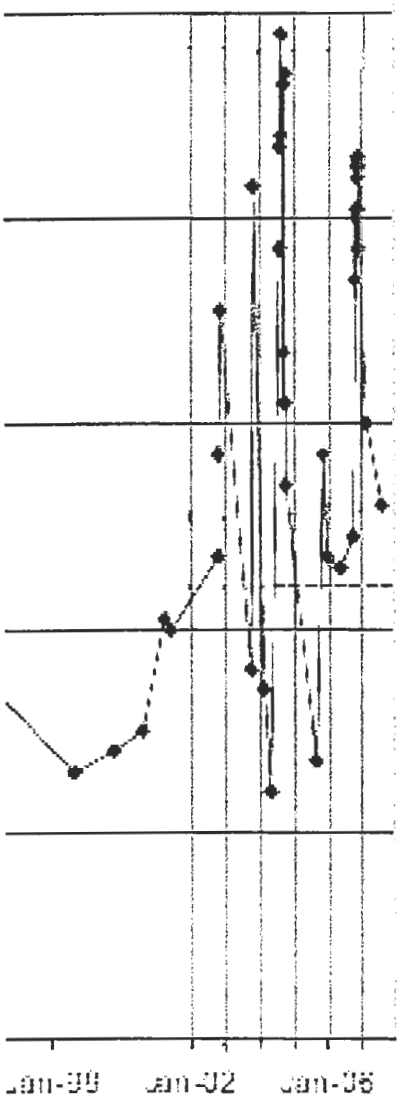
We believe that number 3 is correct, but would still like to see the consultants' source data.

Suggestions for Further Investigation

As previously stated, we believe that additional hydrogeology studies and ground water testing are necessary. We also believe that it is advisable to identify and analyze events that could have led to the sudden spikes in nitrate levels that began to occur in 2002. In this section, we present an example, and our analysis of its potential for causing the spikes. We wish to emphasize that this is only a theory, and that appropriate tests would be needed to determine its validity.

The Annual Contamination Pattern

Figure 4 from the Cleath study shows spikes in the nitrate concentrations in well MB-3. Here, we have expanded the detail for a portion of the chart, focusing on the period from January, 2002 to January, 2006. We will assume that the graph reflects the source data to a reasonable degree of accuracy.



Each of the vertical lines on this image represents the month of January. Note that the peaks in nitrate contamination are occurring just before January of each year. The pattern is slightly different for 2005, but in general, it appears reasonably uniform from year to year.

The pattern of testing (with tests identified by the dots on the graph) is obviously not regular. In addition, we suspect that the original graphing of nitrate levels in straight lines is an over-simplification of actual level variations. We consider it likely that if testing were done weekly, graphing of the levels would show curved lines. This is analogous to the results of drawing a picture using the "connect-the-dots" method. Nevertheless, the graphing done by the consultants should serve to illustrate the points we wish to make.

According to Bill Boucher's August 8 "Status Report on Water Resources Availability and Water Conservation Plan". State Water has an annual 2-week maintenance shutdown period every November

We would expect that the City staff would not wait until the State Water is shut off before starting up the wells, and that some type of testing or other preparatory work would require that some pumping be done prior to switching our water system from State to well water.

We find it extremely interesting that the spikes shown on the graph appear to correspond very nicely to the annual State Water shutdown period. Indeed, on page 13 of the Cleath study, it is stated,

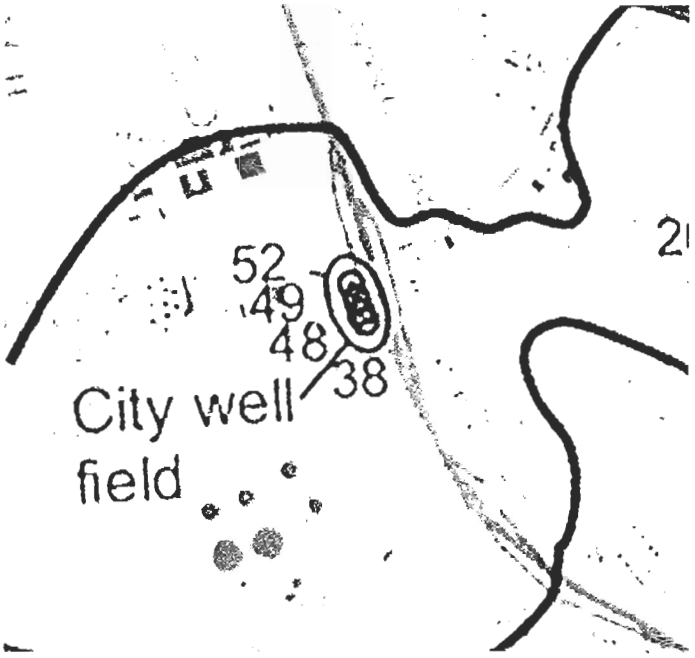
"Nitrate concentration peaks between 2002 and 2006 coincide with full-scale production at the well field, which occurs annually around November during the State Water Project shut downs. Historically, nitrate concentrations in November were in decline, rather than peaking"

This timing supports our belief that the increased nitrate contamination of the wells in recent years is NOT due to a sudden and extremely radical increase in fertilizer usage beginning in 2002. We believe the significant nitrate level spikes each year are due to an increased inflow of exfiltrated sewage into the aquifer.

Potential for Contamination by Exfiltrated Sewage in Groundwater

On page 2 of the Cleath study, it is noted that recent studies have concluded that the basin aquifer is "unconfined to leaky-unconfined". Unconfined aquifers are sometimes also called "water table aquifers, because their upper boundary is the water table.

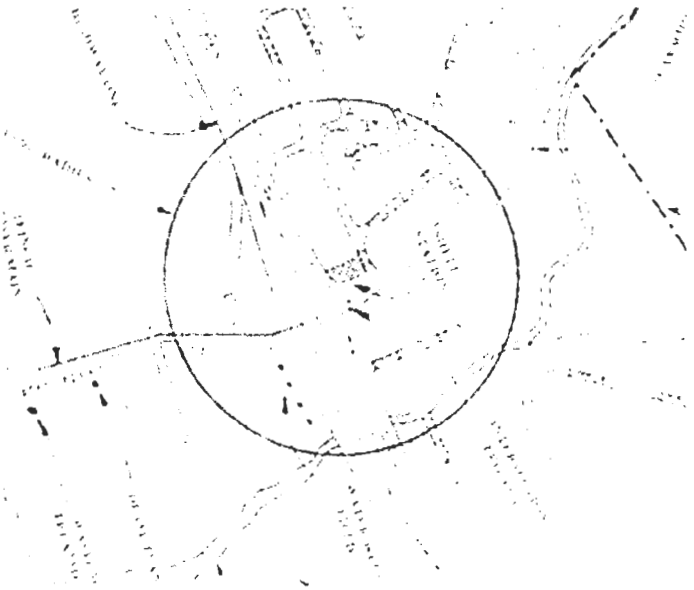
From 2000 through 2002, there was considerable excavation in an area adjoining the well field. We note from the maps provided in the Cleath study that the area where the excavation occurred appears to be directly on one of the boundaries of the aquifer. It is well known, as well as intuitively obvious, that shallow aquifers can cross-contaminate deeper aquifers through penetration of the boundary between them. We submit that it is possible, and even likely, that the excavation breached the boundary of the basin aquifer, providing a path for exfiltrated sewag to enter the basin aquifer, and thus to contaminate our wells.



In this image, a detail of a map included in the Cleath study, the dark lines indicate the boundaries of the aquifer in the areas near Highway 101.

Note the location of the boundaries in relation to area streets; in particular, the intersection of Atascadero Road and Main Street, where the old Shell station was located. Tanks at the station were found to be leaking MTBE.

In the diagram below, quoted from a City document entitled, "The City of Morro Bay and MTBE", a shaded rectangle marks the location of the station.



It appears to us that the station sat directly over the aquifer boundary.

The City document stated, in part,

"*In early 2000, soil borings samples from the Shell station site at 1840 Main Street revealed high concentrations of MTBE in the soil and groundwater. In March 2000, The RWQCB required the Shell station owner Equilon/Equiva to install monitoring wells and to conduct groundwater and soil sampling on the Shell site and off-site. The results of the sampling conducted from May through August 2000, show the MTBE contaminant plume to originate on the Shell service Station site and extend west under Main Street and Hwy 1.*"

Also in this City document, was this statement:

"The City of Morro Bay and DHS are concerned that pumping the wells will influence the MTBE plume west of the Shell Station, causing the plume to move toward the Morro Basin wellfield"

Considerable remediation was done in an attempt to control the MTBE plume and prevent it from entering the wells. In a staff report for the May 30, 2002 regular meeting of the Central Coast RWQCB, we found this information on some of the work done:

> *"On January 24, 2002, Shell removed the inactive UST system to evaluate the source of the release (e.g., piping, fuel dispenser, etc.). Soil sample information and inspection did not pinpoint the exact source of the MTBE leak. In February 2002, Shell placed a slurry of oxygen release compounds (ORC□) in the saturated soils beneath the USTs and in the first few feet of gravel used to backfill the UST excavation. The ORC□ was placed in the UST excavation to stimulate bioremedation to remove MTBE and TBA in this area. In addition, two tank pit-monitoring wells (TP-N and TP-S) were installed within the former excavation to monitor the effectiveness of the ORC□ and water quality. Two extraction wells adjacent to the UST excavation (MW-7 and IW-1) were taken offline of the extraction system to allow the ORC□ to remain in place. Currently, groundwater extraction is from three offsite wells, IW-4, IW-5, and IW-6. Groundwater will continue to be sampled for petroleum hydrocarbon constituents and field tested for water quality parameters (e.g., dissolved oxygen, pH, etc.) on a bi-monthly basis in selected monitoring wells while the groundwater extraction system remains in operation."*

Could the extensive excavations and borings done here, on the boundary of the aquifer, and in very close proximity to the well field, have provided an underground path for contaminants in groundwater adjacent to the aquifer boundary (namely, exfiltrated sewage) to be pulled into the aquifer, and to the wells, when the wells are pumping? Yes, we believe so.

On page 2 of the Cleath study, it is stated,

> *"Ground water movement below the narrows is controlled by the City well field. When the wells are in production, a pumping depression develops that draws water radially toward the wells, including sea water drought. During non-pumping periods, ground water flow below the narrows is toward the coast at a nominal hydraulic gradient of 0.005 ft/ft"*

Because of the remediation work between 2000 and 2002, with emphasis on preventing the MTBE from reaching the wells, along with the fact that the City was prohibited from using the wells until remediation was complete, significant amounts of groundwater containing exfiltrated sewage probably would not, in our opinion, have been able to reach the wells until 2002.

Then, in 2002, contaminated groundwater from outside the aquifer boundary would have been pulled directly into the wells as pumping started. In our opinion, the pumping, as it drew in the contaminated water, would create a "plume" of sewage-contaminated water that would be drawn directly to the wells. There would be some mixing with water already in the aquifer, but not enough to dilute the contaminated water to the point that nitrate levels would be in the safe zone.

On pages 16 and 17, the consultants dismiss the possibility that exfiltrated sewage is the cause of the well contamination – for various reasons that we consider totally invalid. We believe that exfiltrated sewage is present in large quantities in the groundwater in the areas around the damaged lines, and that the contaminated water from those areas is pulled into the basin aquifer when the wells are pumping.

If the aquifer boundary was breached during excavation, then clearly, the "pumping depression" that draws water toward the wells could easily pull ground water, contaminated with exfiltrated sewage, through the breach in the boundary, into the aquifer, and subsequently into the wells.

Potential for Contamination from Sewage in the LInes

We would also like to note that, if the basin aquifer is, indeed an unconfined aquifer, then the fact that some of the sewer lines near the well field are under the water table is also significant in terms of potential pollution of the aquifer with sewage.

One of the consultants' assertions that we believe completely erroneous is that there is little potential for sewage to be pulled from the damaged lines by the pressure created when the wells are pumping. For one thing, one of the justifications used to support their assertion is a quote taken completely out of context.

Further, we believe that basic principles of fluid dynamics clearly establish the certainty that, given the size and number of openings in the lines, a considerable amount of sewage can and does exfiltrate from the lines on an ongoing basis. This exfiltration may certainly be increased by the pumping action of the wells, but even when they are not in use, contamination of the ground water with exfiltrated sewage is a continuous, ongoing process.

Summary, and Recommended Next Steps

In summary, we consider the timing of the excavations and the timing of the sudden increase in well contamination to be too much of a "coincidence" to ignore. We see no evidence that the consultants even considered this potential source of well contamination. As previously noted, we consider the possibility of a sudden, radical increase in fertilizer usage to be highly unlikely.

In addition, we do not believe that sufficient evidence was provided to prove that reduced well field production, and thus reduced recharge and reduced dilution of nitrates in the aquifer, is the sole cause, or even a significant partial cause of the spikes in contamination that occur each fall. As previously noted, on page iii, the consultants state,

> ***"Most of the limited ground water production at the well field now occurs during the late fall when the State Water Project shuts down for annual maintenance. Lower production reduces the amount of recharge from stream seepage adjacent to the well field, which had historically diluted nitrate concentrations coming into the area from the lower Morro Valley. Without significant dilution from stream seepage,*** *and with increasing nitrogen loading from high intensity farming in the lower Morro Valley, nitrate concentrations at the City well field began exceeding the drinking water standard in 2002, and are still increasing.*

We would like to see testing of the ground water adjacent to the aquifer, and of the water in the aquifer, in the immediate region of the wells, with comparison to water IN the wells just before, and during the first few days after pumping begins in November. We believe that such testing would lead to a different conclusion than the one drawn by the consultants.

Conclusions and Recommendations

As previously stated, it is our opinion that the findings presented in the Cleath "Morro Basin Nitrate Study" are based, to a significant extent, upon invalid assumptions, inadequate study of major potential nitrate contamination sources, and in some cases, faulty "science".

Based upon a review of the study by ourselves and by a chemist, upon our independent research, and upon basic logical analysis, we believe that it is not only inappropriate but, in fact, foolish to assert that there is any conclusive proof that the nitrate contamination of our wells can be traced primarily, or even in large part, to farming operations.

We believe strongly that a positive and constructive alliance between the City and local farmers, formed for the purpose of protecting community water supplies, is an excellent idea. We also believe, however, that a coercive, saber-rattling approach, "justified" by what we consider insufficient evidence to blame farmers for water contamination, is NOT the way to go. We consider it appropriate to mention here that It has long been known that it is extremely unwise to bite the hand that feeds you. We hope that Morro Bay City officials will drop the menacing approach, and show respect and consideration for the farmers who grow our food, and help to make our weekly farmer's market events a valuable stimulus for other local businesses, and thus support our local economy.

We would further like to point out some misconceptions regarding use of fertilizers by the farmers. Small farm operators are generally not rich people, and cannot afford waste. We find ludicrous the assumption that our local small farmers can afford to throw excess fertilizer on their fields with wild abandon. One Morro Bay official publicly remarked that farmers had been seen using so much fertilizer that it looked like white clouds above the fields. A bit of research would have revealed that those white clouds were most likely gypsum (calcium sulfate), a commonly used soil additive (not a fertilizer) that can cause the observed effect as it is being applied. This is not an indication that an excessive amount is being used.

We are extremely concerned that data presented in the Cleath Study indicates that nitrate levels in the wells exceeded allowable standards from 2002 on; yet, the residents, and evidently the City Council as well, were not notified of this serious public health issue until 2006. We believe this is a serious breach of public trust.

We further believe that it is extremely interesting that, even after the public was notified of the nitrate contamination in early 2006, there was no apparent effort to identify the source of the contamination until the summer of 2007, when Cleath report data shows that their testing of local water sources began.

We can see no justifiable reason why, if any of our City staff and/or officials knew that nitrate levels in our well water were exceeding standards for public health and safety in 2002, they waited until 2006 to inform the public, and until the summer of 2007 to start looking for the source of the problem. Not the least of what we consider reporting irregularities is the fact that, in 2002, the "well water" was measured at another location, and only after being blended with water from other sources. Is that the same procedure that was followed in 2003 through 2005? If so, why was there no indication on the reports?

Can this questionable nitrate reporting procedure explain why the City reported no violation of nitrate standards in our wells in 2002, 2003, 2004, and 2005, while the Cleath study reports that violations occurred in every one of those years? We recommend an immediate and thorough public investigation of this matter, by independent parties not affiliated with City staff and officials, with findings to be formally shared with residents.

We also believe that the public is entitled to know why the scope of the Cleath study was so limited, in contrast to other well contamination studies we have seen.

- Why was there no investigation of excavations that could potentially have penetrated the aquifer boundary, providing a path for contamination of the aquifer by groundwater in adjacent areas?
- Why were isotopic studies done only on wells and not on water close to the alleged sources?

- Why was the study's treatment of hydrogeology limited to the Morro Basin? Why was the hydrogeology of other areas, from which contaminated water might travel underground to the aquifer, not included?
- Why were farmers not interviewed to determine what fertilizers they were using, and the methods used for application of those fertilizers?

These and other questions need to be answered before City officials make any decisions regarding next steps. Given the numerous and significant questions and issues we have identified, we recommend the following:

1. Do not accept the assertion that agricultural operations are the source of the nitrates in the wells. We believe that this assertion is currently unsupported by any credible evidence.
2. If further studies are to be undertaken, ensure that they include tracer technology and other hydrogeology study methods, as required, to detect the migration paths of contaminants from the sewer lines.
3. Thoroughly investigate events that might have caused the annual spikes in nitrate concentrations to begin in 2002. For example, excavations in the vicinity of the aquifer boundaries might have created a breach that allowed sewage-contaminated ground water to enter, causing the spikes to occur when the wells are pumping.
4. Accelerate repair of the sewer lines, giving it the highest priority. Not only do we believe that exfiltrated sewage is reaching the aquifer. We believe it is reaching the ocean as well.
5. Investigate the discrepancy between well water nitrate readings documented by the consultants, and reported to residents in documents prepared by City staff.
6. If Cleath study reporting of well water nitrate readings is found to be correct, determine why City staff failed to inform the public and City officials of this serious public health issue, and take appropriate action, including the requirement that well water to be tested be gathered from the wells; not from water tanks where the well water has been blended with water from other sources.

References

"**Exfiltration in Sewer Systems**", Robert S. Amick, P.E.Environmental Quality Management, Inc.Cincinnati, Ohio 45240, and Edward H. Burgess, P.E.Camp, Dresser & McKee Cincinnati, Ohio 45249. EPA/600/R-01/034, December, 2000

"Environmental Tracers: Identifying the Sources of Nitrate Contamination in Groundwater", Alan Jeffrey, Isaac Kaplan, Dachun Zhang, Shan-Tan Lu, and Jesper Nielsen, AEHS Magazine, 2001

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"Quantification of sewer leakage - a review", M. Rutsch, J. Rieckermann, and P. Krebs, 10th International Conference on Urban Drainage, Copenhagen/Denmark, 21-26, August 2005

"Wastewater Odor Control: An Evaluation of Technologies", Vaughan Harshman, P.E., and Tony Barnette, Water and Wastes Digest, 2008

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"Tracing Sources of Nitrate in the Long Island Aquifer System", P.S. Bleifuss, G.N. Hanson, and M.A.A. Schoonen , Department of Geosciences . State University of New York at Stony Brook

"Determining Sources of Water and Contaminants to Wells in a Carbonate Aquifer Near Martinsburg, Blair County, Pennsylvania, By Use of Geochemical Indicators, Analysis of Anthropogenic Contaminants, and Simulation of Ground-Water Flow", Bruce D. Lindsey and Michele L. Koch, Scientific Investigations Report 2004-5124, U.S. Department of the Interior U.S. Geological Survey

"Tracing sources of agricultural N using isotopic techniques: the state of the science". Carol Kendall, USGS, WRD-National Research Program, Menlo Park, CA, December, 2004

CCC Exhibit C
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A-3-MRB-08-031

STATE OF CALIFORNIA -- THE RESOURCES AGENCY ARNOLD SCHWARZENEGGER, *Governor*

CALIFORNIA COASTAL COMMISSION

CENTRAL COAST DISTRICT OFFICE
725 FRONT STREET, SUITE 300
SANTA CRUZ, CA 95060-4508
VOICE (831) 427-4863 FAX (831) 427-4877

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT

Please Review Attached Appeal Information Sheet Prior To Completing This Form.

SECTION I. Appellant(s)

Name: Linda Stedjee

Mailing Address: 2848 BIRCH AVENUE

City: MORRO BAY, CA Zip Code: 93442 Phone: 805-771-9254

SECTION II. Decision Being Appealed

1. Name of local/port government:
   CITY OF MORRO BAY

2. Brief description of development being appealed:
   1840 MAIN STREET - BUILD SHOPPING CENTER AND CLOSE 68 MtBE MONITORING WELLS

3. Development's location (street address, assessor's parcel no., cross street, etc.):
   1840 MAIN STREET

RECEIVED
JUN 13 2008
CALIFORNIA
COASTAL COMMISSION
CENTRAL COAST AREA

4. Description of decision being appealed (check one.):

- [x] Approval; no special conditions
- [ ] Approval with special conditions:
- [ ] Denial

Note: For jurisdictions with a total LCP, denial decisions by a local government cannot be appealed unless the development is a major energy or public works project. Denial decisions by port governments are not appealable.

TO BE COMPLETED BY COMMISSION:

APPEAL NO: _____

DATE FILED: _____

DISTRICT: _____

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APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 2)

5. Decision being appealed was made by (check one):

- ☐ Planning Director/Zoning Administrator
- ☐ City Council/Board of Supervisors
- ☑ Planning Commission
- ☐ Other

6. Date of local government's decision: MAY 19, 2008

7. Local government's file number (if any): NOT PROVIDED IN ABSENCE OF MINUTES

SECTION III. Identification of Other Interested Persons

Give the names and addresses of the following parties. (Use additional paper as necessary.)

a. Name and mailing address of permit applicant:
EQUILON ENTERPRISES & DELTA CONSULTANTS
910 LOUISIANA ST, STE 2556
HOUSTON, TX 77002

b. Names and mailing addresses as available of those who testified (either verbally or in writing) at the city/county/port hearing(s). Include other parties which you know to be interested and should receive notice of this appeal.

(1) MORRO BAY PLANNER MIKE PRATTER
655 SHASTA AVE
MORRO BAY, CA 93442

(2)

(3)

(4)

CCC Exhibit C
(page 42 of 47 pages)
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APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 3)

SECTION IV. Reasons Supporting This Appeal

PLEASE NOTE:

- Appeals of local government coastal permit decisions are limited by a variety of factors and requirements of the Coastal Act. Please review the appeal information sheet for assistance in completing this section.
- State briefly **your reasons for this appeal.** Include a summary description of Local Coastal Program, Land Use Plan, or Port Master Plan policies and requirements in which you believe the project is inconsistent and the reasons the decision warrants a new hearing. (Use additional paper as necessary.)
- This need not be a complete or exhaustive statement of your reasons of appeal; however, there must be sufficient discussion for staff to determine that the appeal is allowed by law. The appellant, subsequent to filing the appeal, may submit additional information to the staff and/or Commission to support the appeal request.

PLEASE SEE ATTACHED

CCC Exhibit C
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A-3-MRB-08-031

APPEAL FROM COASTAL PERMIT DECISION OF LOCAL GOVERNMENT (Page 4)

SECTION V. Certification

The information and facts stated above are correct to the best of my/our knowledge.

Signature of Appellant(s) or Authorized Agent

Date: JUNE 13, 2008

Note: If signed by agent, appellant(s) must also sign below.

Section VI. Agent Authorization

I/We hereby
authorize _____
to act as my/our representative and to bind me/us in all matters concerning this appeal.

Signature of Appellant(s)

Date: _____

CCC Exhibit C
(page 44 **of** 47 **pages)**
A-3-MRB-08-031

I have been concerned for some time about the serious problem of sewage leaking from sewer lines all over the City of Morro Bay, and polluting the soil and ground water, the Bay, and the ocean. I was fortunate enough to sit in and observe Marla Jo Bruton's and Richard Sadowski's review of many sewer line video inspection tapes. I saw for myself that there were hundreds of openings in the sewer pipes – misaligned pipe ends, with spaces between the sections, big cracks, and dips and bumps that made some areas of the sewer lines look like a track for a roller coaster.

Nobody could look at those videotapes and not understand that a LOT of sewage is leaking into the soil in Morro Bay. I am not an expert, but it seemed to me that it was not likely that all that damage just happened recently. It looked like it took awhile, especially since we looked at two inspections of one area that were done 7 years apart, and damage recorded in the first inspection was still there when the second one was done.

I am familiar with the content of Ms. Bruton's and Mr. Sadowski's April, 2008 report entitled: "The 'Morro Basin Nitrate Study': Issues and Concerns", and had the opportunity to provide them with assistance in researching some of the information for the report. I so strongly believe in their cause and their expertise, that I brought in one of my brothers, a chemist, to help them with some of the technical issues.

I believe that Ms. Bruton's and Mr. Sadowski's assertions that the MtBE remediation work at 1840 Main Street are probably a major cause of excessive nitrates in City well, as documented in their report. are significant and very logical. For one thing, nothing else seems to account for the timing. I believe that Morro Bay City staff, upon receipt of that report, should immediately have initiated testing to determine if the claims are true.

I further believe that at least some of the monitoring wells that were drilled as part of the MtBE remediation effort:

- Are likely contributors to the nitrate pollution problem
- Would be ideal tools for obtaining samples for testing, and for monitoring of nitrate levels in the City's Morro Basin aquifer, as described in the Bruton/Sadowski report.

I was shocked when I learned that the City of Morro Bay Planning Commission had approved a project at 1840 Main that included shutting down of 68 monitoring wells that had been drilled right over the aquifer – shocked because I knew that various Morro Bay elected officials and staff members had received the Bruton and Sadowski report BEFORE the May 19, 2008 meeting where the project was approved.

In fact, I got an email from the City Attorney (an email I have shared with Ms. Bruton and Mr. Sadowski) that was written May 20, 2008, just one day after the 1840 Main project had been approved. In that email, the attorney said that both Staff and Council has received a reviewed the Cleath Report and the Bruton/Sadowski Report. I am sure that the staff and Council didn't just rush off and read the Bruton/Sadowski report that same day, especially since it had been made available to them in April.

The attorney's email was in response to one I had written to the City Council, urging them to carefully read Ms. Bruton's and Mr. Sadowski's report on the nitrates, and take it seriously.

Whether or not they took it seriously, it appears to me, from the attorney's email, that they and the Morro Bay staff did read the report, but they just didn't do anything about it. They didn't say anything about the potential risks of building at 1840 Main, even though they had the information that there might be a major breach of a side wall of the aquifer under the ground right there – a breach that would need to be fixed to stop the aquifer pollution. I also think that some of the staff should have enough knowledge to have figured out that the monitoring wells could also have opened up paths where pollution could get into the aquifer (around the outsides of the well shafts).

I have attached copies of two pages from the report – the one that the City officials and staff got, and that clearly mentions the 1840 Main address. I hope you will examine them, and stop the new 1840 Main project until all this can be sorted out by independent parties. I don't believe it would be a good idea at all to let the City or the original consultants they hired (Cleath and Associates) to do this work. I think someone from the State should be in charge.

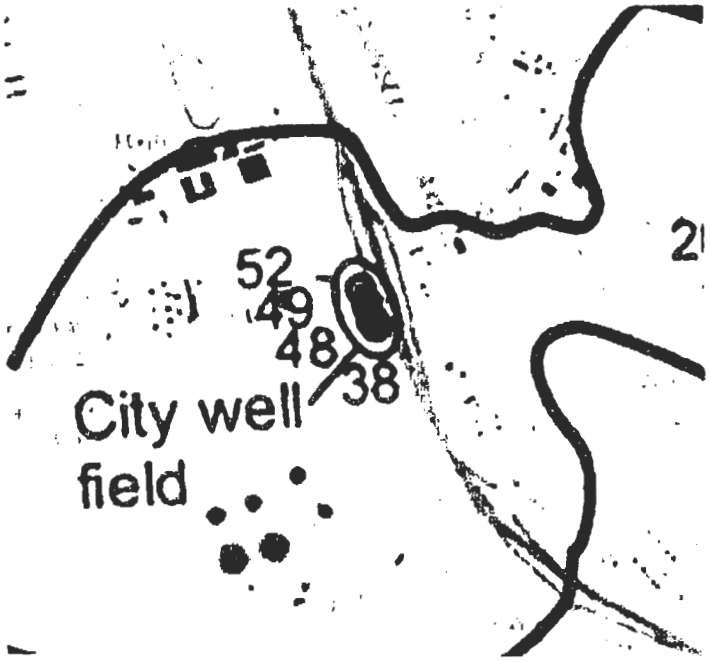
CCC Exhibit C
(page 45 of 47 pages)
A-3-MRB-08-031

Attachment - from "The 'Morro Basin Nitrate Study': Issues and Concerns" Printed from file provided by Maria Jo. Brito

Potential for Contamination by Exfiltrated Sewage in Groundwater

On page 2 of the Cleath study, it is noted that recent studies have concluded that the basin aquifer is "unconfined to leaky-unconfined". Unconfined aquifers are sometimes also called "water table aquifers, because their upper boundary is the water table.

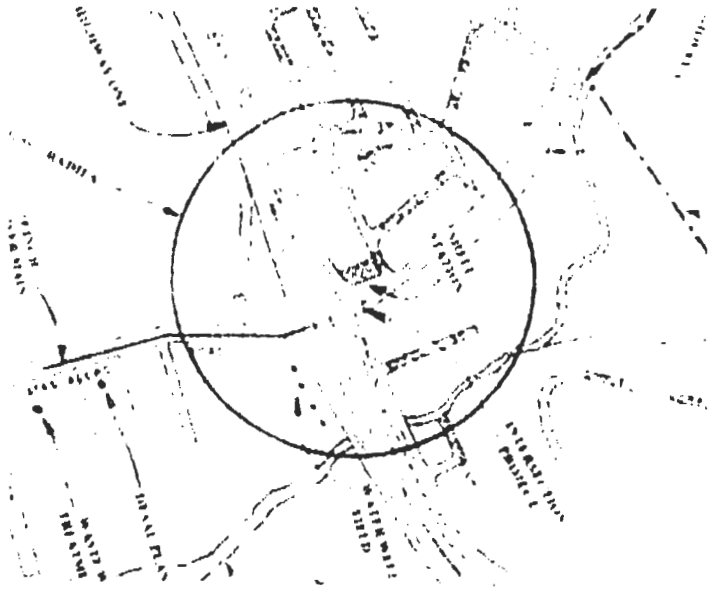
From 2000 through 2002, there was considerable excavation in an area adjoining the well field. We note from the maps provided in the Cleath study that the area where the excavation occurred appears to be directly on one of the boundaries of the aquifer. It is well known, as well as intuitively obvious, that shallow aquifers can cross-contaminate deeper aquifers through penetration of the boundary between them. We submit that it is possible, and even likely, that the excavation breached the boundary of the basin aquifer, providing a path for exfiltrated sewage to enter the basin aquifer, and thus to contaminate our wells.



In this image, a detail of a map included in the Cleath study, the dark lines indicate the boundaries of the aquifer in the areas near Highway 101.

Note the location of the boundaries in relation to area streets; in particular, the intersection of Atascadero Road and Main Street, where the old Shell station was located. Tanks at the station were found to be leaking MTBE.

In the diagram below, quoted from a City document entitled, "The City of Morro Bay and MTBE", a shaded rectangle marks the location of the station



It appears to us that the station sat directly over the aquifer boundary.

The City document stated, in part,

"*In early 2000, soil borings samples from the Shell station site at 1840 Main Street revealed high concentrations of MTBE in the soil and groundwater. In March 2000, The RWQCB required the Shell station owner Equilon/Equiva to install monitoring wells and to conduct groundwater and soil sampling on the Shell site and off-site. The results of the sampling conducted from May through August 2000, show the MTBE contaminant plume to originate on the Shell service Station site and extend west under Main Street and Hwy 1.*"

Also in this City document, was this statement:

CCC Exhibit C
(page 46 of 47 pages)
A-3-MRB-08-03

"The City of Morro Bay and DHS are concerned that pumping the wells will influence the MTBE plume west of the Shell Station, causing the plume to move toward the Morro Basin wellfield"

Considerable remediation was done in an attempt to control the MTBE plume and prevent it from entering the wells. In a staff report for the May 30, 2002 regular meeting of the Central Coast RWQCB, we found this information on some of the work done:

> *"On January 24, 2002, Shell removed the inactive UST system to evaluate the source of the release (e.g., piping, fuel dispenser, etc.). Soil sample information and inspection did not pinpoint the exact source of the MTBE leak In February 2002, Shell placed a slurry of oxygen release compounds (ORC) in the saturated soils beneath the USTs and in the first few feet of gravel used to backfill the UST excavation. The ORC was placed in the UST excavation to stimulate bioremedation to remove MTBE and TBA in this area. In addition, two tank pit-monitoring wells (TP-N and TP-S) were installed within the former excavation to monitor the effectiveness of the ORC and water quality. Two extraction wells adjacent to the UST excavation (MW-7 and IW-1) were taken offline of the extraction system to allow the ORC to remain in place. Currently, groundwater extraction is from three offsite wells, IW-4, IW-5, and IW-6. Groundwater will continue to be sampled for petroleum hydrocarbon constituents and field tested for water quality parameters (e.g., dissolved oxygen, pH, etc.) on a bi-monthly basis in selected monitoring wells while the groundwater extraction system remains in operation."*

Could the extensive excavations and borings done here, on the boundary of the aquifer, and in very close proximity to the well field. have provided an underground path for contaminants in groundwater adjacent to the aquifer boundary (namely, exfiltrated sewage) to be pulled into the aquifer, and to the wells, when the wells are pumping? Yes, we believe so.

On page 2 of the Cleath study, it is stated,

> *"Ground water movement below the narrows is controlled by the City well field. When the wells are in production, a pumping depression develops that draws water radially toward the wells, including sea water drought. During non-pumping periods, ground water flow below the narrows is toward the coast at a nominal hydraulic gradient of 0.005 ft/ft"*

Because of the remediation work between 2000 and 2002, with emphasis on preventing the MTBE from reaching the wells, along with the fact that the City was prohibited from using the wells until remediation was complete, significant amounts of groundwater containing exfiltrated sewage probably would not, in our opinion, have been able to reach the wells until 2002.

Then, in 2002, contaminated groundwater from outside the aquifer boundary would have been pulled directly into the wells as pumping started. In our opinion, the pumping, as it drew in the contaminated water, would create a "plume" of sewage-contaminated water that would be drawn directly to the wells. There would be some mixing with water already in the aquifer, but not enough to dilute the contaminated water to the point that nitrate levels would be in the safe zone.

On pages 16 and 17, the consultants dismiss the possibility that exfiltrated sewage is the cause of the well contamination – for various reasons that we consider totally invalid. We believe that exfiltrated sewage is present in large quantities in the groundwater in the areas around the damaged lines, and that the contaminated water from those areas is pulled into the basin aquifer when the wells are pumping.

If the aquifer boundary was breached during excavation, then clearly, the "pumping depression" that draws water toward the wells could easily pull ground water, contaminated with exfiltrated sewage, through the breach in the boundary, into the aquifer, and subsequently into the wells.

STATE OF CALIFORNIA
REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

STAFF REPORT FOR REGULAR MEETING May 9, 2008

ITEM NUMBER: 7

SUBJECT: **Cleanup Cases, Closures, and Corrective Action Plan Approvals**

Status Reports

Scotts Valley Dry Cleaners, 272-A Mount Hermon Road, Scotts Valley, Santa Cruz County [Karyn Steckling 805/542-4642] (New information is shown in italics.)

Water Board staff provides regulatory oversight of the Scotts Valley Dry Cleaners case in Santa Cruz County. The dry cleaner building is located on a property with other commercial buildings and a parking lot in Scotts Valley. The Scotts Valley Water District's Well No. 10A is located approximately 450 feet south of the dry cleaner building.

Background

In 1996, the responsible parties started remediation of tetrachloroethene (PCE) initially by performing excavation (trenching) and vapor extraction in the source area. In March 1998, Water Board staff required the responsible parties to submit a corrective action plan. Since 1998, the responsible parties conducted several remediation pilot tests/interim remedial actions, including air sparging, aquifer pump testing, and injection of hydrogen releasing compounds and cheese whey. The responsible parties revised the corrective action plan several times based on pilot test results.

The responsible parties implemented high vacuum, dual-phase extraction in March 2004 for PCE plume containment. In July 2004, the responsible parties submitted a revised Interim Remedial Action Plan proposing additional groundwater monitoring and extraction well installations and a permanent groundwater extraction and treatment system.

The Water Board permitted the treated groundwater discharge from the proposed system under the General National Pollutant Discharge Elimination System (NPDES) Permit for Discharges of Highly Treated Groundwater to Surface Waters on May 5, 2005. The groundwater extraction system was fully operational by August 10, 2005.

On May 25, 2005, the Water Board issued Cleanup or Abatement Order (CAO) No. R3-2005-0081 and Monitoring and Reporting Program No. R3-2005-0082 to the responsible parties. CAO No. R3-2005-0081 required the responsible parties to commence operation of a groundwater extraction system, submit a work plan to install wells to further investigate the extent of waste discharges offsite, and submit a corrective action plan according to the Executive Officer's schedule.

detectable DDX from the Facility to the ocean. This concentration is also lower than the U.S. Environmental Protection Agency's Preliminary Remediation Goal for residential land use of 1,700 micrograms per kilogram. The RPs will transport the excavated soil to an authorized waste disposal facility.

The RPs will construct additional facilities to control sediment run-off from the nursery area including a sediment filter, and curbs and gutters along the north and northeast boundaries of the nursery area. The RPs will monitor surface water during storm events at the outlet of the sediment filter.
The RPs will also excavate soil from the sandblast area containing concentrations of metals that exceed normal background concentrations. The excavated soil will be transported to an authorized waste disposal facility.

Next Steps in Cleanup

The environmental contractor will begin the proposed Facility cleanup following Central Coast Water Board staff concurrence and after receiving all appropriate agency permits. Central Coast Water Board staff will approve the corrective action plan provided we receive no significant public comments.

Public Comment Period

On March 28, 2008, Central Coast Water Board staff sent a fact sheet to each address located within 1,000 feet of the Facility. The fact sheet provided summary information about the Facility and the proposed cleanup, provided a link for downloading the corrective action plan, and indicated that the public would have 30 days to comment on the corrective action plan. As of the date of this report, we have not received any comments.

Attachment 2: Padre Associates, Inc. Site Location Map

Staff Closed Cases

Former Shell Service Station, 1840 Main Street, Morro Bay, San Luis Obispo County, [John Mijares 805-549-3696]

In January 1999, samples collected from the City of Morro Bay (City) sanitary sewer system detected methyl tertiary-butyl ether (MTBE). Subsequent investigations confirmed the MTBE contamination originated from this former Shell service station. The underground storage tanks (USTs) and gasoline-impacted soil beneath the USTs were removed from the location in January 2002. The Responsible Party (RP) implemented extensive remedial actions since the discovery of the contamination, which included contaminated soil excavation, addition of oxygen releasing compound to the UST excavation backfill, soil vapor extraction, and onsite and offsite groundwater extraction and treatment.

Since 1997, water deliveries from the State Water Project (SWP) were the principal domestic water source for the City. However, during seasonal periods of high water demand and during SWP delivery shutdown, the City extracts water from the Morro Basin Well Field (Morro Well #3, #4, #14, and #15). These supply wells are located to the southwest and approximately 500 feet from the former USTs. Due to concerns that pumping from the Well Field could deflect the MTBE plume to the Well Field, Shell Oil Company (Shell) commissioned the implementation of a response plan, which involved soil and groundwater remediation, groundwater monitoring, and groundwater modeling to predict migration of the MTBE plume under various scenarios. Since

November 2002, the City has activated the Well Field annually (at varying pumping rates and pumping durations) to meet water supply needs during the scheduled annual shutdown of the SWP delivery. In addition, in September 2004, the City performed a 14-day full-scale groundwater safety pumping test and did not detect MTBE in any of the supply wells. Shell's consultant implemented a comprehensive groundwater monitoring program prior to, during, and after each initiation of groundwater pumping at the Well Field. Extensive monitoring conclusively demonstrated that the City's Well Field was never impacted, even prior to MTBE plume stabilization.

Total petroleum hydrocarbons as gasoline (TPHg), benzene, and MTBE were the only three gasoline constituents that have been detected above the Central Coast Water Board groundwater cleanup goals of 1000 micrograms per liter (µg/L), 1 µg/L, and 5 µg/L, respectively. As a result of remedial action and natural attenuation, groundwater has now been cleaned up and meets cleanup goals. TPHg, Benzene, and MTBE have either been below their respective reporting limit or cleanup goal since January 2001, September 2005, and June 2005, respectively. Central Coast Water Board staff did not close the case earlier, although cleanup goals were met, to allow additional groundwater investigation and monitoring mutually agreed upon by Shell and the City. Results of the additional investigation and groundwater monitoring further confirm that groundwater cleanup goals have been met.

On January 30, 2008, Central Coast Water Board staff notified the property owner, the San Luis Obispo County Division of Environmental Health, and other interested parties of our plan to close this case. We received a letter from Mr. Charles P. Ogle, on behalf of his father, Charles E. Ogle, whose property is approximately 400 feet west (downgradient) of the former Shell Service Station. Mr. Charles P. Ogle stated in his February 22, 2008 letter that, "*Unless the Regional Board is prepared to state that Mr. Ogle's property is free of all contamination tied to Shell, including additional or previously unidentified contamination, Mr. Ogle objects to case closure.*" Central Coast Water Board staff responded in a February 22, 2008 letter to Mr. Ogle, that current monitoring data, from an extensive network of monitoring wells, show that petroleum hydrocarbons and fuel oxygenates are below laboratory reporting limits and in compliance with cleanup goals. Therefore, Central Coast Water Board staff has determined that Shell has successfully remediated the gasoline-impacted soil and groundwater and no further investigation or cleanup action is needed for soil and groundwater associated with this UST case either onsite or offsite. On March 5, 2008, Central Coast Water Board staff directed Shell to destroy all monitoring wells. Upon receipt of a well destruction report documenting the proper destruction of all monitoring wells, Central Coast Water Board staff will close this case and the Executive Officer will issue a final case closure letter.

Quik Stop Market #63, 2303 East Lake Avenue, Watsonville, Santa Cruz County, [John Mijares 805-549-3696]

Quik Stop Markets, Inc. (Quik Stop), operates a mini-mart and a gasoline service station at the subject site. In September 1998, Quik Stop removed two 10,000-gallon USTs from the subject site. Gasoline impacted soil and groundwater were observed during UST removal activities. Approximately 1,050 cubic yards of impacted soil were removed and disposed of appropriately during the removal and replacement of the USTs. Approximately 13,300 gallons of contaminated groundwater were removed from the excavation pit prior to backfilling. In January 1999, Compliance & Closure, Inc. (CCI), conducted soil and groundwater investigations to delineate the extent of contamination and installed monitoring wells. A Soil Aeration Vapor Extraction (SAVE) system operated at the site from November 2000 to August 2001. The SAVE