Western Operations

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Clayton
ENVIRONMENTAL
CONSULTANTS

June 5, 1991

Clayton Project No. 31820.00

Ravi Arulanantham, Ph.D.
Alameda County Health Agency
80 Swan Way, Room 200
Oakland, California 94621

Dear Mr. Arulanantham:

Clayton Environmental Consultants, Inc. is pleased to present this work plan for additional subsurface investigation for Busick Air Conditioning located at 6341 Scarlett Court in Dublin, California.

If you have any questions or require any additional information, please call me at (415) 426-2676 of Robyn Seymour at (415) 426-2674.

Sincerely,

Alan D. Gibbs, R.G.
Supervisor, Geology
Western Operations

ADG/rs
Enclosure

91 MAY 16

31820-2.wpn

CONTENTS

1.0 INTRODUCTION

Clayton Environmental Consultants, Inc. was retained by Busick Air to develop and implement a work plan for additional subsurface investigation at its property at 6341 Scarlett Court in Dublin, California (Figure 1). This work plan was prepared based on the recommendations provided by Mr. Ravi Arulanantham, of the Alameda County Department of Environmental Health (ACDEH), and Regional Water Quality Control Board (RWQCB) guidelines for investigation of fuel leak sites.

Soil and groundwater at the site had been impacted with chlorinated solvents. Mr. Arulanantham recommended installation of four more boreholes and two monitoring wells to better define the horizontal and lateral extent of the chemical constituents recognized in the groundwater beneath the site.

2.0 BACKGROUND

Mr. Bruce Jacobson of Decon Environmental Services contacted Mr. Alan Gibbs, Clayton's supervisor of geology, concerning excavation of a sump at the site. Decon had overexcavated to a depth of approximately 6 feet, there they encountered groundwater. The sump had evidently been used by a previous tenant that had reportedly used chlorinated solvents.

Decon collected water samples from the excavation on July 18, 1990. They pumped and treated the water several times. Water samples were collected again on September 14, 1990. Laboratory analytical results for the before and after water samples indicated a reduction of chlorinated solvent concentrations after pumping. Final results from groundwater sampling (included in the Appendix) indicated that chlorinated solvent concentrations in groundwater did not meet California Regional Water Quality Control Board Drinking Water Standards.

Clayton conducted a subsurface investigation at the site (Clayton Project Report No. 31820, dated December 12, 1990). We installed three boreholes and a monitoring well downgradient, based on regional groundwater flow direction, of the former sump location. Groundwater samples were collected from all three boreholes and the monitoring well. The water samples were analyzed for volatile organics.

The following table summarized the results of the laboratory analyses of the water samples collected by Clayton.

Analyte	BH-1 (ppb)	BH-2 (ppb)	BH-3 (ppb)	MW-1 (ppb)	Regulatory Guidelines*
Trans-1,2-Dichloroethene	ND	ND	38	ND	10
Cis-1,2-Dichloroethene	ND	42	570	4,400	6
1,2-Dichloroethene (total)	ND	40	610	4,400	6
1,2-Dichloroethane	150	160	ND	ND	0.5
Trichloroethene	5	1,500	530	10,000	5
Tetrachloroethene	ND	50	ND	ND	5

Table Notes
ND = Not detected
-- = Information not available or applicable
* = Department of Health Resources (DHS) and Environmental Protection Agency (EPA) Limits of Detection are included with the laboratory analyses (Appendix)

The highest contaminant concentrations were detected in groundwater from monitoring well MW-1, which was installed in the borehole closest to the sump excavation area. TCE was the only chemical constituent analyzed for that was present in all of the samples. The fewest contaminants and the lowest concentrations were found in borehole BH-1. This borehole is crossgradient from the sump area. Boreholes BH-2 and BH-3, which are downgradient of the sump area, had higher concentrations of TCE and other constituents than BH-1, but significantly lower concentrations than those detected in monitoring well MW-1.

The contaminant concentration decreases as the distance from the sump increases.

3.0 OBJECTIVE

Clayton discussed the results of the subsurface investigation with Mr. Arulanantham, on December 4, 1990. Based on this conversation, we recommend installation of four more boreholes and two more monitoring wells to further assess the lateral extent of contamination. The objective of this additional investigation is to define the lateral and vertical extent of the chlorinated hydrocarbon contamination recognized in the groundwater near the former sump excavation pit. To achieve this, Clayton proposes completion of the following tasks.

3.1 TASK 1: HEALTH AND SAFETY PLAN PREPARATION

An updated health and safety plan will be prepared based on the work plan activities and environmental investigations proposed at the site, as per the requirements of Title 29 of the Code of Federal Regulations, Section 1910.120 (29 CFR 1910.120).

3.2 TASK 2: BOREHOLE INSTALLATION AND GROUNDWATER SAMPLING

Clayton will supervise the drilling of six boreholes, two of which will be converted into monitoring wells MW-2 and MW-3. Figure 2 shows the location of both the existing and proposed boreholes and monitoring wells.

The boreholes will be drilled with a hollow-stem auger attached to a Mobile drilling rig. Before work begins on each borehole, the augers and soil sampler will be steam cleaned. The boreholes will be drilled to an approximate depth of 15 feet below ground surface (bgs).

During drilling, the soil characteristics will be logged in the field by a Clayton geologist. Distinguishing features such as color, odor, and relative soil moisture content will be noted. Drilling activities will be conducted in accordance with RWQCB and ACDEH guidelines, under the supervision of a civil engineer or a geologist registered in the State of California.

Waste drill cuttings will be placed into Department of Transportation (DOT)-approved 55-gallon drums for proper disposal at a later date. These drums will be labeled with the name of the site, address, well number, and the drum contents, and will be left at the site.

3.3 TASK 3: MONITORING WELL CONSTRUCTION AND SAMPLING

When we reach the desired depth, a 4-inch diameter PVC schedule 40 well casing and screen (0.010-inch) will be installed into the borehole. All well casings, screens, and bottom plugs will be precleaned prior to installation into the borehole. Sand will be added into the annular space to 1 foot above the screened section of the casing. A 1-foot bentonite seal will be placed above the sand pack by hydrating bentonite pellets. A neat cement seal will then be placed over the bentonite plug to ground surface. A watertight locking box will be installed over the well head to prevent tampering or the entrance of surface runoff. The monitoring wells will be developed 72 hours after installation with an electrical submersible pump, to remove silt from the sand pack. The purged water will be stored onsite in a DOT-approved drum pending analytical results to determine proper disposal methods.

Temporary monitoring wells will be installed into boreholes BH-4, BH-5, BH-6, and BH-7. The wells will be allowed to stabilize for 1 to 2 hours prior to sampling. The wells will then be purged of 2 to 3 volumes prior to sampling in accordance with ACDEH guidelines. The PVC will then be removed from the boreholes and the holes will be backfilled with grout to 1 foot below the surface. The top 1 foot will be completed with either asphalt patch or concrete to match the surrounding surface.

Seventy-two hours after developing the monitoring wells we will sample groundwater from monitoring wells MW-2 and MW-3, using Alameda County Water District guidelines for groundwater sampling and testing. Water samples will be placed in appropriate containers provided by Clayton's state-certified laboratory, labeled, and placed into an ice chest pre-cooled to 4°C for shipment to Clayton's laboratory. One trip blank will be provided in accordance with Clayton's quality assurance/quality

control (QA/QC). Upon delivery to the laboratory, a chain-of-custody form will be completed listing analyses required.

3.4 TASK 4: LABORATORY ANALYSIS

The groundwater samples will be analyzed for suspect chemical constituents by EPA Method 601/602, for combined purgeables to detect volatile organics.

3.5 TASK 5: REPORT PREPARATION AND RECOMMENDATIONS

Upon completion of the laboratory analysis, Clayton will prepare a report summarizing the findings of the investigation. The report will include a discussion of the site investigation technique, soil and groundwater sampling, analytical results, a surveyed local groundwater flow direction and gradient from the onsite wells, conclusions, and recommendations.

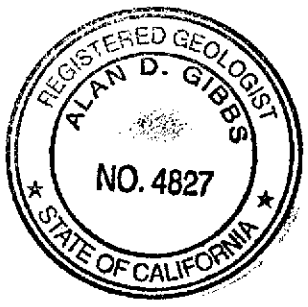
4.0 SCHEDULE

Clayton will begin work on permitting and scheduling drillers within 3 days of obtaining authorization to proceed. We anticipate that the project can be completed within 6 weeks of our start date.

This work plan prepared by: _____
Robyn Seymour
Geologist

This work plan reviewed by: _____
Alan D. Gibbs, R.G.
Supervisor, Geology Group
Western Operations

June 5, 1991



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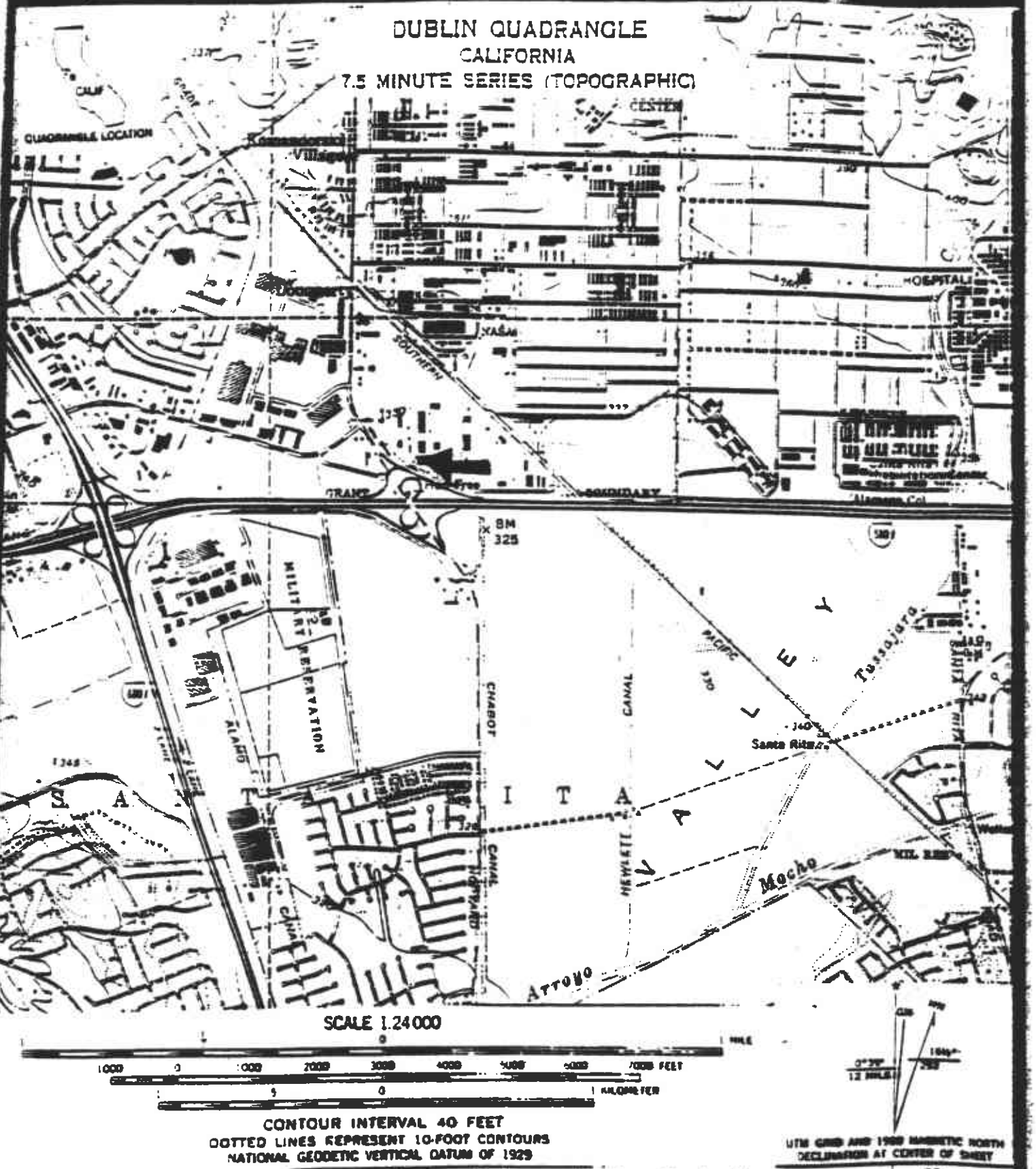
6/6/91

Q+: do you know the G.W flow direction
- how about allowing 3-4 hrs for equilibration

Approved
Ron 6/10/91

Work Plan for Additional Subsurface Investigation at BUSICK AIR 6341 Scarlett Court Dublin, California

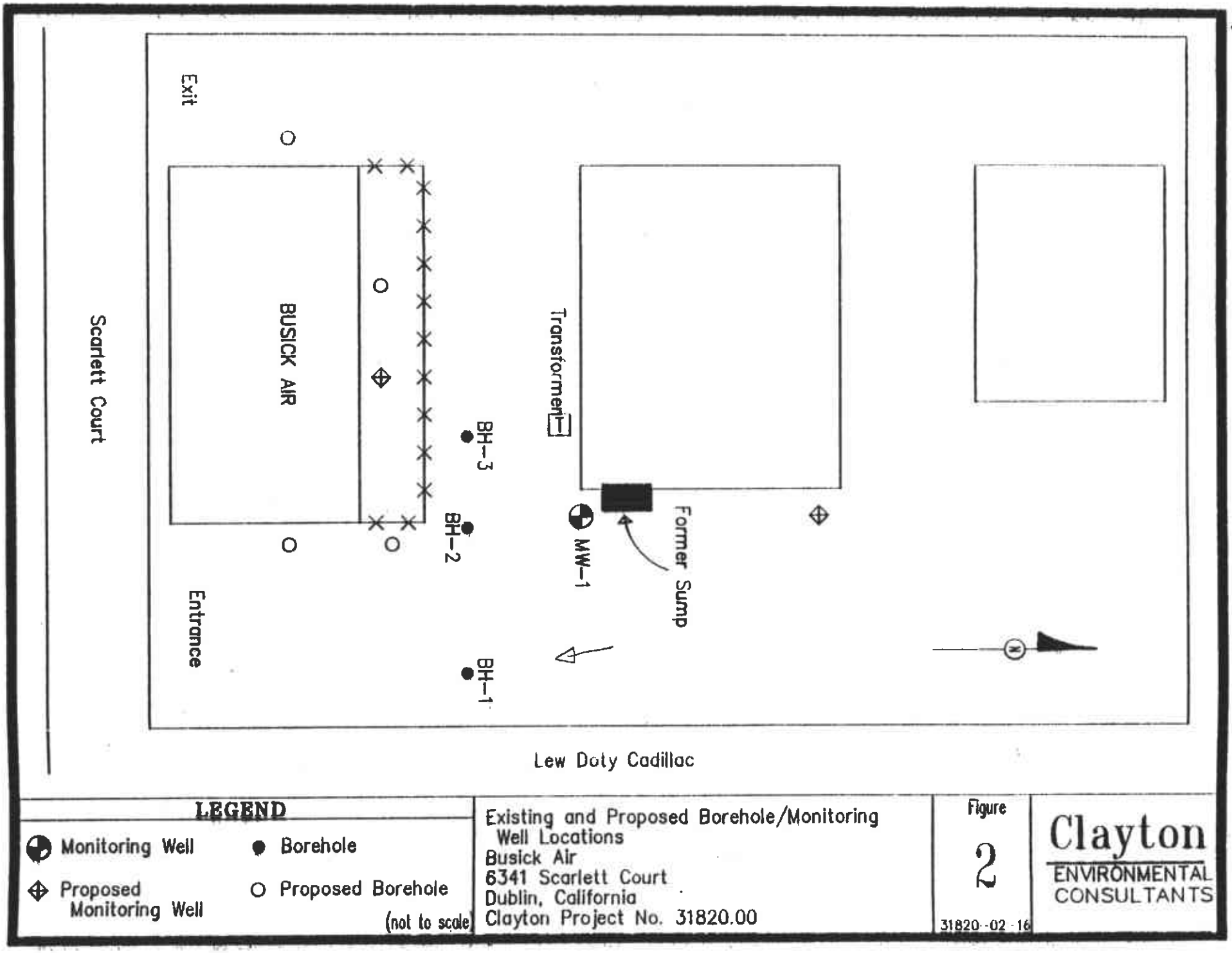
Clayton Project No. 31820.00
June 5, 1991



Clayton Environmental Consultants, Inc.

Figure 1

Site Location Map
Busick Air
6341 Scarlett Court
Dublin, California


Exit
Scarlett Court
BUSICK AIR
Transformer
BH-3
BH-2
MW-1
Former Sump
Entrance
BH-1
Lew Doty Cadillac
LEGEND
Monitoring Well
Borehole
Proposed Monitoring Well
Proposed Borehole
(not to scale)
Existing and Proposed Borehole/Monitoring Well Locations
Busick Air
6341 Scarlett Court
Dublin, California
Clayton Project No. 31820.00
Figure
2
31820-02-16
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APPENDIX

RESULTS OF GROUNDWATER SAMPLE ANALYSES

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

DECON Environmental Services	Client Project ID:	309, Busik Air	Sampled: Jul 18, 1990
26102 Eden Landing Road, Suite 4	Sample Descript:	Water, #1	Received: Jul 18, 1990
Hayward, CA 94545	Analysis Method:	EPA 5030/8010	Analyzed: Jul 26, 1990
Attention: Chris Kwoka	Lab Number:	007-3857	Reported: Jul 31, 1990

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	20	N.D.
Bromoform	20	N.D.
Bromomethane	20	N.D.
Carbon tetrachloride	20	N.D.
Chlorobenzene	20	N.D.
Chloroethane	100	N.D.
2-Chloroethylvinyl ether	20	N.D.
Chloroform	10	N.D.
Chloromethane	10	N.D.
Dibromochloromethane	10	N.D.
1,2-Dichlorobenzene	40	N.D.
1,3-Dichlorobenzene	40	N.D.
1,4-Dichlorobenzene	40	N.D.
1,1-Dichloroethane	10	16
1,2-Dichloroethane	10	N.D.
1,1-Dichloroethene	20	72
Total 1,2-Dichloroethene	20	11000
1,2-Dichloropropane	10	N.D.
cis-1,3-Dichloropropene	100	N.D.
trans-1,3-Dichloropropene	100	N.D.
Methylene chloride	40	170
1,1,2,2-Tetrachloroethane	10	N.D.
Tetrachloroethene	10	2400
1,1,1-Trichloroethane	10	200
1,1,2-Trichloroethane	10	114
Trichloroethene	10	10000
Trichlorofluoromethane	20	N.D.
Vinyl chloride	40	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL

Cynthia H. Camba
Project Manager

RECEIVED SEP 2 1 1990

SUPERIOR ANALYTICAL LABORATORY, INC.

1555 BURKE, UNIT I • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 52494-1
CLIENT: Decon Environmental
JOB NO.: 309

DATE SAMPLED: 09/14/90
DATE RECEIVED: 09/14/90
DATE ANALYZED: 09/18/90

EPA SW-846 METHOD 8010
HALOGENATED VOLATILE ORGANICS
SAMPLE:309-0911-01

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane/Vinyl Chloride	1.0	ND
Bromomethane/Chloroethane	1.0	ND
Trichlorofluoromethane	0.5	ND
1,1-Dichloroethene	0.5	3
Methylene Chloride	4.0	12
trans-1,2-Dichloroethene	0.5	37
1,1-Dichloroethane	0.5	ND
Chloroform	0.5	2
1,1,1-Trichloroethane	0.5	7
Carbon tetrachloride	0.5	ND
1,2-Dichloroethane	0.5	3
Trichloroethylene	0.5	3000
1,2-Dichloropropane	0.5	ND
Bromodichloromethane	0.5	ND
Cis-1,3-Dichloropropene	0.5	ND
trans-1,3-Dichloropropene	0.5	9
1,1,2-Trichloroethane	0.5	5
Tetrachloroethene	0.5	22
Dibromochloromethane	0.5	ND
Chlorobenzene	0.5	ND
Bromoform	0.5	ND
1,1,2,2-Tetrachloroethane	0.5	ND
1,3-Dichlorobenzene	0.5	ND
1,2-Dichlorobenzene	0.5	ND
1,4-Dichlorobenzene	0.5	ND

MDL = Method Detection Limit
ug/l = parts per billion (ppb)
QA/QC Summary: Daily Standard RPD = <15
MS/MSD average recovery = 87 % :MS/MSD RPD =< 1 %

Richard Srna, Ph.D.

Laboratory Director