

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

STAFF SUMMARY REPORT (Adriana Constantinescu)
MEETING DATE: April 9, 2008

ITEM: 4 E

SUBJECT: **Bourns, Inc., for the property located at 1500 Space Park Drive, Santa Clara, Santa Clara County** – Revision of Final Site Cleanup Requirements

CHRONOLOGY: February 1987 - Initial Site Cleanup Requirements adopted
February 1994 - Final Site Cleanup Requirements adopted

DISCUSSION: The Revised Tentative Order (Appendix A) would approve Bourns' proposed change in its cleanup plan from groundwater extraction and treatment to monitored natural attenuation.

Site History and Investigation - The Site is located in the north-central portion of the City of Santa Clara near the intersection of San Tomas Expressway and Highway 101. Bourns operated an integrated circuits manufacturing facility at the Site from 1969 to 1990. Volatile organic compounds were used in the manufacturing process and were handled in two underground storage tanks and an acid neutralization sump. Subsurface investigations conducted at the Site since 1983 have characterized the extent of soil and groundwater contamination. The groundwater plume extends 800 feet down-gradient of the Site towards the north.

Cleanup Actions - Bourns has cleaned up its Site by (1) removing the two underground storage tanks and the acid neutralization sump and (2) operating a groundwater extraction and treatment system (GETS) from 1985 to 2006. The GETS used 15 groundwater extraction wells and was effective in cleaning up the groundwater plume. The GETS removed 540 pounds of volatile organic compounds. The maximum concentration of trichloroethene in groundwater dropped from 600 parts per billion (ppb) to 200 ppb between 1994 and 2007.

Monitored Natural Attenuation - The GETS was shut down in 2006 to allow for an evaluation of monitored natural attenuation (MNA). MNA relies on bacteria that occur naturally in groundwater to breakdown the contaminants into harmless byproducts. Bourns evaluated MNA and determined that natural breakdown of contaminants in groundwater is occurring at the Site.

Tentative Order - The Tentative Order would approve (1) Bourns' proposed change in its cleanup plan from groundwater extraction and treatment to MNA and (2) a reduction in the monitoring well network from 77 wells to 21 wells. The Tentative Order also requires Bourns to complete a soil gas investigation to evaluate vapor intrusion concerns from the remaining groundwater contamination.

Response to Comments - Bourns submitted comments on the Tentative Order (Appendix B), and our responses to those comments are provided in Appendix C. Bourns commented that groundwater concentrations over the last five years are not high enough to warrant a vapor intrusion evaluation. We disagree and conclude that groundwater concentrations at the site do warrant a soil gas investigation. Groundwater concentrations exceed our environmental screening levels for vapor intrusion, and a site-specific risk assessment calculated a potential risk from the vapor intrusion pathway to be greater than our acceptable risk threshold of "one in a million" excess cancer threat. Therefore it is appropriate to require the next stage of investigation, i.e., a soil gas investigation. We revised the Tentative Order to address Bourns' other comments as appropriate.

We expect this item to remain uncontested.

**RECOMMEN-
DATION:**

Adopt the Revised Tentative Order

File No. 43S0097 (AVC)

Appendices: A - Revised Tentative Order
 B - Correspondence
 C - Response to Comments
 D - Site Location Map

Appendix A

Revised Tentative Order

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

REVISED TENTATIVE ORDER

REVISION OF FINAL SITE CLEANUP REQUIREMENTS and RESCISSION OF ORDER
NO. 94-026 FOR:

BOURNS, INC.

for the property located at

1500 SPACE PARK DRIVE
SANTA CLARA
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region (hereinafter Water Board), finds that:

1. **Site Location:** The Site is located in the north-central portion of the City of Santa Clara, in a light industrial/commercial area, and is approximately 1200 feet south of Highway 101 and 1.3 miles west of the Guadalupe River. The Site consists of a three-building complex and covers approximately 5.5 acres.
2. **Site History:** In 1969, the Site was developed as an industrial property by Precision Monolithics, Inc. (PMI), a wholly-owned subsidiary of Bourns, Inc. Operations at the Site included manufacturing of integrated circuits. PMI used chlorinated solvents in its operations. PMI stored solvents in underground storage tanks (USTs). These operations resulted in the release of volatile organic compounds (VOCs), primarily trichloroethene (TCE), into shallow soil and groundwater beneath the Site.

PMI owned and operated this integrated circuits manufacturing facility until 1990. On August 8, 1990, Bourns sold the PMI company to Analog Devices, Inc. (ADI), but retained ownership of the property at 1500 Space Park Drive. Integrated circuits manufacturing and the associated use of chlorinated solvents were discontinued at the Site in 2004. To confirm its responsibility, Bourns contractually agreed with ADI to accept responsibility for cleanup of the soil and groundwater contamination resulting from releases at the site.

Space Park Partners, LLC, is the current owner of the Site.

3. **Named Discharger:** Bourns, Inc., is named as a discharger because of substantial evidence that it discharged pollutants to soil and groundwater at the Site and because it owned the property during or after the time of the activity that resulted in the discharge,

had knowledge of the discharge or the activities that caused the discharge, and had the legal ability to prevent the discharge.

Although it is the successor company to PMI, ADI is not named as a discharger at this time. However, the Water Board reserves the right to name ADI or other additional dischargers if Bourns, Inc., fails to comply with the requirements of this Order.

Space Park Partners, LLC, the current property owner, is not named as a discharger in this order for the following reasons: Bourns, Inc., has adequate financial resources to comply with this order, Bourns, Inc. has complied with the prior orders, and Bourns, Inc. has requested that Space Park Partners, LLC, not be named in this order. However, Space Park Partners, LLC, may be named in the future if these circumstances change.

If additional information is submitted indicating that other parties caused or permitted any waste to be discharged on the site where it entered or could have entered waters of the state, the Water Board will consider adding those parties' names to this order.

4. **Regulatory Status:** This Site was subject to the following Water Board orders:
 - Waste Discharge Requirements (WDR), Order No. 85-109, adopted September 18, 1985
 - WDR, Order No. 85-119 (NPDES Permit No. CA00228878), adopted October 16, 1985
 - Site Cleanup Requirements (SCR), Order No. 87-9, adopted February 18, 1987
 - SCR, Order No. 94-026, adopted February 16, 1994

5. **Site Hydrogeology:** The Site stratigraphy has been investigated to a depth of approximately 75 feet. Two shallow water bearing zones, designated as the A and B aquifer zones, are both located beneath an upper clay layer which ranges from 10 to 15 feet below ground surface (bgs).

The A aquifer has been subdivided into two A zones: the A1 zone extends from approximately 15 to 25 feet bgs and the A2 zone extends from approximately 25 to 45 feet bgs. Although these zones are in hydraulic connection, finer-grained sediments (silty sand) are more predominant in the A1 zone, resulting in lower conductivity when compared with the coarser grained sediments (sand, with some local gravels) encountered in the A2 zone sediments. Groundwater level data collected at the Site consistently indicate that shallow groundwater is encountered between 4 feet and 11 feet bgs and groundwater flow is generally to the north (i.e., towards the San Francisco Bay). The B aquifer extends between 50 feet bgs and 75 feet bgs. The A and B zones are separated by a clay interval that has an approximate thickness of 5 feet.

6. **Remedial Investigation:** Subsurface investigations were initiated at the Site in 1983. Results of early investigations indicated the areas of highest soil contamination, consisting primarily of chlorinated solvents, were in the vicinity of two solvent USTs. Confirmatory samples taken after the two USTs removal indicated that up to 68 parts per million (ppm) of TCE remained in the excavation. Additional chlorinated solvent contamination up to 7 ppm total VOCs was identified between 10 and 16 feet bgs in the saturated soils beneath and directly south of on-Site Building 1.

In April 2004, an additional soil and groundwater investigation was performed inside of and near the on-Site building. VOCs were detected in 26 of the 35 subsurface soil samples collected at depths between 9 and 15 feet bgs. The highest concentrations – detected between 9.5 and 12 feet bgs – were up to 0.037 ppm for tetrachloroethene (PCE), up to 0.15 ppm for TCE, and up to 0.034 ppm for cis-1,2-dichloroethene (DCE) in the saturated soils.

In 1994, the groundwater plume extended laterally in the A aquifer approximately 1000 feet beyond the property line to the north and approximately 600 feet east to west. In 2007, the groundwater plume extended laterally in the A aquifer approximately 800 feet beyond the property line to the north and approximately 400 feet east to west. The maximum concentrations of TCE in groundwater dropped from 600 parts per billion (ppb) in 1994 to 200 ppb in 2007.

The vinyl chloride concentration in groundwater (93 ppb) is greater than the groundwater vapor intrusion environmental screening level, therefore a vapor intrusion evaluation is needed to determine if vapor intrusion is a concern at the Site.

7. **Adjacent Sites:** Fairchild conducts groundwater remedial activities on the properties located at 3080 and 3100 Alfred Street, approximately 1,600 feet northwest of the Site. The Water Board regulates the investigation and remedial activities at these properties under Order No. 92-083. Because of the close proximity of the groundwater plume at the Alfred Street properties to the Site, the groundwater remedial activities are coordinated to minimize the potential for inducing the migration of VOC-affected groundwater between the two sites.
8. **Prior Remedial Measures:** Bourns, Inc., has performed extensive remedial measures that have significantly reduced soil and groundwater contamination. One acid neutralization sump and two waste solvent storage tanks were removed from the site. A groundwater extraction and treatment system (GETS) was started in 1985 and was eventually expanded to include 15 operational groundwater extraction wells. Extracted groundwater was treated using two air strippers prior to discharge to the storm drain under a National Pollutant Discharge Elimination System permit. The cumulative mass of VOCs removed by the GETS since 1985 is approximately 540 pounds. The GETS was effective in reducing VOC concentrations in the A zone, containing the plume, and reducing its lateral extent and overall mass. The GETS was shut down in March 2006 to

allow for evaluation of monitored natural attenuation.

9. **Environmental Risk Assessment:** A screening level environmental risk assessment was carried out to evaluate potential environmental concerns related to soil and groundwater impacts. Chemicals evaluated in the risk assessment include TCE, cis-1,2-dichloroethene (DCE), and vinyl chloride, the primary chemicals of concern identified at the Site.
 - a. **Screening Levels:** As part of the assessment, site data were compared to Environmental Screening Levels (ESLs) compiled by the Water Board staff. The presence of chemicals at concentrations above the ESLs indicates that additional evaluation of potential threats to human health and the environment is warranted. Screening levels for groundwater address the following environmental concerns: 1) drinking water impacts (toxicity and taste and odor), 2) impacts to indoor air and 3) migration and impacts to aquatic habitats. Screening levels for soil address: 1) direct exposure, 2) impacts to indoor air, 3) leaching to groundwater and 4) nuisance issues. Screening levels for drinking water are based on the lowest of toxicity-based standards (e.g., promulgated Primary Maximum Contaminant Levels (MCLs) or equivalent) and standards based on taste and odor concerns (e.g., Secondary MCLs or equivalent). Chemical-specific screening levels for other human health concerns (i.e., indoor-air and direct-exposure) are based on a target excess cancer risk of 1×10^{-6} for carcinogens and a target Hazard Quotient of 0.2 for noncarcinogens. Groundwater screening levels for the protection of aquatic habitats are based on promulgated surface water standards (or equivalent). The Water Board considers a cumulative excess cancer risk of 1×10^{-6} to 1×10^{-4} or less for carcinogens and a target Hazard Index of 1.0 or less for noncarcinogens to be generally acceptable for human health concerns at remediation sites. Soil screening levels for potential leaching concerns are intended to prevent impacts to groundwater above target groundwater goals (e.g., drinking water standards). Soil screening levels for nuisance concerns are intended to address potential odor and other aesthetic issues.
 - b. **Soil Assessment:** Results of the 2004 source area investigation showed that VOCs were detected in 26 of the 35 collected soil samples. The highest concentrations reported were: 0.037 ppm for PCE, 0.15 ppm for TCE, and 0.034 ppm for cis-1,2-DCE. These values are below the ESLs for residential properties.
 - c. **Groundwater Assessment:** The maximum groundwater concentrations detected during the last five years of sampling is presented in the Table below. TCE, cis-1,2 DCE, and vinyl chloride (VC) exceed their respective ESL for drinking water concerns. VC exceeds its ESL for vapor intrusion considering high permeability soils at a commercial/industrial site.

Chemicals of Concern	Maximum Reported Concentration (µg/L)	Results of Screening Assessment *	
		Potential Drinking Water Concerns	Potential Vapor Intrusion Concerns
TCE	203	X	-
cis-1,2 DCE	120	X	-
Vinyl Chloride	93	X	X

* Note: an "X" indicates that respective Environmental Screening Level was exceeded

- d. **Conclusions:** Additional remedial action is needed due to the exceedances of the drinking water ESL for TCE, cis-1,2 DCE, and VC, and the groundwater vapor intrusion ESL for VC.

Due to excessive risk that will be present at the Site pending full remediation, institutional constraints are appropriate to limit on-site exposure to acceptable levels. A deed restriction was recorded for the Site on July 25, 1996. The deed restriction notifies future owners of sub-surface contamination, and prohibits the use of shallow groundwater beneath the site as a source of drinking water until cleanup standards are met.

10. **Remedial Action Plan:** Based on information provided in the 1989 *Remedial Action Plan (RAP)*, the 1992 *RAP Addendum*, and the 1993 *Additional Remedial Investigation*, the following two remedial actions were implemented at the Site: groundwater extraction and treatment and institutional constraints.

After conducting groundwater extraction and treatment at the Site for 20 years, monitored natural attenuation is now proposed as the remedial action for the Site. An amendment to the RAP was presented in the May 15, 2007, *Natural Attenuation Evaluation Report* by LFR, Inc. The evaluation included assessments of daughter products, changes in the lateral and vertical extent of groundwater plume, and total mass of VOCs in groundwater, and a statistical analysis of the trends of VOC concentrations in individual wells. Each of these lines of evidence indicated that natural attenuation of VOCs has occurred and continues to occur in groundwater at and downgradient from the Site. The May 15, 2007, report concludes that VOCs will decrease to drinking water standards in a time frame of approximately 20 to 40 years. TCE degradation and total mass analysis will be used to confirm that attenuation is occurring within the estimated time frame.

In the event that elevated TCE concentrations are detected above the trigger concentrations listed in Task C.5, a contingency evaluation is needed to evaluate the need for additional remedial actions such as restarting the GETS to prevent further downgradient pollutant migration. The TCE trigger concentrations were established based on the average concentration plus the 99% Chebyshev upper confidence limit

calculated from the analytical results obtained between May 2000 and May 2007 for four "sentry" wells (MW-8, WA1-40, WA1-43, and LF1-65).

11. **Basis for Cleanup Standards**

- a. **General:** State Board Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California," applies to this discharge and requires attainment of background levels of water quality, or the highest level of water quality which is reasonable if background levels of water quality cannot be restored. Cleanup levels other than background must be consistent with the maximum benefit to the people of the State, not unreasonably affect present and anticipated beneficial uses of such water, and not result in exceedance of applicable water quality objectives. This order and its requirements are consistent with Resolution No. 68-16.

State Board Resolution No. 92-49, "Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Water Code Section 13304," applies to this discharge. This order and its requirements are consistent with the provisions of Resolution No. 92-49, as amended.

- b. **Beneficial Uses:** The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) is the Water Board's master water quality control planning document. It designates beneficial uses and water quality objectives for waters of the State, including surface waters and groundwater. It also includes programs of implementation to achieve water quality objectives. The Basin Plan was duly adopted by the Water Board and approved by the State Water Resources Control Board, U.S. EPA, and the Office of Administrative Law where required.

State Board Resolution No. 89-39, "Sources of Drinking Water," defines potential sources of drinking water to include all groundwater in the region, with limited exceptions for areas of high TDS, low yield, or naturally-high contaminant levels. Groundwater underlying and adjacent to the site qualifies as a potential source of drinking water.

The Basin Plan designates the following potential beneficial uses of groundwater underlying and adjacent to the site:

- o Municipal and domestic water supply
- o Industrial process water supply
- o Industrial service water supply
- o Agricultural water supply
- o Freshwater replenishment to surface waters

At present, there is no known use of groundwater underlying the site for the above purposes.

- c. **Basis for Groundwater Cleanup Standards:** The groundwater cleanup standards for the site are based on applicable water quality objectives and are the more stringent of EPA and California primary maximum contaminant levels (MCLs). Cleanup to this level will protect beneficial uses of groundwater and will result in acceptable residual risk to humans.
12. **Future Changes to Cleanup Standards:** The goal of this remedial action is to restore the beneficial uses of groundwater underlying and adjacent to the site. Results from other sites suggest that full restoration of beneficial uses to groundwater as a result of active remediation at this site may not be possible. If full restoration of beneficial uses is not technologically nor economically achievable within a reasonable period of time, then the discharger may request modification to the cleanup standards or establishment of a containment zone, a limited groundwater pollution zone where water quality objectives are exceeded. Conversely, if new technical information indicates that cleanup standards can be surpassed, the Water Board may decide that further cleanup actions should be taken.
13. **Reuse or Disposal of Extracted Groundwater:** State Board Resolution No. 88-160 allows discharges of extracted, treated groundwater from site cleanups to surface waters only if it has been demonstrated that neither reclamation nor discharge to the sanitary sewer is technically and economically feasible.
14. **Basis for 13304 Order:** California Water Code Section 13304 authorizes the Water Board to issue orders requiring a discharger to cleanup and abate waste where the discharger has caused or permitted waste to be discharged or deposited where it is or probably will be discharged into waters of the State and creates or threatens to create a condition of pollution or nuisance.
15. **Cost Recovery:** Pursuant to California Water Code Section 13304, the discharger is hereby notified that the Water Board is entitled to, and may seek reimbursement for, all reasonable costs actually incurred by the Water Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this order.
16. **CEQA:** This action is an order to enforce the laws and regulations administered by the Water Board. As such, this action is categorically exempt from the provisions of the California Environmental Quality Act (CEQA) pursuant to Section 15321 of the Resources Agency Guidelines.
17. **Notification:** The Water Board has notified the discharger and all interested agencies and

persons of its intent under California Water Code Section 13304 to prescribe site cleanup requirements for the discharge, and has provided them with an opportunity to submit their written comments.

18. **Public Hearing:** The Water Board, at a public meeting, heard and considered all comments pertaining to this discharge.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the discharger (or its agents, successors, or assigns) shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

1. The discharge of wastes or hazardous substances in a manner which will degrade water quality or adversely affect beneficial uses of waters of the State is prohibited.
2. Further significant migration of wastes or hazardous substances through subsurface transport to waters of the State is prohibited.
3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of wastes or hazardous substances are prohibited.

B. REMEDIAL ACTION PLAN AND CLEANUP STANDARDS

1. **Implement Remedial Action Plan (RAP):** The discharger shall implement the May 15, 2007, RAP amendment described in Finding 10.
2. **Groundwater Cleanup Standards:** The following groundwater cleanup standards shall be met in all wells identified in the Self-Monitoring Program:

Constituent	Standard (ug/l)	Basis
PCE	5	EPA primary MCL
TCE	5	EPA primary MCL
cis-1,2-DCE	6	EPA primary MCL
vinyl chloride	0.5	EPA primary MCL

C. TASKS

1. SOIL GAS INVESTIGATION WORKPLAN

COMPLIANCE DATE: May 31, 2008

Submit a technical report acceptable to the Executive Officer to define the extent of soil gas pollution. The workplan should specify investigation methods and a proposed time schedule. Work may be phased to allow the investigation to proceed efficiently, provided that this does not delay compliance.

2. COMPLETION OF SOIL GAS INVESTIGATION

COMPLIANCE DATE: September 30, 2008

Submit a technical report acceptable to the Executive Officer documenting completion of necessary tasks identified in the Task 1 workplan. The technical report should define the extent of soil gas pollution down to concentrations at or below soil gas screening levels for evaluation of potential vapor intrusion concerns.

3. IMPLEMENTATION OF WELL ABANDONMENT

COMPLIANCE DATE: April 30, 2009

Submit a technical report acceptable to the Executive Officer documenting completion of well abandonment activities proposed in the September 28, 2007, *Groundwater Monitoring Work Plan*. The report should include a description of field activities and figures with well locations.

4. FIVE-YEAR STATUS REPORT

COMPLIANCE DATE: April 30, 2013, and every five years thereafter

Submit a technical report acceptable to the Executive Officer evaluating the effectiveness of the approved remedial action plan. The report should include:

- a. Summary of effectiveness in controlling contaminant migration and protecting human health and the environment
- b. Comparison of contaminant concentration trends with cleanup standards
- c. Comparison of anticipated versus actual costs of cleanup activities
- d. Additional remedial actions proposed to meet cleanup standards (if

applicable) including time schedule

If cleanup standards have not been met and are not projected to be met within a reasonable time, the report should assess the technical practicability of meeting cleanup standards and may propose an alternative cleanup strategy.

5. CONTINGENCY EVALUATION REPORT

COMPLIANCE DATE: 60 days after requested by the Executive Officer

Submit a technical report acceptable to the Executive Officer containing a contingency evaluation report. Propose additional remedial actions such as restarting the GETS to prevent further downgradient pollutant migration.

In deciding whether to require the contingency evaluation report, the Executive Officer will consider TCE concentration trends in sentry wells and specifically whether they exceed the following trigger concentrations.

Well ID	Historical TCE Concentration Range (µg/L)	TCE Trigger Concentrations (µg/L)
MW-8	<0.5	3.0
WA1-40	<0.5 to 1.0	3.0
WA1-43	<0.5 and 9.2	9.2
LF1-65	<0.5	3.0

Notes: µg/L = micrograms per liter

6. CONTINGENCY IMPLEMENTATION

COMPLIANCE DATE: 90 days after Executive Officer approval of Task 5 report

Submit a technical report acceptable to the Executive Officer documenting completion of necessary tasks identified in the Task 5 report.

7. PROPOSED CURTAILMENT

COMPLIANCE DATE: 60 days prior to proposed curtailment

Submit a technical report acceptable to the Executive Officer containing a proposal to curtail remediation. Curtailment includes monitor natural attenuation suspension and significant system modification (e.g., major reduction in

extraction rates, closure of individual extraction wells within extraction network, if applicable). The report should include the rationale for curtailment. Proposals for final closure should demonstrate that cleanup standards have been met, contaminant concentrations are stable, and contaminant migration potential is minimal.

8. **IMPLEMENTATION OF CURTAILMENT**

COMPLIANCE DATE: 60 days after Executive Officer approval

Submit a technical report acceptable to the Executive Officer documenting completion of the tasks identified in Task 7.

9. **EVALUATION OF NEW HEALTH CRITERIA**

COMPLIANCE DATE: 90 days after requested
by Executive Officer

Submit a technical report acceptable to the Executive Officer evaluating the effect on the approved remedial action plan of revising one or more cleanup standards in response to revision of drinking water standards, maximum contaminant levels, or other health-based criteria.

10. **EVALUATION OF NEW TECHNICAL INFORMATION**

COMPLIANCE DATE: 90 days after requested
by Executive Officer

Submit a technical report acceptable to the Executive Officer evaluating new technical information which bears on the approved remedial action plan and cleanup standards for this site. In the case of a new cleanup technology, the report should evaluate the technology using the same criteria used in the feasibility study. Such technical reports shall not be requested unless the Executive Officer determines that the new information is reasonably likely to warrant a revision in the approved remedial action plan or cleanup standards.

11. **Delayed Compliance:** If the discharger is delayed, interrupted, or prevented from meeting one or more of the completion dates specified for the above tasks, the discharger shall promptly notify the Executive Officer and the Water Board may consider revision to this Order.

D. PROVISIONS

1. **No Nuisance:** The storage, handling, treatment, or disposal of polluted soil or groundwater shall not create a nuisance as defined in California Water Code Section 13050(m).
2. **Good O&M:** The discharger shall maintain in good working order and operate as efficiently as possible any facility or control system installed to achieve compliance with the requirements of this Order.
3. **Cost Recovery:** The discharger shall be liable, pursuant to California Water Code Section 13304, to the Water Board for all reasonable costs actually incurred by the Water Board to investigate unauthorized discharges of waste and to oversee cleanup of such waste, abatement of the effects thereof, or other remedial action, required by this Order. If the site addressed by this Order is enrolled in a State Water Board-managed reimbursement program, reimbursement shall be made pursuant to this Order and according to the procedures established in that program. Any disputes raised by the discharger over reimbursement amounts or methods used in that program shall be consistent with the dispute resolution procedures for that program.
4. **Access to Site and Records:** In accordance with California Water Code Section 13267(c), the discharger shall permit the Water Board or its authorized representative:
 - a. Entry upon premises in which any pollution source exists, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
 - b. Access to copy any records required to be kept under the requirements of this Order.
 - c. Inspection of any monitoring or remediation facilities installed in response to this Order.
 - d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the discharger.
5. **Self-Monitoring Program:** The discharger shall comply with the Self-Monitoring Program as attached to this Order and as may be amended by the Executive Officer.

6. **Contractor / Consultant Qualifications:** All technical documents shall be signed by and stamped with the seal of a California registered geologist, a California certified engineering geologist, or a California registered civil engineer.
7. **Lab Qualifications:** All samples shall be analyzed by State-certified laboratories or laboratories accepted by the Water Board using approved EPA methods for the type of analysis to be performed. All laboratories shall maintain quality assurance/quality control (QA/QC) records for Water Board review. This provision does not apply to analyses that can only reasonably be performed on-site (e.g., temperature).
8. **Document Distribution:** Electronic copies of all correspondence, technical reports, and other documents pertaining to compliance with this Order shall be provided to the Santa Clara Valley Water District.

The Executive Officer may modify this distribution list as needed.

9. **Reporting of Changed Owner:** To the extent the discharger becomes aware, the discharger shall file a technical report on any changes in site ownership associated with the property described in this Order.
10. **Reporting of Hazardous Substance Release:** If any hazardous substance is discharged in or on any waters of the State, or discharged or deposited where it is, or probably will be, discharged in or on any waters of the State, the discharger shall report such discharge to the Water Board by calling (510) 622-2369 during regular office hours (Monday through Friday, 8:00 to 5:00).

A written report shall be filed with the Water Board within five working days. The report shall describe: the nature of the hazardous substance, estimated quantity involved, duration of incident, cause of release, estimated size of affected area, nature of effect, corrective actions taken or planned, schedule of corrective actions planned, and persons/agencies notified.

This reporting is in addition to reporting to the Office of Emergency Services required pursuant to the Health and Safety Code.

11. **Rescission of Existing Order:** This Order supersedes and rescinds Order No. 94-026.
12. **Periodic SCR Review:** The Water Board will review this Order periodically and may revise it when necessary.

I, Bruce H. Wolfe, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region, on, 2008.

Bruce H. Wolfe
Executive Officer

FAILURE TO COMPLY WITH THE REQUIREMENTS OF THIS ORDER MAY SUBJECT YOU TO ENFORCEMENT ACTION, INCLUDING BUT NOT LIMITED TO: IMPOSITION OF ADMINISTRATIVE CIVIL LIABILITY UNDER WATER CODE SECTIONS 13268 OR 13350, OR REFERRAL TO THE ATTORNEY GENERAL FOR INJUNCTIVE RELIEF OR CIVIL OR CRIMINAL LIABILITY

Attachments: Self-Monitoring Program
Site Map

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM FOR:

BOURNS, INC.

for the property located at

1500 SPACE PARK DRIVE
SANTA CLARA
SANTA CLARA COUNTY

1. **Authority and Purpose:** The Water Board requires the technical reports in this Self-Monitoring Program pursuant to Water Code Sections 13267 and 13304. This Self-Monitoring Program is intended to document compliance with Water Board Order No. XX-XXX (site cleanup requirements).
2. **Monitoring:** The discharger shall measure groundwater elevations in all monitoring wells and shall collect and analyze representative samples of groundwater according to the following table:

Well #	Sampling Frequency	Analyses
MW-8, WA-10, WA-34, WA1-40, WA2-40, WA1-42, WA1-43, WA1-46, LF1-65, LSIK-1, EW-12A, EW-14A, EW-15A, EW-16A, EW-19A, EW-20A	A	8260, DO, pH, C, T, Tr, and ORP
EW-13A, EW-17A, EW-18A, EW-21A, EW-22A	SA	8260, DO, pH, C, T, Tr, and ORP

Key: SA = Semi-Annually; A = Annually
 8260 = EPA Method 8260 analysis with only the EPA Method 8010 compounds reported
 DO = Dissolved oxygen
 C, T, Tr = Conductivity, temperature, and turbidity
 ORP = Oxidation reduction potential

The discharger may propose changes in the above table; any proposed changes are subject

to Executive Officer approval.

3. **Annual Monitoring Reports:** The discharger shall submit annual monitoring reports to the Water Board on April 30 of the year (e.g., report for the first year due April 30, 2009). The reports shall include:
 - a. **Transmittal Letter:** The transmittal letter shall discuss any violations during the reporting period and actions taken or planned to correct the problem. The letter shall be signed by the discharger's principal executive officer or his/her duly authorized representative, and shall include a statement by the official, under penalty of perjury, that the report is true and correct to the best of the official's knowledge.
 - b. **Groundwater Elevations:** Groundwater elevation data shall be presented in tabular form, and a groundwater elevation map should be prepared for each monitored water-bearing zone. Historical groundwater elevations shall also be included.
 - c. **Groundwater Analyses:** Groundwater sampling data shall be presented in tabular form, and an isoconcentration map should be prepared for one or more key contaminants for each monitored water-bearing zone, as appropriate. The report shall indicate the analytical method used, detection limits obtained for each reported constituent, and a summary of QA/QC data. Historical groundwater sampling results shall also be included. The report shall describe any significant increases in contaminant concentrations since the last report, and any measures proposed to address the increases. The report shall compare TCE concentrations in the four sentry wells (MW-8, WA1-40, WA1-43, and LF1-65) to the TCE trigger concentrations listed in Task C.5. Supporting data, such as lab data sheets, need not be included (however, see record keeping - below).
 - d. **Groundwater Extraction:** If applicable, the report shall include groundwater extraction results in tabular form, for each extraction well and for the site as a whole, expressed in gallons per minute and total groundwater volume for the year. The report shall also include contaminant removal results, from groundwater extraction wells and from other remediation systems (e.g. soil vapor extraction), expressed in units of chemical mass per day and mass for the year. Historical mass removal results shall be included in the annual report.
 - e. **Status Report:** The annual report shall describe relevant work completed during the reporting period (e.g. site investigation, interim remedial measures) and work planned for the following year.
5. **Violation Reports:** If the discharger violates requirements in the Site Cleanup

Requirements, then the discharger shall notify the Water Board office by telephone as soon as practicable once the discharger have knowledge of the violation. Water Board staff may, depending on violation severity, require the discharger to submit a separate technical report on the violation within five working days of telephone notification.

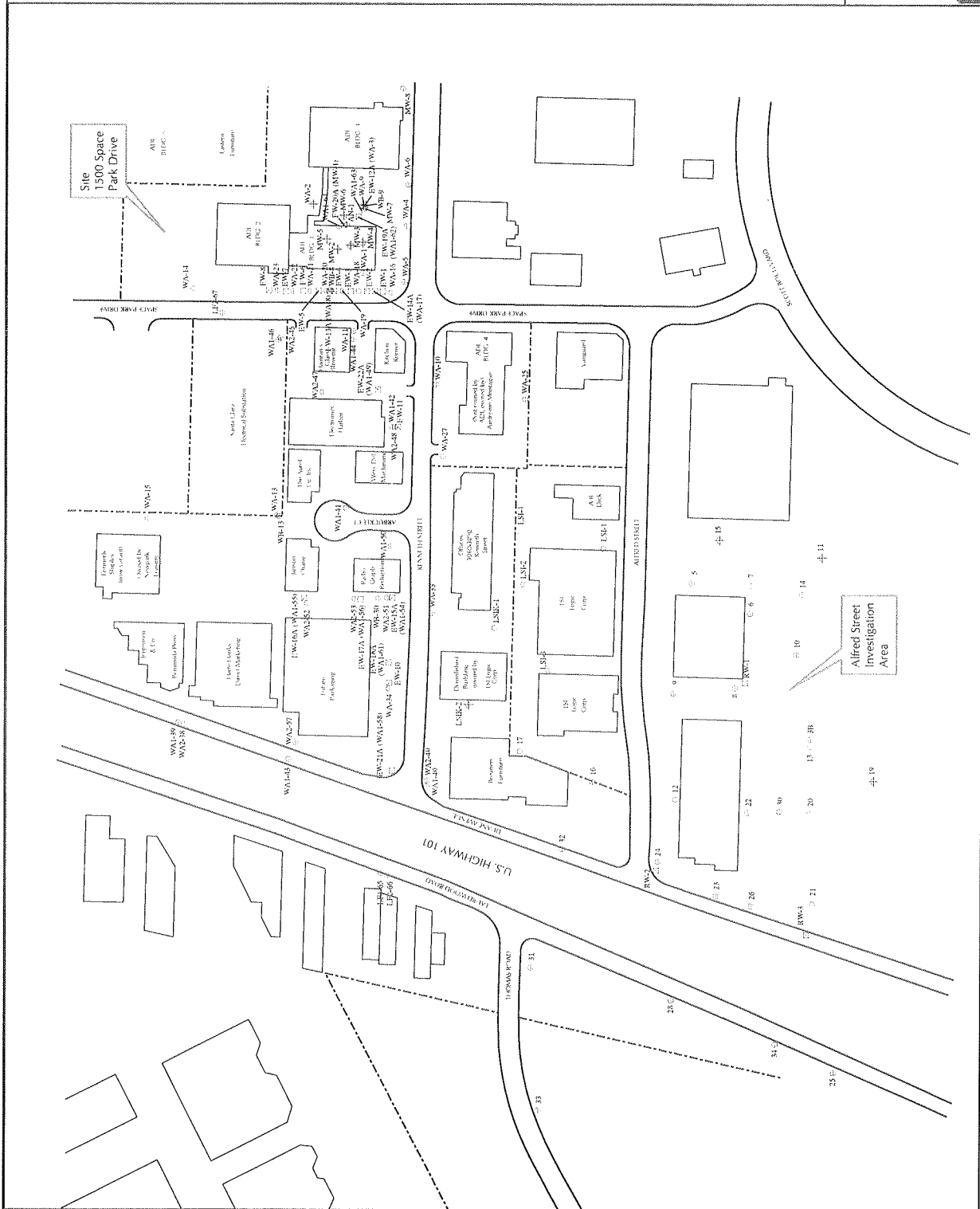
6. **Other Reports:** The discharger shall notify the Water Board in writing prior to any site activities, such as construction or underground tank removal, which have the potential to cause further migration of contaminants or which would provide new opportunities for site investigation.
7. **Record Keeping:** The discharger or his/her agent shall retain data generated for the above reports, including lab results and QA/QC data, for a minimum of six years after origination and shall make them available to the Water Board upon request.
8. **SMP Revisions:** Revisions to the Self-Monitoring Program may be ordered by the Executive Officer, either on his/her own initiative or at the request of the discharger. Prior to making SMP revisions, the Executive Officer will consider the burden, including costs, of associated self-monitoring reports relative to the benefits to be obtained from these reports.

LEGEND

- WA-12, WA-30 AD/PMI groundwater monitoring well
- WA1-50, WA2-51 MW-1, AN-1
- LSIK-1, LSI-4 LSI groundwater monitoring well
- 13, 38 Alfred Sireet investigation groundwater monitoring well
- EW-1 AD/PMI extraction well
- RW-1 Alfred Sireet investigation extraction well
- WA-2 Abandoned well

NOTE:

Bourns groundwater monitoring wells MW-1, WA-3, WA-8, WA-17, WA1-54, WA1-55, WA1-56, WA1-61, and WA1-62 were converted to extraction wells during Groundwater Extraction and Treatment System Expansion activities conducted from June 1994 through February 1995. Monitoring wells WA1-49 and WA1-58 were converted to extraction wells in November 1998.



Site Map

Bourns, Santa Clara, California



Appendix B

Correspondence

From: "Freeman, Lita" <Lita.Freeman@lfr.com>
To: "Adriana Constantinescu" <AConstantinescu@waterboards.ca.gov>
CC: "Cathy Godfrey" <Cathy.Godfrey@bourns.com>
Date: 3/19/2008 1:04 PM .
Subject: Bourns Comments on Tentative Order
Attachments: Bourns Comments on TO.PDF; commercialindustrial risk work sheets.PDF; Summary of Well Construction.pdf; Attachments A and B.pdf; Site Plan 2.pdf

Adriana

Attached are a table with Bourns' comments to the Tentative Order for the 1500 Space Park Drive site and supporting documentation that was requested during our meeting last Thursday, including the commercial/industrial risk assessment work sheet, construction details for select wells, well logs, and a site plan showing the locations of former tanks.

Please let me know if you have any questions.

Thanks

Lita

<<Bourns Comments on TO.PDF>>

<<commercialindustrial risk work sheets.PDF>> <<Summary of Well Construction.pdf>> <<Attachments A and B.pdf>> <<Site Plan 2.pdf>>

Lita D. Freeman, P.G., R.E.A. II, C.A.C.

Principal Geologist

LFR Inc.

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Submitted March 19, 2008

This document represents comments by Bourns, Inc. on the tentative order (Revision of Final Site Cleanup Requirements and Rescission of Order 94-026) for the property located at 1500 Space Park Drive, Santa Clara.

<u>Tentative Order</u>	<u>Bourns Comment</u>
<p>1. Page 3, Finding 6, 4th paragraph states “The vinyl chloride concentration in groundwater (93 ppb) is greater than the groundwater vapor intrusion environmental screening level, therefore a vapor intrusion evaluation is needed to determine if vapor intrusion is a concern at the Site.”</p>	<p>Vinyl chloride was detected at a concentration of 93 parts per billion (ppb) in well WA1-63 in November 2003, which is greater than the RWQCB’s 2007 ESL of 13 ppb for commercial/industrial sites for groundwater vapor intrusion concerns (Table E-1). However, the concentrations of vinyl chloride detected in the sampling events just prior to and following the November 2003 sampling event (vinyl chloride was reported at 2.9 ppb in May 2003 and at 3 ppb in November 2004) were well below the ESL, and since November 2004, the concentrations of vinyl chloride detected in groundwater samples from this well have been below the commercial/industrial ESL (i.e., at 11 ppb or less). Therefore, the vinyl chloride concentration of 93 ppb appears to be an outlier.</p> <p>The area at the Site within which groundwater contamination has been detected is a commercial/industrial area with no residential housing. Thus the relevant ESL criterion is the commercial/industrial use criterion.</p> <p>The only well for which chemical concentrations have been above the commercial/industrial ESL criterion for vinyl chloride during several recent sampling events is EW-12A. The most recent vinyl chloride concentration in that well was 28 ppb (November 2007 sampling event). LFR performed a risk assessment using site-specific data in the Johnson and Ettinger Department of Toxic Substances Control (DTSC) modified model with vinyl chloride at 28 ppb. The input data and risk tables are attached. Based on investigations performed at the Site (see attached well logs), shallow soil beneath the Site is silt and clay and depth to water is approximately 7 feet. Based on the above input data, the commercial/industrial risk is 3.1×10^{-6}. As is stated on Page 4, Finding 9(a) of the tentative order, “The Water Board considers a cumulative</p>

	<p>excess cancer risk of 1×10^{-5} . . . to be generally acceptable for human health concerns at commercial and industrial properties.”</p> <p>As a result, the 4th paragraph of Finding 6 should either be deleted or the last portion of this paragraph, beginning with “therefore a vapor intrusion evaluation is needed,” should be deleted and the text should state that the risk is within the RWQCB’s acceptable risk range.</p>
<p>2. Page 6, Finding 9.c states: “Groundwater Assessment: The maximum groundwater concentrations detected during the last five years of sampling is presented in the Table below. TCE, cis-1,2 DCE, and vinyl chloride (VC) exceed their respective ESL for drinking water concerns. VC exceeds its ESL for vapor intrusion considering high permeability soils at a commercial/industrial site.”</p>	<p>As discussed above, vinyl chloride was detected at a concentration of 93 ppb in well WA1-63 in November 2003, which is greater than the RWQCB’s 2007 ESLs of 13 ppb for commercial/industrial sites for groundwater vapor intrusion concerns (Table E-1). However, the concentrations of vinyl chloride detected in the sampling events just prior to and following the November 2003 sampling event (vinyl chloride was reported at 2.9 ppb in May 2003 and at 3 ppb in November 2004) were well below the ESL, and since November 2004, the concentrations of vinyl chloride detected in groundwater samples from this well have been below the commercial/industrial ESL (i.e., the highest concentration being 11 ppb in November 2005). Therefore, the vinyl chloride concentration of 93 ppb appears to be an outlier.</p> <p>Thus, for these reasons, the last sentence of this finding beginning with the words “VC exceeds . . .” should be deleted.</p>
<p>3. Page 5, Finding 9.d, 1st Paragraph states: “Additional remedial action is needed due to the exceedances of the drinking water ESL for TCE, cis-1,2 DCE, and VC, and the groundwater vapor intrusion ESL for VC.”</p>	<p>Because the Tentative Order directs Bourns to “implement the May 15, 2007, RAP amendment described in Finding 10” [“Natural Attenuation Evaluation Report”] (See Order Paragraph B.1, at p. 8), we recommend that this Finding be revised to read: “As documented in Finding No. 10, natural attenuation of VOCs has occurred and continues to occur in groundwater at and downgradient from the Site. Therefore, monitored natural attention is the recommended remedial action for groundwater for this Site.”</p>

<p>4. Page 8-9, Order Tasks C.1 & C.2. These Tasks address the preparation of a soil gas investigation workplan for the Site and the completion of the soil gas investigation.</p>	<p>For the reasons discussed in Bourns Item No 1 above, a soil gas investigation is not needed and Tasks C.1 and C.2 should be deleted and the remaining tasks renumbered.</p>
<p>5. Page 10, Order Task C.7, provides for a curtailment action if requested by the Executive Officer and further provides that the curtailment action includes “monitor natural attenuation suspension” and “significant system modification (e.g. major reduction in extraction rates, . . .).”</p>	<p>Because the Tentative Order selects monitored natural attenuation as the site remedy and no groundwater extraction will be occurring at the Site, the first sentence of this Task should be revised to read: “Submit a technical report acceptable to the Executive Officer containing a proposal to end monitored natural attenuation and to take such other actions as are necessary to close any remaining remedial facilities at the Site.”</p>
<p>6. Page 13, Order Provision D.9 requires that the dischargers “shall file a technical report on any changes in site occupancy or ownership associated with the property described in this Order, to the extent the discharger has knowledge of any such changes.”</p>	<p>Bourns will not have information on site occupancy or ownership and this requirement should not apply to Bourns.</p> <p>If this provision remains, it should be made clear that it does not relate to changes in individual tenants in the office building, but only changes in ownership of the entire building, to the extent the discharger has knowledge of any such changes.</p>
<p><u><i>Self Monitoring Program</i></u></p>	
<p>7.</p>	<p>Because Page 16, Item 3 d and e note that the dischargers shall submit only annual monitoring reports, this item be revised to remove references to “gallons per minute and total groundwater volume for the quarter” and “units of chemical mass per day and mass for the quarter” and “work planned for the following quarter...”</p>

Appendix C

Response to Comments

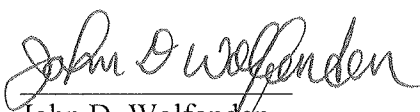
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION


RESPONSE TO COMMENTS

TO: Bruce H. Wolfe
Executive Officer

Date: March 25, 2008
File No. 43S0097 (AVC)

FROM: 
Adriana Constantinescu
Engineering Geologist

CONCUR: 
John D. Wolfenden
Section Leader
Toxics Cleanup Division


Stephen A. Hill
Division Chief
Toxics Cleanup Division

SUBJECT: **Response to Comments on the Tentative Order for the Revision of Final Site Cleanup Requirements for the Former Bourns, Inc., Site, 1500 Space Park Drive, Santa Clara, Santa Clara County**

This document provides the response to comments received on the Tentative Order for the Revision of Final Site Cleanup Requirements (TO) for the subject Site. On February 20, 2008, staff distributed the TO to the appropriate parties for comment. On March 13, 2008, we met with Bourns to discuss its comments on the TO. On March 19, 2008, Bourns submitted written comments on the TO. Comments from Bourns are summarized below together with our response.

1) *Comment:* Delete the requirement to conduct a soil gas investigation to evaluate vapor intrusion concerns because groundwater concentrations over the last five years are not high enough to warrant such an evaluation. Specifically, delete Tasks 1 and 2 of the TO that require a soil gas investigation and the associated supporting findings.

Bourns commented that the vinyl chloride concentration of 93 µg/kg (detected in November 2003 in well WA1-63) appears to be an outlier considering the sampling events just prior to and following the November 2003 sampling event, and from November 2004 to November 2007. Bourns provided a human health risk assessment using data from well EW-12A, the only well during recent sampling events with vinyl chloride concentrations above the vapor intrusion environmental screening level for a commercial/industrial scenario. Using the Johnson and Ettinger modified model, the human health risk for a commercial/industrial scenario was calculated as 3.1×10^{-6} .

Based on these data and calculations, Bourns recommends deleting references in the findings and tasks regarding the need for a vapor intrusion evaluation, specifically in the 4th paragraph of Finding 6, Finding 9.c, Finding 9.d, and Tasks 1 and 2.

Response: We disagree. We conclude that groundwater concentrations at the site do warrant a soil gas investigation to evaluate the vapor intrusion pathway.

In our evaluation of the trend of vinyl chloride historical concentrations in well WA1-63, we note eight detections equal to or above the vapor intrusion environmental screening level of 13 µg/L (see attached Table 2). In addition, we looked at the vinyl chloride historical concentrations in well EA-12A and we note sixteen detections equal to or above the vapor intrusion environmental screening level of 13 µg/L (see attached Table 1). Based on this evaluation we do not consider the vinyl chloride concentration of 93 µg/L as an outlier.

In regards to Bourns' site specific risk calculation of 3.1×10^{-6} , we consider an excess cancer risk of 1×10^{-6} as the point of departure for requiring further evaluation. In other words, if the groundwater concentrations are greater than the vapor intrusion environmental screening level, or if a site specific risk assessment calculates a potential risk to be greater than 1×10^{-6} , then it is appropriate to require the next stage of investigation, i.e., a soil gas investigation.

Finding 9.a of the TO mistakenly listed this point of departure risk as 1×10^{-5} . Finding 9.a of the Revised Tentative Order (RTO) has been changed to reflect a risk range of 1×10^{-6} to 1×10^{-4} to accurately reflect our present practice and to be consistent with U. S. Environmental Protection Agency guidance.

2) Comment: Revise the first sentence of Task C.7 to clarify that curtailment refers to ending monitored natural attenuation.

Response: We disagree. The second sentence of Task C.7 already references monitored natural attenuation suspension as part of curtailment. Thus, no change is made to the RTO based on this comment.

3) Comment: Revise the reporting requirements of Provision D.9 to only apply to changes in ownership of the building but not changes in individual tenants because Bourns will not have information on individual tenants since it does not own or occupy the building.

Response: We agree. The RTO was revised based on this comment.

4) Comment: Revise Provision 3.d and e of the Self-Monitoring Program to reflect annual instead of quarterly monitoring.

Response: We agree. The RTO was revised based on this comment.

Attachment: Tables 1 and 2

TABLE 1
Vinyl Chloride Concentrations ($\mu\text{g/L}$) in Well EA-12A

Date of Sampling	Concentrations
2/23/1988	<25
8/29/1988	<250
2/22/1990	<25
Dup 2/22/1990	<50
6/6/1990	1.5
8/23/1990	1.5
11/22/1991	<25
11/6/1992	230
11/18/1993	110
3/18/1994	130
12/22/1994	66
2/9/1995	<10
8/14/1995	13
2/14/1996	43
8/29/1996	7.6
2/13/1997	13
2/18/1998	8.2
8/13/1998	8.3
2/12/1999	4.1
5/12/1999	9.09
11/12/1999	10.8
5/9/2000	<5.0
11/16/2000	1.6
5/17/2001	6.6
12/7/2001	<0.5
5/16/2002	13
5/13/2003	13
11/13/2003	15
5/13/2004	7.8
11/16/2004	8.7
5/18/2005	3.4
5/11/2006	20
8/1/2006	16
11/13/2006	16
2/20/2007	24
5/14/2007	21
11/12/2007	28

Explanation:

Bold values are equal to or above 13 $\mu\text{g/L}$, the vinyl chloride environmental screening level for vapor intrusion concerns

TABLE 2
Vinyl Chloride Concentrations in µg/L in Well WA1-63

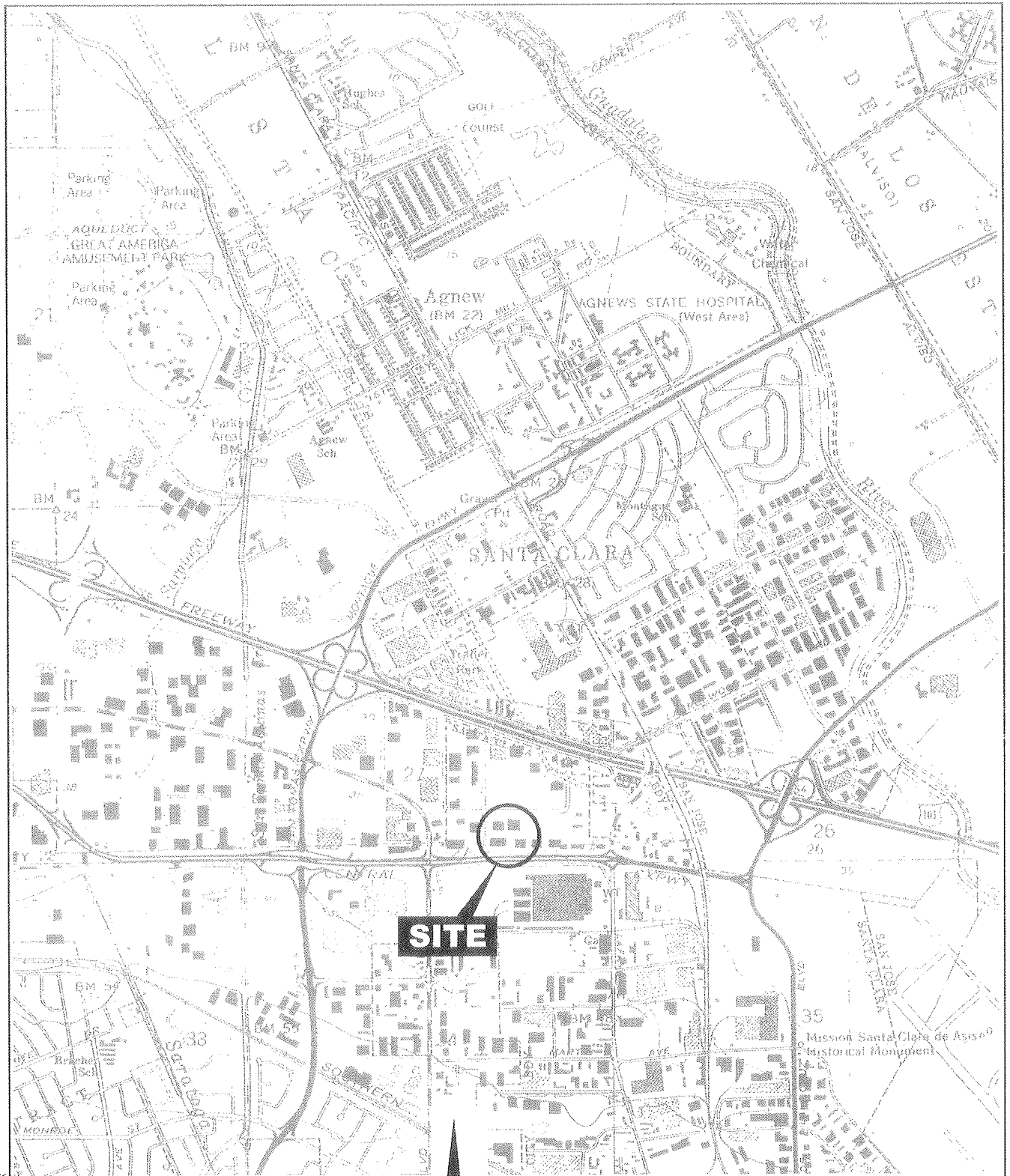
Date of Sampling	Concentrations
8/27/1990	<1
11/28/1990	<2.5
11/22/1991	<25
11/6/1992	<0.5
11/17/1993	<0.5
12/22/1994	16
11/10/1995	36
11/14/1996	5
11/21/1997	54
11/19/1998	22
11/12/1999	41.8
11/16/2000	64
Dup 11/16/2000	66
11/29/2001	<1
11/12/2002	7
5/13/2003	2.9
11/13/2003	93
11/16/2004	3.0
11/15/2005	11
5/10/2006	4.6
8/1/2006	4.7
11/17/2006	3.8
2/22/2007	4.9
Dup 2/22/2007	5.3
11/13/2007	3.3

Explanation:

Bold values are equal to or above 13µg/L, the vinyl chloride environmental screening level for vapor intrusion concerns

Appendix D

Site Location Map



001102142 Site Location Map, CDR

Source: Base map from
 U.S.G.S. Topographic series,
 Milpitas and San Jose West, California
 quadrangles, 1961,
 Photorevised 1980.

0 1000 2000 FEET



Site Location Map

Bourns, Santa Clara, California

