File No. 8-90-418-SI

PROPOSED WORK PLAN
LOCATED 2351 SHORELINE DRIVE
ALMAEDA, CALIFORNIA
AUGUST 30, 1990

PREPARED FOR:

KAMUR INDUSTRIES, INC.

2351 SHORELINE DRIVE

ALAMEDA, CALIFORNIA 94501

BY:

SOIL TECH ENGINEERING, INC.

298 BROKAW ROAD

SANTA CLARA, CALIFORNIA 95050

SOIL TECH ENGINEERING
Soil, Foundation and Geological Engineers
298 BROKAW TOAD, SANTA CLARA, CA 95050 ■ (408) 866-0919 ■ (415) 791-6406

August 31, 1990

Alameda County Health Agency
80 Swan Way, Room 200
Oakland, California 94621

ATTENTION: MS. CYNTHIA CHAPMAN

SUBJECT: PROPOSED WORK PLAN.

Dear Ms. Chapman:

As requested by the Alameda County Health Department, the proposed work plan has been prepared and addresses tasks which were discussed in the meeting of August 21, 1990.

Enclosed is the proposal under approval for submission by Kamur Industries, Inc. via Mr. Murray T. Stevens. Also enclosed is payment for $600 from Kamur Industries, Inc.

If you have any questions, please feel free to contact our office.

Sincerely,

SOIL TECH ENGINEERING, INC.

Richard Downs

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APPENDIX "B"

SOIL TECH ENGINEERING

Soil, Foundation and Geological Engineers

298 BROKAW ROAD, SANTA CLARA, CA 95050 ■ (408) 866-0919 ■ (415) 791-6406

August 30, 1990

File No. 8-90-418-SI

Mr. Murray Stevens
Kamur Industries, Inc.
2351 Shoreline Drive
Alameda, California 94501

Reference: Proposed Work Plan.

Dear Mr. Stevens:

As requested by the Alameda County Health Department, the enclosed work plan for the subject site has been prepared in accordance with local and state requirements.

The work plan consists of the tasks which were discussed with the above agency and the property owner during our meeting of August 21, 1990. the work plan contains plans for removal and disposal of contaminated soil and a preliminary subsurface investigation at the site.

If you have any questions or require additional information, please feel free to contact our office at your convenience.

Sincerely,

SOIL TECH ENGINEERING, INC.

RICHARD DOWNS
ENVIRONMENTAL EDITOR

LAWRENCE KOO, P. E.
C. E. #34928

FRANK HAMEDI-FARD
GENERAL MANAGER

File No. 8-90-418-SI

PROPOSED WORK PLAN
KAMUR INDUSTRIES, INC.
2351 SHORELINE DRIVE
ALAMEDA, CALIFORNIA

Soil Tech Engineering, Inc. (STE) has been authorized to prepare this work plan describing the excavation of impacted soil and a preliminary soil and groundwater investigation at the subject site. This preliminary assessment is being undertaken at the request of the Alameda County Health Department (ACHD) to determine 1) the vertical and lateral extent of petroleum constituents in the soil, and 2) potential impact on the groundwater in the vicinity of the source area. The proposed work plan has been prepared in accordance with the California Regional Water Quality Control Board's (CRWQCB) "Tri-Regional Board Staff Recommendations For Preliminary Evaluation And Investigation Of Underground Tanks Sites" dated August 10, 1990, and the State Water Resources Control Board Document, Leaking Underground Fuel Tank (LUFT) Field Manual.

PURPOSE:

This preliminary subsurface assessment will address the following:

- Removal of petroleum hydrocarbon impacted soil to the depth feasible.
- Characterization of excavated stockpiled soil for proper disposal.
- Elevating the cost effective methods of disposal.

- Determining the vertical and lateral extent of subsurface contamination (i.e. soil and groundwater).
- Initiating a groundwater monitoring program.
- Evaluating the need for additional assessment.

BACKGROUND AND PREVIOUS INVESTIGATIONS:

The site located at 2351 Shoreline Drive in Alameda, California. The site was formerly used as a gasoline service station and car wash. Three underground gasoline tanks (10,000 gallons each) were removed by Zacor Corporation. Soil sampling was conducted by Environmental Bio-System, Inc. (ESB). The tanks were removed on July 12, 1990. The soil sample analytical results taken beneath the underground tank did show high concentrations of total petroleum hydrocarbons (TPH) as gasoline which ranged from 360 parts per million (ppm) to maximum 9,500 ppm.

During tank removal, approximately 250 cubic yards of soil was excavated and stockpiled on the site. The stockpile was hauled to an approved facility where the contaminated soil materials were thermally treated and used as a light weight aggregate.

In addition to tank removal, soil sampling of the tank excavation area and stockpiled soil, ESB consultants conducted additional shallow soil sampling from the undisturbed area surrounding the former tank excavation. A hand auger was used to conduct shallow soil sampling. The depth of the soil sampling ranged from 5.1 to 7.1 feet below ground surface. The location of the soil samplings

conducted by ESB are shown on Figure 3. The soil analytical results show high levels of TPH and BTEX. No groundwater investigation has been conducted to date.

Alameda County Health Care Services-Department of Environment Health (ACHCS-DEH) has requested a preliminary soil/groundwater investigation which includes the removal of contaminated soil and a groundwater investigation to assess the presence of petroleum hydrocarbons in the groundwater.

PROPOSED SCOPE OF WORK:

This proposed work plan presents the overall scope of work for site remediation, soil remediation clean-up criteria, the excavation and monitoring procedures, and to conduct a preliminary subsurface investigation by installing monitoring wells.

To comply with ACHD requirements, STE proposes the following tasks.

Task 1. Health and Safety Plan:

As required by OSHA, a site health and safety plan will be developed prior to initiating proposed on-site activities. The health and safety plan will incorporate safeguards against chemical and physical hazards associated with drilling, sampling and excavating activities. Personnel working on-site as part of this scope of work will be required to read and adhere to the plan. The project manager will have the responsibility for implementing the health and safety plan.

Task 2. Obtain Necessary Permits and Other Clearances for Excavation and Installation of Monitoring Wells:

Need to talk to Zone 7

Task 3. Impacted Soil Excavation:

The proposed remediation of the soil in the vicinity of the former tank will include the following tasks:

- Provide appropriate notifications to ACHD for excavation.
- Survey the excavation for the presence of utilities.
- Excavate the contaminated soil with a backhoe.
- Verify residual soil concentrations at the base and sidewall of the excavation.
- Backfill the excavation with clean fill.
- Prepare a report on soil excavation.

On the basis of the previous work performed by Zacor Corporation, the impacted soil will be excavated to the extent feasible both laterally and vertically. A registered civil structural engineer will be present during excavation to assess the integrity of the Big Five Sporting Goods building foundation located to the south-east.

Following excavation of the contaminated soil, discrete soil samples will be taken from the base and sidewall of the excavation. The number of samples will be based on regulatory agency requirements or one sample per every 20 feet. The samples will be

taken in brass tubes using a hand-held sampling device or from a backhoe bucket. The brass samplers will be covered tightly with aluminum foil and plastic caps, sealed with tape, logged and stored in a cooled ice chest for transport to a state certified analytical laboratory. The soil samples will be analyzed for TPH as gasoline, benzene, toluene, ethyl benzene and xylenes (BTEX).

All excavated soil will be screened by an organic vapor analyzer (OVA) for screening purposes. The OVA reading will be utilized to segregate clean and contaminated soils. The contaminated soil will be stockpiled on visquine for further sampling. The ~~samp~~ field sampling will need to be confirmed by laboratory analyses.
All stockpiled soil will be covered with visquine, anchored by sand bags, to minimize infiltration of rain water. A cyclone fence, cones, barriers and signs will be installed to demarcate field work areas and to minimize public entrance to the work area.

The stockpiled soil will be sampled and analyzed in accordance with the Bay Area Air Quality Management District guidelines (BAAQMD) Regulation 8, Rule 40, as approved on February 15, 1989, for proper disposal. ~~If analytical results of stockpiled soils exceed 1,000 ppm TPH level, then a permit will be obtained from the ACHD for temporary storage of the soil in order to evaluate the cost effective methods of disposal the soil.~~ Only if it's hazardous

Upon completion of this phase, a technical report will be prepared. The report will include a description of (1) scope of work, (2) description of excavation activities, (3) results of soil sampling, (4) volumes of soil removed and overall conclusions.

SOIL TECH ENGINEERING, INC.

Task 4. Installation of Monitoring Wells and Sampling: Make sure they explain why they only installed two if they do.

Two to three monitoring wells will be drilled and installed to assess presence of petroleum constituents in soil and groundwater. Approximate location of proposed monitoring wells are shown on Figure 2. The wells will be installed in accordance with local guidelines. → actually, RWQCB guidelines As indicated earlier, well permits will be obtained, prior to installation of the monitoring wells. A truck-mounted drilling rig using hollow stem augers will be used to drill and install the well.

The drilling, soil sampling and installation of monitoring wells will be conducted in accordance with our Standard Operation Procedures (which includes local and state guidelines) included in Appendix "A". The boring will be completed as a 2-inch diameter monitor well. The well is expected to be about 15 to 25 feet deep. The screen intervals and well depth will be determined in the field by a staff geologist.

Soil cuttings from the borings will be stored in a drum on-site pending the analytical test results for proper disposal.

The static water level will be measured by a electronic water sensor unit using the elevation data obtained after the well development. If free petroleum product is present in the well, the thickness of the product will be measured using an interface probe for measuring petroleum product.

Following well development and stabilization of the well, four to six volumes of water will be removed from the well by a Teflon bailer or submersible pump until the discharge of water indicates stabilization of temperature, pH and conductivity. The sampling protocol is attached in Appendix "A" (underground water sampling). Water samples will be collected using a clean stainless steel or Teflon bailer. Samples will be labeled and stored in an ice-cooled chest for delivery to a state certified laboratory. The water samples will be analyzed for TPH as gasoline, benzene, toluene, ethyl benzene and xylenes (BTEX).

Laboratory Analysis:

All soil samples will be analyzed by GCFID Methods 5030 and 3550 (EPA 8015, 8020) for total petroleum hydrocarbon (as gasoline) and BTEX.

The groundwater sample will be analyzed for TPH by GCFID Methods 5030 and 3550, and BTEX by (EPA Methods 8015 and 8020).

Technical Report Preparation:

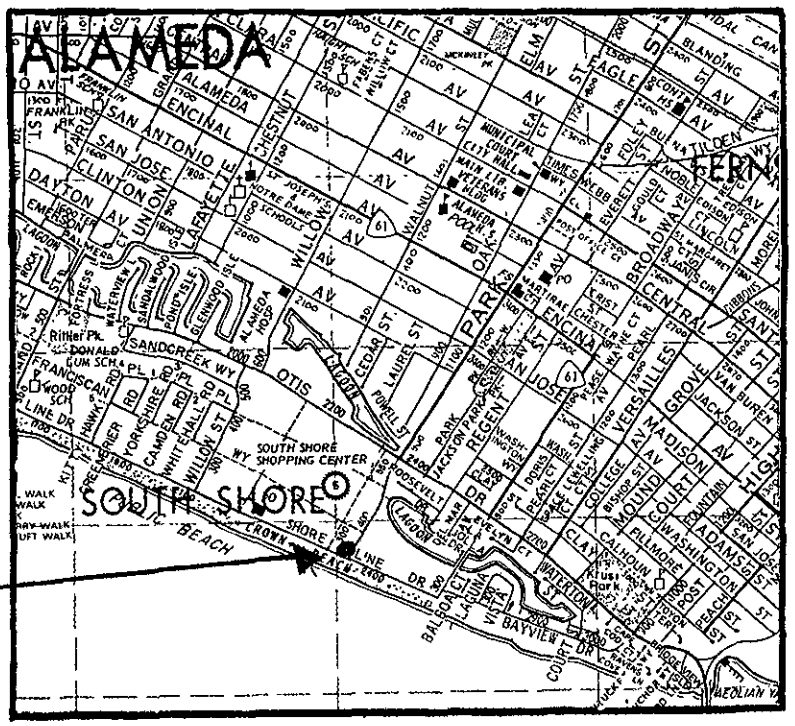
A report summarizing the findings of this phase of investigation will be prepared and will include field methods used, interpretation of the chemical data obtained from soil and groundwater and recommendations for further investigations if necessary.

Task 5. Disposal of Excavated Soil:

STE will determine cost effective methods for disposal of the stockpiled soil after reviewing the soil analytical results conducted in accordance with BAAQMD.

SCHEDULE:

Upon approval of the work plan by ACHD and other regulatory agencies with jurisdiction, STE will mobilize the excavation within one week. All regulatory agencies will be notified at least 2 days prior to initiating excavation. A summary report of our findings can be prepared within 6 to 7 weeks of receipt of the laboratory results.



Site Location

Thomas Brothers Map 1982 Edition
Alameda - Contra Costa Counties Map

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Figure 1

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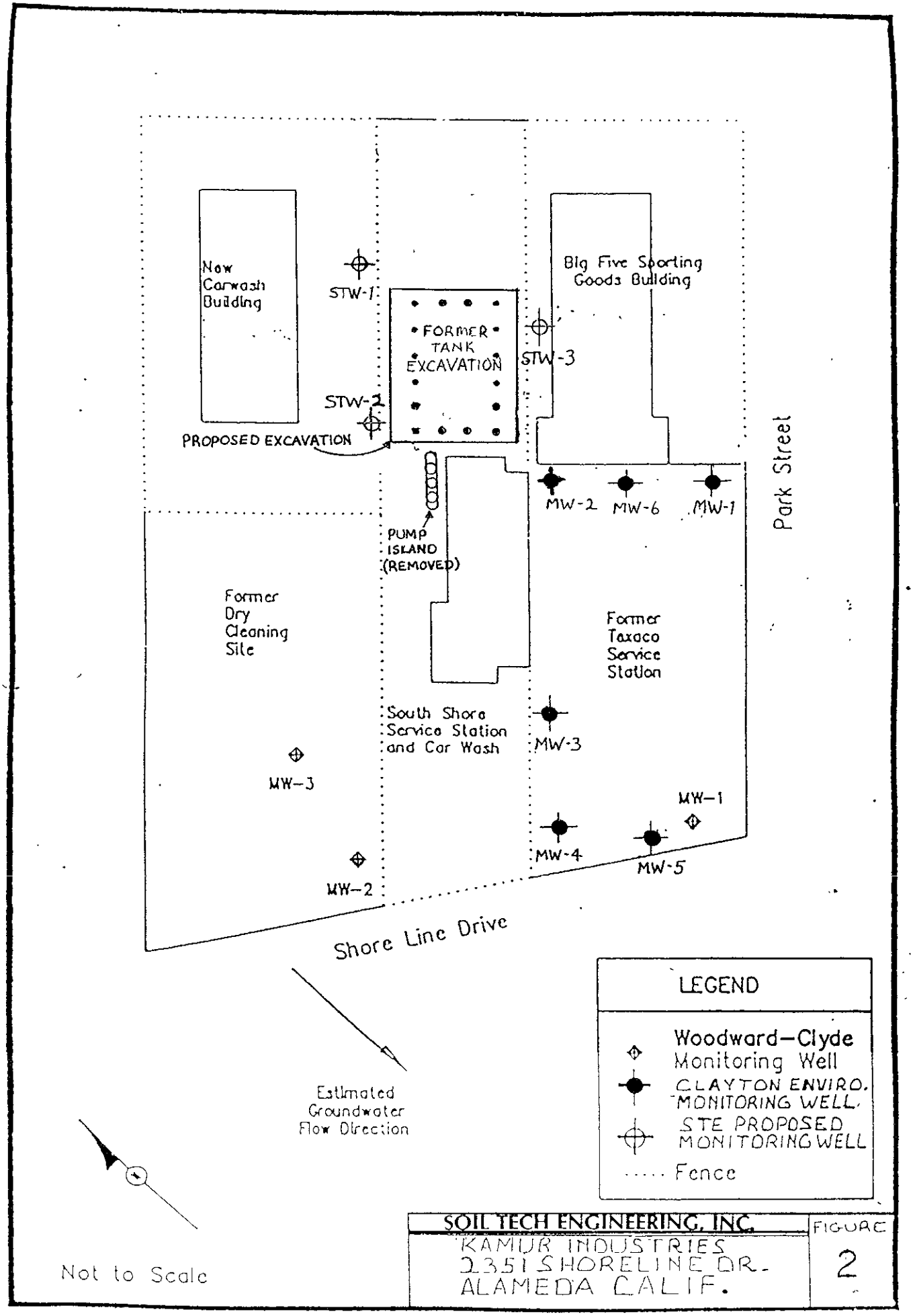

SOIL TECH ENGINEERING, INC.

KAMUR INDUSTRIES
2351 SHORELINE DR.
ALAMEDA CALIF.

FIGURE 2

File No. 8-90-418-SI

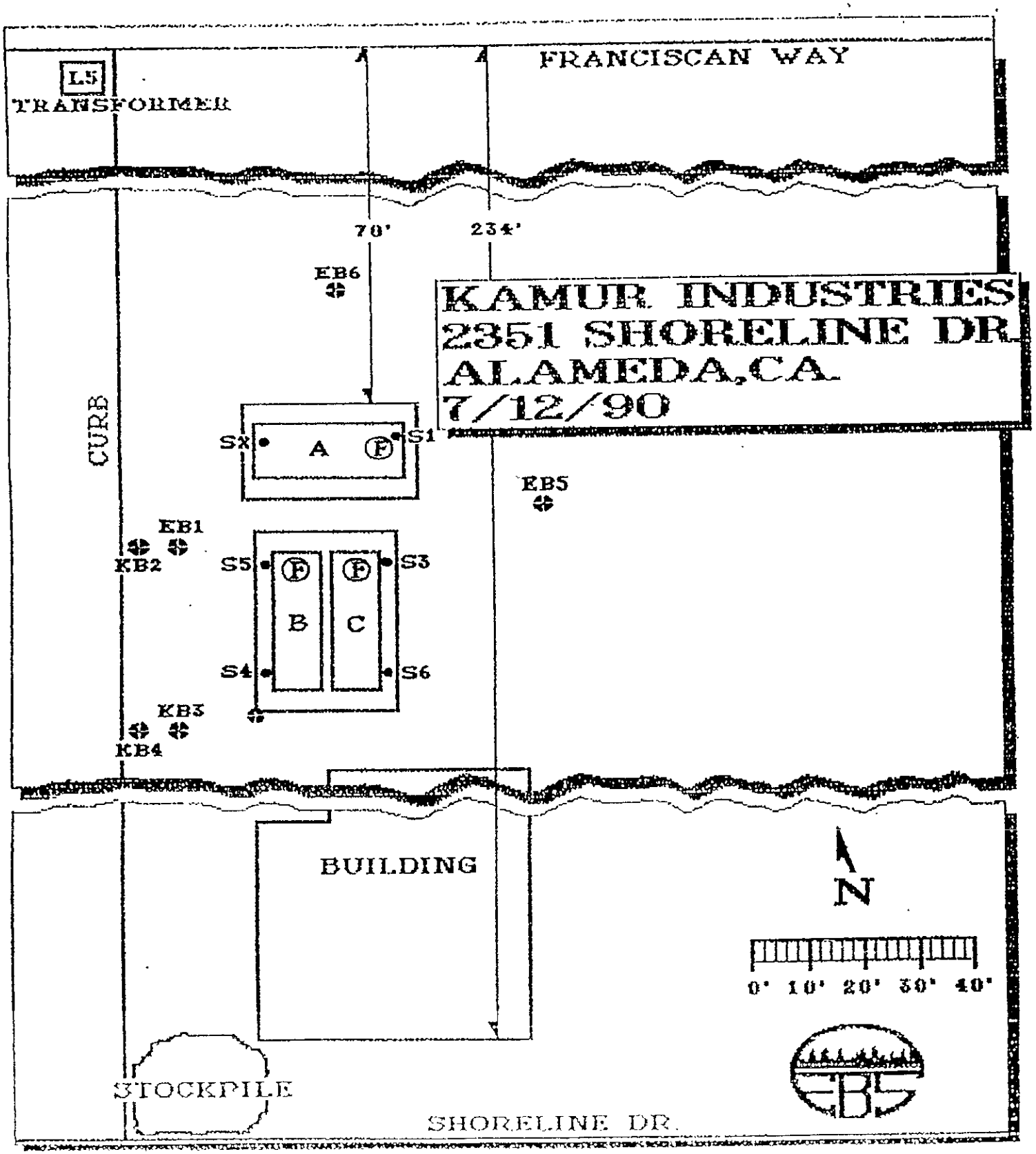

Figure 3

SOIL TECH ENGINEERING, INC.

A P P E N D I X "A"

File No. 8-90-418-SI

DRILLING AND SOIL SAMPLING PROCEDURE

A truck mounted drill rig, using continuous solid flight, hollow stem auger will be used in drilling of soil boring to the desired depths.

Prior to drilling, all drilling equipment (i.e. auger, pin, and drilling head) will be thoroughly steam cleaned to minimize the possibility of cross-contamination and/or vertical migration of possible contaminants.

In addition, prior to obtaining each individual soil sample, all sampling tools, including the split spoon sampler and brass liners will be thoroughly washed in a Tri-Sodium Phosphate (TSP) solution followed by a rinse in distilled water.

During the drilling operation, relatively undisturbed soil samples will be taken from the required depth by forcing a 2-inch I.D., split spoon sampler insert with brass liner into the ground by means of a 140-lb. hammer falling 30-inches or by hydraulic force at various depths.

The samplers will contain relatively undisturbed soil. In general, the first section of soil from the sampler (shoe) will be used in the field for lithologic inspection and evidence of contamination. The selected brass liner will be immediately trimmed, and the ends of the brass liner will be covered tightly with aluminum foil and

plastic caps, seal with tapes, label, place in a plastic bag and store in an ice chest in order to minimize the escape of any volatiles present in the samples. Soil samples for analysis are subsequently sent to a State certified hazardous waste laboratory accompanied by a chain-of-custody record.

Soil samples collected at each sampling interval will be inspected for possible contamination (odor or peculiar colors). Soil vapor concentrations are measured in the field by using Photo Ionization Detector (PID), PhotoVac Tip Air Analyzer. The purpose of this field analysis is to qualitatively determine the presence or absence of hydrocarbons and to establish which soil samples will be analyzed at the laboratory. The soil sample is sealed in a zip-lock plastic bag and placed in the sun to enhance volatilization of the hydrocarbons from the sample. The data is recorded on the drilling log at the depth corresponding to the sampling point.

Other soil samples may be collected to document the stratigraphy and estimate relative permeability of the subsurface materials.

Soil tailings obtained during drilling will be stored at site, pending the analytical test results, for proper disposal.

SOIL TECH ENGINEERING
Soil, Foundation and Geological Engineers
298 BROKAW ROAD, SANTA CLARA, CA 95050 ■

File No. _____

Date _____

By _____

Job _____

Site Description _____ (continued on reverse side)

Type of Drill Rig _____ Hole Dia. _____

(NOTE WATER LEVEL, TIME, DATE AT END OF LOG, CAVING, ETC.)

Elev. _____ Datum _____

ample lity	Blows/6 inches	Sample Loc.	Sample No.	Depth		Soil Classification	Penetrometer
				1			
				2			
				3			
				4			
				5			
				6			
				7			
				8			
				9			
				0			
				1			
				2			
				3			
				4			
				5			
				6			
				7			
				8			
				9			
				0			
				1			

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MONITOR WELL INSTALLATION

Prior to well installation, all the necessary permit will be obtained from the local regulatory agency.

The boreholes for monitor wells will be drilled with the diameter at least two inches larger than the casing outside diameter (O.D.).

Monitor wells will be cased with threaded factory perforated and blank schedule 40 P.V.C. The perforated interval consists of slotted casing, generally 0.010 to 0.040 inch wide by 1.5 inch long slot size, with 42 slots per foot (slots which match formation grain size as determined by field grain-size distribution analysis), a P.V.C. cap is fastened to the bottom of the casing (no solvents, adhesive, or cements are used). The well casing is thoroughly washed and steam cleaned. before placing in the borehole

After setting the casing inside the borehole, kiln dried sand or gravel filter material is poured into the annular space to fill from the bottom of the boring to 2 feet above the perforated interval. A 1 foot to 2 feet thick bentonite plug will be placed above this filter material to prevent grout from infiltrating down into the filter material. Approximately 1 to 2 gallon of distilled water will be added to hydrate the bentonite pellets. The well is then sealed from the top of the bentonite seal to the surface with concrete or neat cement containing about 5% bentonite (see Well Construction Detail).

For protection of well from vandalism and surface water contamination, Christy boxes with special type of Allen screw are installed around the well head, (for wells in parking lots, driveways and building area). Steel stove pipes with padlock are usually set over well heads in landscaped areas.

In general, groundwater monitoring wells shall extend to the base of the upper aquifer, as defined by the consistent (less than 5 feet thick) clay layer below the upper aquifer, or at least 10 to 15 feet below the top of the upper aquifer, whichever is shallower. The wells shall not extend through the laterally extensive clay layer below the upper aquifer. The wells shall be terminated 1 foot to 2 feet into such a clay layer.

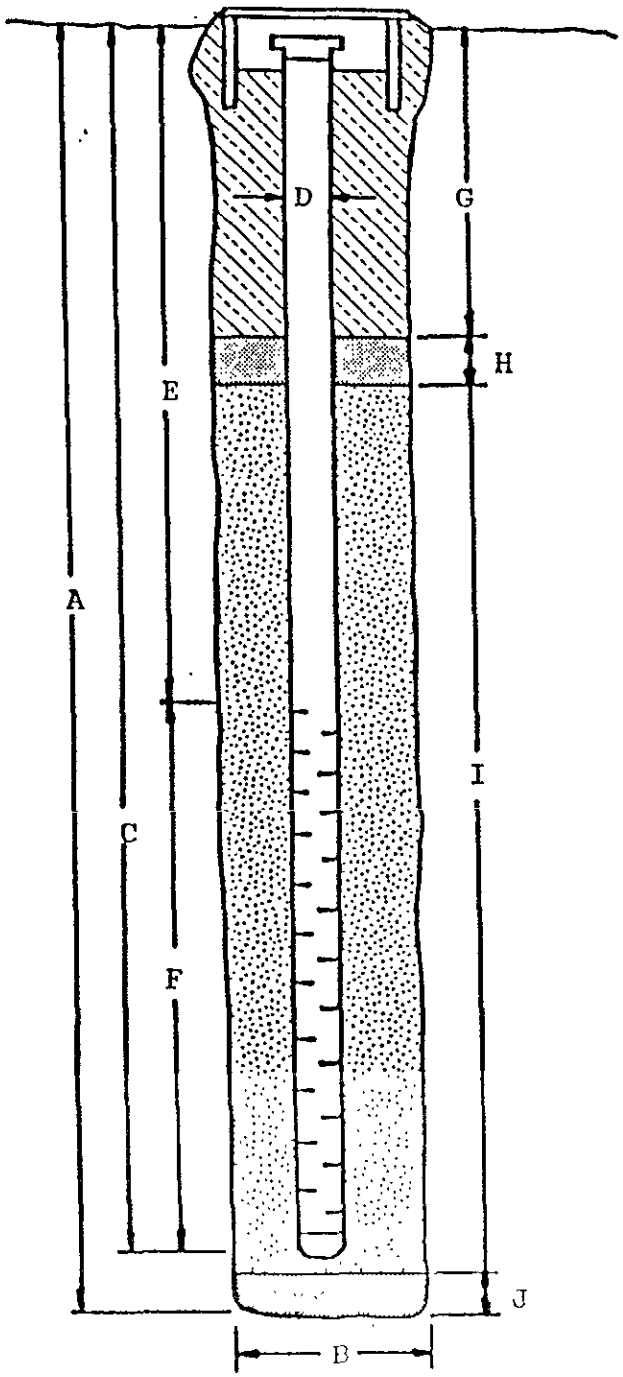
WELL DETAILS

PROJECT NAME:_____ BORING/WELL NO._____

PROJECT NUMBER:_____ CASING ELEVATION:_____

WELL PERMIT NO.:_____ SURFACE ELEVATION:_____

G-5 Vault Box



A. Total Depth:_____

B. Boring Diameter:_____

Drilling method:_____

C. Casing Length:_____

Material:_____

D. Casing Diameter:_____

E. Depth to Perforations:_____

F. Perforated Length:_____

Perforated Interval:_____

Perforation Type:_____

Perforation Size:_____

G. Surface Seal:_____

Seal Material:_____

H. Seal:_____

Seal Material:_____

I. Gravel Pack:_____

Pack Material:_____

Size:_____

J. Bottom Seal:_____

Seal Material:_____

File No. 8-90-418-SI

GROUND WATER SAMPLING

Prior to collection of groundwater samples, all the sampling equipment (i.e. bailer, cables, bladder pump, discharge lines and etc...) are cleaned by pumping TSP water solution followed by distilled water.

Prior to purging, the well "Water Sampling Field Survey Forms" will be filled out (depth to water level and total depth of well and well casing volume calculated). The well will be then bailed or pumped to remove four to ten well volumes or until the discharge water temperature, conductivity and pH stabilize. "Stabilized" is defined as three consecutive readings within 15% of one another.

The groundwater sample will be collected when the water level in the well recovers to 80% of its static level.

Forty milliliter (ml.) glass volatile organic analysis (VOA) vials with Teflon septa will be used as sample containers. The groundwater sample will be decanted into each VOA vial in such a manner that there will be no air space is present. The cap is quickly placed over the top of the vial and securely tightened. The groundwater sample will be labeled and refrigerated for delivery with chain-of-custody to the laboratory. The label information should include a sample identification number, job identification number, date, time, type of analysis requested, and the sampler's name.

In general, a laboratory-cleaned bailer will be used for each monitoring well sampled.

SOIL TECH ENGINEERING

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MONITORING WELL SURVEY SHEET

NAME: _____ DATE: _____

FACILITY NAME AND ADDRESS: _____

_____

DATE WELLS SURVEYED: _____

FIELD ACTIVITIES

	RUN 1		RUN 2		RUN 3	
WELL NUMBER	ROD READING	RIM ELEVATION	ROD READING	RIM ELEVATION	ROD READING	RIM ELEVATION

WARNING: HAVE YOU SURVEYED ALL WELLS? LOCATED ALL WELLS?

HAVE YOU CHECKED FOR AND SURVEYED EXISTING MONITORING WELLS ON ADJACENT PROPERTIES OR PROPERTIES ACROSS THE STREET?

DO WE HAVE ACCURATE SKETCHES AT 1"=30' (AND 1"=100' IF NECESSARY)? IF NOT, MAKE THEM.

\SURVEY

File No. 8-90-418-SI

WELL DEVELOPMENT AND WATER LEVEL MEASUREMENTS

For all newly installed groundwater monitoring wells, the well casing, filter pack and adjacent formation shall be cleared of disturbed sediment and water.

Well development techniques will include pumping, bailing, surging, swabbing, jetting, flushing and air lifting by using stainless steel or Teflon bailer, submersible stainless steel pump, and air lift pump. The well development with continue until the groundwater appears to be relatively free of fine grained sediments and/or until field measurements of pH, electrical conductivity and temperature stabilize.

To assure that cross-contamination does not occur between wells, all well development tools be thoroughly washed in a Tri-Sodium Phosphate (TSP) solution followed by a rinse in distilled water or steam cleaned before each well development.

Subsequent to well installation, the well(s) will be surveyed to nearest bench mark to an accuracy of 0.01 feet, in order to accurately measure the groundwater elevation. The depth to static water surface in all wells will be measured monthly.

Volume of Water in Casing or Hole

Diameter of Casing or Hole (In)	Gallons per foot of Depth	Cubic Feet per Foot of Depth	Liters per Meter of Depth	Cubic Meters per Meter of Depth
1	0.041	0.0055	0.509	0.509×10^{-3}
$1\frac{1}{2}$	0.092	0.0123	1.142	1.142×10^{-3}
2	0.163	0.0218	2.024	2.024×10^{-3}
$2\frac{1}{2}$	0.255	0.0341	3.167	3.167×10^{-3}
3	0.367	0.0491	4.558	4.558×10^{-3}
$3\frac{1}{2}$	0.500	0.0668	6.209	6.209×10^{-3}
4	0.653	0.0873	8.110	8.110×10^{-3}
$4\frac{1}{2}$	0.826	0.1104	10.26	10.26×10^{-3}
5	1.020	0.1364	12.67	12.67×10^{-3}
$5\frac{1}{2}$	1.234	0.1650	15.33	15.33×10^{-3}
6	1.469	0.1963	18.24	18.24×10^{-3}
7	2.000	0.2673	24.84	24.84×10^{3}
8	2.611	0.3491	32.43	32.43×10^{3}
9	3.305	0.4418	41.04	41.04×10^{3}
10	4.080	0.5454	50.67	50.67×10^{3}
11	4.937	0.6600	61.31	61.31×10^{3}
12	5.875	0.7854	72.96	72.96×10^{3}
14	8.000	1.069	99.35	99.35×10^{3}
16	10.44	1.396	129.65	129.65×10^{3}
18	13.22	1.767	164.18	164.18×10^{3}
20	16.32	2.182	202.68	202.68×10^{3}
22	19.75	2.640	245.28	245.28×10^{3}
24	23.50	3.142	291.85	291.85×10^{3}
26	27.58	3.687	342.52	342.52×10^{3}
28	32.00	4.276	397.41	397.41×10^{3}
30	36.72	4.909	456.02	456.02×10^{3}
32	41.78	5.585	518.87	518.87×10^{3}
34	47.16	6.305	585.68	585.68×10^{3}
36	52.88	7.069	656.72	656.72×10^{3}

1 Gallon = 3.785 Liters
1 Meter = 3.281 Feet
1 Gallon Water Weighs 8.33 lbs. = 3.785 Kilograms
1 Liter Water Weighs 1 Kilogram = 2.205 lbs.
1 Gallon per foot of depth = 12.419 liters per foot of depth
1 Gallon per meter of depth = 12.419×10^{3} cubic meters per meter of depth

From Groundwater and Wells, Second Edition

SOIL TECH ENGINEERING

Soil, Foundation and Geological Engineers

298 BROKAW ROAD, SANTA CLARA, CA 95050 ■ (408) 866-0919 ■ (415) 791-6406

WELL MONITORING/SAMPLING

Name:_____ Date:_____

FACILITY NAME AND ADDRESS:_____

_____

DATE WELLS DEVELOPED:_____

FIELD ACTIVITIES

DEVELOPING MONITORING PURGING (PUMP/BAIL) SAMPLING

WELL NUMBER	WELL DEPTH	WATER DEPTH	PRODUCT THICKNESS	SHEEN PRESENCE	ODOR	VOLUME WATER	PURGED PRODUCT

SKETCH -- REMARKS

[redacted] AIN [redacted] CUS [redacted] Y R [redacted] RD

PROJ. NO	NAME
SAMPLERS *(Signature)*	

NO.	DATE	TIME	Soil	Water	LOCATION	CON-TAINER	Analyses Requested ②	REMARKS

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Receive by: *(Signature)*
Relinquished by *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	

SOIL TECH ENGINEERING

Soil, Foundation and Geological Engineers

File No. 8-90-418-SI

A P P E N D I X "B"

SOIL TECH ENGINEERING, INC.

Site Grading and Backfilling:

Site clearing, placement of fill and the control of grading operations at the site must be conducted in accordance with the following recommendations and under a supervision of a Project Engineer.

1) The depression left by the removal of contaminated soil should be cleaned of all debris and backfilled with clean soil. This backfill must be engineering fill. This operation must be conducted under the supervision of the Project Engineer.

2) All engineering fill, whether native or imported soil, should be placed in uniform horizontal lifts not more than 6 to 8 inches in uncompacted thickness and compacted to not less than 90% relative compaction according to ASTM D1557-78 procedure.

3) Before compaction begins, the fill material whether native or imported soil shall be brought to water content that will permit compaction by either:

   A) Aerating the material if it is too wet, or
   B) Spraying the material with water if it is too dry.

   Each lift shall be thoroughly mixed before compaction. No rocks larger than 4 inches in diameter should be used.

4) No soil shall be placed or compacted during periods of rain nor on ground which is not drained of all free water. Soil which has been soaked and wetted by rain or any other cause, shall

SAMPLE MANAGEMENT

Sample Type: Waste

General Composition	Sample Volume	Sample Container	Preservative	Holding Time (d) (recommended/regulatory)
Measurement - Specific Chemicals, Inorganic				
Ammonia			add 1 ml conc H_3PO_4	24 hrs
Arsenic			add 6 ml conc HNO_3/L	6 months
Chlorine			cool 4°C	24 hrs
Chromium VI			add 6 ml conc H_2SO_4/L	24 Hrs
Cyanide, total			add 2.5 ml of 50% NaOH/L, cool 4°C	24 hrs
Fluoride			cool 4°C	7 days
Mercury, total			add 5 ml conc HNO_3L	38 days
Mercury, dissolved			filter, add 5 ml conc HNO_3/L	38 days
Selenius			add 5 ml conc HNO_3/L	6 months
Sulfide			add 2 ml conc HC1/1	24 hrs
Zinc			add 2 ml conc HC1/1	-

Sample Type: Soils, Oils, Solvents, Solids, Highly Contaminated Liquids (c)

Strong acids, pH<2	glass
Strong bases, pH>12.5	plastic

SAMPLE MANAGEMENT

Sample Type: Water and Wastewater

General Composition	Sample Volume	Sample Container	Preservative	Holding Time (d) (recommended/regulatory)
Measurements - Specific Chemicals, Inorganic				
Ammonium	500 ml	plastic or glass	cool, 4°C, add H_2SO_4 to pH<2	24 hr/28 days
Boron	100 ml	plastic	none required	28 days/28 days
Chlorine	200 ml	plastic or glass	determine on site	no holding
Chromium VI	300 ml	plastic or glass, rinse with 1:1 HNO_3	cool, 4°C	24 hrs/28 days
Cyanide, total	500 ml	plastic or glass add NaOH to pH>12	cool, 4°C, dark	24 hrs/14 days
Cyanide, amenable to chlorination	50 ml	plastic or glass	add 100 mg NaS_2O_3	
Fluoride	300 ml	plastic	none required	7 days/28 days
Iodide	100 ml	plastic or glass	cool, 4°C	24 hrs/ -
Iodine	500 ml	plastic or glass	determine on site	1/2 hr/ -
Mercury, total	500 ml	plastic or glass rinsed with 1:1 HNO_3	cool, 4°C add HNO_3 to pH<2	28 days/28 days
Mercury, dissolved	100 ml	plastic or glass	filter on site add HNO_3 to pH<1	glass: 38 days hard plastic: 13 days
Nitrate	100 ml	plastic or glass	cool, 4°C add H_2SO_4 to pH<2	24 hrs/48 hrs
Nitrate & nitrate	200 ml	plastic or glass	cool, 4°C add H_2SO_4	24 hrs/28 days
Nitrate	100 ml	plastic or glass	cool, 4°C or freeze	

SAMPLE MANAGEMENT

Sample Type: Water and Wastewater

General Composition	Sample Volume	Sample Container	Preservative	Holding Time (d) (recommended/regulatory)
Measurement - General Chemical Categories, Organic				
Acid extractables		2 liter glass with TFE lined cap		
Base/neutral extractable		2 liter glass with TFE lined cap		
MBA's	250 ml	plastic or glass	cool, 4°C	24 hr
Oil and Grease	1000 ml	glass, wide mouthed, calibrated	cool, 4°C, H_2SO_4 to pH<2	24 hr/28 days 24 hr/28 days
Organics		glass rinsed with organic solvents, TFE cap		
Phenolics	500 ml	glass		24 hr/28 days
Purgeables by purge and trap	50 ml	glass, TFE lined cap		

SAMPLE MANAGEMENT

Sample Type: Water and Wastewater (a,b,c)

General Composition	Sample Volume	Sample Container	Preservative	Holdin Time (d) (recommended/regulatory)
Nonvolatile organics		2 liter glass with TFE lined cap		
Photosensitive materials		1 liter amber glass		
Volatile organics		40 ml glass vial with TFE lined cap (collect in duplicate)		
Volatile	100 ml	Plastic or glass	cool, 4°C	7 days
Measurement - Physical Properties				
Acidity	100 ml	plastic or borosilicate glass	cool, 4°C	24 hr/14/days
Alkalinity	200 ml	plastic or glass	cool, 4°C	24 hr/14/days
pH	25 ml	plastic or glass	determine on site	2 hr/2 hr
Temperature	1000 ml	plastic or glass	determine on site	no holding
Measurement - General Chemical Categories, Inorganic				
metals, dissolved	200 ml	plastic(g) or glass	filter on site (f)	6 mos (e)
metals, total	100 ml	plastic(g) or glass rinsed with 1:1 HNO_3	HNO_3 to pH<2 (g)	6 mos/6 mos (e)

not be compacted until completely drained and the moisture content is within the limits herein described or approved by the Project Engineer. Prior approval by the Project Engineer shall be obtained before continuing the grading operations.

5) The contractor shall conduct all grading operations in such a manner as to preclude wind blow dirt, dust and related damage to neighboring properties. The means of dust control shall be left to the discretion of the contractor. The contractor shall assume liability for claims related to wind blow materials.

6) Any import soil for engineering fill shall be approved by the Project Engineer before the grading operation.

7) All grading shall be observed and approved by Project Engineer and shall prepare a final report upon completion of the back-filling operations.

SOIL TECH ENGINEERING

Soil, Foundation and Geological Engineers

298 BROKAW ROAD, SANTA CLARA, CA 95050 ■ (408) 866-0919 ■ (415) 791-6406

GENERAL FORMAT
SOIL SAMPLING FOR DISPOSAL
and/or
SITE SUPERVISION

REPRESENTATIVE_____ DATE_____

FACILITY NAME AND ADDRESS_____

_____

FACILITY CONTACT/ENGINEER:_____ PHONE:_(___)_____

DEALER/OWNER :_____ PHONE:_(___)_____

CONTRACTOR :_____ PHONE:_(___)_____

FIRE DEPARTMENT :_____ PHONE:_(___)_____

COUNTY HEALTH DEPARTMENT :_____ PHONE:_(___)_____

STATE AGENCY :_____ PHONE:_(___)_____

SOIL DESCRIPTION(Circle one): SANDY SILTY CLAY SANDY/CLAY SILTY/SAND

ODOR DESCRIPTION (Circle one): NONE FAINT MINOR STRONG

SOIL SAMPLING

NUMBER OF COMPOSITE SAMPLES:_____DEPTH SAMPLES TAKEN AT:_____(FT)

NUMBER OF SAMPLES PER COMPOSITE:_____

SITE SUPERVISION

AERATION: DATE PERMISSION OBTAINED FROM BAAQMD:_____

TOTAL VOLUME OF SOIL TO BE AERATED :_____cu.yds.

VOLUME OF SOIL AERATED ON THIS DATE :_____cu.yds.

EXCAVATION: DESCRIBE PURPOSE:_____

_____

_____

APPROXIMATE VOLUME OF SOIL EXCAVATED:_____cu.yds.

_____

REMARKS:_____

_____

_____

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OUTLINE OF DRUM HANDLING PROCEDURES
FOR
KAMUR INDUSTRIES, INC.
2351 SHORELINE DRIVE
ALAMEDA, CALIFORNIA

1. Test material per site-specific test requirements.

2. Classify Material as: Clean/Non-Hazardous.

3. Labeling of Drums:

   * Pending Label: Used to describe material pending final analytical testing. Labels must be immediately affixed to drum field work.

   * Non-Hazardous Label: Required within 24 hours after analytical results are received.

   * Hazardous Label: Required within 24 hours after analytical results received.

   * For Pick-Up Label: Must be affixed to drum prior to certified hauler arranged pick-up date.

4. Remove within 21 days of generation. Empty drums, where material was disposed in bulk, must be removed the same day they are emptied.

5. Dispose of Material:

   * Clean: Any local landfill.

   * Non-Hazardous: Class III landfill.

   * Hazardous: Class I landfill.

SOIL TECH ENGINEERING, INC.

6. Manifests may be signed by the on-site contractor or consultant, owner, or other authorized representatives. The transporter should not sign the manifest.

   It is the responsibility of the contractor, consultant and owner to arrange for a person to sign the manifest on the day of pick-up.

7. Reporting:

   Reports shall include the following:

   * Completed drummed soil and water worksheets.
   * Attach a copy of the analytical results.
   * State how and where material was disposed.
   * If drums are emptied and material was disposed in bulk, state how empty drums were handled.
   * The signed blue and yellow copies of the hazardous waste manifest.

SOIL:

1. Test Requirements and Methods: Per STE site-specific test requirements.

   * TPH: EPA Method 8015.
   * BTEX: EPA Method 8020.
   * O&G: 503 D&E.
   * Lead:

     -Total Lead - EPA Method 7421.

-Inorganic (soluble) Lead: DOS Title 22, Waste Extraction Test, §22-66700.

-Organic - EPA Method 8240.

* Ignitable:

2. Classification:

* Clean: TPH, BTEX, O&G, VOC and non-detectable (<100 ppm).

* Non-Hazardous if any are true:

-TPH less than 1,000 ppm.

-Lead - Inorganic (soluble) Lead less than 5 ppm (STLC) or less than 100 ppm (TTLC).
- Organic Lead less than 13 ppm (TTLC).

* Hazardous if any are true:

-TPH greater than 1,000 ppm.

-Lead - Inorganic (soluble) Lead greater than 5 ppm (STLC) or greater than 1,000 ppm (TTLC).
- Organic Lead greater than 13 ppm (TTLC).

-Ignitable - If TPH > 1,000 ppm, then conduct Bunsen Burner Test.
- If soil bums vigorously and presistently, soils are RCRA D001.

* VOC - less than 1,000 ppm.

3. Responsibility for Disposal:

* Clean: Consultant, contractor or owner.

* Non-Hazardous: Consultant, contractor or owner.

4. Types of Drums: DOT-17H for a solid, solidified, or sludge material.

5. Disposal Facility:

   * Clean: Any local landfill.

   * Non-Hazardous: Class III or II landfill.

   * Hazardous: Class I landfill.

WATER:

1. Test Requirements and Methods: Per site-specific test requirements.

   * TPH: EPA Method 8015.

   * BTEX: EPA Method 602.

2. Classification:

   * Clean Water: TPH and BTEX non-detectable.

   * Hazardous:

     -Water with dissolved product and detectable TPH and BTEX.

     -Water with free product.

     -Free product only.

3. Responsibility for Disposal:

   * Clean: Consultant/Contractor.

   * Non-Hazardous: Consultant, contractor or owner.

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4. Types of Drums: DOT-17C or DOT-17E for liquid or slurry.

5. Disposal Facility:

   * Clean Water: Into sanitary per Local Sewer District approval or with proper approval from Water Board to storm sewer.

   * Non-Hazardous:

     -Water with TPH and BTEX only.

     -Water with free product.

     -Arrange certified waste hauler to pick and dispose.

   * Hazardous:

     -Free product only.

     -Arrange disposal by a certified hazardous waste hauler.

File No. 8-90-418-SI

HEALTH AND SAFETY PLAN
KAMUR INDUSTRIES, INC.
ALAMEDA, CALIFORNIA

General:

This Health and Safety Plan (HSP) contains the minimum requirements for the subject site field work. The field activities include removal of oil stained impacted soils, soil sampling of excavation bottom and sidewalls, stockpiled soil sampling, drilling and water sampling. All personnel and contractors will be required to strictly adhere with this HSP requirements.

The objective of the HSP plan is to describe procedures and actions to protect the worker, as well as unauthorized person, from inhalation and ingestion of, and direct skin contact with potentially hazardous materials that may be encountered at the site. The plan describes (1) personnel responsibilities and (2) protective equipment to be used as deemed when working on the site. At a minimum, all personnel working at the site must read and understand the requirements of this HSP. A copy of this HSP will be on-site, easily accessible to all staff and government field representative.

Personnel Responsibilities:

Key personnel directly involved in the investigation will be responsible for monitoring the implementation of safe work

practices and the provisions of this plan are (1) the drilling project supervisor and (2) Soil Tech Engineering, Inc. (STE) project field engineer. These personnel are responsible for knowing the provisions of the plan, communicating plan requirements to workers under their supervision and regulatory agencies inspectors and for enforcing the plan.

The personnel-protective equipment will be selected to prevent field personnel from exposure to fuel hydrocarbons that may be present at the site. To prevent direct skin contact, the following protective clothing will be worn as appropriate while working at the site:

1. Tyvek coveralls.
2. Butyl rubber or disposable vinyl gloves.
3. Hard hat with optional face shield.
4. Steel toe boots.
5. Goggles or safety glasses.

The type of gloves used will be determined by the type of work being performed. Drilling personnel will be required to wear butyl rubber gloves because they may have long duration contact with the subsurface materials. STE sampling staff will wear disposable gloves when handling any sample. These gloves will be charged between each sample.

Personnel protective equipment shall be put on before entering the immediate work area. The sleeves of the overalls shall be outside of the cuffs of the gloves to facilitate removal of clothing with the least potential contamination of personnel. If at any time protective clothing (coveralls, boots or gloves) become torn, wet or excessively soiled, it will be replaced immediately.

Total organic vapors will be monitored at the site with a portable PID. Should the total organic vapor content approach that of the threshold limit value (TLV) for any of the substances listed in Table 1, appropriate safety measures will be implemented under the supervision of the site project engineer. These precautions include, but are not limited to, the following: (1) Donning of respirators (with appropriate cartridges) by site personnel, (2) forced ventilation of the site, (3) shutdown of work until such time as appropriate safety measures sufficient to insure the health and safety of site personnel can be implemented.

TABLE 1
THRESHOLD LIMIT VALUES
FOR
COMMON GASOLINE CONSTITUENTS

Benzene	10 ppm
Toluene	100 ppm
Ethyl benzene	100 ppm
Xylenes	100 ppm

No eating, drinking or smoking will be allowed in the vicinity of the drilling operations. STE will designate a separate area on site for eating and drinking. Smoking will not allowed at the vicinity of the site except in designated areas. No contact lenses will be worn by field personnel.

Location and Phone Numbers of Emergency Facilities:

For emergency reasons, the closest facilities addresses and phone numbers are listed below:proximately 1 3/4 miles north of the site. The addresses and phone numbers are listed below:

City of Alameda Fire Department 911
2400 Encinal (at Park Street), Alameda, CA

Alameda Hospital (415) 522-3700
2070 Clinton Avenue, Alameda, CA