REQUEST FOR BID
CONSTRUCTION SPECIFICATIONS
AND CONTRACT DOCUMENTS
FOR A
SOIL AND GROUNDWATER
REMEDIATION SYSTEM

to be installed at

Plaza Car Wash
Former Gasoline Station and Car Wash
400 San Pablo Avenue
Albany, California

Kamur Industries, Inc.

July 30, 1995

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KAMUR INDUSTRIES, INC.
REQUEST FOR PROPOSAL TO CONDUCT ENVIRONMENTAL WORK AT
400 San Pablo Avenue, Albany, California

This is a Request for Proposal for Contractors to submit Bids to continue remediation activities at the subject location. Technical details and a list of deliverables are to be included with your proposal and should be associated with specific work/scope phases as described in this request for proposal. Please feel free to submit any additional information or optional cost items which may prove advantageous to your proposal.

The Contractor shall be responsible for reviewing the site to determine the equipment compound space requirements and available utilities. A site visit may be arranged at the contractors request. The Contractor is to provide specific details of all products and services to be included under the proposal. The Contractor shall be responsible for provision of all equipment, permits, labor, and materials, except as stipulated by Kamur Industries, Inc. (Kamur). Provide a graphical schedule indicating the proposed time lines to complete various phases of this job from the date of contract award.

Kamur reserves the right to accept or reject any or all bids, including the lowest bid, at its discretion. Any informality, irregularity or nonconformity with the components of this request for proposal may result in the disqualification of any proposal. Following the acceptance of any proposal, Kamur reserves the right to terminate unexecuted portions of the proposal in part or in whole.

This is an unadvertised Bid, and is restricted to a maximum of four Contractors which have been pre-qualified by Kamur. Bids will be accepted at the site up to two (2) weeks after the Contractor's receipt of this Notice Inviting Bids, at:

Attention: Murray T. Stevens
Kamur Industries, Inc.
2351 Shoreline Drive
Alameda, California 94501
TEL: (510) 523-7866

Contractors completing remedial activities for Kamur, are required to meet certain minimum criteria prior to the award of any work under contract. The Contractor is responsible for furnishing and installing all necessary equipment, materials, and labor for a complete and operating remediation system. The Contractor must submit examples of related project previously performed, and must have operated ~~and~~ an environmental consulting/contracting firm in the State of California for at least five (5) years.

Kamur requires that its subcontractors shall "maintain statutory workers' compensation insurance; employer's liability insurance covering bodily injury up to $1,000,000; property damage insurance up to $1,000,000 per occurrence; and commercial general liability insurance up to $1,000,000 per occurrence and an umbrella policy up to $1,000,000 per occurrence (or whatever the coverage is)." Kamur Industries, Inc. must be named as an additional insured on all insurance certificates.

The Contractor shall possess a Class A General Contractor's License, a Contractor's Hazardous Materials Certificate, and either the General Contractor or subcontractor to the General Contractor, shall possess an Electrical Contractor's License. All licenses are to be valid in the State of California.

The Contractor will provide a site safety plan specific to this site. Contractors will be expected to provide proof of all necessary licensing, insurance and safety training and equipment for all of their personnel, in compliance with OSHA regulations 29 CFR 1910.120.

KAMUR INDUSTRIES, INC.
INSTRUCTIONS TO BIDDERS FOR
WORK AT
400 San Pablo Avenue, Albany, California

This package includes site background details, scopes of work and bid tabulation worksheets to be used when preparing your proposal. The cost proposal shall be broken into three tasks as follows.

TASK I - WORKPLAN PREPARATION AND PERMITTING

1) Prepare an Addendum to Workplan to be submitted to the Alameda County Health Care Services Agency (ACHCSA) and the Regional Water Quality Control Board - San Francisco Bay Region (RWQCB)
2) Obtain an Authority to Construct/Permit to Operate through the Bay Area Air Quality Management District (BAAQMD)
3) Obtain all local City of Albany Building, Fire, Electrical, and Planning Permits

TASK II - DUAL VAPOR ABATEMENT AND GROUNDWATER EXTRACTION AND TREATMENT SYSTEM AND SUBSURFACE PIPING DESIGN AND INSTALLATION

1) Prepare a design for a dual vapor and groundwater extraction and treatment system, including design of the collection trench, all trenching, subsurface piping, utility service, treatment compound, and equipment
2) Construct a groundwater collection trench and vapor piping, and utility trench to the compound
3) Install all piping and connect piping to compound and connect discharge line to storm drain
4) Perform a pressure test on all piping prior to backfilling trenches
5) Backfill and compact all trenches
6) Install a re-enforced concrete compound treatment pad and fencing
7) Vapor and groundwater extraction and treatment equipment purchase
8) System installation, start-up, tuning, and source test

TASK III - PROJECT COMPLETION AND OPTIONS

1) Final System Installation and Start-up Report
2) As-Built Drawings
3) Operation and Maintenance of the system for one year
4) Quarterly Monitoring

Kamur requests that you submit your bid, based on the attached Construction Specifications,

along with the rate sheets for any extra work that may occur outside of this bid, two (2) weeks from the Contractor's receipt of this letter. Awards will be made within two weeks thereafter, based upon lowest bid and from a qualified licensed contractor. The anticipated start-up date for construction is August 30, 1995.

Site background information and assessment details are included in Appendix A.

KAMUR INDUSTRIES, INC.
BID TABULATION WORKSHEET
400 San Pablo Avenue, Albany, California

Please complete this Bid Tabulation Sheet in accordance with the attached Bid Specifications. The three categories for Bid Tabulation are as follows.

TASK I - ADDENDUM TO WORKPLAN PREPARATION AND PERMITTING

1) Prepare Addendum to Workplan for submittal to the ACHCSA and RWQCB $_____

2) Obtain a BAAQMD Authority to Construct/Permit to Operate $_____

3) Obtain all permits from the City of Albany (Building, Planning, etc.) $_____

TASK II - VAPOR ABATEMENT AND GROUNDWATER TREATMENT SYSTEM, SUBSURFACE PIPING DESIGN AND INSTALLATION

1) Prepare a System Design Including all Plans and Specifications $_____

2) Construct Collection Trench and Connect Vapor Abatement Piping and Utilities to Compound through Collection Trench $_____

3) Install System Piping and Utilities and Pipe into Compound and Connect Discharge Line to Storm Drain $_____

4) Pressure Test Piping $_____

5) Backfill and Compact all Trenches $_____

6) Install a Re-Enforced Concrete Treatment Compound Pad and Fence $_____

7) Procure Soil and Groundwater-Treatment Equipment $_____

8) System Installation, Start-Up, Tuning, and Source Test $_____

TASK III - PROJECT COMPLETION AND OPTIONS

1) Final System Installation and Start-up Report $_____

2) As-Built Drawings $_____

3) Operation and Maintenance of the System for One Year $_____

4) Quarterly Groundwater Monitoring for One Year $_____

TOTAL LUMP SUM BID $_____

WORK SPECIFICATIONS

SECTION 1

SPECIAL CONDITIONS

1.1 WORK UNDER THIS CONTRACT

The work to be performed under this contract shall include furnishing of all labor, material, and equipment necessary for, or incidental to, the designing, permitting, construction and completion of an operating remediation system, and other associated work, as indicated in your Plans and Specifications. The Contractor shall be responsible for all installation, system start-up, source testing, and system start-up report. This work consists of, but is not limited to, furnishing and installing groundwater treatment equipment, removal of all asphalt and concrete, trenching and piping to compound and connecting to the discharge point, utility service, and system piping connections. The vapor abatement and groundwater extraction and treatment equipment will be combined into one dual system, capable of extracting and remediating both vapor and groundwater in one influent stream.

The dual vapor and groundwater extraction and treatment system will consist of one "L"-shaped groundwater collection trench (groundwater interceptor trench), that will be excavated to an approximate length of 100 feet, a width of approximately 18 inches, and a depth of approximately 12 feet below grade (fbg). The south side of the extraction trench will be lined with 6-once filter fabric (must be permeable) and the north side will be lined with a clay geotextile. A six-inch slotted PVC pipe will be placed at the bottom of the collection trench and backfilled with pea-gravel to approximately three feet above the pipe. The pea gravel will then be covered with a one foot layer of slow-hydrating bentonite clay, followed by class II fill to approximately 18 inches below grade. The fill will be compacted to 90%. The goal is to extract both vapor and groundwater from the collection trench for dual remediation.

The vapor abatement portion of the system will also include three monitoring wells (which have already been trenched for connection together), that will be connected to the dual vapor and groundwater extraction and treatment system. The current location of the monitoring well piping terminates near the origin of the proposed collection trench. The utility service and vapor piping will be continued through the collection trench to the compound and connected to the dual extraction system.

The two conduits will be placed at a depth of approximately 18 inches below grade and backfilled with class II fill to approximately three inches below grade. The final surface will be restored to its original condition.

The groundwater collection trench will flow into a sump at one end (located within the treatment compound). A groundwater extraction pump will be installed within the sump and pump groundwater to the above-ground groundwater treatment system for remediation. An additional 40 feet of trenching will be necessary to access the existing electrical conduit chase. The 4-inch metal pipe will serve as {gravity} drain to an onsite storm drain as shown on the plans.

The Contractor shall furnish and install all necessary electrical equipment, conduit, and instrumentation for a complete and operating remediation system, unless otherwise indicated.

1.2 LOCATION OF PROJECT

The former gasoline service station and car wash is located at 400 San Pablo Avenue, Albany, California. A location map is attached in Appendix A of this bid.

1.3 WORKPLAN PREPARATION

The Contractor will prepare a detailed Addendum to the original Workplan (prepared by Soil Tech Engineering, May 4, 1993), that will outline project steps necessary to permit, install, and operate a vapor-abatement and groundwater-extraction and treatment system at the site. A copy of the original Workplan is attached in Appendix A. The Addendum to Workplan will be comprised of three sections: Section 1, Previous Work; Section 2, Proposed Remedial Action; and Section 3, Preliminary Time Schedule to complete the project. In addition, the Addendum to Workplan will consist of drawings, including Plans and Specifications for the soil and groundwater remediation system. A Draft Addendum to Workplan will be submitted to Kamur for review and approval prior to being submitted to the ACHCSA and the RWQCB for approval of work.

1.4 SYSTEM DESIGN

The Contractor will be responsible for preparing Plans and Specifications for a dual vapor and groundwater extraction system, consisting of a collection trench and three vapor extraction wells. The proposed system shall be capable of sustaining a vapor flow rate of 150 cubic feet per minute (cfm) and a vacuum of up to 100 inches of water column, and a groundwater extraction rate of 20 gallons per minute (gpm). The vapor abatement portion of the dual system shall have a destruction efficiency that releases less than 1 pound per day of total petroleum hydrocarbon (TPH) and less than 0.1 pound per day of benzene into the atmosphere. The aeration portion of the water treatment system must have a TPH and benzene removal rate of at least 95%. A description of the system is presented in Section 2.1.10. The conceptual design of the vapor and groundwater extraction and treatment system is shown on drawings BGTS-1, BIVAC GROUNDWATER TREATMENT SYSTEM and on BPID-1, BIVAC GROUNDWATER TREATMENT SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM.

1.5 PERMITS AND LICENSES

The Contractor is responsible for obtaining all permits and licenses necessary for construction of this project. Prior to performing any work at the site, the Contractor will obtain an Authority to Construct/Permit to Operate from the BAAQMD for the proposed vapor-abatement equipment. A NPDES permit has already been obtained for groundwater discharge at this site.

In addition, the Contractor will obtain all City of Albany Licenses and Permits from the Building, Fire, and Planning Departments, and will obtain an electrical permit through the PG&E. The Contractor shall submit five copies of the Plans to the City Building and Planning Departments for approval. The Contractor is responsible for all other permits and fees required for construction.

1.6 CONTRACTOR YARD

The site is currently occupied by two operating businesses with little room for storage. The Contractor is to store only that equipment and materials at the site as absolutely necessary. Equipment must be stored so as minimize impact to the operating business and to not impede vehicular traffic.

1.7 WORKING HOURS

Hours of work shall be limited to 7 am to 5 pm, seven days per week. Other hours must be specifically approved by the property Kamur.
Minimum disruption of the two operating businesses on the site is required.

1.8 CHANGE ORDERS

Change Orders may be initiated by the Contractor or Kamur. Any Change Order resulting in a change to the Contract Price less than $1,000 (and a total cumulative cost change of $5,000) shall be approved and signed by Kamur and the Contractor. If a Change-Order resulting in a change to the Contract Price greater than $1,000, the specific phase of work requiring the Change Order may be sent out for re-bid.

Any Change Order less than $1,000 shall include a description of the work including drawings and specifications as applicable; and the Contractor shall include the price increase (or decrease) of the change, as well as any increase in the Contract Time to complete the change.

SECTION 2

SITE WORK

2.1 TRENCHING AND WELLHEAD CONNECTION

2.1.1 Collection Trench Construction and Disposal of Excess Soil

The Contractor shall excavate approximately 100 linear feet of trenching, 18 inches wide, and 12 fbg in depth, as indicated on your Plans. The collection trench will begin near the electric pole (shown on map) north of the car wash, running parallel to the landscape area in a northwest direction to the fence (shown on map). The collection trench will then turn, paralleling the fence to the location of ~~the~~ MW-3 monitoring well (shown on map). This monitoring well will be included in the collection trench system. Before excavating for any run of pipe, the Contractor shall locate all subsurface piping in the line of construction, and shall expose all existing structures, conduits, piping, etc. which intersect the line of piping to avoid possible damage to existing utilities during excavation. In the event of conflicts or grade, the Contractor shall consult Kamur. The groundwater collection trench will be constructed without shoring. The south side of the collection trench will be lined with 6-once filter fabric (or permeable equivalent) and the north side of the collection trench will be lined with a clay geotextile.

The majority of the surface of the site is overlain with approximately 1-½ to 4 inches of asphalt. The asphalt will need to be sawcut prior to removal. The contractor will be responsible for the removal, transportation, and disposal of clean excavated material and debris, and all excess imported backfill material, if required, to return the site to as close to pre-existing appearance as possible. If field personnel detect volatile organic compounds, with the use of field analysis methods, in the excavated material, the Contractor will not be responsible for the disposal of this material.

2.1.2 Laying of Subsurface Pipe and Backfilling Trenches

Approximately one foot of pea gravel will be placed on the bottom of the trench before laying the 6-inch diameter Schedule 40, machine-slotted 0.020-inch screened PVC pipe with threaded ends on-top of the pea-gravel, as indicated on the Plans. The 6-inch diameter, Schedule 40 PVC pipe will be connected to a sump pump at the sump bottom. A 4-inch diameter PVC pipe will be connected from the top of the sump pump and run vertically to grade. The 6-inch diameter pipe will then be covered with approximately four feet of pea gravel. The pea gravel will be sealed with approximately one foot of slow-hydrating bentonite clay. Class II fill will be placed over the bentonite to approximately 18-inches below grade. One 4-inch diameter PVC pipe and one electrical conduit line (from the already piped monitoring wells) will be placed in the trench and run to the sump location. All piping in trenches shall have a minimum cover of 18-inches. The pipe shall be laid in the trench such that the weight of the pipe is supported throughout the entire length of the pipe, and that at no time does the weight of the pipe rest on a joint or valve. The laying of pipe shall be in finished trenches free from debris or water. The deflection in the pipe or in a standard joint shall not exceed the manufacturer's recommendations.

The Class II fill will be compacted to a minimum of 90% or as required by local City requirements. After the compaction has been met, an approximately four-inch thick layer of un-reinforced concrete will be applied on top of the backfill to bring the trench up to grade level. A 1-foot collar of concrete will be used to surround and support wellhead covers.

All subsurface PVC pipe and fittings shall be 6-inch and 4-inch Schedule 40 PVC pipe as manufactured by Ryan Herco Products Corporation of San Francisco, CA, or Harrington Plastics of Sunnyvale, CA, or equivalent. Schedule 40 PVC shall conform to the requirements of ASTM-D-1784 for Type 1 PVC, and shall be slip connect.

2.1.3 Installation of Sumps and Covers

The Contractor shall install street-rated, metal wellhead covers, as shown on your Plans. The metal wellhead covers, or manholes, will be street-rated steel. The covers will have adequate dimensions to allow servicing of the covered items, with a depth of approximately 30 inches. No mortar or grout that has begun to set shall be used, and no re-tempering shall be permitted.

2.1.4 Ball Valves

Ball valves shall be 4-inch PVC true union ball valves as manufactured by Ryan-Herco (Part No. 5033-040) or equivalent. Ball valves shall be socket type and fitted with EPDM O-rings.

The 3-way ball valve at the remediation compound shall be 3" x 3" x 3"-inch PVC ball valve. The 3-way ball valve shall be as manufactured by Ryan Herco (Part No. 5081-030), or equivalent, and shall be socket type.

2.1.5 Lab Cock Valves

The Contractor shall furnish and install lab cock valves as indicated on the Plans for use as sampling ports. The lab cock valves shall be as manufactured by Ryan-Herco (Part No. 5309-102), or equivalent, and shall be 1/4" x 1/4 " PVC MPT x hose.

2.1.6 Concrete Mixture

Concrete shall be a standard 3/4 5 sack mixture of Portland Cement with a jet or lamp black color additive as manufactured by Davis manufacturing, or equivalent. The concrete and additive shall be machine-mixed.

2.1.7 Laying of Concrete and Remediation Compound Pad

Concrete will be poured over the 3/4-inch pea gravel to a depth of approximately 6 inches to meet grade, after the compaction specification has been met. A one foot concrete collar will surround the well vaults and support the wellhead covers as shown on the plans. The remediation compound will be located in the immediate vicinity of the sump (at the northern end of the collection trench). A remediation compound pad will be constructed according to the Plans, and will be 6-inches thick and re-enforced with re-bar. The dimensions will be 12 feet by 12 feet square.

2.1.8 Remediation Compound Pad Fencing

A permanent chain-link fence with panelling will be installed around the compound. One end of the fence will have double-swing gates with a locking mechanism, to allow installation of the system equipment.

2.1.9 Laying of Asphalt

An asphalt seal will be placed on all trench excavation areas as shown on the plans.

2.1.10 Vapor and Groundwater Extraction and Treatment Equipment

The remediation equipment will be capable of remediating both soil vapor and groundwater in one influent stream. Kamur believes that this dual system approach will reduce costs and substantially increase remediation system performance at the site. The dual-extraction/groundwater treatment system (BIVAC/GTS) fitted with a 7-horsepower extraction blower will be used to remove both vapor and entrained groundwater from the collection trench and three vapor extraction wells. As vapor will be extracted from the collection trench and vapor extraction wells and water will be entrained in the vapor stream as it is removed from the collection trench.

Vapor and entrained groundwater will pass through a water knock-out vessel that will separate entrained water from vapor. Groundwater removed by the water knock-out vessel will be pumped to the groundwater treatment system (GTS), where groundwater will be processed to pre-treatment standards prior to discharge. Groundwater is processed in the GTS by aeration followed by carbon adsorption. The proposed system shall be capable of sustaining a vapor flow rate of 150 cubic feet per minute (cfm) and a vacuum of up to 100 inches of water column, and a groundwater extraction rate of 20 gallons per minute (gpm). The vapor abatement portion of the dual system shall have a destruction efficiency that releases less than 1 pound per day of total petroleum hydrocarbon (TPH) and less than 0.1 pound per day of benzene into the atmosphere. The aeration portion of the water treatment system must have a TPH and benzene removal rate of at least 95%.

A bag filter will be placed in series between the water knockout vessel and the aeration tank. The carbon adsorption system consisted of two 1,000-pound activated carbon filtration vessels connected in series. Treated groundwater will be discharged to the storm drain under the current NPDES discharge permit. The groundwater portion of the equipment should include the following safety devices: a high level shutdown switch for the water knockout vessel, a high bag filter pressure shutdown switch, a high water level shutdown switch within the aeration tank, and a high carbon pressure shutdown switch to insure that the equipment does not become damaged. Pressure gauges should also be placed in series immediately after the water knockout vessel, before the bag filter, and before the carbon canisters. A flow totalizer should also be placed at the outlet of the system. Water within the double containment area will be pumped back into the aeration tank and re-processed.

Hydrocarbon-bearing vapor from the extraction well will be initially abated by an internal combustion (I.C.) engine. When hydrocarbon concentrations fall below 300 parts per million

(ppm) total petroleum hydrocarbons reported as gasoline (TPHg), the I.C. engine will be replaced with two 1,000-pound activated carbon canisters. For bidding purposes, please assume that the I.C. engine will be used for a maximum of two months. Vapor from the aeration tank of the GTS was also diverted to the I.C. engine for abatement.

The conceptual layout and process flow diagram of the vapor and groundwater extraction system are shown on drawings BGTS-1 and BPID-1.

2.2 ABOVE-GROUND PIPING

All above-ground pipe and fittings shall be Schedule 80 PVC, unless otherwise noted on the Plans, and shall be as manufactured by Ryan Herco or Harrington Plastics, or equivalent. Schedule 80 PVC pipe shall conform to the requirements of ASTM-D-1784 for rigid, Type 1 PVC, and shall be slip connect.

Exposed pipe shall be suspended and supported in such a manner as to prevent sagging or over-stressing of the pipe and connections and shall be supported so that no item of the piping system shall transfer any load or stress to any equipment.

2.3 PRESSURE TESTING

2.3.1 Procedures and Methods

At least 48 hours (two working days) before testing any piping, the Contractor shall notify Kamur. All pipe pressure tests shall conform to ANSI/ASME B31.1. The designated test pressure shall be held while examining joints and connections for leaks.

The Contractor shall provide all necessary personnel and furnish and install all necessary test equipment for completion of the testing; including pressurizing equipment, valves, plugs, blind flanges, and pressure and temperature recorders.

The Contractor shall provide written documentation of all tests indicating that testing was satisfactorily completed. The Contractor shall make any and all repairs necessary to all pipe failing to pass the testing requirements of these Specifications.

2.3.2 System Piping

The Contractor shall pressure test the system piping to a pressure of 5 psig for a minimum of 15 minutes. The test shall be performed after complete assembly of the piping. The Contractor may authorize testing and backfilling in sections, but the joints between sections shall be left uncovered for proof of integrity. After all testing is completed and approved, the joints shall be backfilled.

Piping, valves and gauges shall be installed as indicated on the Plans. The Contractor shall furnish and install the necessary piping, fittings, flanges, nipples, etc. needed to connect the

piping and valves whether specifically indicated on the Plans or not.

2.4 SECONDARY SOURCE FUEL LINE HOOK-UP

The Contractor is responsible for meeting all City and Fire Prevention Bureau requirements related to installation of propane tank and associated fuel line which will supply supplementary fuel to the vapor-abatement equipment.

SECTION 3

PROCESS EQUIPMENT

3.1 SHOP DRAWINGS

The Contractor shall submit shop drawings on all process equipment showing complete details of the equipment proposed, and including drawings and material lists for fabricated items. Bound or stapled installation, operating, maintenance, and lubrication instructions shall be furnished to Kamur prior to installation.

SECTION 4

ELECTRICAL

4.1 GENERAL PROVISIONS

The Contractor is responsible for furnishing and installing all work and materials necessary for erecting a complete, ready for continuous use, and tested and working electrical system as indicated on the Plans and as specified herein. All items not specifically mentioned in these specifications or noted on the Plans or accepted shop drawings, but which are obviously necessary to make a complete working installation, shall be deemed to be included herein.

The Contractor shall furnish and install all inserts and hangers required to support conduits and other electrical equipment. All electrical equipment shall be capable of operating successfully at full-rated load, without failure, at ambient air temperatures of -13°F to 122°F at mean sea level.

All cutting, patching, trenching, backfill, repair, concrete work, etc., which is outside pipeline trenches and which is required for work under this Division 16, shall be considered part of the electrical work.

4.2 ELECTRICAL CODES

All electrical work, including connection to electrical equipment integral with mechanical equipment, shall be performed in conformance with the latest published regulations of the National Electrical Code (NEC), State and local codes including Title 24 of the "California Administrative Code"; the American National Standards Institute (ANSI); American Society for Testing and Materials (ASTM); the Uniform Building code (UBC); the Uniform Fire code and local fire code; National Electrical Manufacturers Association (NEMA) Standards, and the latest published regulations of the Federal Occupational Safety and Health Act (OSHA). When applicable, the material used in the performance of the electrical work shall be approved by the Underwriters Laboratories, Inc. (UL), for the class of service for which it is intended.

4.3 TEMPORARY POWER

The Contractor shall install temporary power to the remediation compound as indicated on the Plans. The location of a service point is at an electrical gutter on the north wall of the Car Wash Building near the employee room door. The service point supplies 110/240 volt capacity and it is believed by Kamur to be adequate for the temporary power requirements of the remediation compound. From the service point conduit is available to a box located in the driveway. An already installed PVC pipe can be used as a chase to the new collection trench excavation.

The Contractor is responsible for meeting all PG&E and City requirements for installation and energizing of the temporary compound power. The Contractor shall furnish and install a street light, mounted on the temporary pole, to provide lighting at the remediation compound. The light shall be photosensitive for automatic on-off operation. A separate 110 VAC, 20 amp breaker will supply this light.

The Contractor is responsible for all electrical construction permits and inspection.

4.4 ELECTRICAL HOOKUP

Power to the remediation compound will be supplied and installed by the Contractor from a connection to the existing Car Wash electrical panel according PG&E and City Building Department Regulations.

The Contractor shall perform electrical connections that will consist of a breaker panel with a main disconnect to all power, three 230 volt breakers to supply the overload/motor starter for the blower skid, one 120 volt breaker supplying the remote monitoring equipment, one 120 volt breaker each for the photosensitive light, instrumentation and controls, and a four-gang weather-resistant 110 volt outlet. The Contractor shall furnish and install all of the materials required to hard wire the equipment, whether specifically indicated on the Plans or not.

4.5 TESTING

Tests shall be made to ensure that the electrical equipment is installed correctly and the wiring systems are free of all shorts, grounds, and faulty connections. The correctness of the wiring shall be verified by the actual electrical operation of the electrical and mechanical devices. Any deviation from the wiring shown on the Plans or accepted drawings shall be corrected and indicated on the Plans.

APPENDIX A - SITE BACKGROUND AND PROPOSED INTERIM GROUNDWATER REMEDIATION WORK PLAN

SITE DESCRIPTION

The subject site is located at 400 San Pablo Avenue, Albany, California, as shown on the Vicinity Map (Figure 1). The elevation of the site is approximately 20 feet above mean sea level (msl). The site was formerly used as a gasoline service station and car wash. Immediately adjacent to the former gasoline service station and car wash exists a dry cleaning site is located to the north, and a former paint store was located to the south of the site. The site is approximately one mile east of San Francisco Bay. The site is bordered by El Cerrito Creek to the north, San Pablo Avenue to the east and Adams Street to the west. The surrounding area consists of light commercial and residential sites. The site was a vacant until the late 1950's when the Plaza Car Wash and the adjacent Norge Dry Cleaner buildings were constructed. The three underground storage fuel tanks were installed on the site in 1970.

The observation of separate-phase hydrocarbons (floating product) was observed in the adjacent El Cerrito Creek on July 5, 1989, and prompted the Albany Fire Department to investigate the source. A storm drain, which borders the site on the west, was found to be the source of the petroleum products discharged into the El Cerrito Creek.

The inventory reconciliation records for Plaza Car Wash (reviewed by Kamur in July 1989) indicated discrepancies in the unleaded gasoline inventory. A product line test (conducted in mid-July 1989) confirmed a small leak in the unleaded gasoline fuel lines beneath the pump island. The leak was repaired and approximately five to ten cubic yards of gasoline impacted soil were removed from beneath the product line. Analytical results of a composite soil sample of the excavated soil indicated a total petroleum hydrocarbon reported as gasoline (TPHg) concentration of 7,500 parts per million (ppm), (Soil Tech Engineering, 1993).

REGIONAL AND LOCAL GEOLOGY AND HYDROGEOLOGY

Geology and Hydrogeology

The site is located within the East Bay Plain in the north-central portion of the Berkeley Alluvial Plain (Hickenbottom and Muir, 1988). The active Hayward Fault is approximately two miles east of the site. Helley et al. (1979) mapped the earth materials underlying the site area as older Quaternary alluvium deposits composed of a heterogeneous mixture of poorly consolidated to unconsolidated clay, silt, sand, and gravel. The earth materials beneath the site consist of an irregular layer of clayey silt and sandy clay with some lenses of gravel.

The site is less than 100 feet south from El Cerrito Creek and approximately ½-mile north of Codornices Creek. Groundwater is encountered at the site at an average depth of 5 to 6½ fbg. The direction of groundwater flow is toward the north to north-east at an average gradient of 0.02.

PREVIOUS WORK

A summary of previous work is discussed in the attached Proposed Interim Groundwater Remediation Work Plan prepared by Soil Tech Engineering, dated May 4, 1993.

APPENDIX B - SITE PLATES AND GENERAL INFORMATION

File No. 8-90-421-SI

PROPOSED INTERIM GROUNDWATER REMEDIATION WORK PLAN FOR KAMUR INDUSTRIES PLAZA CAR WASH LOCATED AT 400 SAN PABLO AVENUE ALBANY, CALIFORNIA

MAY 4, 1993

PREPARED FOR:

KAMUR INDUSTRIES

2351 SHORELINE DRIVE

ALAMEDIA, CALIFORNIA 94501

BY:

SOIL TECH ENGINEERING, INC.

298 BROKAW ROAD

SANTA CLARA, CALIFORNIA 95050

File No. 8-90-421-SI

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SOIL TECH ENGINEERING
Soil, Foundation and Geological Engineers
298 BROKAW ROAD, SANTA CLARA, CA 95050 ■ (408) 496-0265 OR (408) 496-0266

May 4, 1993

File No. 8-90-421-SI

Kamur Industries, Inc.
2351 Shoreline Drive
Alameda, California 94501

ATTENTION: MR. MURRAY STEVENS

SUBJECT: PLAZA CAR WASH
Located at 400 San Pablo Avenue, in
Albany, California

Dear Mr. Stevens:

The attached work plan describes the proposed Interim Remedial Plan (IRP) for treating the impacted groundwater at the subject site. The proposed IRP is written in response to Alameda County Environmental Health Department (ACEHD) letter dated January 22, 1993, requesting a work plan to control the dissolved hydrocarbon plume migration. The IRP briefly describes the previous investigation and the planned interim groundwater treatment system.

Based on the best available technology used in this environmental field, we believe the proposed IRP will provide the most cost-effective method to treat the impacted groundwater as requested by the County Environmental Health Department.

File No. 8-90-421-SI

For your information, it appears that the local sewer district may not accept the treated groundwater; therefore, a state permit will be required in order to discharge the effluent either into storm drain with partial landscape irrigation. However, we will pursue for a sanitary sewer district discharge permit. If the sewer district do not allow the discharge of treated groundwater into their system, then an application will be made for a state permit.

California Regional Water Quality Control Board--San Francisco Bay (CRWQCB--SFB) has jurisdiction on issuing a permit (NPDES permit) for discharge of treated groundwater. Normally it takes 3 to 4 months to obtain a discharge permit once the completed application is accepted by the Water Board.

Please submit the proper IRP to the Local County Health Department.

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

Sincerely,

SOIL TECH ENGINEERING, INC.

NOORODDIN AMELI
PROJECT ENGINEER

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

REGISTERED PROFESSIONAL ENGINEER
LAWRENCE SHUI-BUN KOO
C 34928
Exp. 9/95
CIVIL
STATE OF CALIFORNIA

FRANK HAMEDI-FARD
GENERAL MANAGER

File No. 8-90-421-SI

INTERIM GROUNDWATER REMEDIATION WORK PLAN FOR KAMUR INDUSTRIES PLAZA CAR WASH LOCATED AT 400 SAN PABLO AVENUE ALBANY, CALIFORNIA MAY 4, 1993

INTRODUCTION:

Soil Tech engineering, Inc. (STE), is pleased to submit this interim remediation plan (IRP) to describe a proposed groundwater remediation measure for Kamur Industries Plaza Car Wash located at 400 San Pablo Avenue, in Albany, California. The main objective of this IRP action is to remediate the petroleum hydrocarbon contamination in the shallow groundwater and control further migration.

This proposed IRP describes the site, briefly summarizes the previous investigation conducted at the site, describes the proposed IRP and the proposed schedule of this work.

BACKGROUND:

SITE DESCRIPTION:

The site is located at 400 San Pablo Avenue, in Albany, California, approximately one mile east of San Francisco Bay (see Figure 1). The site is bordered by El Cerrito Creek to the north, San Pablo Avenue to the east and Adams Street to the west. The surrounding area consists of light commercial and residential sites.

The site was vacant until the late 1950's when the Plaza Car Wash and the adjacent Norge Dry Cleaner buildings were constructed. The three underground fuel storage tanks were installed on the site in 1970.

The observation of petroleum free-product in the adjacent El Cerrito Creek, on July 3, 1989, prompted the Albany Fire Department to ivestigate the source. A storm drain, which borders the site on the west, was found to be the source of the petroleum products discharged into the El Cerrito Creek.

The inventory reconciliation records for Plaza Car Wash, reviewed by Kamur Industries in July 1989, showed discrepancies in the unleaded gasoline inventory. A product line test, conducted in mid-July 1989, confirmed a small leak in the unleaded gasoline fuel lines beneath the pump island. The leak was repaired and approximately five to ten cubic yards of gasoline contaminated soil was removed from beneath the product line. Analytical results of a composite sample of the excavated soil revealed a Total Petroleum Hydrocarbon (TPH)concentration of 7,500 parts per million (ppm).

PREVIOUS INVESTIGATION:

Subsurface Consultants, Inc. (SCI) was retained by Kamur Industries to perform a site assessment. In August 1989, SCI drilled five soil borings and obtained soil samples for laboratory analysis. Four of the soil borings were completed as monitoring

wells. Laboratory analysis showed the presence of gasoline contaminants in all soil and groundwater samples.

Per CRWQCB staff request, water samples were also obtained from El Cerrito Creek and the storm drain outlet on August 3, 1989. Laboratory analysis revealed high levels of dissolved hydrocarbons at the storm drain outlet and low levels approximately 20 feet down-stream.

A soil vapor study (SVS), conducted by SCI in the area of the Plaza Car Wash and adjacent properties, revealed the presence of hydrocarbon contamination in the soil.

On September 19, 1989, Pacific Pipeline Survey conducted a video inspection of the Adams Street storm drain. The inspection revealed excess concrete along the pipe bottom, a bend across the pipe section and large cracks in the pipe. The bend area was considered to be the most likely location for petroleum products to enter the storm drain pipe and eventually be discharged into El Cerrito Creek.

On October 10 and 11, 1989, Riedel Environmental Services, Inc. installed a sump on Adams Street adjacent to the damaged section of the storm drain for optimum groundwater level influence.

Storm drain pipe joints exposed during sump installation procedures were sealed with mortar. All excavated soils found to be contaminated (when screened with organic vapor analyzer) were

removed and stored on-site pending proper disposal. Stockpiled soils from the product line repair and sump installation areas were treated on-site and transported to the West Contra Costa Sanitary Landfill for disposal.

In December 1989, Kamur Industries retained International Technology Environmental Services (ITES) to conduct the monitoring and sampling of on-site monitoring wells, the Adams Street sump and El Cerrito Creek. The sampling was conducted on a monthly basis from December 1989 through May 1990. All on-site wells showed high levels of dissolved hydrocarbons, and one well showed traces of floating product. The sump also indicated high levels of dissolved hydrocarbons. The El Cerrito Creek samples, taken after each significant rainstorm, showed non-detectable levels in the up-stream station; the storm drain outlet samples showed moderate levels of dissolved hydrocarbons and the down-stream station showed fairly low to non-detectable levels.

In September 1990, Kamur Industries, Inc., retained AGS and STE to remove three underground tanks, conduct soil sampling, excavate contaminated soil, characterize and dispose of contaminated soil. In addition, STE conducted water sampling of El Cerrito Creek during rainy months per Regional Water Quality Control Board (RWQCB) requirements and installed additional monitoring wells as requested by ACHS-HMP.

The details of tank removal, soil sampling and the excavation of the contaminated soil are described in the AGS and STE reports entitled "Removal of 3 Underground Storage Tanks" dated January 9, 1991 and "Underground Tank Soil Sampling and Excavation Report" dated January 15, 1991. The report on soil treatment and disposal is included in the STE report entitled "Report on Soil Remediation at the Plaza Car Wash" dated May 13, 1991.

In February 1991, STE installed two on-site monitoring wells (STMW-1 and STMW-2). In addition, abandoned the on-site wells MW-1 and MW-4 during soil excavation of the former underground tank area. The investigation revealed no free floating product detected in the wells. Dissolved hydrocarbons were detected in all on-site and off-site wells. The details of this subsurface investigation is described in the STE's report "Report of Supplemental Subsurface Investigation for Kamur Industries, Inc. at the Plaza Car Wash" dated May 14, 1991.

GROUNDWATER MONITORING AND SAMPLING:

STE is currently conducting a quarterly monitoring and sampling of the on-site and off-site wells, and the results of the groundwater since March 1991 are summarized in Table 1 and 2. The general direction of the shallow groundwater is towards north to northeasterly directions (Fig. 2).

SUMMARY OF RESULTS OF PREVIOUS INVESTIGATION:

The soil material beneath the site consists of an irregular ? layer of clayey silt and sandy clay with some lenses of gravel.

Results of previous subsurface investigations indicated that the shallow groundwater at the site is impacted with the dissolved petroleum hydrocarbons; namely TPHg and BTEX. Dissolved hydrocarbons in groundwater are yet to be delineated off-site to the northeast and west of the site.

Groundwater is encountered at the site at an average depth of 5 to 6.5 feet below grade. The direction of the groundwater flow is towards the north to north-east (Fig. 2). The groundwater appears to be in unconfined condition. The highest concentration of dissolved TPHg was detected in groundwater from the northern and eastern part of the site.

Based on the results of previous investigations, STE recommended no additional delineation of hydrocarbons in the soil, and work proceed to monitor and sample the wells. In addition, recommended an interim remediation of impacted shallow groundwater.

EVALUATION OF REMEDIAL ALTERNATIVES:

The IRP report evaluated several remediation alternatives for the extraction, treatment and discharge of impacted groundwater. The evaluation of the shallow groundwater is summarized below.

EXTRACTION ALTERNATIVES:

STE has evaluated remedial alternatives for the shallow groundwater. Extraction alternatives considered in the evaluation include (1) extraction wells, (2) an extraction trench, (3) an extraction trench with injection wells to speed up groundwater flow to the trench, and (4) an extraction trench and wells with a slurry wall to dewater the aquifer on-site and soil-vapor extraction. The proposed extraction scenario for the impacted shallow groundwater will include an extraction trench. The expected average flow of groundwater extracted by the trench system is approximately 3 to 5 gallons per minute (gpm). The system may be expanded later to include groundwater extraction wells, if necessary.

TREATMENT ALTERNATIVES:

Three groundwater treatment alternatives were evaluated:

- Granular activated carbon (GAC) adsorption
- Oil/water separator followed by GAC
- UV/oxidation process

The three alternatives were evaluated for their effectiveness, reliability, implementability, regulatory compliance, constructibility, and cost. The evaluation found oil/water separator followed by GAC to be the most feasible and cost-effective alternative.

INTERIM REMEDIAL PLAN:

Based on the information obtained from the previous subsurface characterization of the site by STE and other consultant, STE recommends a groundwater interceptor trench along the easterly and northerly boundary of the site. The L-shaped interceptor trench shown on Figure 3 will be approximately 100 feet in length and extend approximately 10 to 12 feet below grade. The trench will be filled with drain rock surrounded by geotextile fabric on south wall to provide a highly permeable conduit for the removal of all groundwater entering the trench. North wall will be covered by CLAYMAX to control the migration of hydrocarbon contaminations. The drain rock will extend up from the bottom of the trench to 3 feet below grade, the upper portion of the trench will be filled with clean compacted soil. Two submersible centrifugal pumps will be used to continuously remove groundwater from the interceptor trench.

Soil removed from the trench excavation will be classified according to hydrocarbon concentration with a portable, photo-ionization-type organic compound detector and stockpiled on site. A plastic membrane will be placed under the stockpiles to insure that uncontaminated soil in the stockpiled area is not contaminated by the stockpiled soil. Composite samples of soil from the stockpiles will be submitted to an analytical laboratory to determine the hydrocarbon concentration for proper disposal. The soil samples will be analyzed for Total Petroleum Hydrocarbons as gasoline (TPHg). In addition, a few sidewall samples of the trench will also be taken to assess presence of any dissolved petroleum hydrocarbons in the soil.

GROUNDWATER TREATMENT SYSTEM:

Groundwater will be continuously removed from the interceptor trench by two submersible centrifugal pumps. The extracted groundwater removed from the proposed L-shaped interceptor trench will be pumped to a treatment system designed to reduce the hydrocarbon levels acceptable for landscape irrigation, sewer and/or discharge to the storm drain.

The treatment system will consist of three stages of: (a) pumping unit with two 4,000 gallon above ground tank containments, (b) two liquid phase activated carbon drums and (c) one 1,000 gallon treated groundwater collection tank to be used for irrigation and/or discharge into a storm drain (i.e. permitted discharge).

The activated carbon treatment system will be designed with two stages of carbon container in series, each of the two stages will be adequate to treat the entire water stream. An effluent monitoring program will be instituted to assure that the treatment system performs properly, and all water discharged meets the NPDES permit requirements. A process flow chart diagram is shown in Figure 4.

INSTALLATION OF OFF-SITE MONITORING WELLS

STE recommends installation of two to three monitoring wells outside the property to assess the control of plume migration

PERMIT REQUIREMENTS:

All necessary permits, required to install and operate the proposed IRP treatment system will be obtained such as City permit, Sewer District, or an NPDES discharge permit from the Regional Water Quality Control Board (RWQCB) and Bay Area Air Quality Management District.

SCHEDULE:

The duration of the project is estimated as follows:

- Submittal of IRP plan to regulatory agencies -- week 0
- Acceptance of IRP treatment system by Alameda County Health Department and RWQCB -- week 2 to 4
- Apply for all required discharge permits (NPDES) -- week 4-6
- Begin installation of groundwater treatment system -- week 6-8
- Complete site construction -- week 8
- Receive NPDES discharge permit -- week 32

- Begin system operation -- week 34

The estimated above schedule assumes that all necessary permits can be obtained in a timely manner. Any delays imposed by the various regulatory agencies will affect the start-up date.

The work plan, design of treatment unit and permit application process will be initiated promptly upon acceptance of the proposed recommendation by you, State and Local regulatory agencies.

CONSTRUCTION:

Construction of the proposed IRP system will be performed by STE under the direction of our licensed contractor. The services of licensed electrical and plumbing contractors will be employed to complete these respective portions of the project.

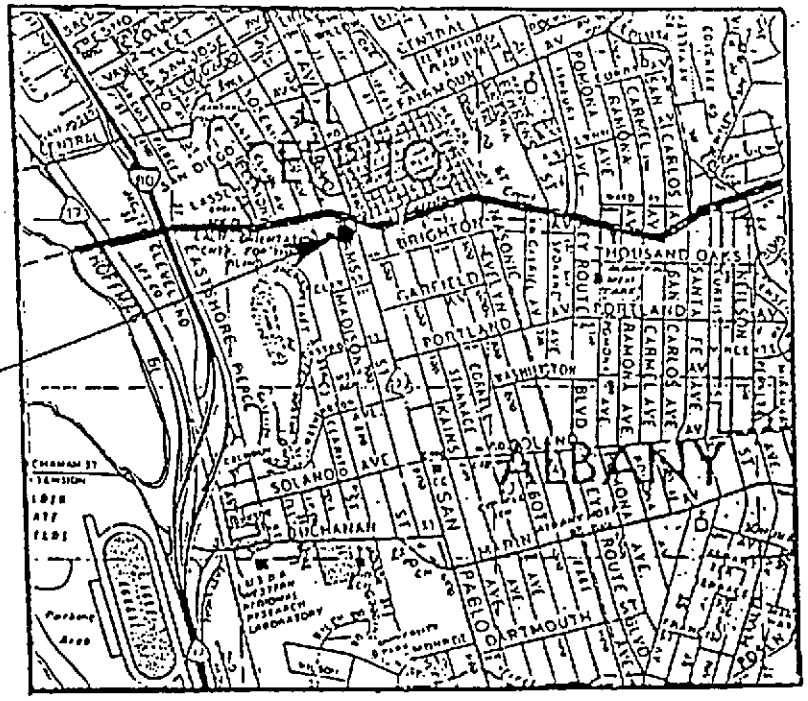
Typical construction tasks will include construction of L-shaped interceptor trench, trenching to accommodate plumbing, air, water and electrical requirements, the installation of treatment components and fencing. All construction will be in accordance with the permit requirements of the building and fire departments.

OPERATION AND MAINTENANCE:

The treatment system will be operated by STE within the permit guidelines specified by the governing regulatory agencies. Weekly maintenance and monitoring of system parameters will be performed to provide efficient system operation. System parameters will be logged and a copy of these records will be kept at the site at all times.

LIMITATIONS:

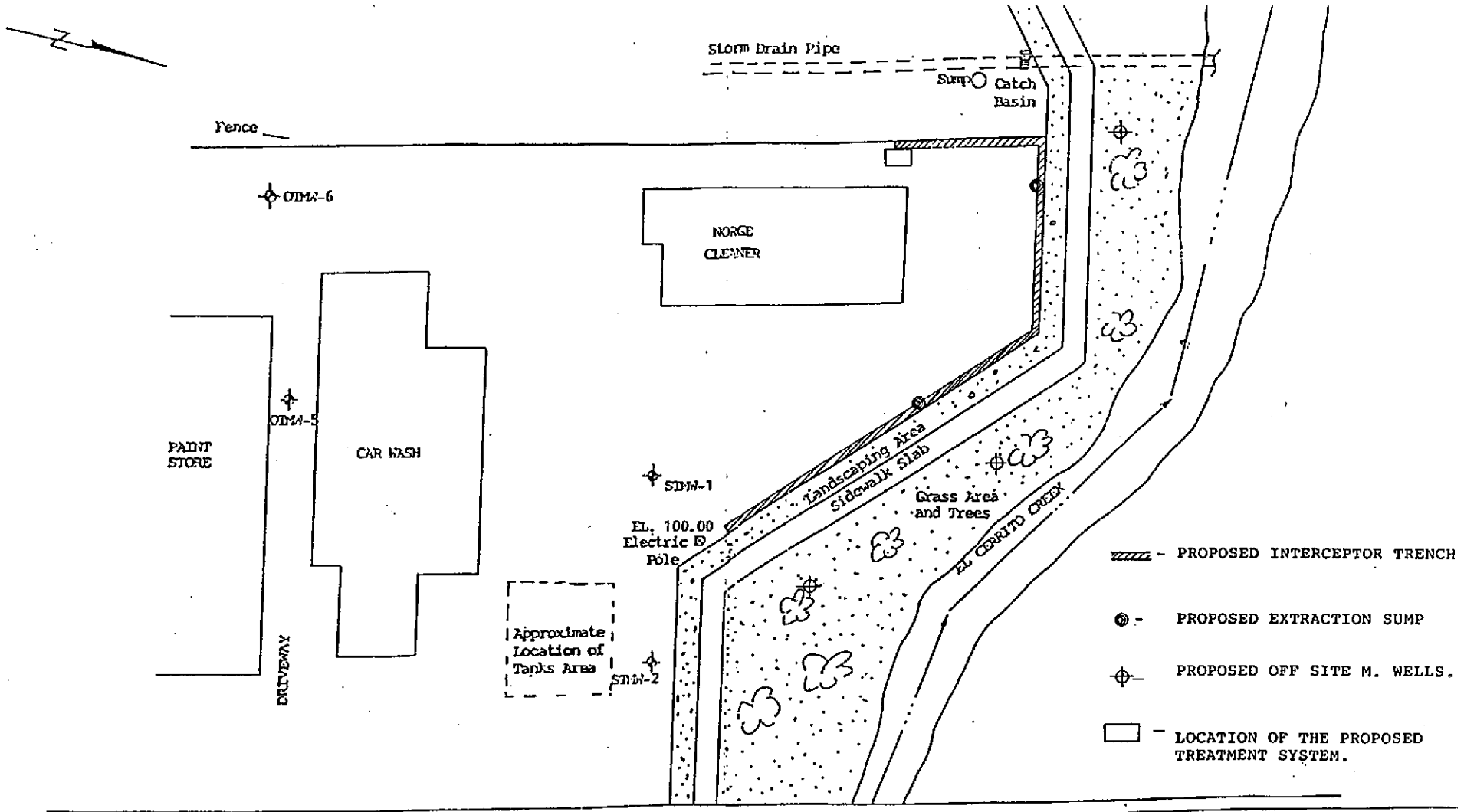
This work plan presents STE's understanding of existing site conditions and approach to conducting work related to the Alameda County Environmental Health Department request to Kamur Industries for a technical report addressing the control of impacted shallow groundwater migration. The information herein is based on the analytical results obtained from the preliminary site assessment.



THOMAS BROS. MAP 1982 EDITION
ALAMEDA COUNTY

PAGE 1 D2

Figure 1



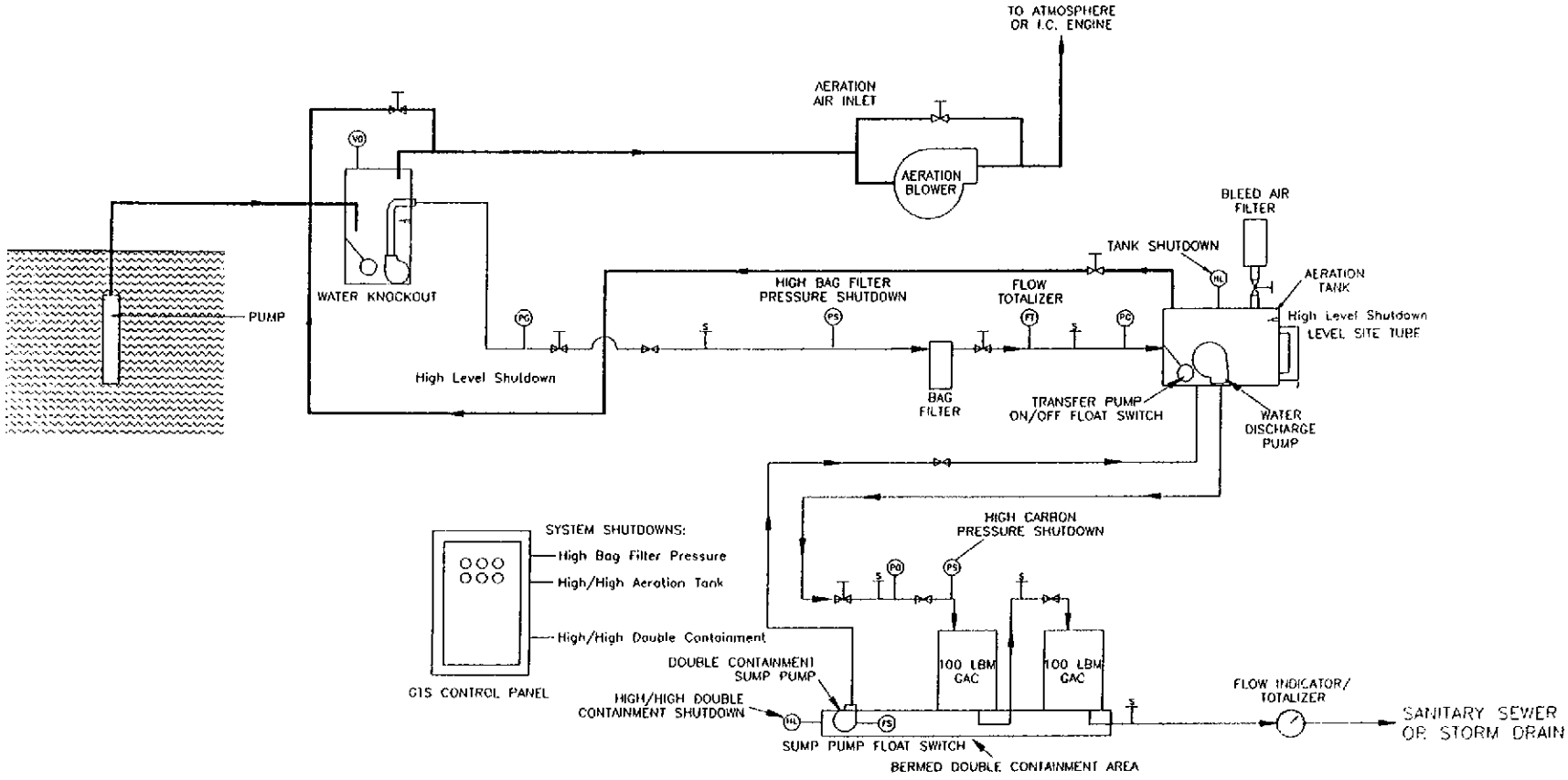
LOCATION OF MONITORING WELLS, INTERCEPTOR TRENC AND TREATMENT SYSTEM.

400 SAN PABLO AVENUE, ALBANY, CALIFONRIA

1" = 30'	PROJECT NO. 8-90-421-SI	FIGURE -
DRAWN BY N.A.		May 4, 1

SOIL TECH ENGINEERING, INC.
298 BROKAW ROAD, SANTA CLARA, CA 95050

Trailer–Mounted
BIVAC



EXPLANATION

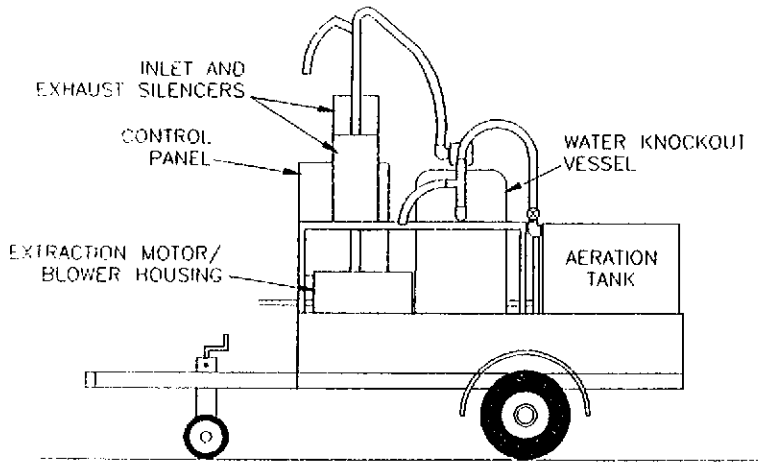
- Check valve
- Gate valve
- Pressure gauge
- Sample port
- Vacuum gauge

BIVAC Groundwater Treatment System Process and Instrumentation Diagram

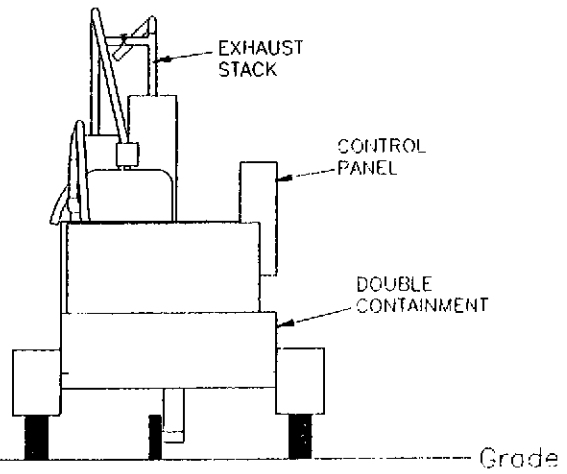
Drawing: BPID–1

Date: 06/21/95

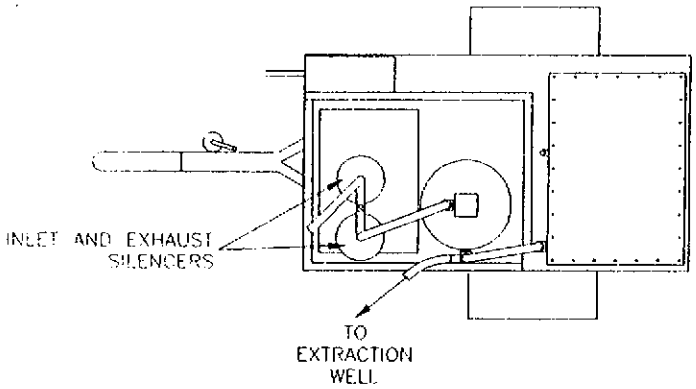
SIDE VIEW



REAR VIEW



PLAN VIEW



SYSTEM ALARMS

- Water Knockout Transfer Pump O.L.
- Aeration Tank Transfer Pump O.L.
- Extraction Blower O.L.

SYSTEM SHUTDOWNS

- High Double Containment
- High Aeration Tank
- High Water Knockout
- High Carbon Pressure
- High Filter Pressure

0 4 8

APPROXIMATE SCALE IN FEET

Drawing: BGTS-1 Date: 02/14/95

BIVAC Groundwater Treatment System