VAPOR EXTRACTION SYSTEM TESTS
FORMER TEXACO SITE
TEXACO JOB NO. FRR4048
2375 SHORELINE DR.
ALAMEDA, CALIFORNIA

Pleasant Hill, California
Santa Ana, California
Las Vegas, Nevada

THE MARK GROUP, INC.

93-1175306.80

June 22, 1994

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93-1175306

Texaco Refining and Marketing
10 Universal Plaza
Universal City, CA 91608-7812

Attention: Mr. Robert R. Robles, Environmental Protection Coordinator
Mr. Thomas C. Hargett, Environmental Geologist

Subject: VAPOR EXTRACTION SYSTEM TESTS - Former Texaco Site
2375 Shoreline Dr.
Alameda, California
Texaco Job No. FRR4048

Gentlemen:

Introduction

This report, prepared by The MARK Group, Inc. (MARK), presents the results of the vapor extraction system (VES) testing conducted at the subject site as shown on Drawing 1.

The following tasks were conducted by MARK on March 15 and April 29, 1994 to evaluate the feasibility of vapor extraction using the existing VES plumbing beneath the Lyon's Restaurant:

- Vapor extraction line manifold testing;
- Vapor extraction line pressure Build-up/Fall-off tests;
- Water extraction tests; and
- Vapor extraction testing.

Discussion and Interpretation of Vapor Extraction Point Tests

Nine soil vapor extraction points were installed by others beneath the Lyons Restaurant at the corner of Shoreline Drive and Park Lane in the City of Alameda, California. The locations of the nine vapor extraction points (VP-1 through VP-9) are shown in Drawing 2. Tests were conducted of each of the existing individual soil vapor extraction points so as to ascertain the suitability of the existing soil vapor extraction system for site remediation.

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Test Conditions

Each of the nine vapor extraction lines was pressure tested for indications of continuity. These tests used potable municipal water injection with concurrent monitoring of pressure buildup/response. Potable water was injected at a nearly constant rate as maintained by a Grundfos Redi-Flo2 pump running at a constant motor RPM (150 Hz power input) with a head varying by between 0.4 and 1.4 feet above the pump intake.

Immediately following the pressure injection test of each of the nine vapor extraction lines a water withdrawal test was conducted to indicate if groundwater extraction is possible by pumping on the vapor extraction line. The attempts at water withdrawal utilized a Honda WB-15 centrifugal pump.

Thirty-five days after the injection/withdrawal tests a vacuum test was conducted of eight of the nine vapor extraction lines. These tests were to ascertain the feasibility of vapor extraction from each line. These tests utilized the intake suction of a propane powered engine assembled by CEECON of Pacifica, California. The maximum intake suction gage pressure was 50-inches of water (4.17 feet water or 1.8 PSI) relative to atmospheric pressure. Attempting to exceed the gage pressure persistently resulted in engine failure. Pressure response in the tested line and in each of the other vapor extraction lines was recorded to $\pm$ 0.1 PSI. Each of the vacuum tested lines produced a small volume of water during testing (about 15 gallons total distributed between all eight vapor extraction lines tested).

Test Results

Injection tests are summarized in Table 1 and vacuum tests are summarized in Table 2. During the injection tests, the initial pressure buildup in each of the nine vapor extraction lines occurred over a period of time roughly proportional to the length of each pipe run. During the water withdrawal tests only VP-8 demonstrated that it may be suitable for dewatering purposes (Note, however, that vapor point VP-8 is constructed with an 1/2 OD steel pipe which will prevent this probe boring being an effective dewatering point). Pressure decline following the injection tests and the vacuum testing results are discussed below and illustrated on Figures 1 through 9.

VP-1 and VP-2 each took less than 4 gallons of injected water and then maintained a constant pressure without additional water injection. Upon injection pump shutoff, VP-1 experienced a very slow (>30 minutes) pressure decline compared to the remaining eight vapor

extraction lines (<3 minutes). The low injection volume may indicate that either these two vapor extraction lines are blinded off or that the formation in which these two vapor extraction points are completed is of low water permeability. During vacuum testing of these two vapor extraction points, each induced a response in the other vapor point as well as in VP-5 through VP-9, though not necessarily to the same degree.

Each of the remaining seven vapor extraction lines (VP-3 through VP-9) took water until the injection pump was shut off. The pressure decline following pump shutoff was less than three minutes for each of these vapor extraction lines as previously indicated. The data presented in Table 1 indicates a relatively high, though variable, water permeability of the area open to each of the vapor extraction lines.

Vapor points VP-3 and VP-4 did not respond during vacuum testing of any other vapor extraction points. During vacuum testing of VP-3, a response was induced in VP-1, VP-2, VP-5, and VP-7. Testing of VP-4 induced a response in all vapor extraction points except VP-3.

Vacuum testing of VP-6 induced a response in VP-1 and VP-7 through VP-9; however, VP-5 responded only to the testing of VP-1 through VP-4.

Vacuum testing of VP-5 induced a response in VP-1 and VP-7 through VP-9. VP-6 responded to the testing of all but VP-3.

VP-7, VP-8, and VP-9 responded to the testing of all other vapor extraction points. During vacuum testing of VP-7 and VP-9; there was a response in VP-1 and VP-6 through VP-9. A vacuum test was not performed on VP-8 since this vapor extraction points had previously produced a large quantity of water.

The irregular nature of the response between and among the tested vapor extraction points suggests that the vapor extraction points are irregularly interconnected. If the interconnection was through the common portion of the vapor extraction line trench backfill, then all vapor extraction points should have responded to each point tested. Therefore, it must be concluded that the interconnection is through the intervening soil.

The inability to maintain the CEECON engine operation beyond the maximum gage pressure suggests that the limiting factor was either air flow through the one inch vapor extraction lines or that there was insufficient air flow through the soils open to the vapor extraction points. Actual air flow could not be measured with the equipment employed.

Conclusion

- Vapor points VP1 and VP2 did not respond to tests in a similar manner to the remaining points suggesting they may be broken or at least will not function as well as the remaining points;

- Vapor point VP-8 pumps water; however dewatering through a 1.0 inch diameter line will not have a very significant area of influence.

Closure

MARK is currently preparing a separate quarterly monitoring report for the subject site. Upon review of the recent groundwater quality and hydrogeologic status, we can provide recommendations on remediation or the alternative, risk assessment/points of compliance.

If you have any further questions, please call Mr. Robert S. Spare, Project Manager, or the undersigned at (510) 946-1055.

Sincerely,

The MARK Group, Inc.

Robert S. Spare

Alan D. Gibbs, R.G.
Associate

ADG:RSS:scd
VPRTEST.LTR

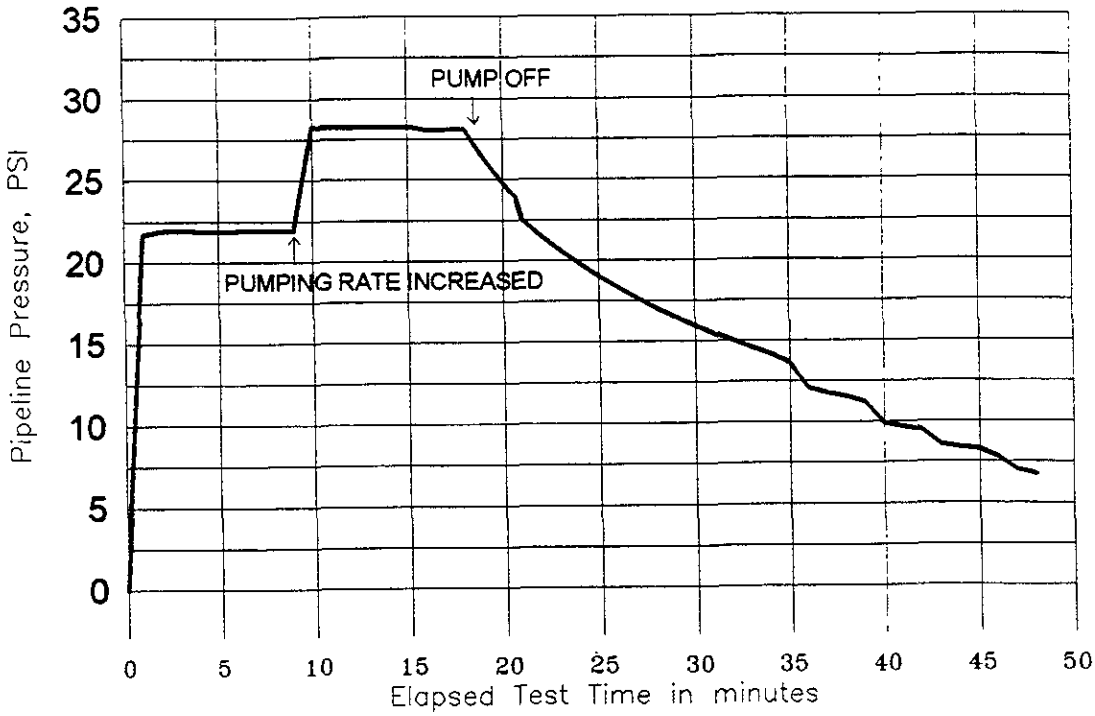
TABLE 1
PRESSURE BUILDUP/FALLOFF TESTS
OF VAPOR EXTRACTION POINTS VP-1 TO VP-9
MARCH 25, 1994
LYON'S RESTRAUNT AREA
SHORELINE DRIVE AND PARK LANE
ALAMEDA, CALIFORNIA

	VAPOR LINE DATA		PRESSURE BUILDUP/FALLOFF TEST						WATER EXTRACTION TEST		
	1-IN. PIPE RUN FT.	1-IN. PIPE VOLUME GAL	INJECTION PRESSURE AT 150 Hz. PSI	INJECTED VOLUME DURING PRESSURE BUILDUP GAL	TIME FOR PRESSURE BUILDUP MIN	TOTAL VOLUME INJECTED GAL	INJECTION TEST DURATION MIN	PRESSURE FALLOFF TIME MIN	VOLUME PUMPED DURING EXTRACTION TEST GAL	DURATION OF PUMPING MIN	CAUSE FOR STOP OF PUMPING
VP-1	41	2.36	22	1.5	<1	2.5	17	>30	0	4	NO FLOW
VP-2	36	2.08	22	2.5	1-2	3.4	18	2-3	0	3	NO FLOW
VP-3	150	8.65	17	11.5	2-3	31.5	17	2-3	5	<5	BROKE SUCTION
VP-4	157	9.06	11	7	1-2	47	15	2-3	3	<5	BROKE SUCTION
VP-5	168	9.69	8.5	8	2-3	39	20	<0.33	5	<5	BROKE SUCTION
VP-6	143	8.25	15.5	7	2-3	35	20	0.66-1	2	<5	BROKE SUCTION
VP-7	130	7.50	21	6.5	2-3	18	20	3	1.5	<5	BROKE SUCTION
VP-8	163	9.40	5.5	16	3-4	51.5	20	<0.33	106	90	SHUT OFF
VP-9	151	8.71	15	10	3-4	45	20	0.66-1	4	<5	BROKE SUCTION

TABLE 2
VACUUM EXTRACTION TESTS
CONDUCTED 04/29/94
LYON'S RESTAURANT AREA
SHORELINE DRIVE AND PARK LANE
ALAMEDA, CALIFORNIA

VAPOR POINT PRESSURE

VACUUM TESTED / VP MONITORED	VP-1	VP-2	VP-3	VP-4	VP-5	VP-6	VP-7	VP-8	VP-9	ATM
VP-1	1.9	1.7	0.3	0.2	0.8	0.8	1.5	1.0	1.3	0.2
VP-2	1.0	1.8	0.3	0.3	0.8	0.9	1.2	0.9	0.7	0.3
VP-3	1.3	1.4	1.5	0.1	1.0	0.2	1.4	0.3	0.5	0.2
VP-4	0.8	1.0	0.2	1.3	0.5	0.4	0.9	0.5	0.7	0.2
VP-5	1.0	0.3	0.3	0.3	1.7	1.0	1.3	1.7	1.3	0.3
VP-6	1.0	0.4	0.4	0.4	0.4	1.5	1.0	0.7	0.8	0.4
VP-7	1.2	0.5	0.5	0.5	0.5	0.7	2.0	0.9	1.3	0.5
VP-8	N	O	T		T	E	S	T	E	D
VP-9	0.8	0.5	0.5	0.5	0.5	0.6	0.6	0.7	1.3	0.5



Length of 1-inch pipe run shown on drawing = 41 feet
1-inch pipe run volume = 2.36 gallons

Water injection pump was a Grundfos Redi-Flo2 pumping out of a calibrated 30 gallon beaker with suction head varying from 1.4 to 1.0 feet above pump intake.

Initial injection rate was that maintained with the pump running with the control box set at 150±2 Hz. The injection pressure rose to 22± PSI while pumping in about 1.5 gallons, after which pressure was maintained and the take of water ceased. At 9 minutes into the test the pumping rate was increased to that maintained with the pump running with the control box set at 175±2 Hz. The pressure increased to 28± PSI and an additional 0.5 gallons of water was injected over about 3 minutes. This pressure maintained was until pump shutoff. The pressure fell over the following 30+ minutes.

The HONDA WB-15 centrifugal pump drew a slight vacuum but did not discharge any water.

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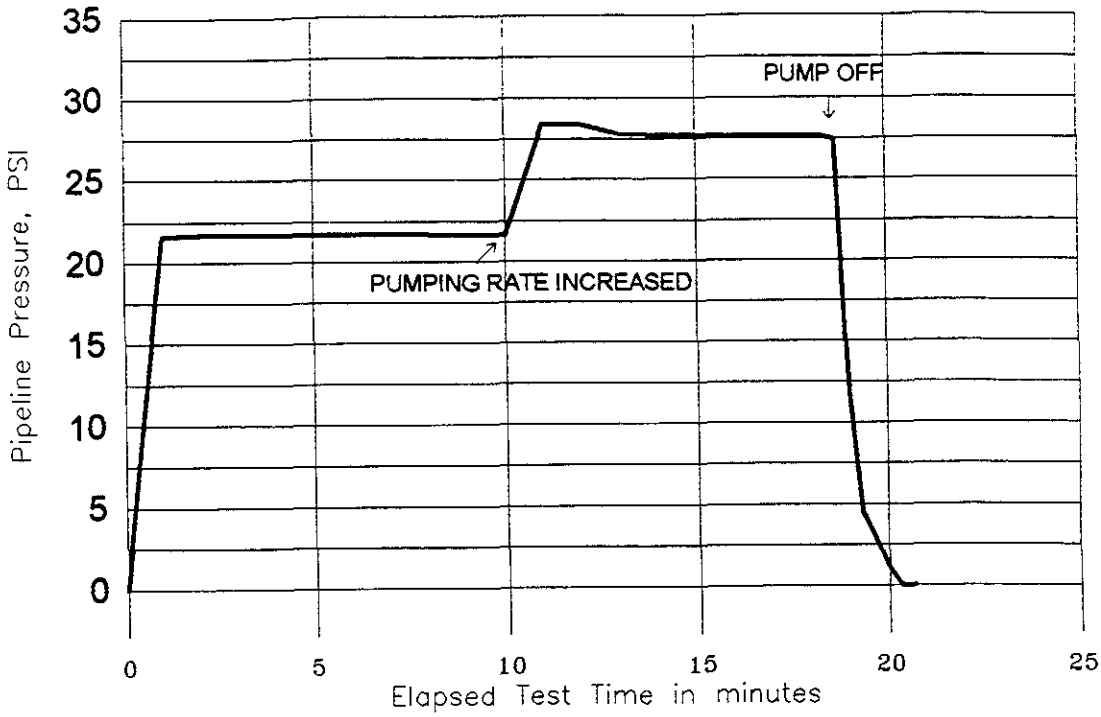
A GROUND WATER CONSULTANCY

PRESSURE BUILDUP/FALLOFF AND WATER EXTRACTION TESTS OF VAPOR EXTRACTION POINT VP-1
LYON'S RESTAURANT AREA
SHORELINE DRIVE AND PARK LANE
ALAMEDA, CALIFORNIA

FIGURE
1



Length of 1-inch pipe run shown on drawing = 36 feet
1-inch pipe run volume = 2.08 gallons

Water injection pump was a Grundfos Redi-Flo2 pumping out of a calibrated 30 gallon beaker with suction head varying from 1.4 to 1.0 feet above pump intake.

Initial injection rate was that maintained with the pump running with the control box set at 150±2 Hz. The injection pressure rose to 22± PSI while pumping in about 2.5 gallons during the first 4 minutes, after which pressure was maintained and the take of water ceased. At 10 minutes into the test the pumping rate was increased to that maintained with the pump running with the control box set at 175±2 Hz. The pressure increased to 27.5± PSI and an additional 0.9 gallons of water was injected over about a minute. This pressure maintained was until pump shutoff. The pressure fell over the following minute.

The HONDA WB-15 centrifugal pump drew a slight vacuum but did not discharge any water.

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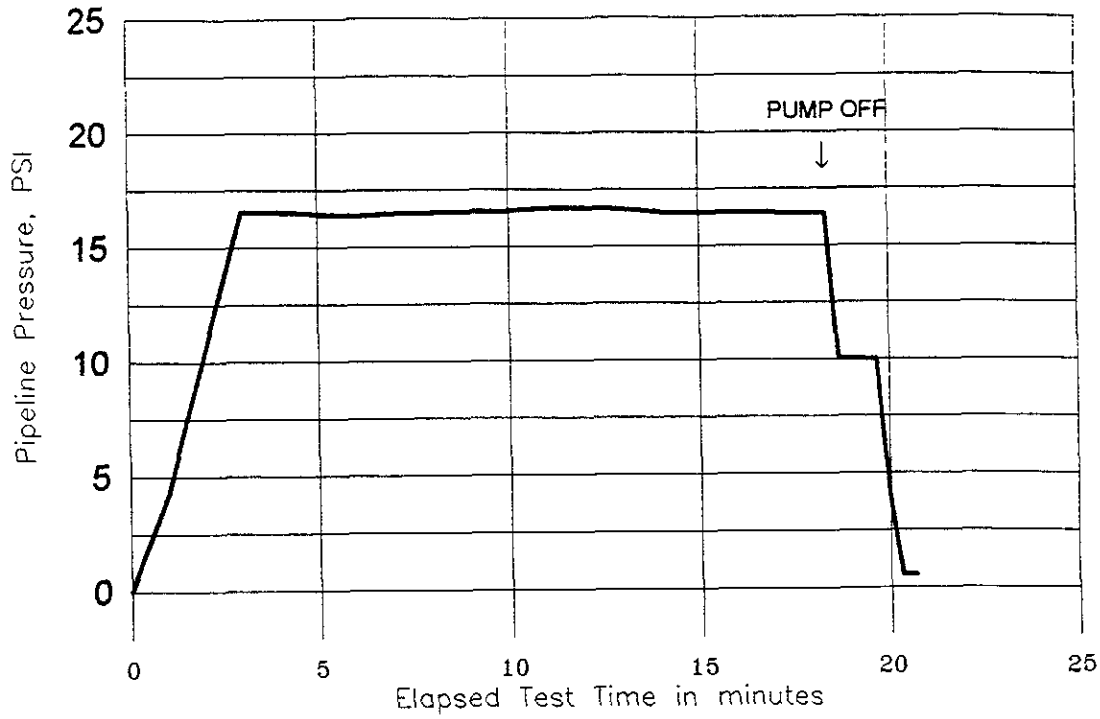
PRESSURE BUILDUP/FALLOFF AND WATER EXTRACTION TESTS OF VAPOR EXTRACTION POINT VP-2
LYON'S RESTAURANT AREA
SHORELINE DRIVE AND PARK LANE
ALAMEDA, CALIFORNIA

FIGURE 2



Length of 1-inch pipe run shown on drawing = 150 feet
1-inch pipe run volume = 8.65 gallons

Water injection pump was a Grundfos Redi-Flo2 pumping out of a calibrated 30 gallon beaker with suction head varying from 1.4 to 0.4 feet above pump intake.

The injection rate was that maintained with the pump running with the control box set at 150±2 Hz. The injection pressure rose to 17± PSI while pumping in about 11.5 gallons during the first 3 minutes, after which pressure was maintained and the take of water continued throughout the 20 minute test duration. This pressure maintained was until pump shutoff by which time about 31.5 gallons had been injected. The pressure fell over the following two minutes. The causes of pressure decline irregularities is unknown.

The HONDA WB-15 centrifugal pump drew a slight vacuum and discharged about five gallons of water before surging and breaking vacuum.

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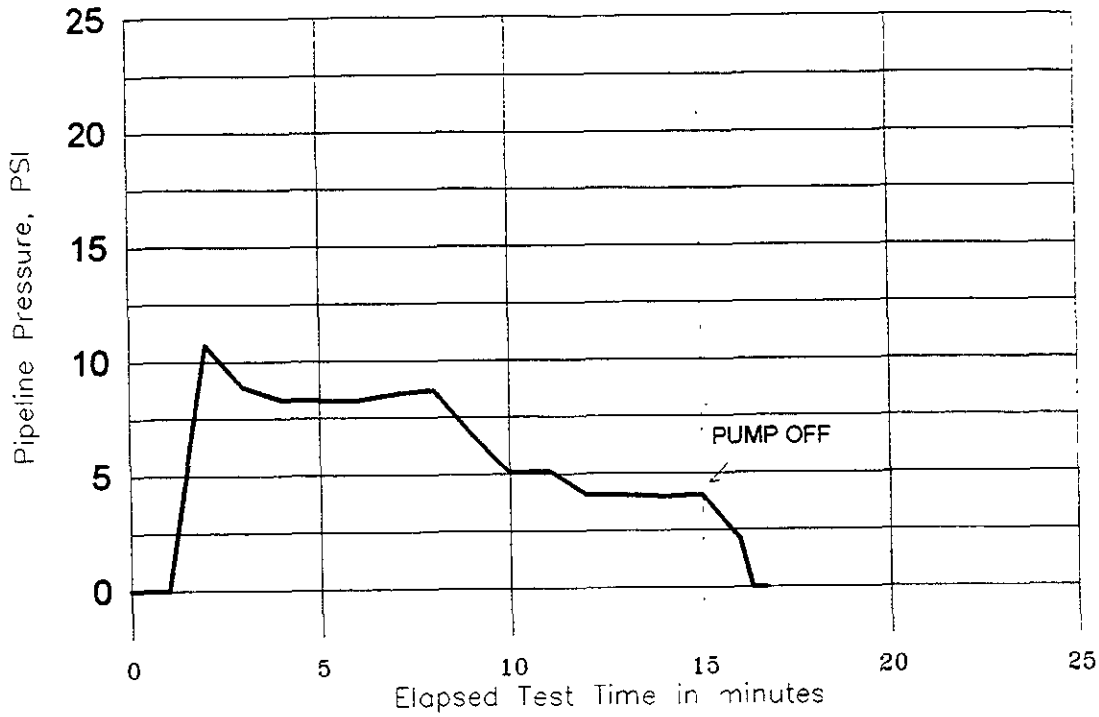
PRESSURE BUILDUP/FALLOFF AND WATER EXTRACTION TESTS OF VAPOR EXTRACTION POINT VP-3
LYON'S RESTAURANT AREA
SHORELINE DRIVE AND PARK LANE
ALAMEDA, CALIFORNIA

FIGURE 3



Length of 1-inch pipe run shown on drawing = 157 feet
1-inch pipe run volume = 9.06 gallons

Water injection pump was a Grundfos Redi-Flo2 pumping out of a calibrated 30 gallon beaker with suction head varying from 1.4 to 0.4 feet above pump intake.

The injection rate was that maintained with the pump running with the control box set at 150±2 Hz. The injection pressure rose to 11± PSI while pumping in about 7 gallons during the first 2 minutes, after which pressure fell in irregular steps. During the test the take of water continued, though the rate varied from 2.3± GPM from 7 to 12 minutes to 4.5± from 12 to 14 minutes, and 3.5± from 14 to 16 minutes, at which time the pump was shutoff. About 47 gallons was injected. The causes of injection pressure irregularities is unknown. The pressure fell during the minute following pump shutoff.

The HONDA WB-15 centrifugal pump discharged about three gallons of water before breaking vacuum.

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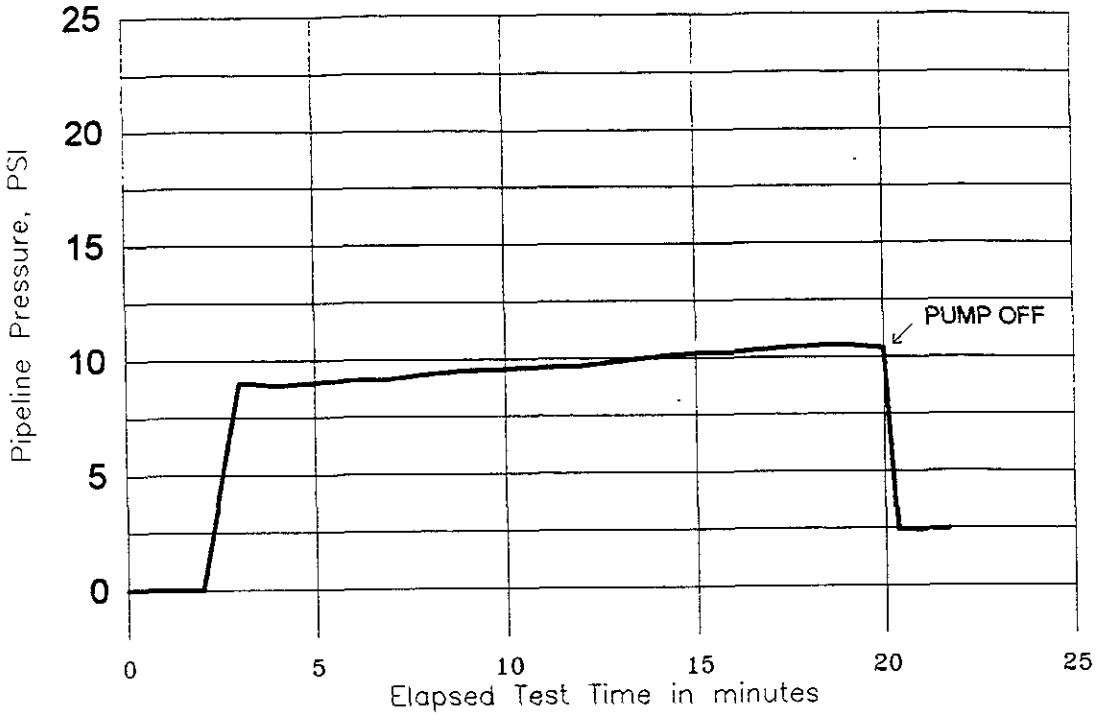
PRESSURE BUILDUP/FALLOFF AND WATER EXTRACTION TESTS OF VAPOR EXTRACTION POINT VP-4
LYON'S RESTAURANT AREA
SHORELINE DRIVE AND PARK LANE
ALAMEDA, CALIFORNIA

FIGURE
4



Length of 1-inch pipe run shown on drawing = 168 feet
1-inch pipe run volume = 9.69 gallons

Water injection pump was a Grundfos Redi-Flo2 pumping out of a calibrated 30 gallon beaker with suction head varying from 1.4 to 0.4 feet above pump intake.

The injection rate was that maintained with the pump running with the control box set at 150±2 Hz. The injection pressure rose to 8.5± PSI while pumping in about 8 gallons during the first 2.5 minutes, after which pressure continued to rise slightly and the take of water continued throughout the 20 minute test duration. Approximately 39 gallons had been injected by pump shutoff. The pressure fell over the following half minute.

The HONDA WB-15 centrifugal pump drew a slight vacuum and discharged about five gallons of water before surging and breaking vacuum.

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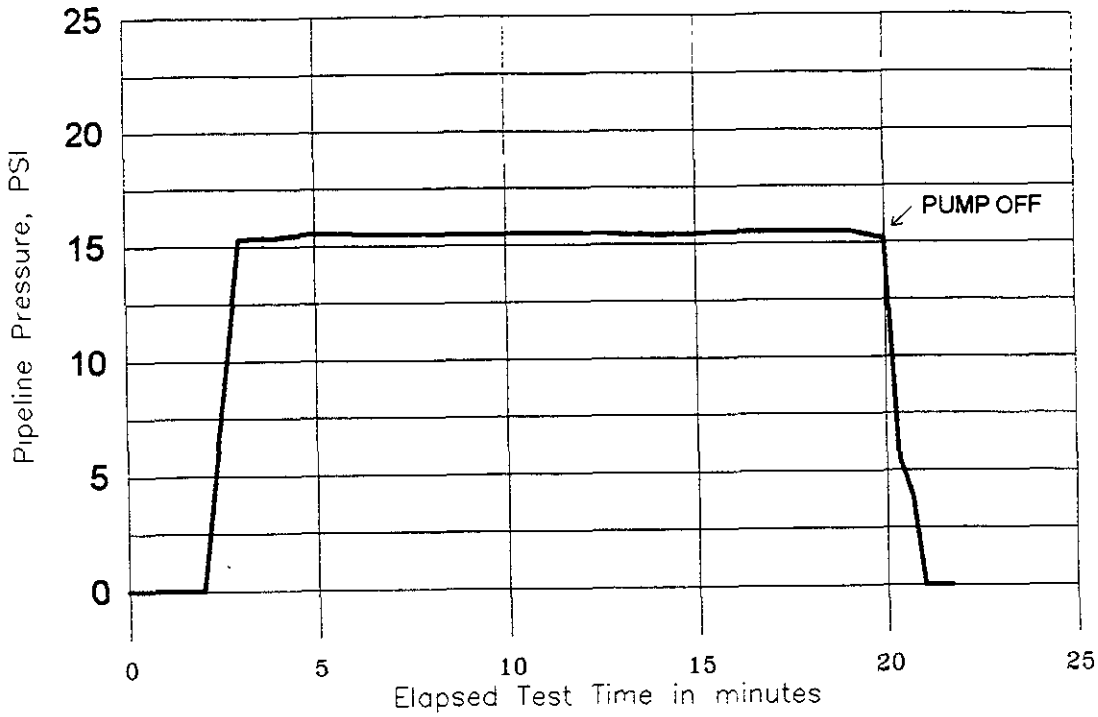
PRESSURE BUILDUP/FALLOFF AND WATER EXTRACTION TESTS OF VAPOR EXTRACTION POINT VP-5
LYON'S RESTAURANT AREA
SHORELINE DRIVE AND PARK LANE
ALAMEDA, CALIFORNIA

FIGURE 5



Length of 1-inch pipe run shown on drawing = 143 feet
1-inch pipe run volume = 8.25 gallons

Water injection pump was a Grundfos Redi-Flo2 pumping out of a calibrated 30 gallon beaker with suction head varying from 1.4 to 0.4 feet above pump intake.

The injection rate was that maintained with the pump running with the control box set at 150±2 Hz. The injection pressure rose to 15.5± PSI while pumping in about 7 gallons during the first 3 minutes, after which pressure was maintained and the take of water continued throughout the 20 minute test duration. Approximately 35 gallons had been injected by pump shutoff. The pressure fell over the following minute.

The HONDA WB-15 centrifugal pump drew a slight vacuum and discharged about two gallons of water before breaking vacuum.

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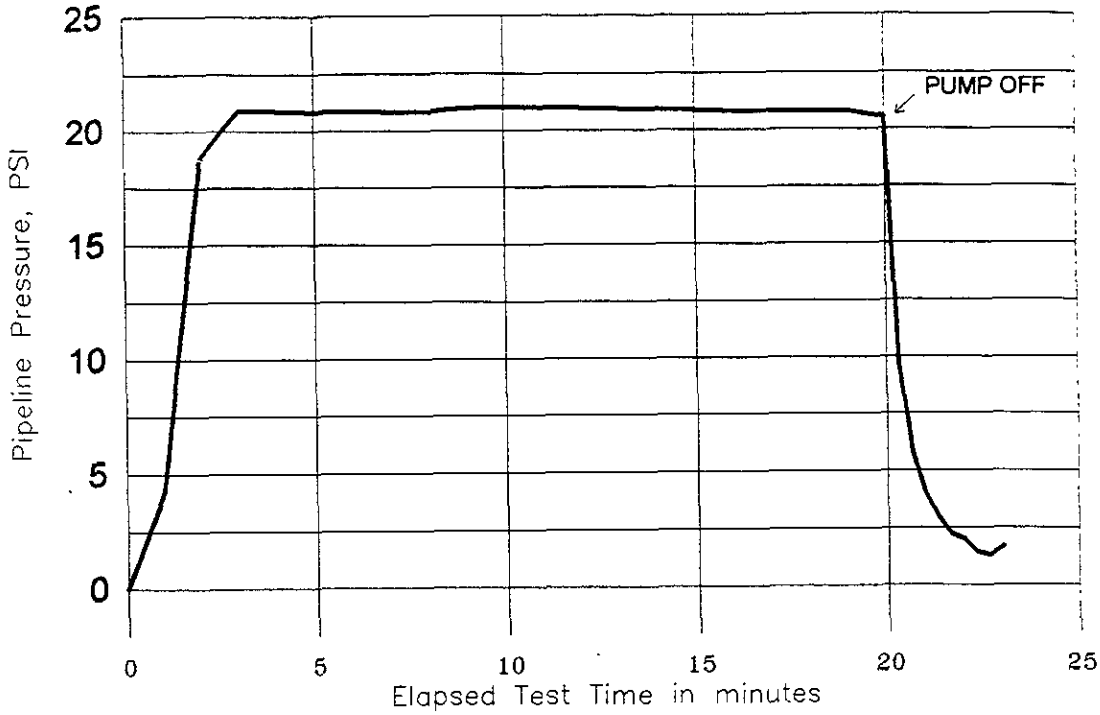
PRESSURE BUILDUP/FALLOFF AND WATER EXTRACTION TESTS OF VAPOR EXTRACTION POINT VP-6
LYON'S RESTAURANT AREA
SHORELINE DRIVE AND PARK LANE
ALAMEDA, CALIFORNIA

FIGURE 6



Length of 1-inch pipe run shown on drawing = 130 feet
1-inch pipe run volume = 7.50 gallons

Water injection pump was a Grundfos Redi-Flo2 pumping out of a calibrated 30 gallon beaker with suction head varying from 1.4 to 0.4 feet above pump intake.

The injection rate was that maintained with the pump running with the control box set at 150±2 Hz. The injection pressure rose to 21± PSI while pumping in about 6.5 gallons during the first 3 minutes, after which pressure was maintained and the take of water continued throughout the 20 minute test duration. Approximately 18 gallons had been injected by pump shutoff. The pressure fell over the following three minutes.

The HONDA WB-15 centrifugal pump drew a slight vacuum and discharged about 1.5 gallons of water before pumping ceased.

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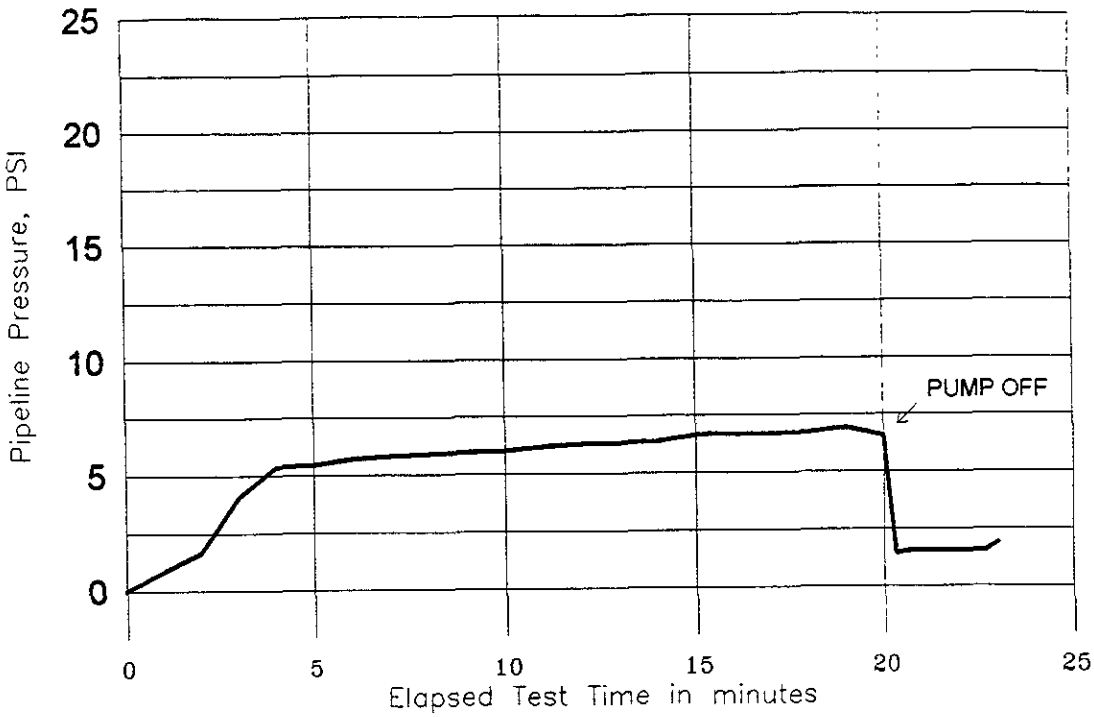
PRESSURE BUILDUP/FALLOFF AND WATER EXTRACTION TESTS OF VAPOR EXTRACTION POINT VP-7
LYON'S RESTAURANT AREA
SHORELINE DRIVE AND PARK LANE
ALAMEDA, CALIFORNIA

FIGURE 7



Length of 1-inch pipe run shown on drawing = 163 feet
1-inch pipe run volume = 9.40 gallons

Water injection pump was a Grundfos Redi-Flo2 pumping out of a calibrated 30 gallon beaker with suction head varying from 1.4 to 0.4 feet above pump intake.

The injection rate was that maintained with the pump running with the control box set at 150±2 Hz. The injection pressure rose to 5.5± PSI while pumping in about 15 gallons during the first 4 minutes, after which pressure rose slightly and the take of water continued throughout the 20 minute test duration. Approximately 51.5 gallons had been injected by pump shutoff. The pressure fell over the following half minute.

The HONDA WB-15 centrifugal pump discharged about 106 gallons of water before pumping shut off.

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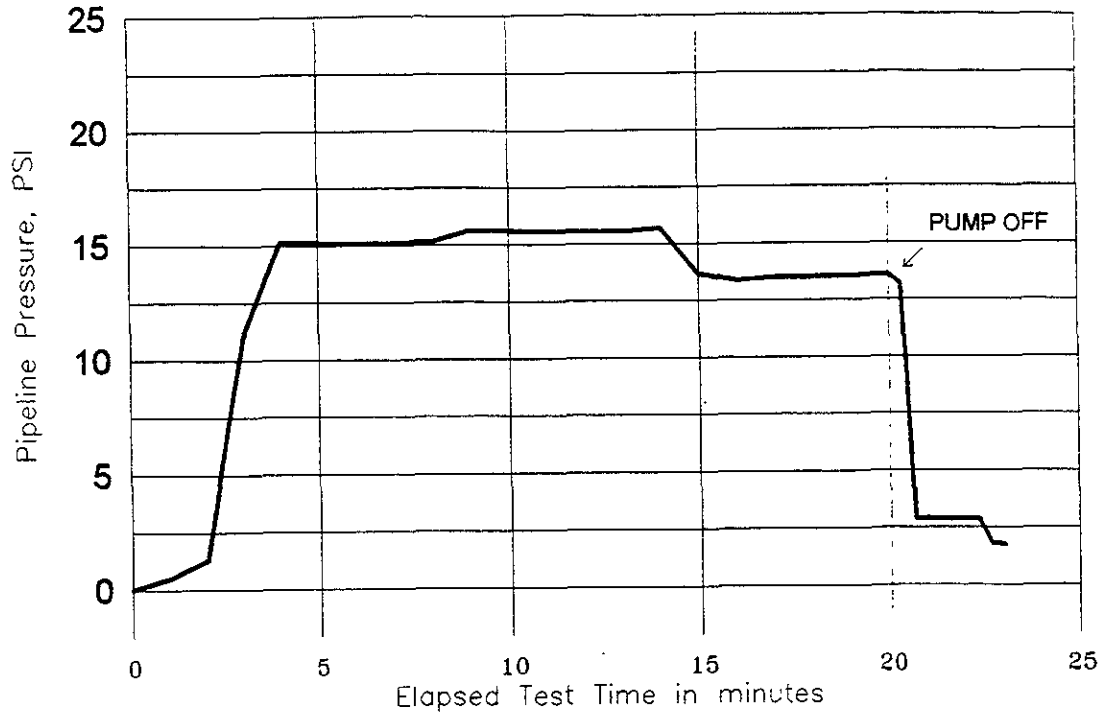
PRESSURE BUILDUP/FALLOFF AND WATER EXTRACTION TESTS OF VAPOR EXTRACTION POINT VP-8
LYON'S RESTAURANT AREA
SHORELINE DRIVE AND PARK LANE
ALAMEDA, CALIFORNIA

FIGURE 8



Length of 1-inch pipe run shown on drawing = 151 feet
1-inch pipe run volume = 8.71 gallons

Water injection pump was a Grundfos Redi-Flo2 pumping out of a calibrated 30 gallon beaker with suction head varying from 1.4 to 0.4 feet above pump intake.

The injection rate was that maintained with the pump running with the control box set at 150±2 Hz. The injection pressure rose to 15± PSI while pumping in about 10 gallons during the first 4 minutes, after which pressure rose and fell in steps. During the test the injection rate was nearly constant and the causes of injection pressure irregularities is unknown. A total of about 45 gallons of water was injected. The pressure fell in about half a minute following pump shutoff.

The HONDA WB-15 centrifugal pump discharged about four gallons of water before breaking vacuum.

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PRESSURE BUILDUP/FALLOFF AND WATER EXTRACTION TESTS OF VAPOR EXTRACTION POINT VP-9
LYON'S RESTAURANT AREA
SHORELINE DRIVE AND PARK LANE
ALAMEDA, CALIFORNIA

FIGURE 9

VAPOR WITHDRAWAL TEST
OF

VP-1

DATE: 04 / 29 /94

BLOWER ON **12:04** BLOWER = CEECON Engine intake, not a blower.

BLIND BLOWER VACUUM PRESSURE, PSI: 1.8 before engine stalls.

	VACUUM PRESSURE									
	VP-1	VP-2	VP-3	VP-4	VP-5	VP-6	VP-7	VP-8	VP-9	ATM
TIME	**12:08**	**12:10**	**12:12**	**12:14**	**12:16**	**12:18**	**12:20**	**12:22**	**12:24**	**12:26**
PRESSURE	1.9	1.7	0.3	0.2	0.8	0.8	1.5	1.0	1.3	0.2

VAPOR WITHDRAWAL TEST
OF

VP-2

DATE. 04 / 29 /94

BLOWER ON **12:30** BLOWER = CEECON Engine intake, not a blower.

BLIND BLOWER VACUUM PRESSURE, PSI: 1.8 before engine stalls.

	VACUUM PRESSURE									
	VP-1	VP-2	VP-3	VP-4	VP-5	VP-6	VP-7	VP-8	VP-9	ATM
TIME	**12:44**	**12:42**	**12:46**	**12:48**	**12:50**	**12:52**	**12:54**	**12:56**	**12:58**	**13:00**
PRESSURE	1 0	1.8	0.3	0.3	0.8	0.9	1.2	0.9	0.7	0.3

VAPOR WITHDRAWAL TEST
OF

VP-3

DATE: 04 / 29 /94

BLOWER ON **10:34** BLOWER = CEECON Engine intake, not a blower.

BLIND BLOWER VACUUM PRESSURE, PSI: 1.8 before engine stalls.

	VACUUM PRESSURE									
	VP-1	VP-2	VP-3	VP-4	VP-5	VP-6	VP-7	VP-8	VP-9	ATM
TIME	**11:05**	**11:07**	**11:03**	**11:09**	**11:11**	**11:13**	**11:15**	**11:17**	**11:19**	**11:21**
PRESSURE	1 0	1.8	0.3	0.3	0.8	0.9	1.2	0.9	0.7	0.3

VAPOR WITHDRAWAL TEST
OF

VP-4

DATE 04 / 29 /94

BLOWER ON **11:28** BLOWER = CEECON Engine intake, not a blower.

BLIND BLOWER VACUUM PRESSURE, PSI: 1.8 before engine stalls.

	VACUUM PRESSURE									
	VP-1	VP-2	VP-3	VP-4	VP-5	VP-6	VP-7	VP-8	VP-9	ATM
TIME	**11:42**	**11:44**	**11:46**	**11:40**	**11:48**	**11:51**	**11:53**	**11:55**	**11:57**	**11:59**
PRESSURE	0 8	1.0	0.2	1.3	0.5	0.4	0.9	0.5	0.7	0.2

VAPOR WITHDRAWAL TEST
OF

VP-5

DATE: 04 / 29 /94

BLOWER ON **13:04**

BLOWER = CEECON Engine intake, not a blower.

BLIND BLOWER VACUUM PRESSURE, PSI: 1.8 before engine stalls.

	VACUUM PRESSURE									
	VP-1	VP-2	VP-3	VP-4	VP-5	VP-6	VP-7	VP-8	VP-9	ATM
TIME	**13:24**	**13:26**	**13:28**	**13:30**	**13:22**	**13:32**	**13:34**	**13:36**	**13:38**	**13:40**
PRESSURE	1.0	0.3	0.3	0.3	1.7	1.0	1.3	1.7	1.3	0.3

VAPOR WITHDRAWAL TEST
OF

VP-6

DATE: 04 / 29 /94

BLOWER ON **13:45**

BLOWER = CEECON Engine intake, not a blower.

BLIND BLOWER VACUUM PRESSURE, PSI: 1.8 before engine stalls.

	VACUUM PRESSURE									
	VP-1	VP-2	VP-3	VP-4	VP-5	VP-6	VP-7	VP-8	VP-9	ATM
TIME	**14:12**	**14:14**	**14:16**	**14:18**	**14:20**	**14:10**	**14:22**	**14:24**	**14:26**	**14:28**
PRESSURE	1 0	0.4	0.4	0.4	0.4	1.5	1.0	0.7	0.8	0.4

VAPOR WITHDRAWAL TEST
OF

VP-7

DATE: 04 / 29 /94

BLOWER ON **14:34** BLOWER = CEECON Engine intake, not a blower.

BLIND BLOWER VACUUM PRESSURE, PSI: 1.8 before engine stalls.

	VACUUM PRESSURE									
	VP-1	VP-2	VP-3	VP-4	VP-5	VP-6	VP-7	VP-8	VP-9	ATM
TIME	**14:53**	**14:55**	**14:57**	**14:59**	**15:01**	**15:01**	**14:51**	**15:05**	**15:07**	**15:09**
PRESSURE	1.2	0.5	0.5	0.5	0.5	0.7	2.0	0.9	1.3	0.5

VAPOR WITHDRAWAL TEST
OF

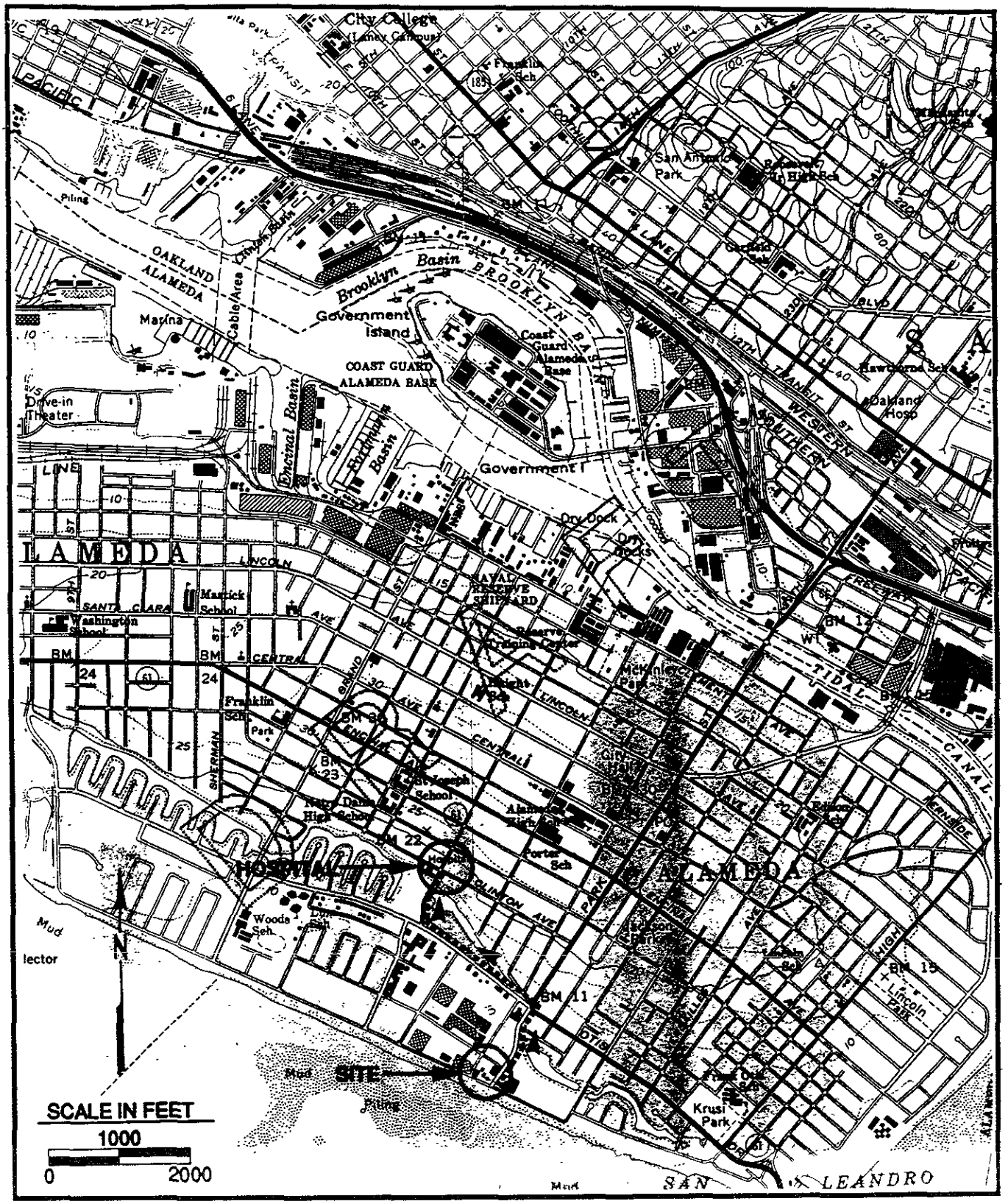
VP-9

DATE 04 / 29 /94

BLOWER ON **15:12** BLOWER = CEECON Engine intake, not a blower.

BLIND BLOWER VACUUM PRESSURE, PSI: 1.8 before engine stalls.

	VACUUM PRESSURE									
	VP-1	VP-2	VP-3	VP-4	VP-5	VP-6	VP-7	VP-8	VP-9	ATM
TIME	**15:44**	**15:46**	**15:48**	**15:50**	**15:52**	**15:54**	**14:56**	**15:58**	**15:41**	**16:00**
PRESSURE	0.8	0.5	0.5	0.5	0.5	0.6	0.6	0.7	1.3	0.5



SITE LOCATION MAP

PREPARED BY RSS REVIEWED BY ADG DATE 6/22/94

THE MARK GROUP, INC.
ENGINEERS & GEOLOGISTS

SOUTHSHORE SHOPPING CENTER
ALAMEDA, CALIFORNIA

PROJECT NO.
92-2175306

DRAWING NO.
1

TBLCK (5/26/92)