SUMMARY REPORT
DRILLING AND SOIL VAPOR EXTRACTION VENT INSTALLATION
INGERSOLL-RAND FACILITY
1944 MARINA BOULEVARD
SAN LEANDRO, CALIFORNIA
NOVEMBER 1994

PREPARED BY
BSK & ASSOCIATES, INC.
PLEASANTON, CALIFORNIA
BSK JOB NO. P94293.4

BSK
& ASSOCIATES

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1181 Quarry Lane
Building 300
Pleasanton, CA 94566
(510) 462-4000
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November 30, 1994

BSK Job No. P94293.4

Capsule Environmental Engineering, Inc.
1970 Oakcrest Avenue, Suite 215
St. Paul, MN 55113-2624

Attention: Mr. John McDermott
Hydrogeologist

Subject: **Summary Report**
Drilling and Soil Vapor
Extraction Vent Installation
Ingersoll-Rand Facility
1944 Marina Boulevard
San Leandro, California

Gentlemen:

BSK & Associates, Inc. (BSK) is pleased to submit this Report which summarizes installation activities of five soil vapor extraction vents (SVEV) at the subject Ingersoll-Rand facility (Site) located at 1944 Marina Boulevard, San Leandro, California (refer to Figure 1, Vicinity Map).

These services were completed in general accordance with BSK Proposal No. PR94345.4, dated September 23, 1994 and Agreement for Well Drilling/Soil Boring Services between Ingersoll-Rand Company and BSK & Associates, dated October 20, 1994.

BACKGROUND

As reported to BSK by Mr. McDermott, the text of the RFQ and Mr. Aguirre of Ingersoll-Rand, it is our understanding that five four-inch diameter PVC soil vapor extraction vents were previously installed by others in the area of a gasoline plume in the equipment storage yard of the Site. The locations of the existing soil vapor extraction vents are presented on Figure 2, Site Map.

PURPOSE AND SCOPE

The purpose of our work was to provide equipment, materials and personnel for drilling and installation of five new SVEV in support of gasoline remediation work being performed by Capsule Environmental Engineering, Inc. for Ingersoll-Rand Company.

BSK & Associates performed the drilling and soil sampling services under our California Water Well Contractor's License C-57 #490942.

The BSK scope of services performed for the SVEV installations included the following:

- Drilling permit application submitted to Zone 7 Water Agency for approval,
- Underground Service Alert (USA) notified 48 hours before commencement of subsurface drilling,
- Field operations performed under the guidelines presented in the BSK-prepared Health and Safety Plan,
- Provision of the materials and installation of five soil vapor extraction vents,
- Preparation of this report which summarizes the work performed and materials used.

METHODOLOGY

Prior to the start of field activities a Site-specific Health and Safety Plan (presented in Appendix A) was prepared by BSK and submitted to Capsule Environmental Engineering, Inc. (CEEI) for review and a drilling permit was submitted to Zone 7 Water Agency (presented in Appendix A). Underground Service Alert (USA) was notified 48 hours prior to site entry, as required by law.

Field work performed (10/31/94 to 11/2/94) at the site for the well installations was directed by a Hydrogeologist (Mr. John McDermott of CEEI). Boring logs which include soil descriptions and well construction details were recorded in the field by John McDermott. The boring logs are presented in Appendix B. The installed SVEV diagrams are presented on Figures 3 through 7.

Drilling was accomplished with a Mobile Drill B-53 truck-mounted rig with 10-inch hollow stem auger. Soil samples were collected at 5-foot intervals by driving a 2.0 inch I.D. sampler, 18 inches into relatively undisturbed soil. Before and after each sample collection event the samplers were cleaned with laboratory grade detergent and double-rinsed with potable water. The soil samples were transferred to a CEEI representative for classification and logging. Organic vapor readings were taken on the soil samples in the field using a photo-ionization detector calibrated daily with iso-butylene.

Augers and drill rods were cleaned with a high-pressure, high-temperature cleaner before and after each bore hole. The equipment was washed in the Ingersoll-Rand facility equipment washing bay. Soil cuttings were placed upon and covered with 6-mil polyethylene sheeting.

Well construction materials consisted of 4-inch diameter schedule 40 PVC casing and 0.020-inch slotted screen with flush threaded joints. The PVC casing and screen meet ASTM F480 and was delivered to the site factory cleaned and wrapped. The annular space around the slotted interval was back-filled with washed, kiln-dried, graded #3 Monterey sand. The sand was placed through the hollow stem auger to a level one foot above the slotted interval. A one foot layer of 1/4-inch sodium bentonite pellets was placed above the sand pack and hydrated with potable water. Neat cement was placed above the bentonite pellet

seal to a level two feet below the existing grade. The remaining two feet of annular space was filled with tamped, clean, fine-grained soil. The SVEV was constructed such that three to five feet of casing would project above the existing grade. A slip cap was fitted to the casing and secured with two pan-head screws.

Under the direction of Mr. John McDermott of CEEI, the SVEV did not require development by BSK.

* * * * *

BSK appreciates the opportunity to have provided drilling and installation services for the subject project. Should you have questions regarding this submittal, please contact us.

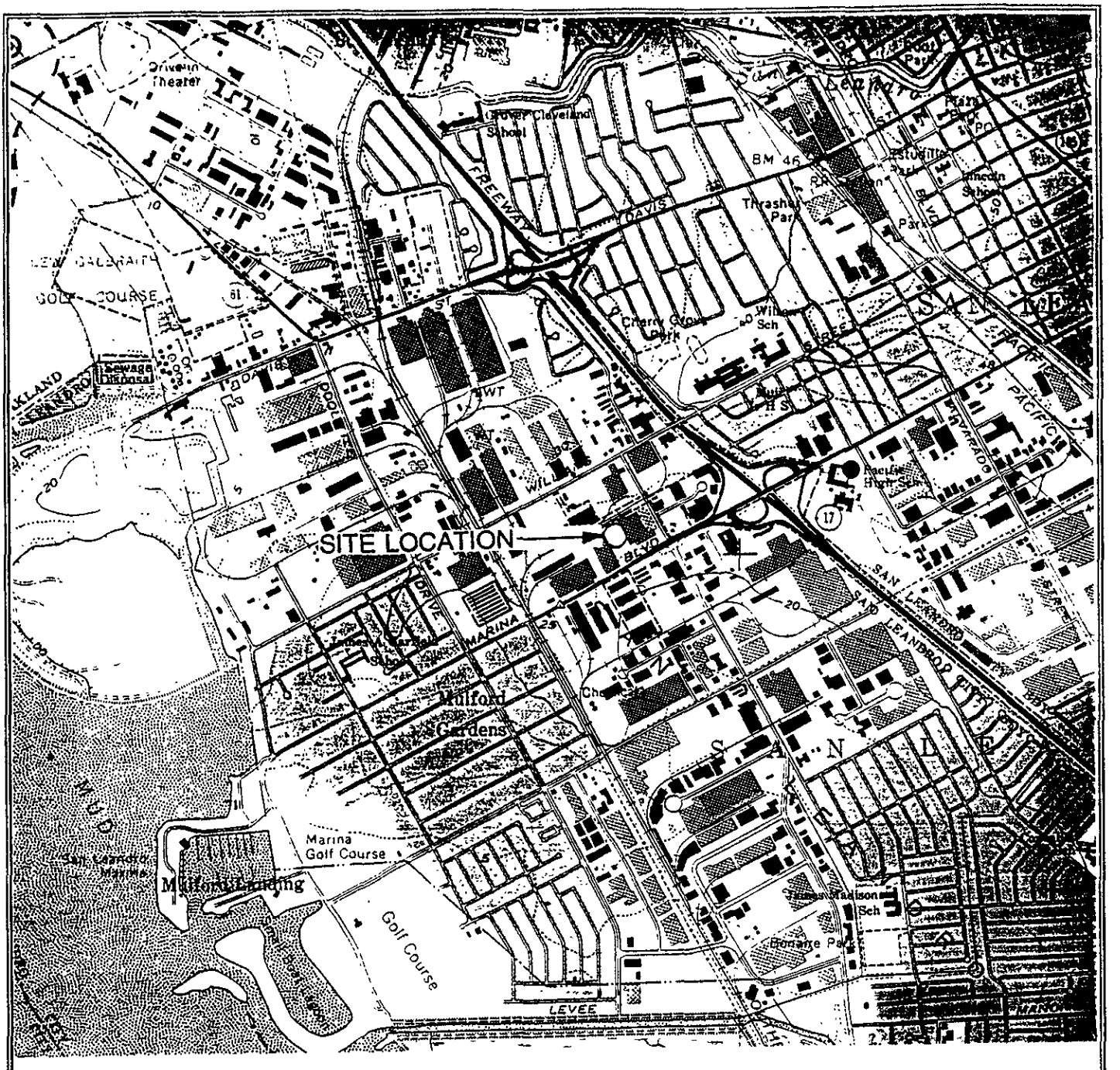
Respectfully submitted,
BSK & Associates

Martin B. Cline
Staff Geologist

Alex Y. Eskandari, P.E.
Manager, Geo-Environmental Services

AYE/MC
(REP\ENV.P94293.REP)

Attachments:
Figure 1, Vicinity Map
Figure 2, Site Map
Figures 3 to 7, Well Construction Details
Appendix A, Health and Safety Plan, Zone 7 Water Agency Well Permit
Appendix B, Boring Logs Prepared by Capsule Environmental Engineering, Inc.

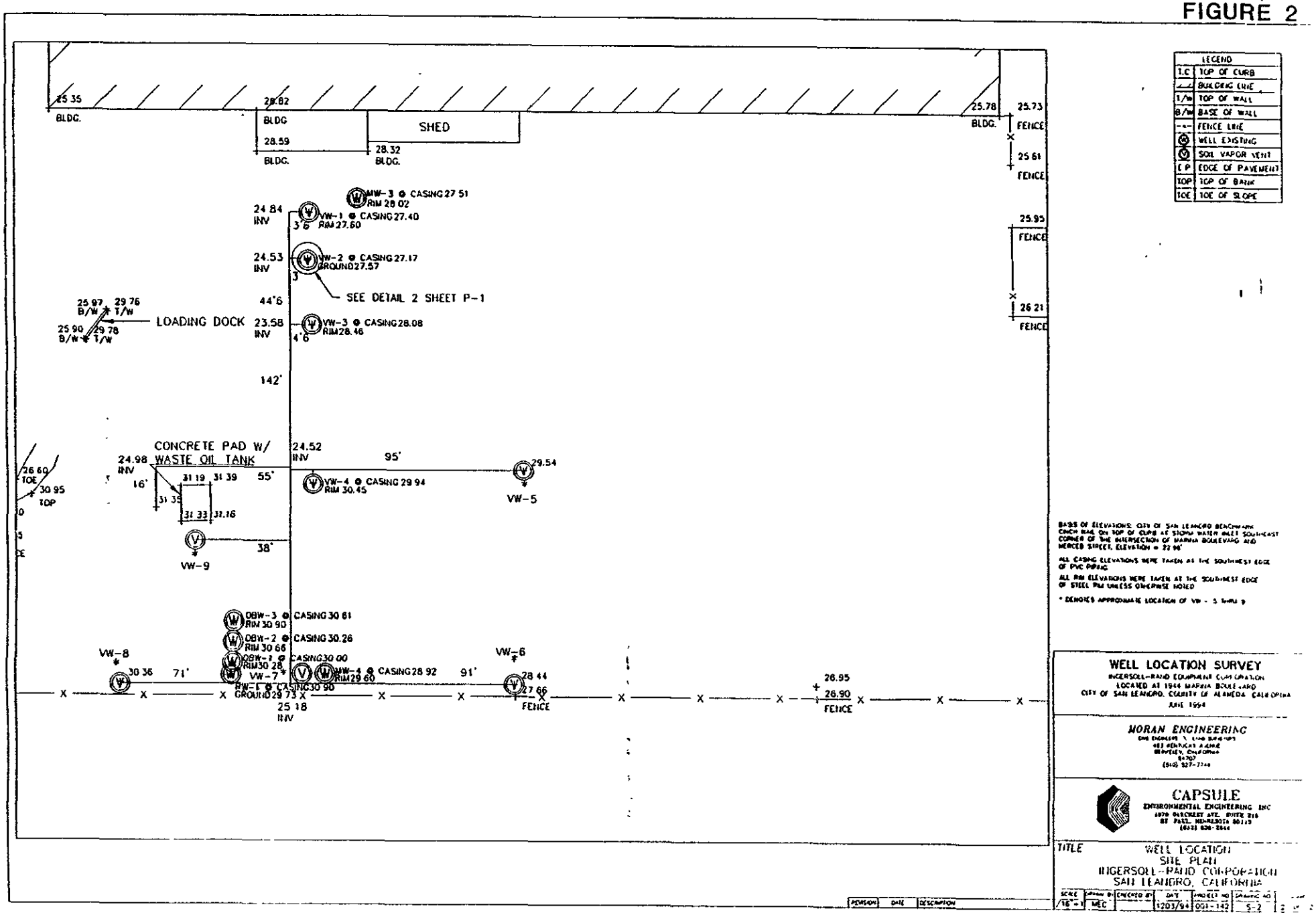


Drilling and Soil Vapor Vent Installation
Ingersoll-Rand Facility
1944 Marina Boulevard
San Leandro, California

VICINITY MAP
BSK Job No.P94293.4
NOVEMBER 1994
FIGURE 1

BSK & ASSOCIATES

FIGURE 2



BASIS OF ELEVATIONS: CITY OF SAN LEANDRO BENCHMARK CINCH BAR ON TOP OF CURB AT STORM WATER INLET SOUTHEAST CORNER OF THE INTERSECTION OF MARINA BOULEVARD AND MERCED STREET, ELEVATION = 32.98'

ALL CASING ELEVATIONS WERE TAKEN AT THE SOUTHWEST EDGE OF PVC PIPING

ALL RIM ELEVATIONS WERE TAKEN AT THE SOUTHWEST EDGE OF STEEL RIM UNLESS OTHERWISE NOTED

* DENOTES APPROXIMATE LOCATION OF VW - 5 SHOWN

WELL LOCATION SURVEY

INGERSOLL-RAND EQUIPMENT CORPORATION
LOCATED AT 1944 MARINA BOULEVARD
CITY OF SAN LEANDRO, COUNTY OF ALAMEDA, CALIFORNIA
JUNE 1994

MORAN ENGINEERING
CIVIL ENGINEERS & LAND SURVEYORS
483 ALVARADO AVENUE
BERKELEY, CALIFORNIA
94707
(510) 527-7744

CAPSULE
ENVIRONMENTAL ENGINEERING INC
1979 OAKCREST AVE. SUITE 210
ST. PAUL, MINNESOTA 55113
(612) 636-3844

TITLE
WELL LOCATION
SITE PLAN
INGERSOLL-RAND CORPORATION
SAN LEANDRO, CALIFORNIA

SCALE	DRAWN BY	CHECKED BY	DATE	PROJECT NO	DRAWING NO
1" = 1'	MEC		12/03/94	001-142	S-2

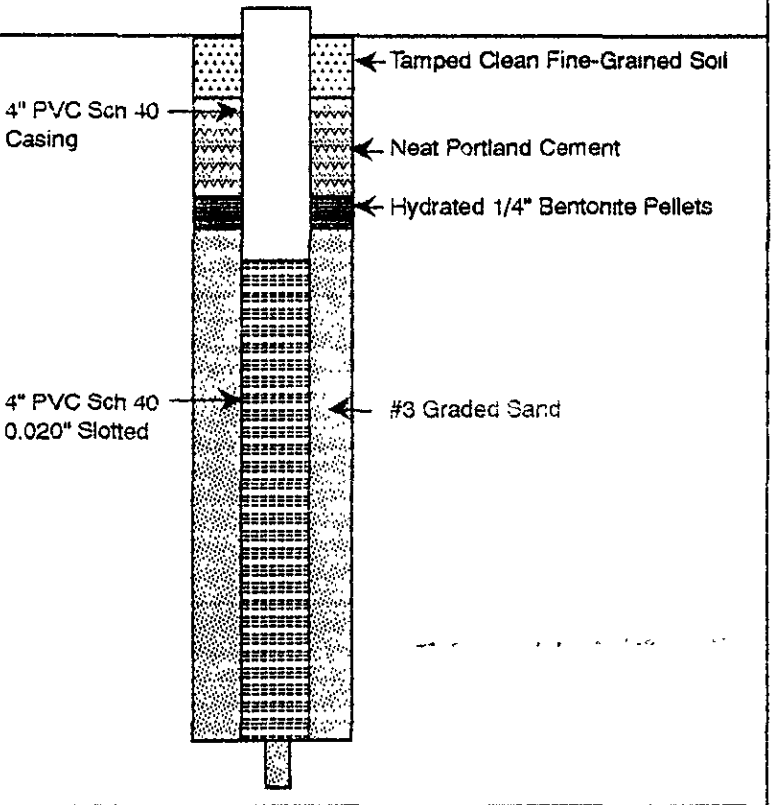
REVISION	DATE	DESCRIPTION

VAPOR EXTRACTION WELL VW-5

DATE:
LOGGED BY: J. McDermott (Capsule Environmental Engineering, Inc.)
Zone 7 Permit # 94684
WATER LEVEL: --
ELEVATION: --
EQUIPMENT: Mobile Drill B-53, 10" O.D. Hollow Stem Auger

PID READING (ppm)	SAMPLE INTERVAL	BLOWS/FOOT	TYPE OF SAMPLER
0		16	CS
0		18	CS
0		17	CS
0		26	CS
0		31	CS

0
5
10
15
20
25
30



TYPES OF SAMPLERS

SPT–Standard Penetration 1.4" ID Split Spoon Sampler
CS–2" ID Split Spoon Sampler
MC–2.5" ID Modified California Sampler
SH–2.8" ID Thin-Wall (Shelby Tube)
CC–2.7" ID Double Tube Continuous Coring Sampler

NOTES:
1. Boring completed at a depth of 23.5 feet.
2. Sampling resistance is measured in blows per foot required to drive the sampler 12 inches with a 140 lb. hammer falling 30 inches after sampler has been seated 6 inches.

■ *Indicates Undisturbed Sample*

□ Indicates No Recovery

DRILLING AND SOIL VAPOR VENT INSTALLATION
INGERSOLL-RAND FACILITY
1944 MARINA BOULEVARD
SAN LEANDRO, CA

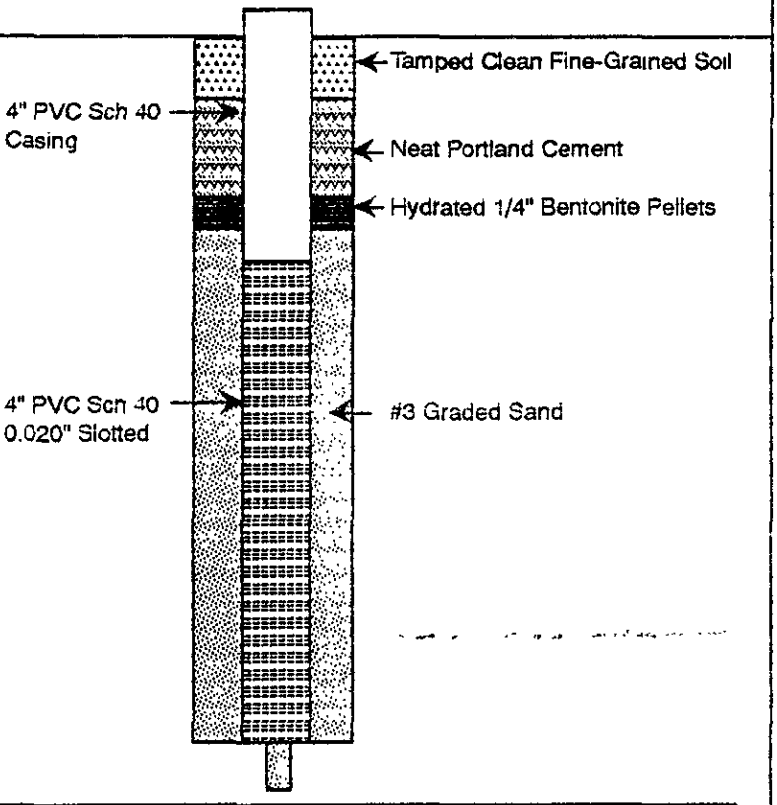
BSK Job No. P94293.4
WELL CONSTRUCTION DETAILS
FIGURE 3

BSK & ASSOCIATES

VAPOR EXTRACTION WELL VW-6

DATE:
LOGGED BY: J. McDermott (Capsule Environmental Engineering, Inc.)
Zone 7 Permit # 94684
WATER LEVEL: --
ELEVATION: --
EQUIPMENT: Mobile Drill B-53, 10" O.D. Hollow Stem Auger

	PID READING (ppm)	SAMPLE INTERVAL	BLOWS/FOOT	TYPE OF SAMPLER
0				
5	9	■	9	CS
10	6	■	16	CS
15	4	■	6	CS
20	0	■	28	CS
		■	35	CS
25				
30				



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NOTES:
1. Boring completed at a depth of 23.5 feet.
2. Sampling resistance is measured in blows per foot required to drive the sampler 12 inches with a 140 lb. hammer falling 30 inches after sampler has been seated 6 inches.

■ Indicates Undisturbed Sample

□ Indicates No Recovery

DRILLING AND SOIL VAPOR VENT INSTALLATION
INGERSOLL-RAND FACILITY
1944 MARINA BOULEVARD
SAN LEANDRO, CA

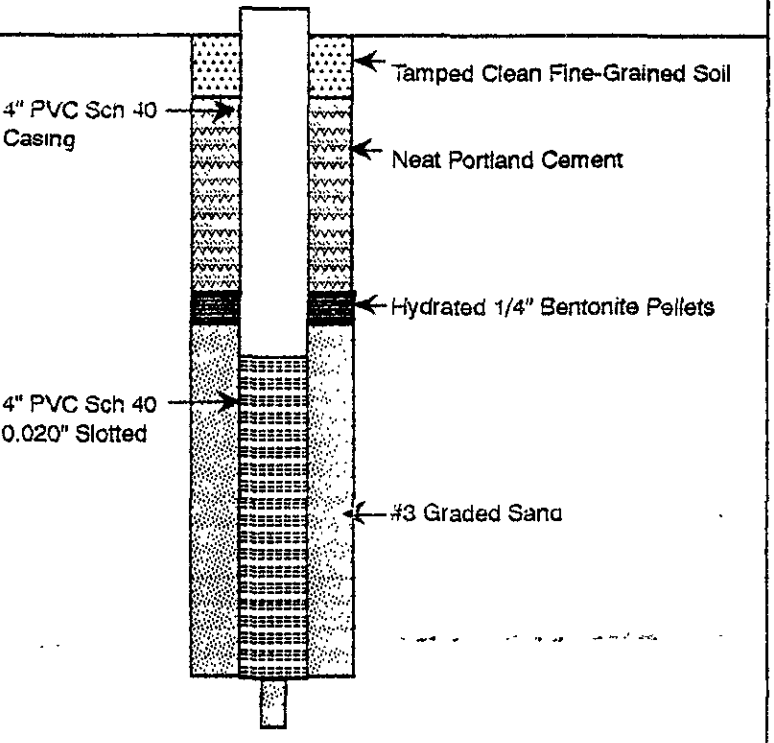
BSK Job No. P94293.4
WELL CONSTRUCTION DETAILS
FIGURE 4

BSK & ASSOCIATES

VAPOR EXTRACTION WELL VW-7

DATE:
LOGGED BY: J. McDermott (Capsule Environmental Engineering, Inc.)
Zone 7 Permit # 94684
WATER LEVEL: --
ELEVATION: --
EQUIPMENT: Mobile Drill B-53, 10" O.D. Hollow Stem Auger

	PID READING (ppm)	SAMPLE INTERVAL	BLOWS/FOOT	TYPE OF SAMPLER
0				
5	0		10	CS
10	0		18	CS
15	0		11	CS
20	953		18	CS
25				
30				



TYPES OF SAMPLERS

SPT--Standard Penetration 1.4" ID Split Spoon Sampler
CS--2" ID Split Spoon Sampler
MC--2.5" ID Modified California Sampler
SH--2.8" ID Thin-Wall (Shelby Tube)
CC--2.7" ID Double Tube Continuous Coring Sampler

NOTES:
1. Boring completed at a depth of 21.5 feet.
2. Sampling resistance is measured in blows per foot required to drive the sampler 12 inches with a 140 lb. hammer falling 30 inches after sampler has been seated 6 inches.

Indicates Undisturbed Sample

Indicates No Recovery

DRILLING AND SOIL VAPOR VENT INSTALLATION
INGERSOLL-RAND FACILITY
1944 MARINA BOULEVARD
SAN LEANDRO, CA

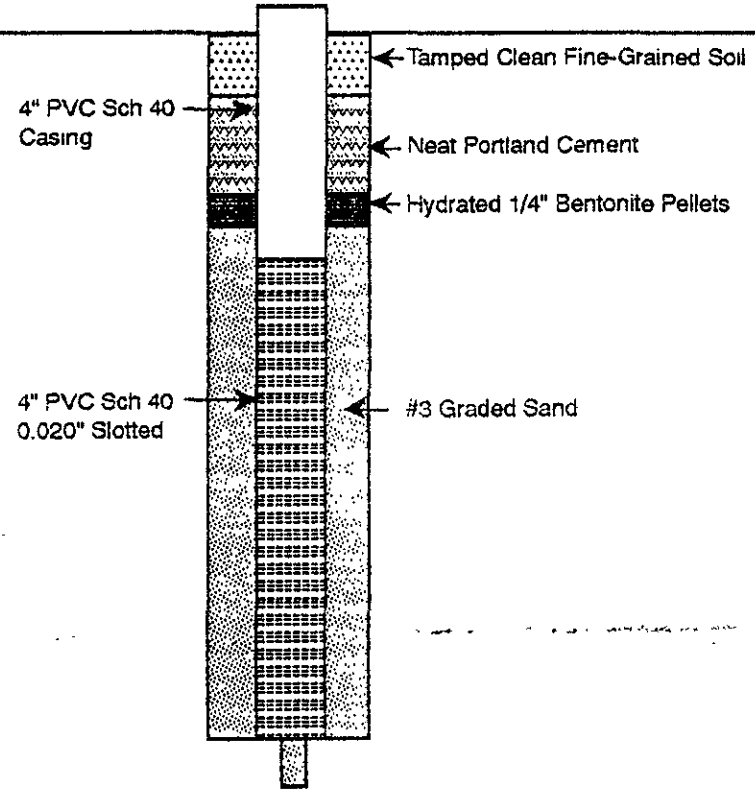
BSK Job No. P94293.4
WELL CONSTRUCTION DETAILS
FIGURE 5

BSK & ASSOCIATES

VAPOR EXTRACTION WELL VW-8

DATE:
LOGGED BY: J. McDermott (Capsule Environmental Engineering, Inc.)
Zone 7 Permit # 94684
WATER LEVEL: --
ELEVATION: --
EQUIPMENT: Mobile Drill B-53, 10" O.D. Hollow Stem Auger

	PID READING (ppm)	SAMPLE INTERVAL	BLOWS/FOOT	TYPE OF SAMPLER
0				
5			15	CS
10	0		11	CS
15	0		12	CS
20	865		8	CS
	120		26	CS
25				
30				



TYPES OF SAMPLERS

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CC–2.7" ID Double Tube Continuous Coring Sampler

NOTES.
1. Boring completed at a depth of 23.5 feet.
2. Sampling resistance is measured in blows per foot required to drive the sampler 12 inches with a 140 lb. hammer falling 30 inches after sampler has been seated 6 inches.

Indicates Undisturbed Sample

Indicates No Recovery

DRILLING AND SOIL VAPOR VENT INSTALLATION
INGERSOLL-RAND FACILITY
1944 MARINA BOULEVARD
SAN LEANDRO, CA

BSK Job No. P94293.4
WELL CONSTRUCTION DETAILS
FIGURE 6

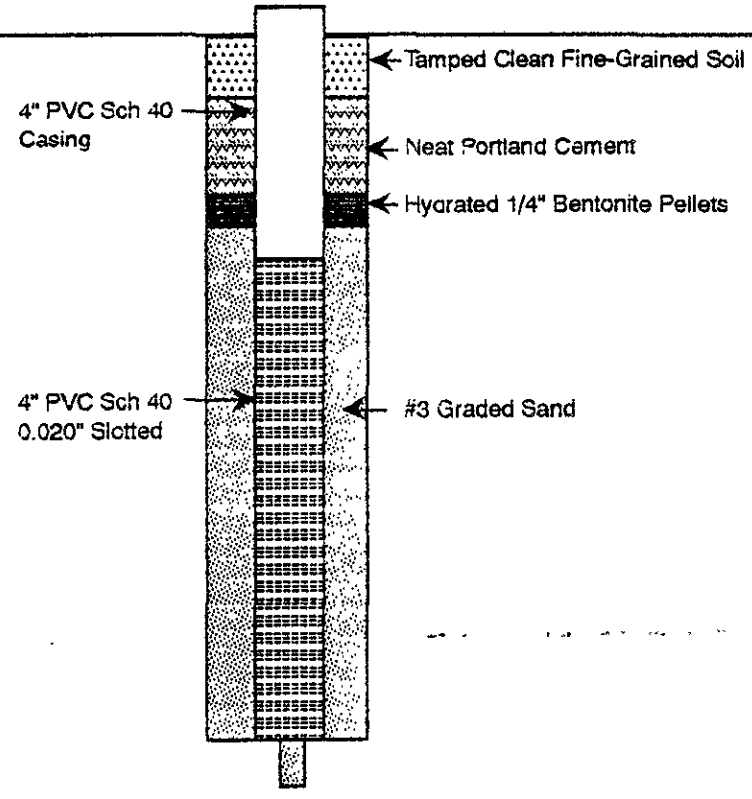
BSK & ASSOCIATES

VAPOR EXTRACTION WELL VW-9

DATE:
LOGGED BY: J. McDermott (Capsule Environmental Engineering, Inc.)
Zone 7 Permit # 94684
WATER LEVEL: --
ELEVATION: --
EQUIPMENT: Mobile Drill B-53, 10" O.D. Hollow Stem Auger

PID READING (ppm)	SAMPLE INTERVAL	BLOWS/FOOT	TYPE OF SAMPLER
1		20	CS
2		19	CS
1		11	CS
286		9	CS
		25	CS

0
5
10
15
20
25
30



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NOTES:
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Indicates Undisturbed Sample

Indicates No Recovery

DRILLING AND SOIL VAPOR VENT INSTALLATION
INGERSOLL-RAND FACILITY
1944 MARINA BOULEVARD
SAN LEANDRO, CA

BSK Job No. P94293.4
WELL CONSTRUCTION DETAILS
FIGURE 7

BSK & ASSOCIATES

APPENDIX A

BSK
& ASSOCIATES

HEALTH AND SAFETY PLAN

DRILLING AND SOIL VAPOR EXTRACTION VENT INSTALLATION
INGERSOLL-RAND FACILITY
1944 MARINA BOULEVARD
SAN LEANDRO, CALIFORNIA

BSK JOB NO. P94293.4
OCTOBER 1994

BSK & Associates

HEALTH AND SAFETY PLAN

1.0 PROJECT DATA

1.1 Project

Drilling and Soil Vapor Extraction Vent Installation
Ingersoll-Rand Facility
1944 Marina Boulevard
San Leandro, California

1.2 Client

Ingersoll-Rand Company c/o Mr. John McDermott, Capsule Enviromental Engineering

1.3 Work Description

Drilling, soil sampling and installation of five soil vapor extraction vents in soil contaminated with gasoline related compounds.

2.0 ORGANIZATIONAL STRUCTURE

2.1 Client Supervisor

John McDermott

2.2 BSK Project Manager

Tim W. Berger (510) 462-4000

The Project Manager (PM) for BSK & Associates (BSK) has overall responsibility for safe conduct of field work, including full implementation of this operating procedure by project staff assisting with field work. BSK will comply with regulations, including OSHA 29 CFR 1910.134 and 8CCR 5144 (Respiratory Protection) and 29 CFR 1910.120 and 8CCR 5192 (Hazardous Waste Operations).

The PM has primary responsibility for:

- Assuring that personnel are aware of known site conditions, components of this plan, and are familiar with planned procedures for dealing with emergencies.

- Monitoring the safety performance of site personnel to ensure that required work practices are employed, and correcting work practices that may result in injury or potential exposure to hazardous substances.

- Preparing accident/incident reports.

The BSK Project Manager would have successfully completed the OSHA 40-hour safety training, plus requisite annual 8-hour recertification training.

3.0 SAFETY MEETINGS

3.1 Pre-Job Conference

A health and safety meeting describing the pertinent health and safety concerns involved in the project would be attended by the client's representative, BSK, and designated personnel.

3.3 Daily Tailgate Meetings

"Tailgate" safety meetings would be held daily prior to work start-up to present and review health and safety concerns associated with the project.

4.0 SITE CONTROL

Access to hazardous and potentially hazardous areas of spill sites must be controlled to reduce the probability of occurrence of physical injury and chemical exposure of field personnel, visitors and the public. A hazardous or potentially hazardous area includes areas where field personnel are required to wear respirators and borings are being drilled with powered augers.

Entry to hazardous areas would be limited to individuals who must work in those areas, and those qualified to do so. Entrance to the work zone will be appropriately marked, taped or placarded to prohibit unauthorized entry. Unofficial visitors must not be permitted to enter hazardous areas while work is in progress in those areas. Official visitors should be discouraged from entering hazardous areas, but may be allowed to enter only if they agree to abide by the provisions of this document, have the requisite OSHA certifications, follow orders issued by the Site Safety Officer, and are informed of the potential dangers that could be encountered in the areas.

4.1 Hot Zone

Drill Operation Zone

4.1.a. Authorized Personnel - Authorized personnel would be those persons directly involved in drilling, logging, monitoring and primary support activities.

4.1.b. Personal Protection - A minimum of Level D personnel protective equipment will be maintained, which includes a minimum of a hard-hat, work shoes, ear protection, and gloves.

4.1.c. Zone Limits - Hot zone limits extend to 15 feet from the drill rig.

4.2 Warm Zone

Transitional area/buffer zone, decontamination area. Fully encircles Hot Zone.

4.2.a. Authorized Personnel - Persons authorized to enter this zone include secondary drilling/work support, decontamination personnel and supervisory personnel with requisite health and safety-training.

4.2.b. Personal Protection - Persons entering the Warm Zone would wear a minimum of a hard-hat. Persons working within the warm zone would dress in Personal Protective Equipment (PPE) similar to that used in the Hot Zone at that time.

4.2.c. Zone Limits - Warm Zone limits extend 10-feet from vehicles and equipment in use at the site, other than the drill rig. The zone would extend to 25-feet from the drill rig.

4.3 General Site Entry

4.3.a. Authorized Personnel - BSK, Capsule Environmental Engineering and persons employed at the Site.

4.3.b. Personal Protection - None required

4.3.c. Limits - Site grounds

4.4 Control Zone Delineation

Control zones would be clearly delineated by barricades, traffic cones, barricade tape or other demarcation.

5.0 MEDICAL SURVEILLANCE

BSK personnel entering the Warm and Hot-control zones would have completed yearly physicals which include the parameters mandated by 29CFR 1910.120.

6.0 EMERGENCY RESPONSE

6.1 Initial Response

All emergencies shall be reported by dialing 911 on available phones (a mobile phone will be provided for BSK Personnel on-Site). Ambulance, fire and police services are available through this number, 24 hours a day. The nearest hospital is located at 855 East 14th Street, San Leandro. The telephone number is (510)667-4545

6.2 Chemical Hazard

Following detection of an action-concentration of a contaminant by field monitoring equipment, personnel would move crosswind of the release source following equipment shut-down. Personal Protective Equipment specific to the detected hazard would then be employed if detected concentrations allow. If possible, personnel should remain within the control zones until decontaminated. Work will not proceed until hazard identification and mitigation measures are emplaced.

7.0 JOB HAZARD ANALYSIS

Physical hazards at the site incude noise, possible underground and adjacent electrical utilites, slippery and uneven surface and potentially limited egress in case of an emergency. Chemical hazards include those associated with gasoline contaminated soil, water and vapors.

7.1 Noise Hazards

The primary noise hazard is expected to occur during the use of the drilling rig. Hearing protection is recommended to be worn in the vicinity of the drill rig during opperations.

7.2 Utilities

BSK will contact Underground Service Alert 48 hours prior to the start of drilling. BSK will

request that the Site owner make all private underground utility locations known to us prior to the strart of drilling.

7.3 Traffic Hazards and Outside Access

Vehicular traffic in the work area is expected from personell who work at the Site. BSK will maintain traffic-type barricades in the work area to alert drivers. BSK will also position thier work so as to prevent disrution of normal traffic patterns at the Site.

7.4 Potential Chemical Hazards

Based upon information provided by Capsule Environmental Engineering, chemicals which may be present at the site and present a potential hazard to personnel are listed in Table 1. The primary route of entry for the chemicals which have high vapor pressures would be inhalation.

TABLE 1

Compound Name	Vapor Pressure (mm Hg)	Threshold Limiting Value (ppm)	Time Weighted Average (ppm)	Short-Term Exposure Limits (ppm)	IDLH (ppm)	Other Hazards
Benzene	75	Ca	0.1	1.0	Ca	
Toluene	20	100	100	200	2000	
Ethylbenzene	10	100	100	125	2000	
Xylene	9	100	100	200	1000	
Gasoline	--	300	300	500	--	LEL=14,000
Portland Cement	NA	10*	10*	NA	NA	Caustic When Wet

LEL - Lower Explosion Limit
Ca - Carcinogen
NA - Not Available
* - mg/M^3

7.5 Warning Properties - Warning properties listed are those related to inhalation:

Compound	Properties
Benzene	Aromatic odor, eyes, nose, respiratory irritant
Toluene	Sweet pungent odor, fatigue, weak, confusion, euphoria
Ethylbenzene	Aromatic odor, eyes, mucous membrane irritant
Xylenes	Aromatic odor, dizziness, excitement, drowsiness

7.6 Monitoring for Potential Site Chemicals

Air monitoring for volatile organic compounds will be performed by the Site Safety Officer to evaluate the likelihood of personal exposure exceeding the Cal/OSHA PEL for suspected Site contaminants. Potential exposures will be evaluated using a PID. Since the PID response is non-specific, any response will arbitrarily be considered a positive indication of contaminant encounter.

7.6.a Photo Ionization Detector (PID) - A PID utilizing a 10.0 ev lamp can detect the following compounds of concern:

Compound	PID Response Factor
Benzene	0.7
Xylene	0.7
Toluene	0.8
Ethylbenzene	0.5

The PID would be calibrated daily to a 100 ppm iso-butylene standard, and zeroed in the field to ambient working conditions.

7.6.b Odors - Unusual odor or other chemical warning encountered during work activities would result in cessation of work and re-assessment of work conditions.

8.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

If small quantities of the compounds described in Section 7.0 are encountered during the exploration investigation, the most likely entry route for contaminants to workers is inhalation and skin contact.

8.1 Perceived Hazards

8.1.a. Inhalation - Dust, fumes, mist and vapors may be inhaled during drilling processes. Volatilized organic compounds may be expected at the site, and will be monitored by PID.

8.1.b. Skin Contact - Contact with the skin by splashing or sloshing of drilling effluent, possibly containing hazardous compounds, is a perceived hazard. Eye contact with fluids may also be anticipated.

8.2 Personal Protective Equipment

8.2.a. Protective Materials - The following protective materials are recommended for gloves and boots at the site: Nitrile, Vinyl or PVC.

8.2.b. Uncoated tyveks are recommended.

8.2.c. Eye Protection - To prevent contact with the eyes, encapsulating goggles should be worn around hazardous fluids. Workers not handling fluids should wear protective eyewear to guard against flying debris. Eyewear must conform to ANSI Standard Z87.1.

8.2.d. Respirator Selection - If required, respirators would be NIOSH-approved full or half-face, and shown to have been fit-tested to the user. Respirator cartridges available for use at the site should be suitable for organic vapors, dust, mist and fumes.

8.3 Working PPE Levels

Workers within the work area control zones should be dressed in Level D Protective apparel, which includes, but is not limited to:

Work Boots
Safety Glasses/Goggles
Hard Hat
Gloves
Hearing Protection

For emergency measures, respirators with the appropriate cartridge should also be available.

8.4 PPE Revision

Encounter with and identification of a hazardous compound or compounds would necessitate re-evaluation of PPE and safety procedures at the work site.

9.0 DECONTAMINATION

Decontamination of employees and equipment would occur before exit from site control zones.

PPE and equipment that may be reused would be washed with detergent and water, and thoroughly rinsed with potable water. Articles to be changed daily, such as coveralls, inner gloves, foam ear inserts and respirator cartridges would be discarded to a plastic bag, tied, and placed in a DOT drum reserved for such purpose. Removal of PPE would be performed in a manner such that inner protective gloves would be the last item removed, and skin and clothing would not contact soiled gear. Wash and rinse bins and brushes would be supplied for decontamination. Decontamination would be performed in the Warm Control Zone. Rinsate and wash water would be contained, and stored in DOT-approved drums reserved for that use.

If used, respirators would be washed separately, sanitized and stored and sealed for next use. Each employee would be responsible for the cleaning and storage of their respirator.

10.0 SPILL CONTAINMENT

Containment of leakage or spill from a storage container at the site will be exercised promptly, with materials designed for that purpose, such as dikes, booms, pads and plug material. If a container has leaked, it will be properly disposed, and the contents transferred to another suitable container.

11.0 SANITATION

It is our understanding that restrooms are available for BSK use within the Site.

12.0 ILLUMINATION

No work is anticipated 1/2-hour after sunset and 1/2-hour before sunrise.

13.0 CONFINED SPACE ENTRY

Confined space entry is not anticipated.

14.0 SITE EXCAVATION

Excavation at the site other than the bore-hole is not expected. The bore-hole would be securely covered to prevent accidental entry, or deliberate entry without tools.

15.0 PHYSICAL HAZARDS

Physical hazards which can be expected at the project site include equipment failure, slip, trip and fall, and weather. Preventative measures would be taken to mitigate these hazards.

15.1 Equipment

Equipment used at the site would be regularly and properly maintained, kept clean and stored in its proper location or position when not in immediate use.

15.2 Worker Conduct

Horseplay would not be tolerated. Loose clothing would be secured with tape or other material. Dry walking and standing surfaces would be maintained, and items would not be left where they can result in a trip or fall. Elevated persons or items would be made stable and/or secured.

15.3 Weather

Inclement weather such as heat or rain can result in accident or injury.

15.3.a. Heat: Heat stress is not considered a significant hazard in the winter and spring.

15.3.b. Rain - During rain, extra caution would be maintained for slip and overhead hazards, as well as containment of runoff from waste. If a thunder storm occurs, work would cease, the drill mast lowered if safe to do so, and cover taken away from work vehicles.

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Ingersoll-Rand Facility
1944 Marina Blvd.
San Leandro, CA

CLIENT
Name Ingersoll-Rand Company
Address 200 Chestnut Ridge Rd. Voice
City Woodcliff Lake, NJ Zip 07675

APPLICANT
Name BSK & Associates
Fax (510) 462-6283
Address 1181 Quarry Ln #300 Voice (510) 462-4000
City Pleasanton CA Zip 94566

TYPE OF PROJECT
Well Construction
Cathodic Protection ___
Water Supply ___
Monitoring ___
Or Extraction Wells X
Geotechnical Investigation
General ___
Contamination ___
Well Destruction ___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. C57-490942

WELL PROJECTS
Drill Hole Diameter 10 in. Maximum
Casing Diameter 4 in. Depth 22 ft.
Surface Seal Depth 6 ft. Number 5

GEOTECHNICAL PROJECTS
Number of Borings ___ Maximum
Hole Diameter ___ in. Depth ___ ft.

ESTIMATED STARTING DATE 10/31/94
ESTIMATED COMPLETION DATE 11/2/94

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

APPLICANT'S SIGNATURE Martin Chin Date 10/24/94

FOR OFFICE USE

PERMIT NUMBER 94684
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well Projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 24 Oct 94
Wyman Hong

91992

APPENDIX B

BSK
& ASSOCIATES

GEOLOGIC LOG

CAPSULE ENVIRONMENTAL ENGINEERING, INC.
ST. PAUL, MINNESOTA

OWNER Ingersoll-Rand
WELL NO. VW-9
PAGE 1 OF 2 PAGES

LOCATION 1944 Marina Blvd
San Leandro, CA 94577
DATE COMPLETED November 2 1994
DRILLING COMPANY BSK & Associates
DRILLING METHOD Hollow stem auger 6 1/4"
SAMPLING METHOD split spoon sampler every 5 feet
OBSERVER John McDermott
REFERENCE POINT (RP)
ELEVATION OF RP

SCREEN TYPE slotted PVC
DIAM. 4" SLOT NO. 0.020
SETTING 7 to 22 feet
SAND PACK 6 to 23.5 feet (1 into split spoon hole)
CASING 4" PVC
SETTING -3.5 to 7 feet
DEVELOPMENT —
DURATION —
STATIC WATER LEVEL —
YIELD —

REMARKS Installed as soil vapor extraction well

DEPTH (FEET) FROM	TO	DESCRIPTION
0	1.5	ground; sandy, brown; fill (described from auger return)
5	6.5	split spoon sample; number of blows 6, 9, 11; sand; greenish brown, very fine to fine grained, silty to clayey, some very small holes ~~upon~~ on sample faces, no odor 1 ppm w/ PID
10	11.5	split spoon sample; number of blows 5, 9, 10; clay; brown, silty, 1/8" to 1/16" holes on sample faces, 2 ppm w/ PID

OWNER Ingersoll-Rand

WELL NO. NW-9

DEPTH (FEET) FROM	TO	DESCRIPTION
15	16.5	split spoon sample; number of blows 6, 6, 5; sand; brown mottled with reddish brown, fine to medium grained, silty, some subangular very coarse to pebble sized gravel, 1 ppm w/ PID
20	21.5	split spoon sample; number of blows 3, 4, 5; sand; brownish grey to grey, very clayey; some grey clay at 21+; 286 ppm w/ PID
22.0	23.5	split spoon sample; number of blows 6, 10, 15;
TD		clay; dark grey, silty; few small holes as sample is broken; petroleum odor and wetness as sample is parted

GEOLOGIC LOG

CAPSULE ENVIRONMENTAL ENGINEERING, INC.
ST. PAUL, MINNESOTA

OWNER Ingersoll-Rand
WELL NO. VW-5
PAGE 1 OF 2 PAGES

LOCATION 1944 Marina Blvd
San Leandro, CA 94577
DATE COMPLETED November 2, 1994
DRILLING COMPANY BSK & Associates
DRILLING METHOD Hollow stem auger, 6 1/4"
SAMPLING METHOD Split spoon sampler, every 5 feet
OBSERVER John McDermott
REFERENCE POINT (RP)
ELEVATION OF RP

SCREEN TYPE slotted PVC
DIAM. 4" SLOT NO. 0.020
SETTING 7 to 22 feet
SAND PACK 6-23 (into split spoon hole)
CASING 4" PVC
SETTING -3.6 to 7 feet
DEVELOPMENT ——
DURATION ——
STATIC WATER LEVEL ——
YIELD ——

REMARKS installed as soil vapor extraction vents

DEPTH (FEET) FROM	TO	DESCRIPTION
0	1.0+	asphalt and gravel; asphalt (0 to 0.5 feet), crushed rock as fill (0.5 to 1.0+)
1.0+	4.0-	sand; brown to yellowish brown, clayey
4.0-		silt; black, clayey, "humic-looking" no odor, 0ppm w/ PID
		(descriptions from 0 to 5 feet from auger returns)
5.0	6.5	split spoon sample; number of blows: 8 7 9; sand; fine to medium grained, yellowish-brown, few small gravel pieces; 0ppm w/ PID

OWNER Ingersoll-Rand, San Leandro

WELL NO. VW-5 PAGE 2 OF 2 PAGES

DEPTH (FEET) FROM	TO	DESCRIPTION
10.0	11.5	split spoon sample; number of blows, 5, 7, 11; sand, yellowish-brown to brown and clay; brown, sandy; a few 1/8" holes running lengthwise in split spoon sample, perhaps root ~~remnants~~ remnants; 0 ppm w/PID
15	16.5	split spoon sample; number of blows, 3, 8, 9; (15-16) clay; greenish brown to brown; sandy; some subangular 1/4" gravel pieces (16.0 to 16.5) sand; mottled, reddish brown to brown; fine to medium grained, silty, ~~interval~~ interval is damp; 0 ppm w/PID
20.0	21.5	split spoon sample; number of blows 5, 10, 16; (20.0-21.0') sand; fine grained, brown, clayey (21.0'-21.5) clay; brownish-black, plastic; 1/16" to 1/8" holes in clay ~~clay~~, running lengthwise along spoon sample, short lengths; root or animal caused; wetness or partings in clay; 0 ppm w/PID
22.0	23.5	split spoon sample; number of blows 7, 12, 19
TD		clay; mottled brown and grey; slightly sandy; 0 ppm w/PID

GEOLOGIC LOG

CAPSULE ENVIRONMENTAL ENGINEERING, INC.
ST. PAUL, MINNESOTA

OWNER Ingersoll-Rand
WELL NO. VW-6
PAGE 1 OF 2 PAGES

LOCATION 1944 Marina Blvd
San Leandro, CA 94577
DATE COMPLETED November 2, 1994
DRILLING COMPANY BSK & Associates
DRILLING METHOD Hollow stem auger, 6 1/4"
SAMPLING METHOD Split spoon sampler, every 5 feet
OBSERVER John McDermott
REFERENCE POINT (RP)
ELEVATION OF RP

SCREEN TYPE 4" slotted PVC
DIAM. 4" SLOT NO. 0.020
SETTING 7-22 feet
SAND PACK 6-22+ (into split spoon hole)
CASING 4" PVC
SETTING ~3.5 to 7 feet
DEVELOPMENT —
DURATION —
STATIC WATER LEVEL —
YIELD —

REMARKS Installed as soil vapor extraction well

DEPTH (FEET) FROM	TO	DESCRIPTION
0	1+	fill; gravel w/ brown sand
1+	3+	sand; brown, fine to very fine grained, silty
3+		clay; black, silty, "humic looking" (descriptions from 0 to 5 feet from auger returns)
5	6.5	split spoon sample; number of blows 4 4 5; sand; brown to yellowish brown, silty, more clay like by 6.5 9 ppm w/ PID

OWNER Ingersoll-Rand (San Leandro)

WELL NO. VW-6

DEPTH (FEET) FROM	TO	DESCRIPTION
10.0	11.5	split spoon sample; number of blows 4 7 9 clay; brown to greenish brown, sandy, interval from 11 to 11.5 is more sandy in appearance; ~~6 ppm~~ 6ppm w/ PID
15.0	16.5	split spoon sample; number of blows 2 3 3 sand; brown to mottled reddish brown, fine to very fine grained, very clayey, moist to wet; 4 ppm w/ PID
20.0	21.5	split spoon sample; number of blows 7, 12, 16, clay; dark gray, silty, sandy, very firm 1/8" to 1/16" holes in clay running lengthwise along split spoon, short length, 0 ppm w/ PID
22.0	23.5	split spoon sample; number of blows 7, 15, 20; clay; dark brownish dark gray, silty, occasional carbon speck, 1/8" to 3/16" on laminae as sample is broken, plant remains?
TD		

GEOLOGIC LOG

CAPSULE ENVIRONMENTAL ENGINEERING, INC.
ST. PAUL, MINNESOTA

OWNER Ingersoll-Rand
WELL NO. VW-7
PAGE 1 OF 2 PAGES

LOCATION 1944 Marina Blvd
San Leandro, CA 94577
DATE COMPLETED November 2, 1994
DRILLING COMPANY BSK & Associates
DRILLING METHOD Hollow stem auger 6"/4"
SAMPLING METHOD split spoon sampler every 5 feet
OBSERVER John McDermott
REFERENCE POINT (RP)
ELEVATION OF RP

SCREEN TYPE Slotted PVC
DIAM. 4" SLOT NO. 0.020
SETTING 10 to 20
SAND PACK 9 to 21.5 (into split spoon hole)
CASING 4" PVC
SETTING -5 to
DEVELOPMENT ——
DURATION ——
STATIC WATER LEVEL ——
YIELD ——

REMARKS Installed as soil vapor extraction vent

DEPTH (FEET) FROM	TO	DESCRIPTION
0	1+	fill; gravel, sandy
1+	3+	sand; olive green to brown, silty, clayey
3+		clay; black, "humic looking" silty, no odor (descriptive) from 0 to 5 feet from auger returns)
5	6.5	split spoon sample, ~~none~~ number of blows 5, 5, 5; sand, brown to greenish brown, fine to medium grained, silty, moist. 0 ppm w/ PID

OWNER Ingersoll-Rand (San Leandro)

WELL NO. VW-7

DEPTH (FEET) FROM	TO	DESCRIPTION
10.0	11.5	split spoon sample; number of blows 6, 8, 10; sand; brown to yellowish-brown, fine to medium grained, silty to clayey; 0 ppm w/ PID
15	16.5	split spoon sample; number of blows 4, 5, 6; sand; yellowish-brown, very fine to fine grained, loose; 0 ppm w/ PID
20.0	21.5	split spoon sample; number of blows 3, 6, 12; clay; dark gray to black, gasoline odor, 958 ppm w/ PID
TD		

GEOLOGIC LOG

CAPSULE ENVIRONMENTAL ENGINEERING, INC.
ST. PAUL, MINNESOTA

OWNER Ingersoll-Rand
WELL NO. VW-8
PAGE 1 OF 2 PAGES

LOCATION 1944 Marina Blvd.
San Leandro, CA 94577
DATE COMPLETED November 2, 1994
DRILLING COMPANY RSK & Associates
DRILLING METHOD Hollow stem auger, 6 1/4"
SAMPLING METHOD Split spoon sampler every 5 feet
OBSERVER John McDermott
REFERENCE POINT (RP)
ELEVATION OF RP

SCREEN TYPE 4" slotted PVC
DIAM. 4" SLOT NO. 0.020
SETTING 7 to 22 feet
SAND PACK 6 to 23.5 feet (into split spoon)
CASING 4" PVC
SETTING -3.5 to 7 feet
DEVELOPMENT —
DURATION —
STATIC WATER LEVEL —
YIELD —

REMARKS Installed as soil vapor extraction well

DEPTH (FEET) FROM	TO	DESCRIPTION
0	1+	asphalt; (0 - .3 feet), then gravel w/ sand
1+	3+	sand; olive greenish-brown, clayey, damp at 3+
3+		clay; brownish-black "humic looking", not as dark as other locations
		(descriptions from 0 to 5 feet from auger returns)
5	6.5	split spoon sample: number of blows 6 7 8; sand; brown, fine to medium grained, silty, cleaner appearing sand by 6.5

OWNER Ingersoll-Rand

WELL NO. VW-8

DEPTH (FEET) FROM	TO	DESCRIPTION
10	11.5	split spoon sample; number of blows 4, 5, 6 clay; dark grayish brown; 0 ppm w/ PID
15	16.5	split spoon sample; number of blows 6, 6, 6 sand; yellowish brown very fine to medium grained, silty; yellowish brown clay from 15.5 to . . ; 0 ppm w/ PID. Took picture
20	21.5	split spoon sample; number of blows 2, 3, 5; clay; grey, silty progressively more clayey thru interval; 865 ppm w/ PID
22	23.5	split spoon sample; number of blows 6, 11, 15;
TD		clay; dark grey, silty, some 1/8" to 1/16" holes running ~~length of sample~~ lengthwise along sample, discontinuous when sample is broken; 120 ppm w/ PID