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MODIFIED WORK PLAN FOR THE REMOVAL OF UNDERGROUND STORAGE TANKS AND INSTALLATION OF GROUNDWATER MONITORING WELLS

PHASE I SITE CHARACTERIZATION PROGRAM

HARRISON STREET GARAGE 1432 HARRISON STREET OAKLAND, CALIFORNIA 94612

Prepared by:

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June 5, 1991

File No. 0390044.02

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SC5 ENGINEERS

June 6, 1991 File No. 0390044.02

Mr. Paul Smith Alameda County Health Care Services Division of Hazardous Materials Department of Environmental Health 80 Swan Way, Room 200 Oakland, California 94621

Subject:

Modified Workplan for

Removal of Underground Storage Tanks

and Preliminary Site Investigation

Harrison Street Garage 1432 Harrison Street

Oakland, California 94612

Dear Mr. Smith:

On behalf of the property owners, SCS Engineers (SCS) is pleased to submit this modified work plan, including the appended Underground Tank Closure Plan, Health and Safety Plan, and other supporting documentation, for the 1) proposed removal of four abandoned underground storage tanks (USTs), three hydraulic lifts and associated facilities, and 2) initial installation of groundwater monitoring wells at the Harrison Street Garage, 1432 Harrison Street, Oakland California. The supporting documentation includes: copies of tank removal contractors' insurance certificates, plot plan, and a deposit check for \$1074 (as per 1991 Alameda County deposit fee schedule) to cover the cost of County review and administration.

Alameda County issued the original Cleanup Order to the property owners, Alvin Bacharach and Barbara Borsuk, on September 24, 1990. SCS Engineers submitted an initial work plan to the County on February 15, 1991. This modified work plan is being submitted pursuant to a letter dated April 24, 1991 from the owners Attorney to the

Mr. Paul Smith June 6, 1991 Page Two

Alameda County District Attorney and subsequent discussions between Alameda County, SCS Engineers, and Attorneys representing the property owners and District Attorney's office, dated April 26, 1991, regarding the excavation and removal of the existing tanks and associated facilities prior to the implementation of a more detailed site characterization and assessment program involving the drilling and installation of soil borings and monitoring wells and collection of representative soil and groundwater samples. The tasks to be completed as part of this work plan constitute Phase I of the site characterization and assessment program for this site.

This work plan will be implemented immediately following the Countys approval.

If there are any questions, please contact either of the undersigned at (415) 829-0661.

Sincerely,

Nels R. Johnson, P.E. Senior Project Engineer

SC\$ Engineers

John P. Cummings, Ph.D., R.F.A., R.E.P.

Office Director SCS Engineers

Thomas D. Gilmore

Staff Geologist SCS Engineers

NRJ/JPC/TDG:sar

Enclosures

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SECTION 1 PROJECT DESCRIPTION

This modified work plan, including the appended Underground Tank Closure Plan and supporting documentation (Appendices A, B, and C), outlines the proposed field operations and associated analytical test services to be provided by SCS Engineers (SCS) for the proposed removal of abandoned underground storage tanks (USTs) and associated facilities, including hydraulic lifts, at the Harrison Street Garage, 1432 Harrison Street, Oakland, California. Alameda County issued the original Cleanup Order to the property owners on September 24, 1990. This modified work plan is being submitted pursuant to a recent agreement between Alameda County, SCS Engineers, and attorneys representing the property owners and District Attorney's office, dated April 26, 1991, to excavate and remove the existing tanks and associated facilities prior to the implementation of a more detailed site characterization and assessment program involving the drilling and installation of soil borings and monitoring wells and collection of representative soil and groundwater samples. The tasks to be completed as part of this work plan constitute Phase I of the site characterization and assessment program for this site. Following is a brief background and description of the site, including tank locations and conditions, investigative and remedial actions which have been performed to date, and current plans to remove the tanks, including sample collection procedures and proposed analytical tests to be conducted.

SECTION 2

SITE DESCRIPTION AND HISTORY

The subject site is located in downtown Oakland and is bordered by Harrison Street on the west and Alice Street on the east, between 14th and 15th Streets (Figure 1). Lake Merritt is located approximately one-quarter mile east of the subject site. Figure 2 presents a site plan that outlines the building perimeter, adjacent streets, and suspected locations of both on-site and off-site USTs.

A garage facility utilized for parking automobiles and light trucks currently exists on the site, and essentially consists of two directly adjoining buildings. The first is the principal entrance to the parking garage at 1432 Harrison Street. This single-story building contains a partial mezzanine and is constructed of timber and masonry. The second is a multistory garage that is on the Alice Street portion of the property and is constructed of reinforced concrete. Historical aerial photographs date construction of the buildings back some forty to fifty years.

Results of Previous Investigations

Previous investigations by others indicate that the soil is contaminated beneath the site and that such contamination includes measurable quantities of gasoline, diesel fuel, Benzene, Toulene Ethylbenzene and Xylene (BTEX) constituents, and PCBs. The reported analytical results (Table 1) are based on analyses of selected soil samples collected during the drilling of 6 exploratory borings by Subsurface Consultants in October 1990. The Subsurface Consultants' report also indicates that subsurface materials consist primarily of dense, fine-grained sands containing varying amounts of clay and silt. Published geologic maps indicate that these sediments are part of the Merritt Sand Formation. Groundwater was encountered by Subsurface Consultants during the drilling at depths ranging from 23 to 25 feet below the Harrison Street grade. Information regarding groundwater flow direction is not available; however, it is presumed to flow eastward toward Lake Merritt.

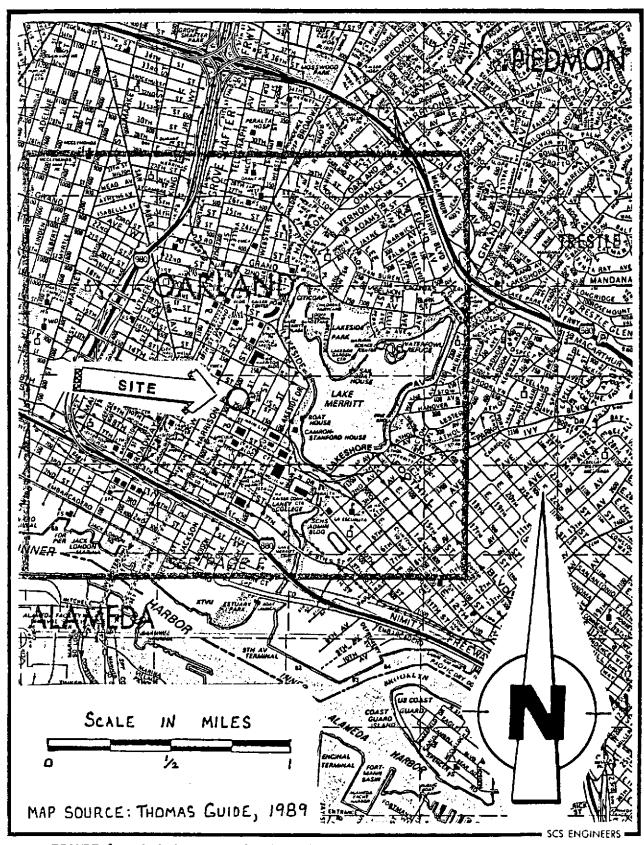


FIGURE 1: Vicinity Map Showing the Location of Subject Site

FIGURE 2: Schematic of Site Showing Location of USTs and Proposed Monitoring Wells

TABLE 1. CONTAMINANT CONCENTRATIONS IN SOIL

(Results of Subsurface Consultants October 1990 Investigation)

Boring No. & Depth (ft)	TVH ¹ (ppm)	B ² (ppb)	T ³ (ppb)	X ⁴ (ppb)	X ⁵ (ppb)	TOG ⁶ (ppm)	TKH ⁷ (ppm) <u>Keros./Diesel</u>	OTHER 8010/Sol Pb/PCBs /(ppm)/(ppb)
B1 @ 20	6,300	99,000	490,000	610,000	110,000	8	/	/
B2 @ 18.5	9,300	98,000	900,000	1,100,000	190,000		/	/0.21/
B3 (in sump)							/	/
B4 @ 10						6,300	ND ⁹ /1,700	/
B5 @ 22.5	110	24	210	1,300	69		/	/
B6 @ 9		ND	ND	ND	ND	ND	98/ND	ND/0.06/9
B6 @ 9.5						ND	140/ND	(Arochlor 1260) /

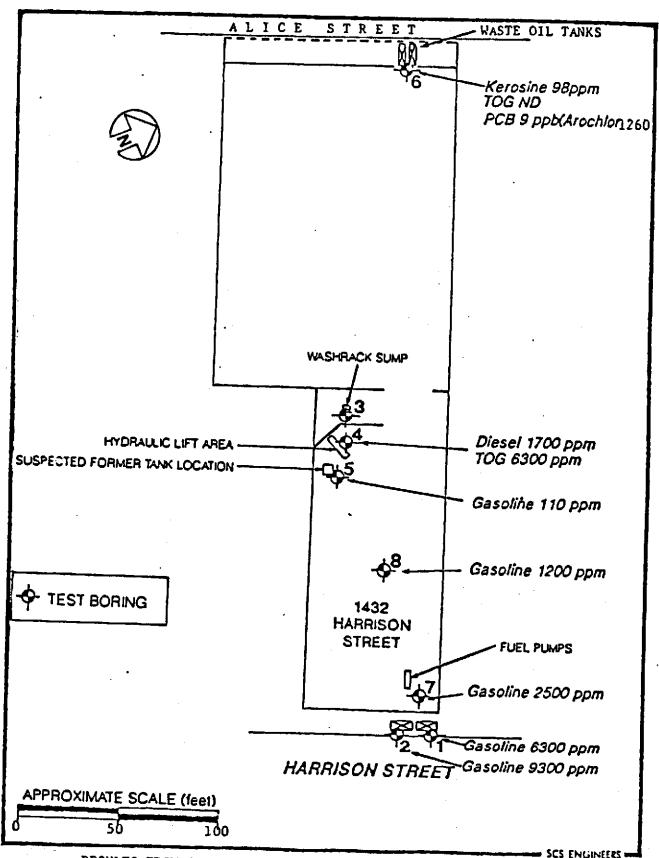
- 1 Total Volatile Hydrocarbons, mg/kg = ppm
- 2 Benzene, ug/kg = ppb
- 3 Toluene
- 4 Xylene
- 5 Ethylbenzene
- 6 Total Oil & Grease
- 7 Total Extractable Hydrocarbons (as kerosene and diesel)
- 8 --- = Not tested for
- 9 ND = Not detected

TABLE 1. CONTAMINANT CONCENTRATIONS IN SOIL (CONT'D)

(Results of Subsurface Consultants October 1990 Investigation)

Boring No. & Depth (ft)		B ² (ppb)	T ³ (ppb)	X ⁴ (ppb)	X ⁵ (ppb)	TOG ⁶ (ppm)	TKH ⁷ (ppm) Keros./Diesel	OTHER 8010/Sol Pb/PCB /(ppm)/(ppb)	ls
B7 @ 13	ND	ND	ND	ND	ND				
B7 @ 20	2,500	3,500	34,000	130,000	33,000		/	/0.07/	
B8 @ 22.5	1,200	2,300	38,000	89,000	18,000		/	/	

- 1 Total Volatile Hydrocarbons, mg/kg = ppm
- 2 Benzene, ug/kg = ppb
- 3 Toluene
- 4 Xylene
- 5 Ethylbenzene
- 6 Total Oil & Grease
- 7 Total Extractable Hydrocarbons (as kerosene and diesel)
- 8 --- = Not tested for
- 9 ND = Not detected



RESULTS FROM SUBSURFACE CONSULTANTS

Suspected sources of contamination may include either on-site and/or off-site USTs. The lateral and vertical extent of contamination has not yet been defined. A previous geophysical investigation by J. R. Associates completed in August 1990 disclosed the presence of several USTs and associated facilities within the boundaries of the subject site. A description of these tanks and a summary of investigative and remedial actions which have been performed to date are presented below.

Waste Oil Tanks

Two waste oil tanks are located beneath the basement floor of the multi-story parking structure along Alice Street. Figure 3 shows the tanks and associated piping and vent lines in the area. The date of installation of these tanks is unknown. No records have been located which have documented the volume or composition of these tanks. However, it is believed that each tank has an approximately 1000-gallon capacity and is of steel construction. On October 27, 1990, Falcon Energy drained the contents of both tanks by removing a combined total of 1300-gallons of waste oil from them.

Gasoline Tanks

Two gasoline tanks are located near the western property boundary beneath the Harrison Street sidewalk in front of the entrance to the garage. Permits issued to a former long-term tenant of the garage, Douglas Motor Services, show that these tanks each have 1000-gallon capacities, are of steel construction, and were installed in 1975 and 1982, respectively. On October 27, 1990, Falcon Energy removed most gasoline (total less than 200 gallons) from the tanks. The condition of these two tanks is unknown, although a sample collected from one was discolored by rust. The recovered gasoline and waste oil was accepted and utilized by a recycling contractor.

It should be noted that there is evidence of two other abandoned-in-place USTs a few feet west of the above-described gasoline tanks, beneath the Harrison Street sidewalk of the adjacent property. There tanks and property are owned and operated by other parties.

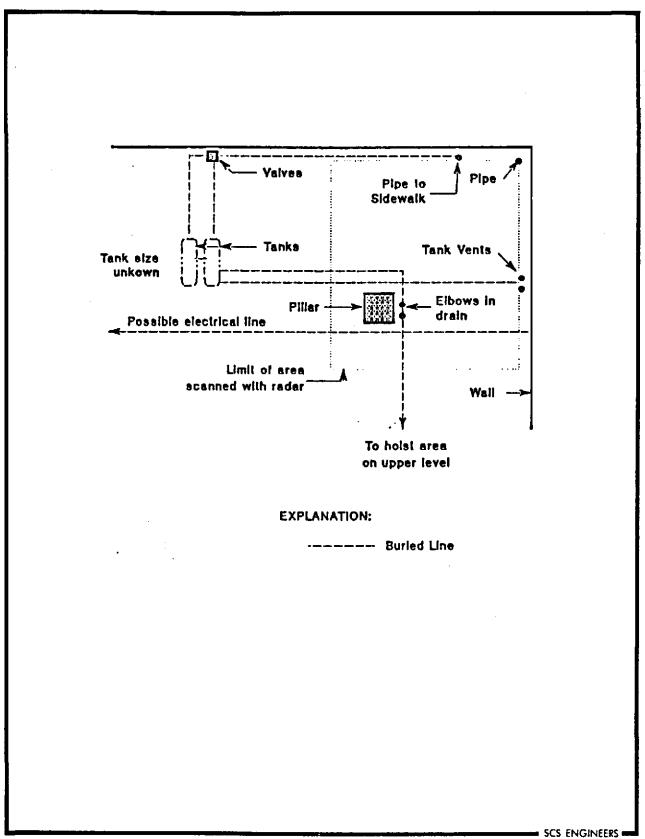


FIGURE 3: Detailed Site Plan of Alice Street Basement Garage, Showing Tank and Associated Piping Locations based on Geophysical Survey

Hydraulic Lift Area

The recent J. R. Associates geophysical investigation also identified a probable underground fluid reservoir located near the hydraulic lift area as well as three hydraulic lift rams inside the Harrison Street parking garage. Figure 4 shows the hydraulic lifts and associated piping in the area; the area of the Ground Penetrating Radar (GPR) anomaly marks the suspected location of the underground fluid reservoir.

There is no available record to indicate that integrity testing has ever been performed on any of the above-described tanks. The tanks are suspected to be the principal source(s) of the site's contamination. However, the total quantity of product(s) lost cannot be estimated at this time.

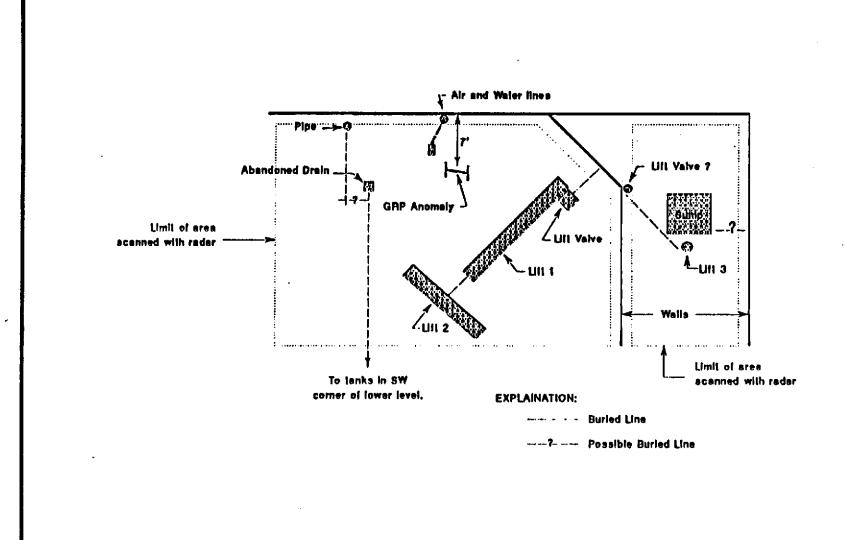


FIGURE 4: Detailed Site Plan of Hydraulic Lift Area in upper Harrison Street Garage, Showing Lift and associated Piping and Suspected Underground Fluid Reservoir (GPR anomaly) areas

SECTION 3

PROJECT ORGANIZATION AND FUNCTIONAL RESPONSIBILITIES

LIST OF PROJECT PERSONNEL

SCS Engineers

Dr. John P. Cummings, Project Director and Health and Safety Officer

Mr. David E. Ross, P.E., Technical Advisor And Quality Assurance Officer

Mr. Nels R. Johnson, P.E., Project Manager

Mr. Jack N. Alt, Certified Engineering Geologist

Mr. J. Don McClenagan, Field Manager

Mr. Thomas D. Gilmore, Field Geologist

Ms. Adi Constantinescu, Field Geologist

Mr. Prabhu N. Ravandur, Field Engineer

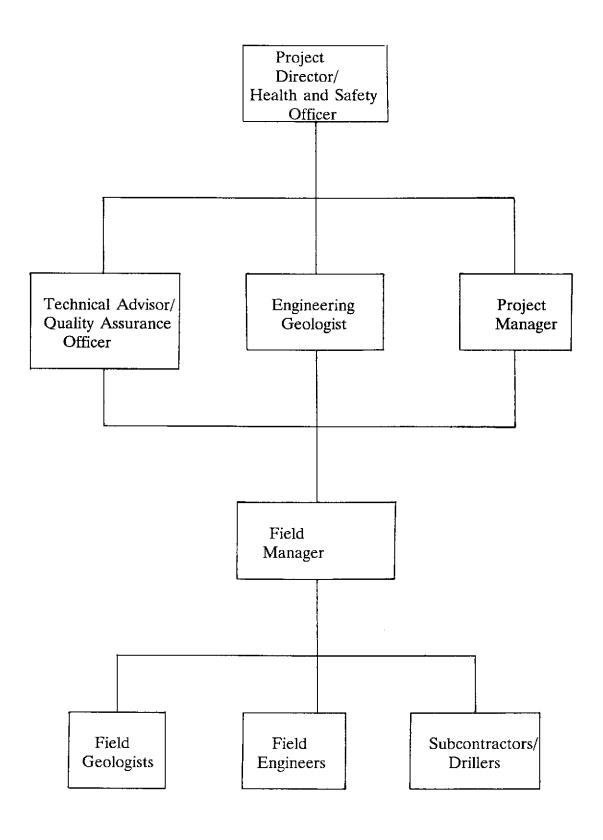
Subcontractors

SCS Field Services
J R Associates
HEW Drilling Company
Hogate Exploration
Bay Area Exploration

Contract Analytical Laboratory

SCS Analytical Laboratory 2860 Walnut Avenue Long Beach, California 90806

SCS ENGINEERS ORGANIZATIONAL STRUCTURE



FUNCTIONAL RESPONSIBILITIES

Project Director/Health and Safety Officer

The Project Director (PD) will be responsible for overall project management and supervision. In this capacity, he will also closely coordinate with USACE Project Managers in order to assure satisfactory, accurate, and timely completion of all field operations, interpretation of laboratory analytical results, establishment of and compliance with quality-assurance procedures, and other characterization activities as required. For this project, the PD also will serve as the Health and Safety Officer (HSO). In this capacity, his responsibilities will include development, implementation, and updating of the Health and Safety Plan, including assessing, and interpreting the results of site monitoring and evaluation of health hazards, with specific application to determination of appropriate corrective actions or changes in required Personal Protective Equipment (PPE) that may be mandated by changes in site working conditions or environment.

Technical Advisor/Quality Assurance Officer

The Technical Advisor (TA) will provide technical support and expertise to the project as required by specific site conditions or problems that may be encountered during the course of either field operations or interpretation of analytical results. Such conditions may include, but are not limited to, discovery of unusual and/or complex combinations of contaminants, characterization or assessment of complex or interactive contaminant plumes or migration patterns, or interpretation of ambiguous laboratory results. For this project, the TA also will serve as the Quality Assurance Officer (QAO). Because the TA/QAO is affiliated with the Long Beach Office of SCS Engineers, his QA responsibilities are separate and independent from the Dublin Office-based project management, although he will report directly to the Project Director. In this capacity, the QAO will assess, initiate, carry out, and review corrective actions required to maintain adequate quality-assurance procedures for the field collection and laboratory analysis of samples interpretation of results, and chemical characterization of the site.

Project Manager

The Project Manager (PM) will be responsible for the day-to-day management of all operations associated with the site characterization program. In this capacity, he will be responsible for conducting and coordinating smooth and timely completion of the field operations, ensuring adequacy and completeness of the sampling and monitoring program and resulting characterization, and resolving any unanticipated problems or difficulties that may occur during the daily operations. In addition, the PM will be responsible for maintaining compliance with the Health and Safety Plan and will audit site health and safety practices, decontamination, and environmental monitoring activities.

Field Manager

The Field Manager (FM) will be responsible for overseeing daily activities of the sampling and monitoring program. He will also monitor job progress and overall Health and Safety Plan compliance.

Field Geologists/Engineers

During drilling, well installation, water-level measurement, and sample collection activities, field geologists and/or engineers will identify sampling locations and depths, collect and preserve soil samples, log soil conditions, measure water depths, collect and preserve representative groundwater samples, complete Chain-of-Custody documentation, and ship samples to the laboratory.

SECTION 4

FIELD ACTIVITIES

INTRODUCTION

The planned field activities for this first phase of the contamination characterization program include removal and disposal of the USTs and hydraulic lifts, collection of soil samples from all excavated tank pits, collection of sludge and water samples from the wash rack sump area, basement collection drain and capped pipe in the basement, installation of a total of three groundwater monitoring wells, (one adjoining the gas UST, one adjoining the waste oil UST and one adjoining the hydraulic lifts), well development and collection of representative groundwater samples.

The field methodology and laboratory analytical procedures to be used in the collection, analysis, and interpretation of chemical data for this contamination characterization program are outlined and described below. The purpose of the planned operations is to: 1) remove probable sources of contamination presently onsite, 2) identify contaminants, 3) characterize the lateral and vertical extent of contamination, 4) identify concentration levels, and 5) identify the probable direction of movement (if any) of soil and /or groundwater contamination at the Harrison Street Garage.

Installation of groundwater monitoring wells will permit the collection and analysis of representative groundwater samples surrounding the tank and lift sites in order to define the nature, extent, and concentration of contamination and to discern the probable source and direction of movement of the contamination. Periodic measurement of groundwater levels in the wells will provide information concerning site-specific hydrologic conditions and temporal changes in water levels, which will in turn permit establishment of a groundwater gradient and probable direction of flow. Similarly, soil samples collected at the time of monitoring well installation and from additional, strategically located soil borings (to be drilled during a subsequent phase of site characterization) will permit characterization of the nature, probable source,

extent, and concentration levels of any potential soil contamination in the designated areas.

Completion of the above elements is expected to permit initial characterization and assessment of the nature and extent of any soil and/or groundwater contamination at the three individual sites being investigated. Interpretation and integration of analytical test results will permit: (1) qualitative and quantitative determination of whether chemical releases to the environment have occurred, (2) identification of probable sources and extent of contamination, (3) identification of chemical constituents and concentration levels of any contamination present, which will in turn indicate the appropriate method of disposal and/or remediation, and (4) determination of whether additional or more detailed characterization of any individual site may be either required or desirable.

All field operations will be conducted and analytical test results determined so as to fully comply with all applicable federal, state, and local regulations governing underground storage tanks. The results of this characterization investigation will provide the basis for addressing the next phase of cleanup operations. It should be noted here that soil and groundwater analyses in subseaent phases will be limited to those constituents detected in this phase of the workplan.

The sampling and analytical procedures presented in this plan will ensure that consistent and reproducible sampling methods are used; proper analytical methods are applied; analytical results are accurate, precise, and complete; and the overall objectives of the contamination characterization and monitoring program are achieved. These procedures will be performed in accordance with Title 23, Subchapter 15, Sections 2550 through 2559 of the California Code of Regulations. The Tri Regional Board Staff recommendations for Preliminary Evaluation and Investigation of USTs (10 August, 1990) has been used as a guideline for the development of these procedures.

The remainder of this work plan consists of sections that describe in detail the various elements of the Phase I Site Characterization Program, including: Tank and lift removal, installation of monitoring wells, procedures for soil sample collection, groundwater level measurement and groundwater sample collection. In addition, documentation of Chain-of-Custody, analytical services, and quality assurance procedures are described.

LOCATION OF UNDERGROUND UTILITIES

Prior to the beginning of any field drilling or tank removal operations, Underground Service Alert (U.S. Alert) will be contacted in order to locate any underground utilities present near the proposed investigative areas around each former tank site. In addition, a geophysical survey utilizing ground penetrating radar may also be conducted to locate the same. Such utilities will include, but may not be limited to:

- Water
- Storm and Sanitary Sewer
- Electric Power Lines
- Telephone
- Natural Gas and other High-pressure Fuel Lines
- Cable Television
- Other Facilities, such as Steam, Vacuum, or Compressed Air Lines
- Underground Storage Tanks and Associated Vent Lines or Dispenser Facilities

Precise field location of existing utility lines (or other unanticipated field conditions) may dictate the need to slightly modify proposed field locations of borings in order to avoid potential damage to the existing lines. SCS Engineers will contact the County for its approval of any such locational changes prior to the initiation of actual field work at those locations.

Identification of buried pipes or drain lines in the basement and their respective outlets or sewer hookups is of concern. It is not certain the destination of discharge for the drains in the basement. As built drawings for building and city public sewers will be researched. If adequate records are not available a pipe-locating service or

service or geophysical survey will be called upon to determine the destinations of discharge for the basement drain.

COLLECTION OF SAMPLES FROM WASH RACK SUMP AND COLLECTION DRAIN AREAS

Liquid and/or sludge samples will be collected for analysis from three possible contamination source areas, including 1) the wash rack sump area in the Harrison Street garage 2) the collection drain in the Alice Street Basement and 3) the capped pipe also in the Alice Street basement. Analysis of these samples will permit identification of the contents of these areas, which currently are unknown, and will provide the basis for further drilling and sampling during a subsequent phase of characterization.

Liquid and/or sludge samples, if available, will be collected from the wash rack sump and/or adjoining lift ram. A preliminary field reconnaissance indicated that no water was present in the sump area, although water was present in the adjoining lift ram. There is a sufficient amount of sludge or other solid residue present in the immediate sump area to collect a representative sample for analysis. Sludge will be collected using either a stainless steel or disposable plastic scoop and retained in a wide-mouth jar with a non-reactive screw-top. Representative water samples will be collected from the ram next to the sump using a disposable bailer. No water from the ram will be purged prior to sampling, as it is unknown how much product is available. The initial sample collected will be examined for the presence of floating, free product, which, if observed, will be measured and described, and any other distinguishing characteristics will be noted. A minimum of two 1-liter bottles and four 40-ml VOA vials will be collected. Samples will be sealed following collection, labeled, kept in cold storage (4°C), and transported with Chain-of-Custody documentation to a certified testing laboratory for analysis. The analyses to be performed are specified in Table 2.

TABLE 2

LABORATORY ANALYSIS SUMMARY
FOR COLLECTED SOIL AND WATER SAMPLES

Location	TPH-G ¹	$TPH-D^2$	BTEX ³	O.L. ⁴	O&G ⁵	ClH ⁶	PCB's ⁷	PPM ⁸
Gasoline Tanks	X	X	X	X	X	X	X	X
Hydraulic Lift		X	X		X			
Waste Oil Tanks (Basement)	X	X	X		X	X	X	X
Wash Rack Sump	X	X	X		X	X		
Collection Drain & Capped Pipe (Basement)	X	X	X		X	X		X

- 1. Total Petroleum Hydrocarbon as GAS (EPA 8015 Mod)
- 2. Total Petroleum Hydrocarbon as Diesel (EPA 8015 Mod)
- 3. Benzene, Toluene, Ethylbenzene, Xylene (EPA 8020)
- 4. Organic Lead (DOHS MIBK Method)
- 5. Oil & Grease (EPA 413.1)
- 6. Chlorinated Hydrocarbons (EPA 8120)
- 7. Polychlorinated Biphenyls (EPA 8080)
- 8. Priority Pollutant Metals

Liquid samples also will be collected from the basement collection drain and capped pipe. Based on preliminary field reconnaissance, both these sources appear to contain only liquids. If a disposable bailer cannot be inserted into either opening, or if insufficient material is available, a hand-operated siphon pump with removable hoses will be used for sample collection; clean hose lines will be installed in order to avoid cross-contamination of samples between the drain and pipe sources. A minimum of two 1-liter bottles and four 40-ml VOA vials will be collected from each source, provided sufficient material is available to sample.

TANK AND LIFT REMOVALS

The two gasoline USTs beneath the Harrison Street sidewalk, the two waste oil USTs in the Alice Street basement, and the three hydraulic lifts and possible associated hydraulic fluid reservoir, and any associated product piping or vent lines that are exposed all will be removed and disposed of by a State-licensed hazardous materials contractor, after first being properly cleaned, vented, degassed, and inerted. Manifests (to be appended to the tank removal report) will document proper treatment, storage, and disposal of all tanks, associated piping, and rinsate solutions.

It is anticipated that all excavation spoils will be retained on-site until disposition can be determined. The soil will be covered with visqueen material as required to keep contaminants contained. The open excavations will be barricaded until disposition of spoils can be determined (ie used as backfill or hauled off-site).

Collection of Soil Samples

Following excavation and removal of the tanks or lifts from each area, representative soil samples will be collected from each site and submitted to a State-certified analytical laboratory for testing. Two soil samples will be collected from beneath the ends of each tank or lift area. These samples shall be taken from native materials not to exceed 2 feet below the bottom of the tank/lift. Although groundwater is not expected to be encountered if it present in the excavation pit, the soil samples will be collected from the pit walls near the tank ends at the soil/groundwater interface. A water sample also will be collected from any excavation pit where it is present.

Soil samples will also be collected at an interval of 20 feet for associated product piping that is removed. These samples will be analyzed for the same constituents as the pertinent UST.

Additional soil samples will be collected from the excavation spoils piles. SCS Engineers expects to collect one sample, either discrete or a composite (at the direction of the County inspector) from each excavation. The two gasoline tanks and the two waste oil tanks should comprise one excavation each, and therefore, one sample each. It is currently unclear whether removal of the hydraulic lifts and associated reservoir will comprise one or more separate excavations; one to three soil samples will be collected from the hydraulic lift area excavation spoils pile(s). If composite samples are required, soil will be collected from portions of the pile as designated by the County inspector, mixed together in a clean bucket, and retained in brass sleeves.

Soil samples will be collected and retained in clean brass sleeves, the ends sealed with teflon tape, capped with plastic end caps, sealed tightly with tape, labeled, and kept in cold storage (4°C) for transport to a State-certified laboratory. During sampling, samples will be screened in the field using both visual inspection and a portable organic vapor meter.

INSTALLATION OF GROUNDWATER MONITORING WELLS

Following removal of the tanks and lifts, a total of 3 groundwater monitoring wells will be installed, one adjacent to gasoline UST, waste oil USTs and hydraulic lifts. Installation of the initial 3 wells is expected not only to permit determination of a verified downgradient groundwater flow direction and to measure water levels, but also to meet the "within 10 feet (of a former tank site)" requirement specified by the Tri-Regional Recommendations (revised August 10, 1990, Page 11). Figure 2 shows the proposed locations of the monitoring wells, each in the presumed downgradiant (i.e., eastward) groundwater flow direction from the presumed source areas, which include: (1) the gasoline (2) waste oil tanks and (3) hydraulic lift areas. Each well also will

be used for sampling and monitoring during the next phase of the more detailed site characterization and assessment program.

Placement Rationale

The proposed wells are designed and will be sited so as to (1) permit computation of a verified downgradient groundwater flow direction, (2) measure water levels, and (3) optimally investigate the nature and levels of contamination both at known and suspected sources of contamination. A verified downgradient direction has not yet been established for this site; however, it is provisionally assumed to subparallel the local topographic slope. Consequently, and based on an assumed easterly direction of groundwater flow, contaminants which could move from their source are expected to migrate in a generally easterly direction toward Lake Merritt.

Drilling and Installation of Wells

The proposed groundwater monitoring wells will be installed using a hollow-stem auger drilling rig. Because of the height and clearance constraints imposed by the ceilings and access ways within the existing parking structure, a small skid-or trailer-mounted rig will be utilized inside the basement. The wells near the Harrison Street garage entrance and hydraulic lift areas will be installed using a conventional truck-mounted drilling rig.

The well installation will be coordinated by a field geologist, under the supervision of a State-registered Certified Engineering Geologist (CEG). The borings will be logged in the field by the field geologist, and soils encountered will be classified using the Unified Soil Classification System (Figure 5). Well logs for each boring showing lithologies encountered, depth to groundwater, and well construction details will be included in the final written report. A sample field boring log is shown in Appendix D.

The proposed borings will be approximately 6 inches in diameter. Borings will be drilled to a total depth of approximately 35 feet below the Harrison Street grade, or

UNIFIED SOIL CLASSIFICATION SYSTEM

GENERAL SOIL CATEGORIES			SYME	BOLS	TYPICAL SOIL TYPES	
		Clean Gravel with	GWM		Well Graded Gravel, Gravel-Sand Mixtures	
S. iev	GRAVEL More than half	little or no fines	GP		Poorly Graded Gravel, Gravel-Sand Mixtures	
SOIL	coarse fraction la larger than No. 4 sieve size	Gravel with more	GM		Silty Gravel, Poorly Graded Gravel-Sand-Silt Mixtures	
COARSE GRAINED SOILS More than half is larger than No. 200 sleve		than 12% fines	GC		Clayey Gravel, Poorly Graded Gravel-Sand-Clay Mixtures	
E GR.		Clean sand with little	sw		Weil Graded Sand, Gravelly Sand	
OARS than his	SAND More than half coarse fraction	or no lines	SP		Poorly Graded Sand, Gravelly Sand	
ا کَ قَ	is smaller than No. 4 sieve size	Sand with more than 12% fines	SM		Silty Sand, Poorly Graded Sand-Silt Mixtures	
			sc		Clayey Sand, Poorly Graded Sand-Clay Mixtures	
# \ e \ e	SILT AND CLAY Liquid Limit Less than 50%				Inorganic Silt and Very Fine Sand, Rock Flour, Silty or Clayey Fine Sand, or Clayey Silt with Slight Plasticity	
SOILS No. 200					Inorganic Clay of Low to Medium Plasticity, Gravelly Clay, Sandy Clay, Silty Clay, Lean Clay	
FINE GRAINED SOILS	SILT AND CLAY Liquid Limit Less than 50% SILT AND CLAY Liquid Limit Greater than 50%		OL		Organic Clay and Organic Silty Clay of Low Plasticity	
GRAII			мн		мн	
FINE Ihan hal	SILT AND CLAY Liquid Limit Greater than 50%		СН		Inorganic Clay of High Plasticity, Fat Clay	
More					Organic Clay of Medium to High Plasticity, Organic Silt	
	HIGHLY ORGANIC SOILS				Peat and Other Highly Organic Soils	

FIGURE 5: Unified Soil Classification System Chart

at least 10 feet below the groundwater surface. A previous subsurface investigation conducted at this site in October 1990 by Subsurface Consultants, encountered groundwater at an average depth of 23 to 25 feet below the Harrison Street grade. The augers will be steam-cleaned on site at the completion of each boring. Waste water and sludge from the steam cleaning and excavation spoils from drilling will be collected and transferred to 55-gallon drums for temporary storage on-site. The waste water and spoils will be analyzed and the results will dictate the final disposition.

Soil samples will be collected from each boring at a minimum interval of every 5 feet, and at the soil/groundwater interface (if encountered), with a Modified California split-spoon sampler. Samples will be retained in brass sleeves, examined, sealed with teflon, capped with plastic end caps, tightly wrapped with tape, labeled, and kept in cold storage (4°C) for transport to a chemical testing laboratory certified by the California Department of Health Services. Samples submitted for analysis of heavy metal constituents will be retained in glass jars with non-reactive lids. Samples will be screened in the field using a photo-ionization detector type organic vapor meter (OVM). Protocal for sample labeling is as follows: All samples will include identification of project name or number, date and time of sampling, drill hole or

Well Construction

Typical well construction details for the installation of groundwater monitoring wells are shown in Figure 6. Each monitoring well will be constructed in the borehole using flush-mounted, threaded PVC well casing. As proposed, wells located inside the building will be two inches in diameter. Factory-slotted screen with 0.020-inch slots will be placed into the aquifer, with solid PVC pipe installed above. The perforated zone of the casing will be installed from about 5 feet above the groundwater surface to the total depth of the well, such that perforated casing extends at least 10 feet below the groundwater surface. A perforated zone of this nature should accommodate anticipated seasonal water-level fluctuations at the site. A flush-mounted, threaded end cap will be placed on the bottom of the perforated section. Couplings between

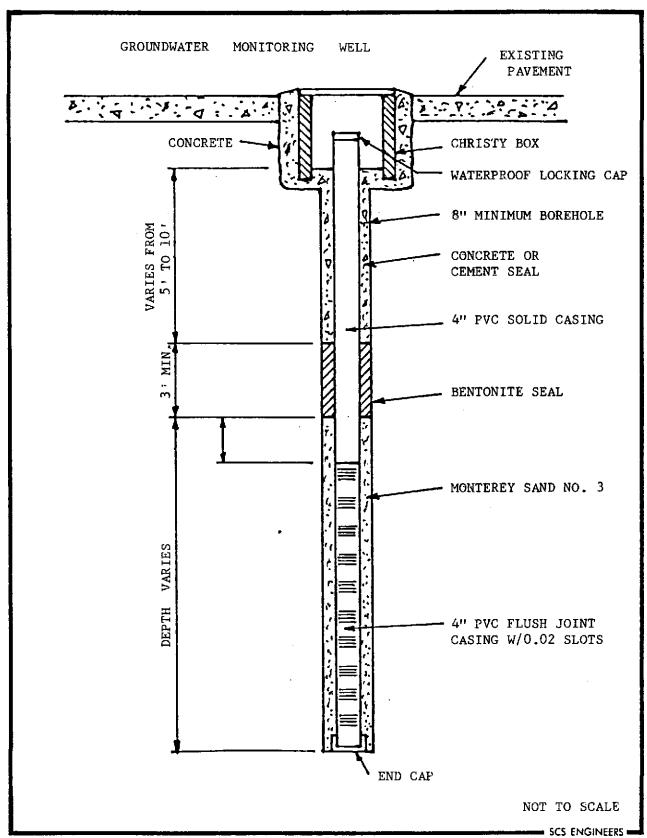


FIGURE 6: Typical Well Construction Details for the Installation of Groundwater Monitoring Wells

the casing sections will be flush-set, threaded pipe with no glued connections. All casings will be steam-cleaned prior to installation.

The well casing will be set inside the hollow augers prior to their removal in order to prevent caving of the hole prior to installation of the casing. The annular space surrounding the well screen will be filled with a filter pack, such as Monterey Sand No. 3, to a level at least 2 feet above the top of the screened interval and then capped with a bentonite seal approximately 3 feet thick. The sand will be poured slowly into the annular space between the PVC pipe and the augers. This procedure will be interrupted periodically in order to measure the depth to the top of the sand with a weighted tape. The remaining annular space above the bentonite seal will be monitoring well number, sample number, sample depth, and requested analyses. filled with a cement/grout mixture to a level about 1 foot below grade. The top of the well will be cemented and set with a locking monument well cover. The concrete surface seal will be sloped away from the well casing at the ground surface in order to promote good drainage and prevent infiltration. The top or surface portion of the well casing will be fitted with a lockable, expandable rubber plug in order to reduce or minimize unwarranted intrusion into the casing.

A reference point on each monitoring well casing will be marked with an indelible marker and then surveyed by SCS Engineers in order to establish elevations that will be used for depth-to-water measurements and gradient calculations. The leveling survey will measure elevations to the nearest 0.01 foot and all elevations will be referred to an established benchmark or other fixed local control point of known elevation.

Well Development

Each monitoring well will be developed in order to increase its specific capacity, prevent sanding, maximize well life, and collect representative samples of the groundwater. Well development generally repairs any damage done to the native materials by the drilling operations, restores natural hydraulic properties to the

adjacent soils, and improves hydraulic properties near the borehole so that water flows more freely into the well.

The wells will be developed by removing or flushing the finer material from both the local native materials and the sand filter pack surrounding the wells. This procedure will consist first of bailing the well and then pumping or bailing the well until it produces clean water, i.e., water containing minimal amounts of suspended solids. All of the groundwater produced or removed during the well development operations will be stored temporarily on-site in approved 55-gallon drums, which will be labeled as to their contents. Subsequent testing of the purged groundwater will indicate its final disposition.

New disposable bailers will be used for all well purging and sampling activities. The use of dedicated bailers for each well will assure sample cleanliness and avoid potential for cross-contamination. Should any reusable equipment, such as pumps, be employed, all equipment will be decontaminated both prior to and subsequent to its use in each well. Decontamination will consist of steam cleaning and/or washing of equipment using trisodium phosphate soap, tap water rinse, and distilled water rinse.

Water Level Measurement

Prior to any groundwater sampling, static water-level measurements in each monitoring well will be taken using an electronic water-level indicator. Water-level measurements will be made by a field geologist or engineer and the readings will be measured to the nearest 0.01 foot from the marked reference point on the top of the well casing. The monitoring wells will be sampled for soluble constituents only after completion of the water-level measurements. Water levels will be converted to elevations with respect to mean sea level (MSL), or another fixed local control point, and a groundwater elevation contour map then will be constructed from the water level data.

Sealed wells should always be uncapped and left open for several minutes prior to water-level measurement in order to allow ambient groundwater levels to equilibrate. The water level will be measured by lowering the electrode and cable slowly into the well casing. The water level indicator will be turned on and the buzzer tested before lowering the cable into the well. Water levels will be reported in feet below a measured reference point, usually a mark on the top of the well casing. The point on the sounder cable where the water level indicator will register maximum deflection will be held against the reference point and marked. The distance from the mark to the nearest footage tab will be measured using a pocket tape calibrated in hundredths of feet. Water level measurements will be repeated two or more times in order to assure accuracy of the water level measurement.

All water levels will be recorded on prepared forms of the type shown in Appendix D. The recorded data will include the depth to water, in feet below the reference point, the time and date of the measurement, and the calculated water level, depth or elevation, with respect to a fixed control point. Water level measurements will be reported to the nearest 0.01 foot.

Notes of any activity or condition which may affect the water level measurements will be made during the water level measuring. Such activities may include changes in local atmospheric conditions, pumping from nearby wells, drilling and/or testing operations.

Collection of Groundwater Samples

The following sections contain a detailed description of the equipment, well purging and sampling techniques, and methods of sample handling to be utilized in the collection of representative groundwater samples for the water quality monitoring program.

The depth to static water level first will be measured and recorded, as described in the section "Groundwater Level Measurements," before purging and sampling of each monitoring well begins. Next, a clear disposable bailer will be lowered into each well following water-level measurement, but prior to purging, in order to sample the upper surface of the groundwater. Any free product observed floating on the groundwater will be measured in the bailer, and its color, odor, turbidity, or other distinguishing characteristics will be noted and described.

Following free product sampling, each monitoring well will be purged of three to four well-volumes of water using disposable bailers or a submersible pump. Well purging permits a representative sample of groundwater to be obtained directly from the aquifer, rather than from water which had been standing in the well. Because the well casing diameter, total well depth, and groundwater level will be known or can be calculated for each well, an accurate estimate of well volume can be made in the field in order to estimate and measure the purge volume required to be evacuated from each well prior to sampling. If the well does not recharge fast enough to permit removing three well-casing volumes, the well will be pumped or bailed dry, and sampled as soon as sufficient recharge has occurred. Again, notations will be made as to any color, odor, turbidity, or other distinguishing characteristics in the water being purged from the well. Groundwater removed from wells prior to sample collection will be contained temporarily on-site in approved 55-gallon drums, which will be clearly labeled to identify contents as "Possibly Hazardous" and source. Subsequent testing results will dictate its final disposition.

After completion of the minimum bailing time required to adequately purge the well, the purging water level, well discharge rate, temperature, specific conductance, and pH again will be measured and recorded on the field data sheet. A typical data sheet is shown in Appendix D. The time when the purging began, the duration of purging, and the date of the sampling also will be noted on the data sheet. If a pump is used for purging of wells, it will be decontaminated both prior to and subsequent to its use in each monitoring well. Decontamination will consist of washing of equipment with trisodium phosphate soap, tap water rinse, and distilled water rinse.

Representative groundwater samples will be collected using a disposable acrylic bailer and contained in pre-cleaned 40 ml VOA vials with teflon-coated septa or 1-liter amber jars, depending on the analysis to be performed. The type of containers, preservation, and maximum holding times permitted prior to analysis for both soil and groundwater samples will conform to EPA standards. Samples will be acidified for preservation when required by EPA protocol. The general procedure for sample collection is as follows. Sample containers will not be pre-rinsed with sample, and will be filled slowly just to overflowing so that a convex meniscus remains over the opening of the container. Samples to be analyzed for volatiles will be collected first, allowing no head space and with as little disturbance of the water as possible. The container will then be carefully sealed with the teflon-lined cap. All efforts will be made to minimize volatilization of the samples, particularly by minimizing sample exposure to the atmosphere through collection as soon after completion of well purging or recharge as practicable and by ensuring that all air is expelled from sample containers. If air bubbles are present following sealing of sample containers, the sample should be poured out and resampled. Duplicate groundwater samples will be routinely collected.

Sealed sample containers then will be labeled with a sample tag, using similar protocol to that described above for soil samples. Labels will include: project name or number, date and time of sample collection, monitoring well number, sample number, name of person collecting the sample, and requested analyses.

Sample Handling

All samples for all analyses will be refrigerated from the time of field collection until the time the samples are analyzed in the laboratory. Samples obtained from sources or sample points known or suspected to contain high concentrations of volatile contaminants will be segregated from the other samples during handling and shipment. Samples containing high concentrations of volatile organic compounds will be shipped in separate containers to minimize potential cross contamination with other samples during shipping. Trip and field blanks (see Section 6) will be included with each

container of samples shipped to the laboratory. At the end of each field day, the samples will be carefully packaged to preclude damage or breakage and sealed with tape for secure transportation to the selected laboratory. All sample shipments will be sent via an overnight carrier such as Federal Express with the proper Chain-of-Custody forms clearly documenting the sample identification, time and date of collection, and analyses to be performed. An example of the Chain-of-Custody form is included in Appendix D. A more detailed description of Chain-of-Custody documentation is outlined in Section 5. Samples will be scheduled to arrive at the analytical lab within 24 hours after acquisition.

SECTION 5

DOCUMENTATION OF CHAIN OF CUSTODY

To ensure the integrity of samples from time of collection to reporting of analytical results, documentation of Chain-of-Custody is required. Custody documentation will permit tracing of the possession and handling of samples from the time of collection in the field through laboratory analysis and final disposition. The components of the custody procedure include: sample labels, field log, and Chain-of-Custody document containing analysis request. Sample field logs and Chain-of-Custody documents are included in Appendix D.

Sample labels will be attached to all sample containers in order to prevent misidentification of samples. Labels will be filled out and attached to sample containers at the time of sample collection. Protocol for sample labeling is discussed under the appropriate (i.e., soil or groundwater) sampling procedures outlined in Section 4, Field Activities.

Sample seals will be attached to the sample caps in order to detect possible contamination or unauthorized tampering of the samples during transfer. Gummed labels or tape are recommended. The seal will be attached in a manner that requires breaking of the seal in order to open the sample container.

A field sampling log will be maintained to record observations and information obtained during sampling. The field log will include:

- Location of sample point.
- Sample identification.
- Number and volume of samples taken.
- Description of sample point and sample methods.
- Date and time of collection.
- Field observations.
- Field measurements (e.g. pH, temperature, specific conductance).
- Names(s) and signature(s) of persons(s) collecting the sample.

The Chain-of-Custody document will accompany all samples delivered to the laboratory and will include sample identification, date sampled, and analyses requested. Any instructions for special handling, storage, or disposition of the samples also will be included on the request form.

The sample transmittal documents will include the shipping receipts to document sample transport, and sample Chain-of-Custody form. The acknowledgement of receipt will include date of sample receipt, identification of samples received, condition of samples as received, and signature of receiving laboratory representative on the same Chain-of-Custody form.

Copies of all documents relating to sample custody will be permanently retained by SCS Engineers and will be appended to written reports summarizing analytical test results.

SECTION 6

ANALYTICAL SERVICES AND QUALITY ASSURANCE PROCEDURES

ANALYTICAL SERVICES

A chemical testing laboratory certified by the State of California Department of Health Services will be retained to analyze all soil and water samples collected as part of the Site Characterization Program. The primary laboratory to be used is:

> SCS Analytical Laboratory 2860 Walnut Avenue Long Beach, California 90806

The minimum verification laboratory analyses to be performed on each sample will depend on the contaminants known or suspected to be present in each study area and will be in accordance with the "Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites". All sample analyses for organic compounds will be completed within 14 days of sample collection, or as otherwise required by EPA regulations. If contaminants other than those that are suspected to be present in any given study area or sample, then other EPA-designated analyses will also be performed, as required. Laboratory reports will include sample identification, date sampled, date received, date analyzed, and analytical results.

Internal laboratory QA/QC tests or assessments will be included with all reported test results. A written presentation and critical evaluation of laboratory quality assurance data will be included in site characterization program progress reports. For further explanation of the primary laboratory's QA/QC procedures, refer to the SCS Analytical Laboratory Quality Assurance Quality Control Manual. This manual is available upon request.

QUALITY ASSURANCE PROCEDURES

The quality assurance measures outlined below will be taken in order to ensure and

confirm the integrity and reliability of the analytical laboratory data generated during the Site Characterization Program.

Field Quality Assurance

As a part of the field quality assurance program of the contract, trip and field blanks will accompany all groundwater samples submitted for laboratory analyses. The trip blank will consist of a container of organic-free reagent water that is kept with the field sample containers from the time the samples are originally collected in the field until they are delivered to the laboratory. The purpose of trip blanks is to determine whether samples are being contaminated during transit or sample collection. Trip blanks pertain only to analyses for volatile organic compounds; therefore, the containers must contain no headspace. Only one trip blank is needed for one day's sampling and shall satisfy trip blank requirements for both soil and groundwater materials for that day if all volatile samples are shipped in the same cooler.

The field or rinsate blank will be collected at the sample site using ultrapure water which first has been poured directly into the acrylic bailer and then bottled under the same field conditions as the representative groundwater samples. Disposable bailers are expected to be the primary sampling tool, eliminating the need for equipment decontamination and potential cross-contamination of either field samples or sampling equipment. Should any other reusable sampling equipment be employed, the rinsate blank will consist of reagent water which has been collected from the final rinse of the sampling equipment following decontamination. This will permit detection of whether sampling equipment is causing cross-contamination of samples.

Laboratory Quality Assurance

Duplicate soil and groundwater samples will be simultaneously collected from each well using the same procedures as for collection of the original samples, as outlined in Section 4. The duplicate will be analyzed in the event that the original sample has been tampered with, broken, or otherwise rendered unusable. Duplicate samples also may be used for occasional internal QA/QC purposes in order to provide field

originated checks on the quality and accuracy of laboratory analytical procedures. For these purposes, the identity of the samples will be held blind to the analysts and laboratory personnel until the chemical analyses have been completed.

APPENDIX A ALAMEDA COUNTY UNDERGROUND TANK CLOSURE PLAN

Project Specialist (print)____

ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
DEPARTMENT OF ENVIRONMENTAL HEALTH
HAZARDOUS MATERIALS DIVISION
80 SWAN WAY, ROOM 200
OAKLAND, CA 94621
PHONE NO. 415/271-4320

UNDERGROUND TANK CLOSURE PLAN

* * * Complete according to attached instructions * * *

1.	Business Name	All Right Parking					
	Business Owner _	Same			-	_	
2.	Site Address						
	City	Oakland	_ Zip _	94612	Phone		
з.	Mailing Address				<u>-</u>		
					Phone		
4.	Land Owner	Alvin H. Bacharach	, Barbara	J. Bor	suk		
	Address 383 Diab	lo Rd., Ste. 100	city, st	ate _	Danville, CA	Zip	94526
5.	Generator name u	nder which tank	will be	manif	ested		
		Barbara J. Borsuk					
	EPA I.D. No. urd	er which tank wi	ll be ma	nifes	tedCAC (0005988	340

6. Contractor	Falcon Energy Associates	
Address	P.O. Box 1257	
City	Stockton, 95201 Phone 209-463-7108	
License Type	General Engineering ID# 584524	
7. Consultant	SCS Engineers	
Address	6761 Sierra Court, Suite "D"	
City	Dublin, CA Phone 415-829-0661	
8. Contact Person	for Investigation	
Name	Nels R. Johnson Title Senior Project Engineer	
Phone	415-829-0661	
9. Number of tank	s being closed under this plan4	
Length of pipi	ng being removed under this planUnknown	
Total number of	of tanks at facility4	
10. State Register instructions).	ed Hazardous Waste Transporters/Facilities (see	
** Underground	tanks are hazardous waste and must be handled ** as hazardous waste	
a) Product/Re	sidual Sludge/Rinsate Transporter	
Name	Falcon Energy Associates EPA I.D. No. CAD 982526857	
Hauler Li	cense No. 2463 License Exp. Date June 1991	
Address _	P.O. Box 1257	
City	Stockton, State CA Zip 95201-1257	_
b) Product/Re	sidual Sludge/Rinsate Disposal Site	
Name	The Kiesel Company EPA I.D. No. MOT 300011160	_
Address _	4801 Fyler Avenue	_
City		

	c) Tank and I	iping Transporter	
	Name	Falcon Energy Associates EPA I.D. No. CAD 982526857	
	Hauler I	License No. 2463 License Exp. Date June 1991	
	Address	P.O. Box 1257	
	City	Stockton, State CA Zip 95201-1257	
	d) Tank and	Piping Disposal Site	
	Name	Erickson Inc. EPA I.D. No. CAD 009466392	
		255 Parr Boulevard	
	City	Richmond, State CA Zip 94801	
11.		ample Collector Don Mc Clenagan	
			-
		SCS Engineers	-
	Address	6761 Sierra Court, Suite "D"	-
	City	Dublin, State CA Zip 94568 Phone 829-0661	-
12.	Laboratory		
	Name	SCS Analytical Laboratory	
	Address	2860 Walnut Avenue	_
	City	Long Beach, State CA Zip 90806	
	State Certif	ication No.	
13.	Have tanks or	pipes leaked in the past? Yes [] No []	
	If yes, descr	ibe. Unknown	_
			_
			_

14. Describe methods to be used for rendering tank inert

One hour prior to scheduled removal of tank, inert tank with dry ice at the

rate of 20 1b per 1000 gal capacity with Fire/Health Inspector on-site, test

tank with LEL/Oxygen meter.

Before tanks are pumped out and inerted, all associated piping must be flushed out into the tanks. All accessible associated piping must then be removed. Inaccessible piping must be plugged.

The Bay Area Air Quality Management District (771-6000), along with local Fire and Building Departments, must also be contacted for tank removal permits. Fire departments typically require the use of explosion proof combustible gas meters to verify tank inertness. It is the contractor's responsibility to bring a working combustible gas meter on site to verify tank inertness.

15. Tank History and Sampling Information

Gasoline Tanks

nk	Material to		
Use History (see instructions)	be sampled (tank contents, soil, ground- water, etc.)	Location and Depth of Samples	
Installed in 1975 contained gasoline last used - unknown	Soil/groundwater, if encountered	One at each end of tank from native materials at base of pit, not to exceed 2 ft below tank.	
Installed in 1982 contained gasoline last used - unknown	Soil/groundwater, if encountered	One at each end of tank from native materials at base of pit, not to exceed 2 ft below tank.	
	Use History (see instructions) Installed in 1975 contained gasoline last used - unknown Installed in 1982 contained gasoline	Use History (see instructions) Installed in 1975 contained gasoline last used - unknown Installed in 1982 contained gasoline contained gasoline Installed in 1982 contained gasoline Soil/groundwater, if encountered Soil/groundwater, if encountered	

One soil sample must be collected for every 20 feet of piping that is removed. A ground water sample must be collected should any ground water be present in the excavation.

Excavated/Stockpiled Soil				
Stockpiled Soil Volume (Estimated)	Sampling Plan			
Unknown	Sëë Modified Work Plan			

Stockpiled soil must be placed on bermed plastic and must be completely covered by plastic sheeting.

16. Chemical methods and associated detection limits to be used for analyzing samples

The Tri-Regional Board recommended minimum verification analyses and practical quantitation reporting limits should be followed. See attached Table 2.

Gasoline Tanks

Contaminant Sought	EPA, DHS, or Other Sample Preparation Method Number	EPA, DHS, or Other Analysis Method Number	Method Detection Limit
TPH Gasoline		EPA 8015 G	Soil/Water 10 ppm/0.5 ppm
TPH Diesel		EPA 8015 D	10 ррт/0.05ррт
BTEX		EPA 8020	10 ppm/0.05 pp
Oil and Grease		413.1	5 ppb/1 ppb
Total Lead		AA spectroscopy	0.2 ppm/5 ppb
	,		
1			
			4. * ¥

17. Submit Site Health and Safety Plan (See Instructions)

14. Describe methods to be used for rendering tank inert

Before tanks are pumped out and inerted, all associated piping must be flushed out into the tanks. All accessible associated piping must then be removed. Inaccessible piping must be plugged.

The Bay Area Air Quality Management District (771-6000), along with local Fire and Building Departments, must also be contacted for tank removal permits. Fire departments typically require the use of explosion proof combustible gas meters to verify tank inertness. It is the contractor's responsibility to bring a working combustible gas meter on site to verify tank inertness.

15. Tank History and Sampling Information

Waste Oil Tanks

Tar	nk	Material to	Location and Depth of Samples	
Capacity	Use History (see instructions)	be sampled (tank contents, soil, ground- water, etc.)		
Approximately 1000 gal	Installation: Unknown contained waste oil last used: Unknown	Soil/groundwater, if encountered	One at each end of tank from native materials at base of pit, not to exceed 2 ft below tank.	
Approximately 1000 gal	Installation: Unknown contained waste oil last used: Unknown	Soil/groundwater, if encountered	One at each end of tank from native materials at base of pit, not to exceed 2 ft below tank.	

One soil sample must be collected for every 20 feet of piping that is removed. A ground water sample must be collected should any ground water be present in the excavation.

Excavated/Stockpiled Soil			
Stockpiled Soil Volume (Estimated)	Sampling Plan		
Unknown	See Modified WorkpPlan		

Stockpiled soil must be placed on bermed plastic and must be completely covered by plastic sheeting.

16. Chemical methods and associated detection limits to be used for analyzing samples

The Tri-Regional Board recommended minimum verification analyses and practical quantitation reporting limits should be followed. See attached Table 2.

Waste Oil Tanks

Contaminant Sought	EPA, DHS, or Other Sample Preparation Method Number	EPA, DHS, or Other Analysis Method Number	Method Detection Limit
			Soil/Water
TPH Diesel		EPA 8015D	10 ppm/0.05 ppm
TPH Gasoline		EPA 8015G	10 ppm/0.5 ppm
BTEX		EPA 8020	5 ppb/l ppb
Total Lead		AA Spectroscopy	0.2 ppm/5 ppb
Oil & Grease		413.1	10 ppm/0.5 ppm
]			
ļ			4 , ^ ₩

17. Submit Site Health and Safety Plan (See Instructions)

14. Describe methods to be used for rendering tank inert

Before tanks are pumped out and inerted, all associated piping must be flushed out into the tanks. All accessible associated piping must then be removed. Inaccessible piping must be plugged.

The Bay Area Air Quality Management District (771-6000), along with local Fire and Building Departments, must also be contacted for tank removal permits. Fire departments typically require the use of explosion proof combustible gas meters to verify tank inertness. It is the contractor's responsibility to bring a working combustible gas meter on site to verify tank inertness.

15. Tank History and Sampling Information

Hydraulic Lifts

Tank Capacity Use History (see instructions)		nk	Material to	Location and Depth of Samples	
			be sampled (tank contents, soil, ground- water, etc.)		
1.	Unknown capacity		Soil/groundwater, if encountered		
2.	Unknown capacity	Installation of lifts and reservoir is unknown.			
3.	Possible third UST capacity unknown	The tanks possibly contained hydraulic fluid. The date of service discontinuation is unknown.		One at each end of tank/lift from native materials at base of pit, not to exceed 2 f below tank/lift.	
	•				

One soil sample must be collected for every 20 feet of piping that is removed. A ground water sample must be collected should any ground water be present in the excavation.

Carte School 5

Excavated/Stockpiled Soil			
Stockpiled Soil Volume (Estimated)	Sampling Plan		
Unknown	See Modified Work Plan		

Stockpiled soil must be placed on bermed plastic and must be completely covered by plastic sheeting.

16. Chemical methods and associated detection limits to be used for analyzing samples

The Tri-Regional Board recommended minimum verification analyses and practical quantitation reporting limits should be followed. See attached Table 2.

Hydraulic Lifts

Contaminant Sought	EPA, DHS, or Other Sample Preparation Method Number	EPA, DHS, or Other Analysis Method Number	Method Detection Limit
			Soil/Water
TPH Diesel		EPA 8015 D	10 ppm/0.05 ppm
BTEX		EPA 8020	5 ppb/l ppb
Oil & Grease		413.1	10 ppm/0.5 ppm
		,	
			4 - * \$

17. Submit Site Health and Safety Plan (See Instructions)

18. Submit Worker's Compensation Certificate copy			
Name of Insurer Daugherty & Company, 2495 W. March Lane, Stockton			
19. Submit Plot Plan (See Instructions)			
20. Enclose Deposit (See Instructions)			
21. Report any leaks or contamination to this office within 5 days of discovery. The report shall be made on an Underground Storage Tank Unauthorized Leak/Contamination Site Report form. (see Instructions)			
22. Submit a closure report to this office within 60 days of the tank removal. This report must contain all the information listed in item 22 of the instructions.			
I declare that to the best of my knowledge and belief the statements and information provided above are correct and true.			
I understand that information in addition to that provided above may be needed in order to obtain an approval from the Department of Environmental Health and that no work is to begin on this project until this plan is approved.			
I understand that any changes in design, materials or equipment will void this plan if prior approval is not obtained.			
I understand that all work performed during this project will be done in compliance with all applicable OSHA (Occupational Safety and Health Administration) requirements concerning personnel health and safety. I understand that site and worker safety are solely the responsibility of the property owner or his agent and that this responsibility is not shared nor assumed by the County of Alameda.			
Once I have received my stamped, accepted closure plan, I will contact the project Hazardous Materials Specialist at least three working days in advance of site work to schedule the required inspections.			
Signature of Contractor			
Name (please type) John P. Cummings, Office Director, SCS Engineers			
Signature			
Date 6/5/91			
Signature of Site Owner or Operator			
Name (please type) Alvin H. Bacharach, Barbara Borsuk			
Signature			

Date _

APPENDIX B SITE HEALTH AND SAFETY PLAN

EMPLOYEE HEALTH AND SAFETY PLAN, POLICIES, AND PROCEDURES FOR THE CLOSURE OF UNDERGROUND HAZARDOUS WASTE TANKS AND OTHER STANDARD FIELD OPERATIONS

SCS Engineers 6761 Sierra Court, Suite D Dublin, California 94568 (415) 829-0661

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SECTION 1 INTRODUCTION

General Overview

The following Employee Health and Safety Plan, Policies, Procedures, and Practices have been established for field operations conducted by SCS Engineers, or their subcontractors, involving the removal and closure of underground hazardous waste storage tanks or soil and groundwater contamination assessment and remediation activities in Alameda County. This plan includes both job site activities, including tank removal, excavations, well installation and collection of soil and groundwater samples, and remediation activities, and off-site activities, including trucking and disposal operations, emergency response, and cleanup activities.

Intent

The intent of SCS Engineers Health and Safety Policies and Procedures is to:

- 1) Provide all employees and other individuals involved in both on-site and offsite activities with the safest possible work environment and to minimize or eliminate exposure to any hazardous substances or conditions.
- 2) Comply with the requirements of CFR Section 1900-1910 of the Code of Federal Regulations, and applicable OSHA and Cal OSHA standards.

Authority and Responsibilities

SCS has primary responsibility for the health and safety of their employees during the work outlined in the work plan. Each SCS subcontractor will be responsible for the safe and healthful performance of work by each of its employees or support personnel who may enter the site.

All subcontractors retained by SCS are required to ensure that all their employees, visitors, subcontractors, and suppliers/vendors, while on the work site and in the conduct of this investigation, comply with the provisions of this Health and Safety Plan and the minimum standards set forth under the Federal Occupational Safety and Health Act (OSHA). Any specific operation, machine, or process not covered will be governed by other applicable General Safety Orders of the OSHA, Cal/OSHA. The Subcontractor is required to know the safety regulations which apply to the operation.

SECTION 2

SAFETY RULES, PROCEDURES, AND POLICIES

General

- Employees must immediately notify the Health and Safety Officer, their Supervisor, or any other officer, of any unsafe working condition or equipment.
- A supervisor or his designate must always be present when hazardous materials are handled. No hazardous materials may be transferred or pumped, hoses disconnected/connected/drained, barrels handled, or any similar operation in any manner alone. Use the "Buddy" system - at least two people always must be present.
- Access to safety showers and fire extinguishers must be kept clear at all times.
- Smoking is not permitted on any job site unless specific smoking areas are provided and so marked.
- Any spill must be reported to a supervisor and cleaned up immediately. This includes small spills and spillage on drum transfer. Drum leaks shall be reported to a supervisor and over-packed.

Protective Clothing

Protective clothing is necessary to protect employees from hazardous products, spills, cleanup, soil contamination, and similar operations within the environment. SCS Engineers will provide appropriate protective clothing for various job assignments, at no cost, as required.

Protective clothing includes, but is not limited to:

- 1) Boots or protective shoes, depending on the job function.
- 2) Shirts, pants, or aprons sufficient to allow daily changes of clothes.
- 3) Class A, B, C, or D level personal protection equipment (PPE), as required.
- 4) Gloves appropriate for the materials handled or work environment.
- 5) Hard hats are required for all job site personnel.

Employees are required to:

- 1) Wear the designated protective clothing when instructed.
- 2) Maintain cleanliness of PPE.
- 3) Advise their supervisor of defects, loss, or damage to PPE.

Respirators

Company responsibility:

Whenever it has been determined that an airborne health hazard exists or may exist, SCS Engineers will provide and maintain the appropriate-level respirator.

Employee responsibility:

- 1) Use the appropriate respirator in accordance with the instructions and hazards determined for each particular work area, job site application, or job function.
- 2) Report any malfunction of the respirator to immediate supervisor.
- 3) Inspect the respirator prior to use for visible defects or damage.
- 4) Clean the respirator and periodically replace filters, as needed.
- 5) As preventative maintenance, store respirator in proper container or use plastic-lock bag.

Eye Protection

Safety glasses with side shields, goggles, or face shields will be provided to any employee who wants or is required to use them for any aspect or operation associated with removal, closure, sampling, or other site activities related to tank removals or other field operations.

In addition, individuals performing or working near the following operations will be required to use the indicated eye protection:

- 1) Welding, brazing, or metal flame cutting: welder's goggles with intensity filters.
- 2) Drumming: splash-proof goggles or face shield.
- 3) Pumping: face shield.

Personnel and Equipment Decontamination

Decontamination of equipment and personnel is necessary to confine the contaminants to the site and to preclude migration elsewhere. Upon leaving the work area, all major equipment, tools, and materials will be cleaned to remove grease, oil, or encrusted dirt.

Decontamination procedures are discussed in more depth below. Personnel decontamination will involve washing of hands and face with soap and water after removal of protective gear and prior to eating. Boots, respirators, gloves, and hard hats will be washed in a soap and water wash. Tyvek will be placed in a plastic bag for disposal.

Equipment Decontamination:

All major reusable equipment and other tools for boring activities will be decontaminated prior to leaving the work area. Cleaning will normally consist of scrubbing to remove encrusted materials, followed by a soap-and-water wash and potable water rinse using a high-pressure, low-volume water spray or steam cleaning unit. Containers of detergent solutions for cleaning tools, boots, and gloves will also be available.

A drill rig decontamination area will be established where the rig will be cleaned before it is moved out of the work area.

Personnel responsible for steam cleaning will use appropriate personal protective equipment.

Personnel Decontamination:

Decontamination of personnel will be performed within the designated decontamination zone. Decontamination will consist primarily of soap-and-water washing and water rinse

of exterior protective gear to remove contaminants, followed by removal of gear. Disposable coveralls will be removed by turning the clothing inside out. A general sequence of doffing procedures is outlined below. The extent of required washing, or modifications to the sequence, may be specified by the Site Health and Safety Officer as appropriate.

The minimum steps in decontamination will be as follows:

- · Wash work gloves and boots;
- Rinse respirator; and
- · Wash hands and face.

Contaminated protective clothing will be properly disposed. Provisions for emergency decontamination will be available as designated by the Site Health and Safety Officer at the drilling site. Clean water will be provided to rinse work gloves and boots.

Eating, Drinking, and Smoking:

Eating, drinking, or smoking will not be allowed in the work area and decontamination zone. Potable water will be available in areas just outside the work area.

SECTION 3

CHEMICAL ABUSE/IMPAIRMENT

As employees may be working near or with hazardous or dangerous materials and conditions, and operating or working near heavy equipment, it is imperative that employees not be impaired or under the influence of ANY chemical which reduces their effectiveness in reacting to a dangerous condition. Therefore, SCS Engineers, in order to protect all employees who depend on each other, establishes the following abuse/impairment policy:

- Chemical abuse/impairment is defined as use of alcohol, medication, drugs, or other chemical substances without a doctor's permission which alters, impairs, or changes the physical and mental condition of the employee.
- Consumption of any alcoholic beverage in any quantity at any job site is absolutely prohibited. Any person observed consuming alcoholic beverages during the work day, regardless of the hour or day, will be immediately fired.
- Any employee reporting to work at any location under the influence of alcohol, smelling of alcohol, or if alcoholic containers are found in any equipment, will be immediately fired.
- Any employee found to be using any other illegal drug at any time on any job site will be immediately fired.
- Any employee taking medication under a doctor's care or who has purchased over the counter medication must advise his supervisor.
- All employees are encouraged not to smoke. SCS Engineers will discuss any legitimate request of any employee to quit smoking and help place them in a program, if sponsored by the Company's health care provider. Employees are encouraged to participate in these medically supervised programs.

SECTION 4

SCS ENGINEERS HEALTH AND SAFETY PLAN

<u>Scope</u>

The SCS Engineers Health and Safety Plan outlined below is intended both to provide and ensure adequate safeguards to all personnel who may be exposed to hazardous materials or conditions during the normal course of their work conducting closure and other associated site operations and activities related to underground storage tank removal and other field operations. The scope of this plan does not include unexpected or unusual occurrences.

Composition of Typical Products Handled

Most products encountered in routine tank removal and closure operations and associated soil and groundwater contamination assessment and mitigation/remediation investigations are organic compounds that commonly include, but are not limited to:

- A) diesel fuel
- B) gasoline
 - 1) leaded
 - 2) unleaded
- C) waste oil and grease
- D) kerosene
- E) hydraulic lift fluid
- F) tank and pipe rinsate
 - 1) 99 percent water
 - 2) 1 percent detergents and trace elements
- G) possible inorganic heavy metals, such as lead or zinc
- H) polychlorinated blphenyls (PCBs)

Contaminated Soils

Results of laboratory soils analyses typically take two weeks or more to complete after tank removal. Treatment of soils, contamination procedures, and site remediation are separate processes which are covered by additional safety procedures not included in this list.

Assessment of Health and Safety Hazards

Initial site operations typically encompass only removal of cleaned tanks and product piping. Therefore, level D personal protective equipment (PPE) is the normal required level of protection at this stage of site operations.

Fire and Explosion:

Two fire extinguishers with a minimum class rating of 20 BC shall be kept within at least 50 feet of the removal operation at all times during work operations. Open flames or other ignition sources are not permitted anywhere within the area of operations. NO SMOKING signs will be posted in proximity to the work site. The use of welding or other electrical-spark producing equipment is specifically prohibited in the vicinity of a contaminated site or tank containing product residue. If such operations are determined to be necessary, approval of the Health and Safety Officer or other appropriate supervisor is required and the tank must previously have been rendered inert. The local fire district also should be notified in order to determine whether a fire inspector/observer should be present. Care always should be taken not to severely impact, crush, or puncture the tank prior to inerting, especially when it is known or suspected to contain volatile or potentially explosive compounds or gases.

Other Physical Hazards:

SCS Engineers routinely encourages fencing of all tank removal and excavation sites for the duration of work operations, if existing plant fencing and security is not present or adequate. If our clients refuse, a waiver must be signed wherein the client excludes SCS Engineers from any liability or responsibility contained therein owing to the lack of fencing. Normally, barricades and caution tape are used to restrict access to the area

of work operations, and may be used to secure a site overnight if no deep excavations or other hazards are present. If deep excavations must be left open unattended, then steel trench plates or plywood should be used to completely and securely cover the excavation. Work operations that can be completed during the same day and remain under the direct supervision of the Project Manager may be exempted from the fencing requirement, with the prior approval of the Health and Safety Officer.

It is expected that the work operations involving excavation, waste oil tank removals, and collection of soil samples in the Alice Street basement will be conducted in an area of both restricted access and limited air circulation. Consequently, the additional measures outlined below will be taken in order to ensure that safe and healthful working conditions are maintained. Ear protection will be worn by all employees and subcontractors at all times when work is in progress in this area. Dust masks and/or full-face respirators also will be available at all times for protection from dust and potential airborne contaminants stirred up during excavation and tank removal. At least 2 high-volume fans will be placed at existing grates in the basement ceiling/Alice Street sidewalk - one intake, one exhaust to provide both fresh air to and air circulation within the basement area of work operations. Exhaust from stationary drilling and/or excavating equipment involved in the tank removal operations will be vented directly to the outside via closed lines. Only those vehicles or equipment directly required or involved in the removal operations will be permitted in the basement area of operations. Vehicles and other equipment shall be shut off when not in use. Equipment operators will need to exercise particular caution at all times when working in this area, both because of the low vertical clearance and the presence of overhead electrical lines near the excavation area.

No deep excavations are expected for this project. All soil sampling will be completed with mechanical equipment from the surface outside the excavation. No site personnel are allowed to enter any excavation deeper than 4 feet. Deeper excavations must be shored or braced, or must be performed using special excavation procedures following appropriate OSHA and Cal OSHA standards for stepping and/or sloping sidewalls.

If underground utilities are known or suspected to be located within or near the area of the planned excavation, U.S. Alert will be contacted in advance of the work operations to precisely locate and label the lines and/or associated facilities. Any site personnel working or excavating near operating utility lines of any kind (i.e., electrical, gas, water/sewer, etc.) should always exercise extreme caution and should immediately notify the Project Manager or other supervisor if any damage, leakage, or other problem is observed.

Chemical and Other Health Hazards:

The major chemicals suspected to be present are listed above. Material Safety Data Sheets (MSDS) are presented in Appendix A.

Airborne contaminants at the site could exceed currently recognized health limits for waste oil, gasoline, benzene, toluene, and xylene. Benzene is a suspect carcinogen which is regulated by Cal/OSHA and OSHA. Air purifying respirators are not approved for worker protection against benzene.

An organic vapor meter OVM will be routinely used to monitor the breathing zone for volatile organic compounds during excavation and other field activities. Respirators will be required if readings at any time exceed 300 ppm over background. Workers may continue work in respirators until concentrations reach 500 ppm. At that point, personnel will use airline respirators to continue work or evacuate the work zone until levels dissipate.

Contact with contaminated waste materials and soils would be expected to irritate the skin, with prolonged exposure leading to the development of skin lesions. For this reason direct skin contact with drilling soils will be avoided by wearing protective gloves. Protective gloves and safety goggles will be required in areas where waste materials and contaminated soil are handled.

Organization and Responsibilities

Project Manager:

A project-specific Senior Project Manager or Project Engineer or Scientist, or his/her designee, is specifically responsible for all aspects of daily operations and for each specific site operation regarding tank removals, soil/groundwater sampling, or well installations. This Project Manager is responsible for the project through its successful completion, and all questions or problems associated with the projects should be directed to him/her. The Project Manager also is responsible for daily safety briefings and updates or site-specific changes to work crews and subcontractors prior to the start of work operations. Any designee shall report directly to the Project Manager.

Site Health and Safety Officer:

The Project Manager is authorized to act as the Site Health and Safety Officer. The office Health and Safety Officer may appoint a designee to act as Health and Safety Officer for a specific job and he/she shall report directly to the Project Manager.

The Safety Officer is specifically given authority to take the following actions:

- Require specific health and safety precautions prior to site entry by subcontractors, their personnel, visitors, SCS personnel or any other job site participants. This includes hard hats, any appropriate eye, ear, or foot protection, respirators, or any other safety equipment that the site Safety Officer deems necessary.
- Require any worker, including subcontractor personnel, to obtain immediate medical attention.
- Deny access to the site or any portion thereof when imminent health and safety risk exists.
- Order the immediate evacuation of workers, including subcontractor personnel, from any area of the site when, in the Safety Officer's professional judgement, conditions warrant such action. This includes shutting the site down.

Emergency Actions

If any emergency involving actual or suspected personnel injury or adverse chemical exposure occurs, the Safety officer shall take the following steps:

- 1) Remove the exposed or injured person(s) from the immediate area of danger.
- 2) Render first aid, if necessary. Decontaminate the victim's outer clothing only after critical first aid has been administered.
- 3) Obtain paramedic services or ambulance services. Transport the victim(s) to the closest local hospital for proper medical care. This procedure IS TO BE FOLLOWED even if no visible injuries are apparent.
- 4) Other personnel shall be evacuated to a safe distance until it has been determined by the site Safety Officer or other emergency response personnel that a safe site exists to resume work. If any doubt or questions exist, further appropriate advice shall be sought.
- 5) At the first opportunity, the Safety Officer shall contact the Project Manager and provide details, including a written report, of the conditions leading to and response to the suspected incident and procedures taken to prevent any subsequent recurrence.
- 6) A written report of the incident shall be prepared by the Safety Officer and the Project Manager within twenty-four (24) hours following the incident. There are NO EXCEPTIONS.

Site Shut-Down:

The Safety Officer shall shut any job site down and evacuate all site personnel to safe distance, if any of the following conditions occur:

- a) Extremely strong odors
- b) Excavation conditions which are unsafe, including but not limited to dirt slippage and slumping, excessive moisture, exposed or damaged utilities, and other similar observances.
- c) Instability of any equipment or structure.
- d) In any of these events, or similar occurrences, in the judgement of the Safety Officer, work will stop at the site until a modified work plan is prepared and approved by the Project Manager and regulatory agencies as necessary.

Emergency Response and Containment:

The Safety Officer is authorized to implement appropriate emergency response in accordance with the SCS Engineers EMR procedure plan either to protect worker health and safety or to contain accidental spills so as to minimize further environmental damage. The Safety Officer is further authorized to utilize the closest available local EMR facilities when required by his judgement.

If no undue risk is present, site personnel may attempt to contain a spill using whatever safe means are available, prevent additional spillage, and prevent spill migration into any storm drains, sewers, or natural drainage and waterways.

Available On-Site Safety Equipment:

Fire extinguishers, first aid kits, water, level D suits and PPE, head protection, eye protection, and gloves are to be available at each site at all times during work operations.

APPENDIX A1 MATERIAL SAFETY DATA SHEETS

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Common Synor Tokol Merrysantone Merrysantol	rmon Symmyme Walery Squist Colorless Pleasant ador rzene nedi Floats en water Flammable, Intlating vapor is produced.		12	FIRE HAZARDS Tosh Point, 40°F C.C., 45°F D.C. Florimable Limits in Air, 1,27%-7% Fire Estinguishing Agents, Carbor dioxide or dry chamics to small fires, ordrary boson for the fire form.		18. HAZARD ASSESSMENT CODE (See Mazerd dater borners) Hardbook) A-T-U	
Stop discharge of possible. Knop process among Shut of synthem chances and call for department. Stay reprint and the sales page to "Ampet Breath" values. A vid mother of milliogued and swaps looker and remoin discharged mastered. Notify focal healt" and posturion accritical agencyte.			u	foam for targe fires. Pre Estimputating Agents Hed to be Used Water may be ineflective Bipectal Mozerde of Combustion Products Not partness Beharter in Pire, Vapor is hearier than be and may beself a considerable distance to a source of ignition and flash back.		12. HAZARD CLASSIFICATIONS Code of Federal Regulations; Flammobit doubt MAS Mazard Railing for Bulk Water Trempertarions; Category Railing	
Fire	Filishheet, stong waren that may accur. Vator may explicit if syntact in an encioused snap. If an accyntee and settlemia met in cetture aysanatus Lings sub-with day chemical, look, or particle decisios.			4 4	Igmition Temperature: 992°F Electrical Hazerd Chast I, Group D Burning Rate, 5.7 non/min, 5. Adiobalik, Flame Temperature: Dala not evalable (Contraed)		Fre
Exposure	C SLL F OR METICAL AID VARDRI Intelling it eyes, more and Break. If intelling, or less of commonwhere. If intelling, or less of commonwhere. Lives to beth as. If the setting has simped give principl respenses. It intelling has simped give principl respenses. It intelling to skin and eyes engine. EXCURD In sating to skin and eyes. If employed, will cause hauses, nomiting or tras of composurerses. If employed, will cause hauses, nomiting or tras of composurerses. If employed, will cause hauses, nomiting or tras of composurerses. If employed, will cause hauses, nomiting or tras of composurerses. If employed, will cause hauses, nomiting or tras of composurerses. If employed are not put put of easier If it is the common of the put of easier If the common of the common of the common of the extent of the common of the com			7.2 7.3 7.4 7.5 7.4 7.3	7. CHEMICAL REACTIVITY Reactivity With Water, No reaction Reactivity with Convener, Malerials: No reaction Stability During Transport Stable Neutriniting Agents for Arids and Charlite, Not personnil Parymental Ners, Not personnil professor of Polymentalises Not performed Maler Rate (Rescause to Product): Data red evaluable Reactivity Grauge: 32	11.3	Assistance Effect
Water Pollution	Dangerous it aquaint life in high concentrations. Fouring it shousains. May be thoughous if it enters well intellags. Fooling local houses and within originals. North operators of mostly well: intellags.					12.1 12.1 12.3 12.3	Liquid Molecular Weight: 82.14 Builing Puint of 5 aloc 231.1°F = 110.8°C = 353.8°K
(S-s Paspansa lasar wannin	2. LABEL 1. RESPONSE TO DISCHARGE 2. LABEL 3. Chan: 3		<u> </u>	B. WATER POLLUTION Aquate Testicity: 1160 mg/s/96 tv/oursish/TL _m /bysh motor Waterfewl Tasticity: Data not evaluate Blological Daygen Demand (BOD): D%, 5 days, 26% (Parce); 8 days Food Chain Concentration Potential;	12.6	-138"F = -95 0"C = 178.2"K	
3.1 ES Competielle Hydrocarbon 3.2 Fermula Coloci 3.3 MIO/UN Designa 3.4 DOT ID No. 128	Permute ColleCNe 4.3 Order, Pumpent, promotic, benzana-like; MO/UN Envignation: 3.2/1394 distinct, pleasant			Norma	26 0 dynas/cm = 0 0290 M/m at 201 12.8		
5. HEALTH HAZARDS 5.1 Parsonal Protective Equipment. All-supplied mash, gaggies or face should, plastic gloves. 8.3 Bymplams Fallewing Espacem. Vapors inhale eyes and upper respiratory discl. cause dizzbess, headactis, enembered, respiratory erest. Liquid inhales eyes and causes drying of akin. If expirated Espaces inciding gagging, discless, deposated expectaging pulmonary edoma. If hyperised Espaces enoughing gagging, discless, deposated expectaging pulmonary edoma. If hyperised Espaces information is NOT induce remaining, call is disclos. EYES Rush with moster for of these 15 fms. SKIN wigs off, wash, with soap and water. 8.4 Threshold Elieft Value; 100 ppm. 8.5 Breat Torm Inhalation Limits. 800 ppm for 30 min. 8.6 Tostoty by frequesters. Grade 2, LDs. = 0.5 to 6 gifting. 8.7 Late Tesmity. Kidney and how damages may follow inpestion. 8.8 Veget (Gos) inflame Characterisatics. Vapors cause a sign't smarting of the eyes or respiratory system if present in high concentrations. The effect is beingcomy. 8.9 Edeptif as Sahd Intitute Characterisatics. Minimum hazard. If spilled on plothing and allowed to			12	8. SHIPPING ,RFDRMATION Grades of Purity. Research, respect, electron of 88.8 + %; industrial contains 84 + %; with 1% sylene and prest emounts of bentave and rest emounts. Puriticantons, 807120; line pure then industrial. Storings Temperature, Ambient Herri Atmosphere, No requirement Veriting: Open (fileme arraster) as gressure-vectors.	12.14 12.15 12.16 12.26 12.26	3.81 % 10° J/kg Neol of Continuations: ~17.430 (Na/Ib) ~ #866f Cal/g ~ #405 5 % 10° J/kg Neol of Decomposition, Not perhaps Heat of Schullors, Not perhaps Heat of Perymerizations, Not perhaps Heat of Perymerizations, Not perhaps Heat of Furiors, 17 17 cal/g Limiting Yafue, Data not analogie Raid Vapor Pressure; 1.1 pain	
Eleptic as Solid Inflant Characteristics: Minimum hazard. If splind on plothing and alcohol to remain, may bound and recidency of the skin. Site Thresholds 0.17 ppm. Site Value: 2,000 ppm.					6. FIRE MAZARI Stoichkometric Ah ta Fuel Relto Dola rer avi Flame Temperature: Dola noi avelable	•	inved)

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Common Syne	-	Watery bound	Colortess	S-eet ador			
1, 3-Dimethyloenzene Xyloi	• !	1					
•		Floats on water	Flammable, imusing ve	upor is produced.			
Stop disch	albe i bistic	Die Koep people ex	råy				
Call fire de Avoir cons	patment att mit koud	C and vaccer.					
ISCIBIL AND	THE SHOWS IN	charged material age	ences				
		•	• •				
	FLAMMA	ARLE					
	Flashbat Vapo m	of along waper trail her explicitle if sprites	May boout. Circ an enclosed pres.				
	A. 64, PS	アン・モロウミカーカーかく ひてゅうたい	INC ACOMINATE	.ela			
Fire	Matar m	na, de mellective pr Sollec conteners es	hemical) bi carbon dos n fra chi water.	192			
	1						
	!						
	CALL F	OR MEDICAL AID.					
	YAPOR	** POSH, 97É	~				
	0074	COLUMN TO SERVICE	Proof. the, pricult breathing, (e, per et			
	Move is	. Rest ex. Yn: New stoomed ov	ve enficiel respiration				
	L D.ett.	aut e burchy bas i aut per sicopiec ba	onadeul nt suurche isabilimmire				
_	PIONED	to sain and eyes.					
Exposure	Remove	wed, will cause find Contemplated bioth	see, vombing, or loss o	f sorsziouaness.			
	■ D'm	T##.	eri and flush with plent is CONSCIOUS, have	Archier Gusty mates P Ol mates			
	DC NOT	HITINGY BOUCH!	G.				
	l						
	-AMMEL	·· ·· ·· ·· ·· ·· ·· ·· ·· ·· ·· ·· ··	TE IN VERY LOW CON				
Water	Fourte B	JL TC ACUATIC LF E steroëne. Sangereus if E onlan		ICENTRATIONS.			
Pollution		-					
	Note, op	cal health and unight protors of hearth w	te officials. Jeler makes				
1. RESPO	NSE TO DIS	CHARGE	2 LABEL				
(See Response	e Method e H	ierotopek)	2.1 Galegory, Fe	ammable équid			
	grigh fami	-	22 Close 3				
Frank be n	become	!					
Chemical an	c bulease, se	estremi					
3. CHEMI	CAL DISIEN	ATIONS	4. DESERVA	ABLE CHARACTERISTICS			
3.1 CG Competibility		pretic		te (no ohipped): Liquid			
Hydrocarbon 3.2 Fermula in-Carl			4.2 Color: Colorie				
3.3 MO/UK Design	return 3.2/1	307	Ged telepart year, y	POPPE, PRESCRIPTION AND THE			
3.4 DOT 60 No.: 130 3.5 CAS Registry N		. /					
	#84 rea _	<u> </u>					
		S. HEAL'	TH HAZARDS				
5.1 Personal Prote	-ctive Equip	ment Approved to		esk. poppies or face shield:			
bietzc Bional	t and boots.						
8.2 Symptoms Fell skin Fisher	iowing Expr	ment: Valors and	s headache and dizzes sietues and nice	ess Liquid Problem eyes and On developing pulmonary			
edena fing		IS NAMED VONDING.	itrej, tenuma,	O) Developing pulmonery nd come can be talal Kidney			
and her dans &3 Treatment of E	rage can occ Euposyrus ev	out. I-IALATION IOMOve	r to frach air, adminute	* Artificial resouration and			
erygen if ma	prod, cafe (doctor. INGESTION	DO NOT INDUCE YORK	ing, call a doctor, EYES:			
Bakh with wat	flush with water for all least 15 nm. SKIN wipe off, wash with sout and water,						
&5 Short Term Inn	halation Limi	Pia. 300 payrs for 30					
		de 2, LDas = 50 to	500 g/kg				
E.S. Vapor (Gee) in	rham Chanc	cteration. Yapon o	aver a eight smaring :	Of the eyes or respiratory			
system if pres	eent ei high c	CONCERNATION The	effect is temporary.				
E.S. Ulquid or Solid remain, may o	ers ineithi Yelva seles	racionatios, lénam, ng and haddering di	um hazard if spilled or fithe skim	solothing and allowed to			
\$ 10 Odo: Thresheli	a. 0.05 ppm						
\$.11 (DLH Value, 10,	,000 ppm						

6. FIRE HAZARDS 6.1 Pleah Points 64°F C.C. 6.2 Plannmable Limits in Air; 1.1%-6.4% 6.3 Fire Estinguishing Agenta: Foun, dry shremal, or carbor soustle 6.4 Fire Estinguishing Agenta field be be Used. Water may be instinctive. 6.5 Special Hazards of Cerebrumteen Products. Not prehipment 6.5 Services in Fire: Vapor is heaver than are and may travel considerable destricts in Autor of gration and feat heads. 6.7 Ignition Temperature: 806°F 6.8 Electrical Hazards Class I, Group D 6.9 Surving Rates 2 8 monitors. 6.10 Adiabatic Floris Temperature: Data not evaluble 6.11 Stochton than Temperature: Data not evaluble 6.12 Floris Temperature. Data not evaluble 7. CHEMICAL REACTIVITY 7.1 Reactivity With Water. Not reaction neartion 7.2 Reactivity with Common Materials. Not neartion 7.3 Stockfory During Transport Stable Advancation. Not perturent 7.4 Neutralising Agents for Addie and Countion Not perturent 7.5 Invitation of Polymertaction. Not perturent 7.6 Invitation of Representation. Not perturent 7.7 Moter Ratio (Reactard to Product) Data not evaluable 7.8 Hazartvity Groups 32	10. HAZARD ASSISSMENT CODE (See Hazard Assarsament Handbook) A-T-U 11. HAZARD CLASSIFICATIONS 11.1 Code of Feders: Requisitions: Flammable load 11.2 MAS Hazard Ruting for Buts Water Transportation: Category Ruting Fro
S. WATER POLLUTION 8.7 Aquatic Tasiothy: 22 ppm/86 for/bhogis/TL _m /hesh water 8.2 Waterfour Tasiothy. Data not a-raichte 8.1 Siclogical Orygen Domand (BOO): 8 to (c. 5 days, Ch. (theor.), 8 days 8.4 Food Chain. Concentration Persontial: Data not available 8.5 SKIPPING INFORMATION 8.1 Grades of Purity, Research 96,99%; Pure 99,9%, Technical 99,7% 9.2 Storage Temperature, Ambued 8.3 fourt atmosphere; No requirement 8.4 Verding: Open (familia areasier) or pressure-incounts.	12. PHYSICAL AND CHEMICAL PROPERTIES 12.1 Physical State at 15°C and 1 above Liquid 12.2 Molecular Weight 105.18 12.3 Boding Point at 1 above 246.47° = 131.8°C = 405.1°K 12.4 Proving Point = 1 above 256.47° =
NOT	ប

Commer Synanyma 1, 2-Dmethyberzona Nytol		Watery liquid	Colorivas	Soo! actor			
		Floats on water	Floats on water Flammable, emating vapor is produced.				
Stop dischar	ge i posso	4 Kee; people av	ay .				
Call the dep Avoid conta-		and vapor.					
lecteu and s	emove deci	verged makenar okullor: comrat age	n.net				
,							
	PARIL	BLE	· · · · · · · · · · · · · · · · · · ·				
	Flashbat Vapor m	i along vapor trai Is emplode e conse	me; occur. F ar enclosed area. g apparatus				
	Wes es	CONTACTOR DISERVE	c apparatus emical, or carbon Bioxi				
Fire	Water my	n be prefective or	ke	-			
		osed containers will	- 				
	<u> </u>						
	CALL FO	MEDICAL AID					
	ROPAY						
	N COMME	er eyes, reset and t , will count beside:	Prost. Ne, difficult brestring,	э (сы			
	Hove K	Pilitario de Carres de Car	•				
	II Dresm	ng hes stopped group of a difficult, give o	s stricus respiration.				
	LIGUID						
Evacoura	property in	it skir and uyou.		_			
Exposure	2070		ne, voriting, or loss o	4			
	consciousness. Nembre continuesed clothing and shoes. Fush decided stees with blents of water.						
*	Flust affected areas with pienty of water. If PN EYES, hold eyeks oper and flush with pienty of water. If SN ALLOWED and noting CONSCIOUS, have victor dans water.						
	~ ~	make 1					
1	JO NOT	MOUCE VOMITING	1 .				
İ							
	Danour	E source Maria	-				
Water	F-27	chorame.	high concentrations.	-			
Pollution		angerous Z II enter		į			
	Noth oc	e' health and width rators of nearby w	e officials. Ne: intekes				
				· · · · · · · · · · · · · · · · · · ·			
	ISE TO DIS	- -	2 LABEL				
(Set Response			2.1 Calegory: Fl	emmeble <u>Equid</u>			
lana naming Entanta ara		andit y.	2.2 Cinas: 3				
Should be no			1				
Chemical and	PYNCE F	H Iment					
1. CHEMIC	AL DESIGN	LTIONS	4, arstm	ABLE CHARACTERISTICS			
3.1 CG Congettolit) ·				
Hydrocerbon	,		4.1 Physical State (as shipped): Liquid 4.2 Celor: Colorinas				
11 Formula o-Cotto			4.3 Odor: Bergene-Ba, pherapteratic eromatic				
3.3 PMO/UN Designs 3.4 DOT ID No.: 130		107					
3.4 CAS Repletry M	o.: 95-47-4						
	, 						
		<u> </u>	7U ma 3 a				
6.1 Personal Protoc			TH HAZAROS				
bjestic Bjover				est goggles or face plusts			
&Z Symptoms Fath	owing Expe	eura: Vapore saue	headaithe and dizzin	res Liquid inhales eyes and			
	mic whose c		YOG, SEEDING, ONE TADA	di divelopino purnonery			
edoma it ingo Kathan and av			Damps, heededhe, er	of come. Can be fatal.			
6.3 Treatment of E	EPOWE N	MALATION. Remove	to fresh air, administr	r artificial respiration and			
entities is under	anyger if required, call a doctor. INGESTION on NOT induce vorming, call a social EYES:						
	Bush with water for at least 12 from SKIN with off, west with apart and water,						
	Threshold Lindt Value, 100 ppm Short Term Inneintion Limits, 200 ppm for 30 min,						
All Toxisty by Ingo	ertion: Grad	# 2, LD. = 50 m					
5.7 Late Tairinty, K							
full Vapor (Gee) byt problem if prose	sent Characters	terlettos. Vapora o oncentralismo. The	suec e sight emerang. stiect is temporary.	of the eyes or respiratory			
				dothing and allowed to			
men, may a		c and redoming o					
\$10 Odor Threshold				Į.			
6.11 (Di.H Yaika, 10)	~~ paper			ł			

	4
5. FIRL HAZARDS 6.1 Plash Plant, 63°F CC, 75°F D.C. 6.2 Flammable Limits in Air,1,1%-7,0% 6.3 Fire Estingumbing Agenta Foom, sty chemical, or carbon stocate 6.4 Fire Estingumbing Agenta Foom, sty chemical, or carbon stocate 6.5 Fee Estingumbing Agenta Not to be Used. Water may be unflective. 6.6 Special Hazards of Combustion Products. Not perfectly a server in Fine. Vapor is haven than as end may bread or source of system are flash back. 6.7 Ignition Temperature: 88°F 6.8 Electrical Hazards Class I, Group D. 6.8 Burning Rete: 5.8 mor/min. 6.10 Adiabetic Flame Temperature: Dela nor available. 6.11 Blochloreute: An to Suel Ratter. Data not available. 6.12 Flame Temperature: Data nor available. 7. CHEMICAL REACTIVITY 7.1 Reactivity Witt: Water: No reaction 7.2 Reactivity with Common Maleralist No hazards. 7.3 Stantiny During Transport: Stable 7.4 Novirulating Agents for Anida and Counties: Not perferent 7.5 Polymertantion. Not personnt 7.6 Polymertantion. Not personnt 7.7 Molar Ratio (Resectant to Product!) Data not available 7.8 Seactivity Group; 32	Transportation: Calogory Rating Fra
Not personal 3.7 Moiar Ratio (Resetant to Productly Data not evaluate	12.1 Physical State at 16°C and 1 atmo: Liquid
NOT	πι

Commer Synon 1, 4-Dinemybersene Xylol	yma.	Hatery equal	Colorens	S—se! adar		
		Floats or, water I Freezing	Flammable, emlating v gont is \$6°F.	apol is produced.		
Sinc discharge if possible. Neet people sway. Call fire securiment. Avad cohister with layed and wapor. Include and remove discharged hateries. Hotely local heater and poliuson connot agencies.						
Fire	F_LAMMABLE Flaintest along vapor tan' may occur. Vapor may explose if syntact if an enclosed pres. Wast sen-contamed treatming apparatus Entingues' with toam, by chemical, or carbon dicade Water may be methative on the Cool exposed contamers with rester.					
Exposure	CALL FOR MEDICAL AID. VAPOR IMMUNIC to cycle, note and shreat. If orbiting, or to cycle, note and shreat. If orbiting, or total of toneocountees. More to test are discretized, or toneocountees. If the saming has stopped, give antificial respiration. If the saming is official, give origine. LICILID Immunication of cycle, if another or toneocountees. If anothered, will feate have an almad, nomiting, tous of consciousness. If anothered, will feate have not shown and feater of the same contamination of committing, tous of consciousness. If anothered or to same part of shoes. Fluid affector the same part of shoes. Fluid affector or contamination of the same part of same if the EVEE hold reports open and fluid with plants of water, if SWALDWED and solem is CONSCIOUS, have within safer or make the product of the contamination of the same part of the safer					
Water Poliution	MARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. Fauling to showake. May be designed if it enters water insoles. Notify tocal health sent white officesis. Notify operators in neithy water makes.					
1. RESPON (Sint Hospither leads which the Evaluation of Should be re Onemical and	Methods I g-high flanv in moved	in-ultrack) rebilly	2. LABEL 3.1 Cologory, I 3.2 Close 3	Parmable kodd		
3. CHEMICAL DESIGNATIONS 3.1 OG Compertielty Clima. Arometic hydrocarbon 3.2 Fermice p-Cala(Chia)a 3.3 BrO/Uni Designation: 3.2/1307 3.4 DOT 10 No.: 1307 2.5 CAS Registry No.: 106-42-3			4.1 Physical St 4.3 Calor: Colo	YABLI CHARACTERISTICS I'd (as shipped): Liquid I'dea bentone, sherocleratic eromatic		
		S. HEAL	TH HAZAROS			
Personal Pretective Equipment: Approved canalier or ai-aupplied mask, goggles or face sheld; plastic planes and boots. Symptoms Reflexing Exposure: Vapon cause headscris and distrines. Liquid males ayes and sun. If taken into lungs, causes severe coughing, dearess, and rapidly developing pulmonary.						
edoma if ingested, sources houses, vombing, enemps, houseche, and come. Can be tasel, Koning and liver demage con accus. E.B. Trestment of Exposure, RINALATION remove to treat air, administer artifical respiration and origin if required, can's doctor. RIGESTION: as NOT institut vombing, can's doctor. EYEB: such with water for at least 15 mm. SKRI, wipe off, west-with soop and water.						
	algion Lin	vis. 200 pprr. for 30		į		
A.7 Late Tematry: A	Cettery and		- •	1		
S.B. Vapor (Gre) Inflam Characteristics, Vapors cause a slight sharing of the eyes or respiratory system if present in legin concentrations. The effect is temporary. B.B. Liquid at Solid Inflam Characteristics, Minimum hazard if applied on clothing and allowed to remain, they bears sharing and recoloring of the solid.						
5.10 Odor Threshold 5.11 IDUK Value, 10		·				

6. FIRE HAZARDS 6.1 Flash Point: 81°F C.C. 6.2 Flammable Limits in Air. 1.1°h-6.5°h 6.3 Fire Estinguishing Agents. Form. By Chemical, or carbon dionale 6.4 Fire Estinguishing Agents Not to be Used. Mater may be reflective. 6.5 Special Hazards of Combusition Products Not perhamin 6.6 Sehavior in Fire. Vapor a heaven ther or and may brevel considerable distance to a source of gration and fast back. 6.7 Ignition Temperature. 870°F 6.8 Electrical Hazards Class I. Group D 6.9 Surving Rates: 5.6 min./min 6.10 Adiabatic Flame Temperature: Data not available 6.11 Stucknisments Air to Fire! Reliac Data not available 6.12 Flame Temperature: Data not available 7. CHEMICAL REALITIVITY 7.1 Reactivity with Common Materials. Not neaction 7.3 Bascitivity Water, Not reaction 7.3 Bascitivity During Transports Stable Countries. Not perhamin 7.4 Perlymentation. Not perhamin 7.5 Perlymentation. Not perhamin 7.6 Moter Ratio (Resectant Its Products) Data not available 7.8 Reactivity Groups 32	18. HAZARD ASSISSMENT CODE (See Nazard Assersamenti Hendbook) A-T-U 11. HAZARD CLASSIFICATIONS 11.1 Code of Foderal Regulationer Flammable liquid 11.2 NAS Nazard Refini for Suff. Welter Transponation: Carlegary Roting Fra
8. WATER POLLUTION 8.1 Aquests Testisty; 27 ppm/86 to foliage/TL_/fract water 8.2 Westered Testisty; Data not available 8.3 Sectional Original Demand (BOO); 0 8/6 in 5 days 8.4 Facet Chain Consentration Potential: Data not available 8. SHIPPING INFORMATION 8.1 Grades of Purity; Research 95 89%; Pure 95 8%; Tectnical 90 0% 9.2 Storage Temperatura, Amburat 9.3 fort Athematicals, Not caparitimal 9.4 Venting Open, (form anoster) or present-vacuum	12. PHYSICAL AND CHIMICAL PROPERTIES 12.1 Physical State at 15°C and 1 atom: Liquid 12.2 Molecular Weight 106 18 12.3 Booling Paint at 1 atom: 280.8°F = 128.7°C = 411.5°K 12.4 Pressing Paint: 35.9°F = 129.7°C = 296.5°K 12.5 Critical Presperature: 565.4°F = 329.0°C = 616.2°K 12.6 Critical Pressure: 560.4° atom = 34.65 pain = 3.510 MN/69° 12.7 Spourité Genétig: C 8461 at 20°C (liquid) 12.8 Liquid Surface Tendenc 28.5 dynes/gm = 0.0285 N/m at 20°C 12.9 Liquid Surface Tendenc 37.6 dynes/gm = 0.0285 N/m at 20°C 12.10 Vapor (Cas) Spourit Monta of Vapor (Cas): 1.071 12.11 Ratio of Spourit Monta of Vapor (Cas): 1.071 12.12 Latert Mont of Vaporitation: 18.0 Bu/E = 8° and/g = 3.4 X 10° J/kg 12.14 Neal of Combustion: ~17.559 Bts/fb = —9784.7 and/g = —406.41 X 10° J/kg 12.15 Neal of Combustion: Not partners 12.16 Head of Polymortarian: Not partners 12.17 Head of Folkiers Not partners 12.18 Head of Folkiers Not partners 12.27 Rend Vapor Pressure: 0.34 pain 12.27 Rend Vapor Pressure: 0.34 pain
NO	TES

ETHYLBENZENE

Commer Synenyma Lapad Phenyerhane EB		Colorless Sweet gasoine-bke odor	6. FIRE HAZARDS	ID. HAZARD ASSESSMENT CODE	
		Flammable, immaining vapor is produced.	6.1 Flosh Point BC1F D.C., 587F D.C. 6.2 Flammable Limits in Air; 1.0%-6.7% 6.3 Fire Extinguishing Agents, Foat (most effective), water top carbon double at the property of themself.	(See Mazert Assessment Monotopoli) A-T-U	
Mes gog from the Stores Sterem acter an	ischent fauld and vapor heet ger seff-contained bleathing a neuding ploves) historiaburces and cer fire dep large if possible of and use water spray to fand if remove discharged materials if head? and politifier controlla	pseralus and rubber overcisting atment of open "vapor	6.4 Fire Estinguishing Agents Not to be Used. Not persons 6.5 Sepecial Masside of Combustion Products Intigting vapors are generated when heated. 6.6 Separator in Fire, Vapor is heave than air.	11. HAZARD CLASSIFICATIONS 11.1 Code at Fodoral Regulational Financiable liquid 11.2 NAS Nasard Rating for Bulk Water Transportations	
Fire		of in an enclosed area. Med breathing apparatus, and tubber overcrothing a toen, or certion dioxide or fee.	and may havel considerable distance to the source of greisor and feath bace. 5.7 Ignition Temperature, 840°F 6.8 Electrical Mazard, Not parament 6.9 Surving Rate, 5.8 remures 6.10 Adiabatic Plama Temperature; Data Not Available	Celegory Rating Fire	
Exposure	CALL FOR MEDIDAL AID VARDRI Intrialing to syes, note and if or helds, set cause dizon More to Fresh, and store if the set of the set of the if the set of the set of the if the set of the set of the MY burn skin and syes, farmore contaminated off Furth and the set of the if the EVES, how eyed to if the SVES, how eyed to in the DC NOT INDUCE VOMITH	ove artificial respiration Oxygen Thing and shoes Jenn, of water Del and June with plants of asser	7. CHEMICAL REACTIVITY 7.1 Reactivity With Water, fic reaction 7.2 Reactivity with Common Malerials leg reactivity with Common Malerials leg reactivity During Transport Stable 7.8 Stability During Transport Stable 7.8 Mourralizing Agents for Acids and Couplies Not pursuing 7.5 Polymortation; Not pursuing 7.6 Invibries of Relymortation; Not partition; 7.7 Mole Relia (Relectant to Product) Date Not Auslable 7.8 Reactivity Group; 32	Aquite Toxony 3 Assirate Elect 2 Reactivity Cities Chemicals 3 Water 9 Self Reaction 0 11.3 NFPA Maxand Clevalfloation Category Clevarfloation Health Hazand (Shire) 2 Faminabiny (Red) 3 Reactivity (Yellow) 0	
Water Pollution	MARMFUL TO ADUATIC LI Fouring is provided. May be dispersion if principal Notify local heart and wild Notify operators of nearty.	de příznak		12. PHYSICAL AND CHEMICAL PROPERTIES 12.1 Physical Blate at 15°C and 1 along Liquid 12.2 Molecular Weight 106.17 12.3 Beding Paint at 1 along 277.27°C 116.2°C = 400.4°K	
1. RESPONSE TO DISCHARGE (See Response Methods Nerdbooks) Micromad Strands Nerdbooks) Micromad Strands Nerdbooks Stouc is removed Dismod and physical featment 2. LABEL 2.1 Catingony: Flammable liquid 2.2 Close: 3 2.2 Close: 3 2.3 CHEMICAL DESIGNATIONS 4. DESERVABLE CHARACTERISTICS 4.1 Physical State (as phipped): Liquid 4.2 Celes: Colorises 4.3 Celes: Colorises 4.3 Celes: Colorises 4.3 Celes: Colorises 4.3 Odies: Aromatic 4.3 Odies: Aromatic		2.1 Category: Flammable squid	25 ppm/96 to r/bi-squi/7t _m /hes* resign 8.2 Wele-foret Toatetty: Data not available 8.3 Beologica' Datyen Demond (800): 2.6% (Peor), 2.6cya 8.4 Feec Chein Componitation Potential:	12.4 Freezing Palmi:	
		4.1 Physica' State (as shipped): Louid 4.3 Cator: Coloriess	29.2 dyres/cm = 0.0292 N/m et 13.8 Liquid Water Intertocal Tendent 35 45 dynes/cm = 0.03548 N/m 20°C 12.18 Vapor (Gas) Specific Gravity; Not perioans 13.11 Retio of Specific Mosto of Vapor (f 1.071 12.12 Listent Heat of Vaportastions 144 Stu/6; = 06 1 cal/g =		
J. Symptoms Fad Moderate into August Into Moderate into August Into Moderate Int	rethre Equipments Self-contains overing Exposures, threlation in later of eye with comes' supply appeares. MinduSTOR if it is a contained to the point of the prompt of the point of the prompt of the point of the p	5 6/4g (rat) super moderate imitation such that personnel will of a temporary. I Emaning of the skin and festidiums is one on	9. SHIPPING INFORMATION 9.1 Grades of Purity, Research grade: 99.90%, pure grade 96.5%, technool grade 99.0% 9.2 Blomper Temperature. Ambient 9.3 Perci Atmosphere: Not requirement 9.4 Verting: Open (tame enester) or preseure vacuum	3 35 X 10° J/kg 12.13 Mest of Combustion: —17,760 Bts//b = —9677 Ed//g — —412.5 X 10° J/kg 12.14 Heat of Decompositions Not perment 12.15 Mest of Solution, Not perment 12.15 Mest of Solution, Not perment 12.25 Mest of Felicino, Data Not Available 12.25 Mest of Fuelon, Data Not Available 12.27 Rvic Vepor Pressure, 0 4 page	
18 Debri Thresheid 11 MDUK Velve 2,00	14C apm		Staichlometric Air to Fue! Ratio Data hot av S.12 Plame Temperature: Data hot Avacable		

Common Synn Burnaling of Kerpsine Range bit Furt of No. 1 Jet Fuet JP-5	nyme	Watery liquid Floats on water,	Colmicss	furi oil eder			
Sicc dischings if possible Call the drip atment Avoid ron't clienth agued (solder and import discharged material Mothly book ficatch and pollution constituting agencies.							
Fire	Combustion of the premist fuent or seton dichide. Exemplish a fr. the premist fuent or seton dichide. Water may be interected on fre. Coo' exponent contamine with water						
Exposure	CALL FOR MEDICAL ASD LIGURD Philating to bkin and eyes. Marmid if evaluousd Phormal in evaluousd Phormal						
Water Pollution Notify populate in aquate life in high concentrature. Found is showning. May be derignous if centers water intakes. Notify local health and water principle. Notify operators of nearby water existent.							
2. RESPONSE TO DISCHARGE (See Perponse Methods Nondhook) Mechanical containment Should by removed Chamical and physical beatment 2. LABEL 2. Label 2.1 Calegory, None 2.2 Cleas: Not pertinent							
J. CREMICAL DESIGNATIONS 3.1 CG Competibility Class Miscellaneous hydrocation Abeluse 3.2 Fermits CHs.+2 3.3 MO/UN Designation: 3.3/1223 2.4 DOT (C No.: 1223) 3.5 CAE Registry No.: 8008-2049							
		S. HEALT	TH HAZARDS				
8.2 Symplems Fall stomach, if to adems.	1.1 Personal Protective Equipment, Protective gloves, goggles or face shield. 1.2 Eymptoms Fishowing Exposure; Vapor sauses sight irritation of eyes and nose 1 touic intoless stomach, if taken this large souses coughing distress, and reportly developing pulmonary adems.						
Treatment of Esposure, ASPIRATION inforce bod rest, administer payen, call a doctor, midESTION de NOT induce vorming, call a doctor. EYES wash with plenty of welsa. SKINE was off and wash with plenty of welsa. SKINE was off and wash with plenty of welsa. SKINE was off and wash with plenty of welsa. Stine was not considered to the stine welsal to the stine was not considered to the stine. The stine was not considered to the stine was not considered to the stine was not considered to the stine. The stine was not considered to the stine wa							

6. TIRE HAZARDS 6.1 Fineh Folint: 100'F (mm JC C	18 HAZARD ASSESSMENT CODE (See Hazard Assessment Handback)
8.2 Flammable Limits in Air: 0.7%-5% 6.2 Fire Estinguishing Agents, Fcam, any Chemical, or carbon disorde	A-T-U
6.4 Fire Extinguishing Agents Hot to be Used Water may be ineffective	11. HAZAND CLASSIFICATIONS
8.5 Special Mazards of Combustion Products. Not perinant	11.1 Code of Federal Regulations:
8.6 Behavior in Fire: Not permana 8.7 Ignition Temperature: 444°F	Combustable Food 11.2 MAS Mazand Rolling for Bull, Water
68 Electional Hazard, Not pertenged	Transportation: Culcapry Roting
6.9 Burning Rate; 4 minima. 6.10 Adiabatic Flame Temperature:	Fire as your annual and a 2
Date not available 6.11 Stoichiometric Aix to Evel Rating	Health Vapor britant
Date not available 4.13 Filme Temperature: Date not available	Liquid or \$0'-5 Indent 1 Foreins
William Statement Control of Cont	Water Polumes Human Toxs by
	Agustic Toer ty
). CHEMICAL REACTIVITY	Asstrone Effect
7.1 Reactivity With Water, No reaction 7.2 Reactivity with Common Materials, No.	Orber Chemicals
reaction	Self Rescion
7.3 Stability Ouring Transport, Stable 7.4 Meutralizing Agente for Acide and	Calegory Classification
Caustice, Not perinant 2.5 Palyment attor: Not perinant	Health Hazard (Blue) 0 Flammatides (Red)
7.6 inhibitor at Polymerization: Not perferent	Reactivity (Yellow)
7,7 Mole: Relia (Reactant to Fraduct) Date not evelable	
7.8 Reactivity Group: 33	
ļ	12. PHYSICAL AND CHEMICAL PROPERTIES
	13.5 Physical State at 15°C and 1 atm: Liquid
	12.2 Molecular Weight Hot periment 12.3 Boiling Point at 1 atric
	297-500°F = 200-250°C = 473-533°K
8. WATER POLLUTION	124 Freezing Point
6.1 Aquatic Yazielty;	-50°F = -45 6°C = 227.6°K 12.6 Critical Temperature, Not pertnant
2990 ppm/24 to/bluegdi/TL _m /hesh water	12.6 Critical Pressure, Not persuare 12.7 Specific Gravity:
8.2 Waterlaw! Toxicity: Data not available 8.3 Philogical Oxygen Demana (800):	C.BD of 16°C (Rigard) 12.6 Liquid Surface Yerniotic
53%, 5 days 8.4 Food Chain Concentration Potentials	23 32 dynes/pm = 0 023-0 032 N/m at 20°C
Mind era cana cusus ebucantistiès: bitétifés	12.9 Liquid Water Intertectal Tension:
	47-49 dires/cm = 0.047-0.049 N/m at 20°C
	12.19 Vapor (Gas) Specific Gravity; Not periment
	12.11 Ratio of Specific Heats of Vapor (Gos): Not performs
	12.12 Latent Heat of Vaportations 12.12 Latent Heat of Vaportations 110 Stu/ft = 80 ps//g = 2.5 2 10° J/lo
SHIPPING INFORMATION	18.13 Ment of Combustions —18,540 Blu/B = —10.300 cat/g = —431.24 X 10f J/kg
9.1 Gredes of Purity: Light hydrocarbon #914ate: 100%	12.14 Heat of Decomposition. Not perform
8.2 Storage Temperatura; Ambient	13.15 Heat of Solution, Not perferent 12.16 Heat of Polymorization: Not periment
8.3 Ineri Almosphere, Nr. requeement 8.4 Venting Open (flame anester)	12.25 Heat of Fusion Data not available 12.25 Limiting Value: Data not available
	12.27 Reid Yapor Pressure: 0.1 psla
1	
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NOT	CS .

Commun Symm Descript (Agril)	Plants on wells	Yelcu-brows Lube a fue' of edge	FIRE HAZARDS I.1 Flesh Points 100°F C.C. I.2 Flesh-Points 100°F C.C. I.3 Fire Enthalphille In Air, 1,2%-8% A.3 Fire Enthalphilling Agentic Dry chemical, foam, or curbon disorde.	18. HAZARD ASSESSMENT CODE (Free Hazard Assessment Hardbook) A-T-U
Gaf it e dep Avoid ponts holists and	gr if gossible a frent. It with liquid it with liquid it show of such aged material for sith and poliuson sorthol ag	encies.	4.4 Pire Extrepolating Agents Not to be Used Water may be ineffective. 4.8 Special Masents of Cambanition Products. Not performed. 5.6 Behavior in Pire. Not performed. 4.7 Spridant Temperature, 350—425°F 4.8 Electrical Masend Not performed.	11. HAZARD CLASSIFICATIONS 11.1 Code of Fodorus Regulations: Corobustile lique 11.2 MAS Mazerd Reting for Bulk Water Transports their half bailed 11.3 HFFR Hearnet (Escaphisations)
Fire	Emmeurations Errongues wern on chemic Water may be professive o Cooc waycound contamens in	n Na.	G.E. Rumbing Refs. 4 even/eas. G.15 Atladostic Florina Youngarphysic Dole not available G.15 Stainhiornotric Ab to Fuel Reflec Dole not available G.12 Florina Temperature, Data veri available	Category Class-Pierrion Health Mazerd (Bue)
Exposure	CALL FOR MEDICAL AID. LIGUID Insuling to akin and eyes. Hammal is evalianted flaminate good flaminate good flaminate good flaminate contaminated flaminate contaminated flaminated management flaminated and seed or miss. DC NOT INDUCE VOMITIE	terity of water par and flue? with planty of water, I in CONSCIOUS, have victim drink water	7. ENI-NICAL SEACTIVITY 2.1 Reactivity With Water No maction 7.2 Reactivity with Convene Materials; No reaction 7.3 Stateliny During Transpart: Stable 7.4 Neutralizing Apents for Addit and Counties. Not personnel 7.5 Pelymentantics; Not personnel 7.6 Pelymentantics; Not personnel 7.7 Notes Research for Seaching Not personnel 7.7 Notes Research for Pelyments to Presidely Data not pelable 7.8 Reactivity Grauge: 33	·
Water Pollution	Dengarous it aquate life to Fourier to showing. May be despecus if it one Notify local faulth and and Notify openators of neithy	ng weter bricken. Ne pficials.		12. PHYSICAL AND CHEMICAL PROPERTIES 13.1 Physical State in 15°C and 1 above Liquid 12.2 Molecular Weight Not personne 12.3 Boofing Point at 1 above 380—180°F = 183—283°C == 486—180°F
(See Response Mechanica) e Should be re		2. LABEL 2.1 Catingony: None 2.2 Clease Not pertnert	B. WATER POLLUTION Aquatic Transity: 704 mg 1/24 for/promise American shad /Tl., /aash wasse B.3 Waterfowt Transity: 20 mg /ag LDuo (maker) Biological Orygen Demand (BOO): Date not available	asc—asche 11.4 Frenzing Pelet; —30°F = —34°C = 240°K 13.5 Critical Frençonsher: Not pertneral 12.5 Critical Pressure; Not pertneral 12.7 Specific Gravity; 0.87—0.85 at 15°C (legicit) 13.8 Liquid Surface Temptox 27—22 tiynes/cm = 0.023—0.032 N/ 51.20°C
	picable ntiem: 3.1/1270 10	4. OPSEPVABLE CHARACTERISTICS 6.1 Physical State (as obligand): Liquid 6.3 Cafor: Light brown 6.3 Odon; Characterasse	8.4 Food Chain Concentration Potentials Note	12.0 Liquid Water interfaces Tenesce: 47-48 synes/em. a 0.047-0.048 N/ at 2010 12.10 Vepor (Gos) Specific Gravity: Not pertinent 12.11 Retic at Specific Hests of Vepor (Ges): Not) pertinent 12.12 Latent Hest of Veporization: 110 Stat/b a 60 cal/g a
6.2 Symplants Fell MSESTION: 1 ranging from enhalator, of animal harding purchased from the second from the se	ctive Equipment, Protective powering Exposures; WHALATIO issues nauses, serviving and indiched facilities to energia part indiched facilities to energia pagging fraction with issuepring gapging fractions of system eachievant followed specures. PRGESTIGH sic hit ordered but feet, advisorable sockers by sping and insult. Value No single value acpire lateton Limita: Data mp1 malatic motors: Grade 1; LDs. m §-15 title mp1 symbolis.	W causes headechs and sight addiness, benging, skyt-basion of central nervicus system some, and death, pulmonen intellion secondary to religious may be delayed. ASPIRATION couses dyspma, substemal delives, and rapidly from the second and preumoning acuse orest of by depression. I induce vorming, seed medical attention. Propose EVES wash with copious quantity of water, or scale and water, able.	9. SHIPPING INFORMATION 8.1 Grades of Purity: Deser fuel 1-D (ASTM) 9.2 Storage Temperature, Ambient 9.3 trent Atmosphere, No requirement 8.4 Venting Open (Tame anaster)	2.5 X 10° J/kg 12.13 Heat of Combunition: —18,540 Bla/fb — —10,300 pal/g = —431,24 X 10° J/kg 12.14 Heat of Decomposition. Not pertinent 12.18 Heat of Salution. Not pertinent 12.19 Heat of Feynmication. Not pertinent 12.26 Heat of Peynmication. Not pertinent 12.26 Heat of Fundamentation. Not pertinent 12.27 Reid Vepox Pressure: Data not seelable 12.27 Reid Vepox Pressure: Data not seelable
high screent (\$.8 Edgrid or Solid	Home, The effect is temporary firsturnt Characteristics, Mini- nuise smarting and reddering i till 7 ppm	high hazard if applied on clotteng and allowed to	EDM	its .

	- <u></u>			
Cal he den Avoid comu	Flosts or water,		6. FIRE HAZARDS 6.1 Flash Point 125°F C.C. 6.3 Flash mobile Limits in Air; 1,3°s 45°0°s 6.3 Pro Entinguishing Agenta. Dry chemical, foom, or cartor, dioxide 6.4 Pro Entinguishing Agenta Not to be Used Water may be methodise 6.8 Ripertal Hazards of Conducation Products. Not performed 6.8 Behavior in Fire. Not performed 6.7 Ignition Temperature, 480m 545°F	10. HAZARD ASSESSMENT CODE (See Majord Assessment Handburgh) A-T-EJ 12. HAZARD CLASSIFICATIONS 11.1 Code of Federal Regulations Combinities iquid 11.2 MAS Majord Reting for this Welser Transportation, Not Stated
Fir●	Combinable. Esting as with the charmon's fearth cartain districts. Water may be restrictive an fee. Too' exposed containers with water. Fire		8.8 Euroing Rate: 4 montroin. 8.18 Author Rate: 4 montroin. 8.10 Adhabate Fland Temperature, Data not evaluate 6.11 Steichlematric, Air is Fuel Retile; Data not evaluate 8.12 Fland Temperature, Data not evaluate	Transportance, high blad 11.3 BFFA Mannet Charlings Charleston Calegory Charleston Health Hazard (Blad)
Exposure	CALL FOR MEDICAL AID. LEDDED Property to ship and symb. Harmor F symbored. Refrece contaminated circle Flore affected symbol specific of the EVES, hold symbol so if SWALLDED, and vicin on the DO NOT MODICE VOMITME	tenth of males pers and flust with priently of males. In a CONSCIOUS, have within drivid water	7. CHEMICAL PLACTIVITY 7.1 Rescriving With Water. No reaction 7.2 Reactivity onto Community Melvides Not reaction 7.3 Stability During Transport. Stable 7.4 Meurinizing Agents for Acids and Counties. Not performs 7.5 Performits Not. Not performs 7.6 Inhibitor of Performitations. Not performs 7.6 Inhibitor of Performitations. Not performs 7.7 Moler Ratio (Newstant to Productly Outs not available 7.8 Reactivity Groups 23	12. PHYSICAL AND CHEMICA; PROPERTIES
(See Heapened Mechanical (Should be m		'9 welet ihteken. Na priloista	8. WATER POLLUTION 8.1 Aquatic Toxicity; 204 mg/s/24 for/juvenile American state/Th_fast water 8.2 Waterfew Taxicity, Data not eraliable 8.3 Biological Oxygen Demond (BOD); Data not evaluable	12.5 Physical State of 18°C and 1 attec Liquid 12.2 Molecular Weight, Not persent 13.3 Seeing Point of 1 atte; 500—640°F = 282—238°C = 535—611°K 13.4 Present Point 0°F = 18°C = 255°K 12.5 Critical Temperature. Not pertent 12.6 Critical Present in Not pertent 12.7 Specific Gravity: C.87—0.00 at 20°C Board; 12.8 Liquid Surface Tendon. Das not available 12.9 Liquid Surface Tendon. Das not available 12.9 Liquid Waler Intersock Tendon.
3.1 CG Competibility discretion 3.2 Fermille, Not ap 2.3 IMO/UH Design 3.4 DGT ID No. 121	opicable selenc 3.1/1279	4. DESERVABLE CHARACTERISTICS 4.1 Physics State (as shipped) Liquid 4.2 Celer Light brown 4.3 Odor: Characteristic	8.4 Food Chain Concumytion Potential: None	Date not evaluable 12.10 Vapor (Sus) Specific Gravity: Not performed 13.11 Ratio of Specific Heats of Vapor (Gas): Not performed 12.12 Latent Heat of Vaportsation: Not performed 12.13 Heat of Commission: ——10.800 cm/(g = —453.17.8.10° Jrsg 12.14 Heat of Commission: ——10.800 cm/(g = —453.17.8.10° Jrsg 12.14 Heat of Commission: ——10.800 cm/(g = —453.17.8.10° Jrsg 12.14 Heat of Decomposition: Net performed
S. REALTK HAZARDS 8.1 Personal Protective Equipment Protective gloves, popples or face shield. 8.2 Symptoms Self-sing Exposures: PROSESTON causes housed, worstling, and comping, depression of ceresi increase system ranging from nich tweedock to ensectivate, come, and death; pulmonery inteston securciany to schedule to ensectivate, come, and death; pulmonery inteston securciany to schedule to ensectivate, come, and death; pulmonery inteston securciany to solvent, eight of branching papping, dyspres, substanted distribut, eight entry papping, dyspres, substanted distribut, eight entry thereof by depression, and spendy developing participation of protective protections and previous guides and protective entry, each moderal intention EVES with with copicus queriety of water. SKIN: 18 move solvent by wiping and wish with solic and water. 8.4 Threshood Limit Valva, No single TLV applicable. 8.5 Short Term Involution Limits: Date not evaluable. 8.6 Tearity by Important Characteristics, Sight smarting of eyes or respiratory system if present in high concentration to ensection. Sight smarting of eyes or respiratory system if present in high concentration to the recovery of the protection of the sight of the protection of the sight of continuous hazard it spilled on clothing and allowed to remain, may base smarting and readering of skin. 8.10 Deep Threshold Date not available.		8. SHIPPING INFORMATION 8.3 Grades of Purity, Diesel Aud 2-D (ASTM) 8.2 Storings Temperatura, Andrews 8.9 Inert & Proportions in Properties 8.4 Venting: Open (Name anastes) NOTE	12.15 Neal of Schillers Not persisent 12.16 Head of Perfymerization Not persiser 12.25 Nead of Fusion Data not exclude 12.29 Lawlling Value: Data not available 12.27 Reid Vapos Presaura, Data not available	

POLYCHLORINATED BIPHENYL

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Common Synor PCS Chizmeted biphonyl Another Halogeneted wises Polyphonopolyphonyls	gowder Smile in wester,	d Light yekne band, as Week adar while powder	§ FIRE HAZARDS § 1 Flash Paint > 266°F 6.3 Flammable Limits in Abt Date not evolable 8.3 Fire Etimpulahing Agentic Weler, fears,	10. HAZARO ASSESSMENT CODE (See Mazard Assessment Handbunk) H
Augist genta Car for day housts and	ign if possible. Kviet people an ct with least and acid software, isochurgud material ramove dischurgud material health and politicar control ag		o's chemical, or certain disorde 8.4 Pre Enthipsishing Agents that is be been not pertenent 8.5 Special Nazarde of Combustion Products, imaking gases are generated in free. 8.6 Behavior in Pire, Not personnt.	11. hAZARD ELASSIFICATIONS 11.1 Code of Federral Regulations: ORAL-E 11.2 NAS HALArd Rating to: Suft. Water Transports Non. Not Intel 11.3 NFPA Hazard Elastifications
Fire	Combushble Evergues ² , with valor, fourt	, dry chemical, or carbon dioude.	Byrlion Temporature, Date not averable Bir Einctrinet Hakerdt, Hol perhrens Burning Rate; Date not averable Burning Rate; Date not averable Bir Adlebate; Flame Temporature; Date not available Birlinet and available Birlinet available Birlinet Temporature; Date not available Set Temporature;	fact beload
Exposure	CALL FOR MEDICAL ARD. LIGURD OR BOURD IMARING IS AND INFO SYME PARTY SHOULD SHEEL HIT IS BE SHE EYES, AND SYMHOLE OF	lerin; of maker. nan and Bust with plendy of water.	7. CHIMICAL SLACTIVITY 2.1 Reactivity With Water No reaction 7.2 Reactivity with Commer. Majorisis: Mg reaction 7.3 Subship During Transport Stable 7.4 Ment-wizing Agents for Apide and Counties, Not perferent 7.4 Perferentialities, Not perferent 7.4 Invisitor of Polymerizations Not perferent 7.7 Major Ratio (Reactions in Product); Data not evaluable 7.6 Reactivity Orace, Data not evaluable 7.6 Reactivity Orace, Data not evaluable	
Water Pollution	HARLESUL TO AQUATIC LI May be dangerine if it arts housy local health and wild housy operators of nearby	Me sficels.	-	12. PHYSICAL AND CHEMICAL PROPERTIES 12.1 Physical State at 18°C and 1 arms Sold 12.2 Molecular Weight Not pertinent 12.3 Boiling Point at 1 arms Very high 12.4 Freezing Point Not pertinent 13.5 Critical Temperature. Not pertinent
(See Properties beaut reprint Should be re	RSE TO DISCHARGE I Methode Handbook) ignored proved of physical frastrums	2. LABEL 2.1 Category; Norm 2.2 Class. Not pertinent	8. WATER POLLUTION 8.1 Aspertic Textilety: 0.279 ppm/95 for/plungit/TL ₀ /feeth onler 0.005 ppm/335-1980 for (pm/sh/TL ₀ /set) under 8.3 Waterfeet/ forkely: LD ₀ 2000 ppm [make/filexh]	12.8 Critical Pressure. Not perhant 12.7 Specific Grevity: 1.3—1.8 at 20°C Squid 12.8 Liquid Surface Tension. Not perthant 12.8 Liquid Water Interfacial Tension: Not perthant 12.18 Vapor (Gas) Specific Gravity: Not perhant 12.11 Ratio of Specific Heats of Vapor (Gas)
3. CHEMI 3.1 CO Comparishi 3.2 Ferroda: (Cash 3.3 MO/UN Design 3.4 DOT 80 No. 23 3.8 CAS Registry 9	he JCS, netters. Not felled 18	4. OBSERVABLE CHARACTERISTICS 4.1 Physics Bisle (as shipped) Liquid at solid at solid 4.2 Cefor; Pele yellow (liquid), soliotises (solid) 4.3 Odor; Pischically odoriess	8.3 Biologics! Ozygon Demand (BOD): Very fow 8.4 Feed Cheln Concentration Petential: High	Not perinent 12.12 Latent Heal of Vaperboldest: Not pertnent 12.13 Need of Combustion, Not perinent 12.14 Need of Decomposition, Not perinent 12.16 Need of Beckman, Not perinent 12.16 Need of Polymerboldes, Not perinent 12.26 Need of Fuelost Data not evaluable 12.26 Linding Value. Data not available 12.27 Need of Polymerboldes. Data not available
8.3 Symptom Fe 8.8 Treatment of 8.4 Threshold Lin 8.5 Short Term in 8.5 Turnity by in 8.7 Late Terminy 8.8 Yeper (Lin) in 97 ord ling 8.8 Liquid or Selec	ective Equipment, Gloves and fouring Exposure, Acre Bon Especialre, SKM wish, with all Value 0.5 to 1.0 regress helesten Limite; Data rer small gentlers, Grude 2, and ret LDs Coules chromosome! abrome when Characteristics. Vapors j highly. They serving be believe of brittens Characteristics. Con 4° fortiers Characteristics: Con 4° Data moi englishe.	plun portaci. aç and meter. able i = 3860 mg/kg illes in ists, briti defects in brits souns sovers intustori of eyes and throat and pause souns sovers intustori of eyes and throat and pause	9. SHIPPING INFORMATION 9.1 Grades or Purity, 17 grades (some liquid), some solids; which drive premarily in the chicries consent (20% de % by reging) 9.3 Storage Temperature, Ambient 6.3 Inert; Almosphere; No requirement 6.4 Verting Open.	·
			•	DILS

APPENDIX A2 SITE SPEACIFIC EMERGENCY INFORMATION

SITE SPECIFIC

EMERGENCY INFORMATION

Job Site:

Harrison Street Garage 1432 Harrison Street

Oakland, California 94612

Contact Person:

John P. Cummings; Office Director/Site Health & Safety Officer

SCS Engineers (415) 829-0661

Nels R. Johnson; Project Manager

SCS Engineers (415) 829-0661

Emergency Phone Numbers:

Dial 911, report location,

nature of injury or accident, and assistance required.

Fire Protection/Paramedics:

Dial 911

Poison Control Center/San Francisco:

1-800-523-2222 or 415-476-6600

National Response Center (NRC): For toxic chemical

and oil spills

1-800-424-8802

Hospitals/Emergency Services (Figure 1):

Nearest:

Peralta Hospital 450 30th Street Oakland, California 415-451-4900

Other Hospitals in Area:

Providence Hospital 3100 Summit Street Oakland, California 415-835-4500

Merritt Hospital Hawthorne and Webster Streets Oakland, California 415-655-4000 Kaiser-Permanente Medical Center 280 W. MacArthur Boulevard Oakland, California 415-596-1000

Telephones are available in offices on the site and a cellular phone also will be present. A job site safety meeting will be held daily with the crew, including subcontractors, prior to starting excavation. NO SMOKING signs will be posted in proximity to the work site(s). Two fire extinguishes with a minimum class rating of 20BC shall be kept within at least 50 feet of the removal operation at all times during work operations. There shall be no ignition sources allowed within the area while removal operations are in progress. A first aid kit shall be present on site during all removal operations.

A copy of this notice shall be conspicuously posted in the area adjacent to removal operations, along with a copy of the fire department permit.



LOCATIONS OF OAKLAND HOSPITALS NEAR HARRISON STREET GARAGE 1432 Harrison Street, Oakland, California

APPENDIX A3 SIGNATURE SHEET

SIGNATURE SHEET

All employees of SCS Engineers, its subcontractors, or other agents must certify by signing this document that they have completed the appropriate OSHA-approved training and that they have read and will comply with this Site Health and Safety Plan.

Signature/Company	Date
Signature/Company	Date

APPENDIX C

TANK REMOVAL CONTRACTOR'S WORKMAN'S COMPENSATION INSURANCE CERTIFICATES

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12/31/90
                       CERTIFICATE OF INSURANCE
his certificate is issued as a matter of information only and confers no rights
upon the dertificate holder. This certificate does not amend, extend or alter
the coverage afforded by the policies listed below.
                                  Letter A Pacific Compensation Ins. Co.
                               C
RODUCER
                              M Letter B
  Daugherty & Company
 2495 West March Lane
  Stockton CA 95207
                            A Letter C
                               N
INSURED
                              I Letter D
E
                                            "LIMITS AT POLICY INCEPTION"
  Falcon Energy Associates
  P. O. Box 1257
                               S Letter E
                 CA 95201
  Stockton
 his is to certify that policies of insurance listed below have been issued to he insured named above for the policy period indicated. Notwithstanding any
requirement, term or condition of any contract or other document with respect
 b which this certificate may be issued or may pertain, the insurance afforded
the policies described herein is subject to all the terms, exclusions and
conditions of such policies. Limits shown may have been reduced by paid claims.
 Gnl Aggregate
  ( ) Commercial GL
  ( ) ( )Claims Made
                                                    Prd-CompOp Agg
                                                    Pers & Adv Inj
      ( )Occurrence
                                                    Each Occur
   ) Owners & Contr
                                                    Fire Damage
                                                    Medical Exp
  - AUTOMOBILE LIABILITY ------
  ( ) Any Auto
( ) All Owned
                                                   CSL
                                                    B.I./Person
                                                    B.I./Accident
   ( ) Scheduled
  ( ) Hired
                                                    P.D.
  ( ) Non-Owned
  ( ) Garage Liab
  + EXCESS LIABILITY ------
                                                 Each Occur Aggregate
  ( ) Umbrella Form
  ( ) O.T. Umbrella
   - WORKERS COMPENSATION ------
           WP012191 11/30/90 11/30/91 STATUTORY
    W.¢.
                                                                  $1,000
                                                    Each Accident
      Employers Liab.
                                                    Disease/Pol $1,000
                                                    Disease/Emp
                                                                  $1,000
DESCRIPTION OF Operations/Locations/Vehicles/Restrictions/Special Items
   RE: As their interest may appear.
                 Should any of the above described policies be cancelled
 CANCELLATION:
     before the expiration date thereof, the issuing company will endeavor
     to mail ten days written notice to the certificate holder named below
     but failure to mail such notice shall impose no obligation or
     liability of any kind upon the company, its agents or representatives.
 NAME and ADDRESS of CERTIFICATE HOLDER
     SITE ADDRESS
       1432 Harrison Street
       Oakland, CA 94612
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Adono. CERTIF	ICATE OF IN	·		Forthern A	12/12	750
Corroon & Black of Mis 8112 Maryland Avenue	ssourt, Inc.	CONCEDE NO DIGHT	TS UPON THE C	MATTER OF INFOR	R. THIS CI	ERTIFICAT
St. Louis, Missouri 63	3105-3721	CO	MPANIES AF	FORDING COVE	RAGE	:
		COMPANY A Goth	am Insuranc	ce Company	•	
INSVARD	••	COMPANY B OCEA	n Marine Ir	ndemnity		
Kiesel Enterprises, I		COMPANY C		ee i is the Control of the Control o		· • •••• • • • • • • • • • • • • • • •
4801 Fyler Avenue St. Louis. Missouri 6		COMPANY D	•	• •	***	; # 1 :
DATE OF COLUMN	•	COMPANY E	g in the self-seamen, make the	- ALT MARKETHIA		P Inches Added
OVERAGES					· · · · · · · · · · · · · · · · · · ·	<u> </u>
THIS IS TO CERTIFY THAT THE POLICE INDICATED, NOTWITHSTANDING AND CERTIFICATE MAY BE ISSUED OR MEXCLUSIONS AND CONDITIONS OF I	t requirement, term or Ay pertain, the insurant	condition of any cont de afforded by the Po	ract or other	DOCUMENT WITH RES ID HEREIN IN BUBLEOT	PECT TO WI	HICH THIS
co Type of Insurance	POLICY NUMBER	POLICY EPPECTIVE (YY)CQ:hm; byac	POLICY EXPIPATION BAYE (MM/DD/YY)	'	BTINI	
OENERAL LIABILITY Y COMMERCIAL GENERAL LIABILITY A CLAIMS MADE X OCCUR. OWNER'S & CONTRACTOR & PROT. X COVEYAGE INC LUCES S Subject to 72 hours	MMO-35827 udden and accide	12/01/90 ntal pollution,	12/01/91	CENERAL ACCREGATE PRODUCTS COMPIOP ACCREGATE ADV. INJUR BACH OCCURRENCE FIRE DAMAGE (Any one if MED. EXPENSE (A) and in	0. 81,(V 81,(81,(000,000 000,000 000,000 000,000 50,000
AUTOMORILE LIABILITY				COMBINED SINGLE	4	
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SCHEDULEP AUTOS		1		(Fer person)	i # 	
HIRED AUTOS		; ;	1	SODILY (NURY (Fer accident)	•	
SARAGE LIABILITY		,	•	PROPERTY CAMAGE	1	
B. UMBRELLA PORM X'OTHER THAN UMBRELLA FORM	GCM 13974	12/01/90	12/01/91	SACH DOCURRENCE ADDREDATE		000,000
WORKER'S COMPENSATION AND EMPLOYERS' LIABILITY				STATUTORY LIMITE EACH ACCIDENT DISEASE—POLICY LIMIT DISEASE—EACH SHPLO	6	
OTHER			1			
escription of gperations/locations/v	emiclés/appoial Items		<u> </u>	,		
CERTIFICATE HOLDER		CANCELLATION	SOUNCE I	7.7. <u> </u>	HEEL.	A September 1
SITE ADDRESS	•	154		BED POLICIES BE CA		ī
1432 Harrison S	====================================	HAIL 30 DAYS W	MITTEN NOTICE 1	usuing company The certificate h	OLDER NAM	ED TO THE
•		Ŋ		notice shall impos impany, its agents (!
Oakland, CA	17616	ANTHORICE AS THE ME				1

ISSUE DATE MAN/DOMY) THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY
AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS
CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE
AFFORDED BY THE POLICIES BELOW. ACORD PRODUCER Charles L. Crane Agency 100 South Fourth Street COMPANIES AFFORDING COVERAGES St. Louis COMPANY LETTER The Continental ins. Companies MO 000083102 COMPANY LETTER KEMPER INSURED COMPANY FALCON ENERGY INC PACIFIC EMPLOYERS INSURANCE CO LETTER P.O. BOX 1257 COMPANY a LETTER STOCKTON COMPANY CA 852010000 LETTER THIS IS TO CERTIFY THAT POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS, AND CONDITIONS OF SUCH POLICIES. POLICY EFFECTIVE POLICY EXPIRATION CO TR ALL LIMITS IN THOUSANDS POLICY NUMBER TYPE OF INSURANCE GENERAL ABBREBATE GENERAL LIABILITY PRODUCTS-COMPLOPS ADGREEATE COMMERCIAL BENERAL LIABILITY PERSONAL & ADVERTISING INJURY \$ CLABAS MADE OCCURRENCE EACH OCCURRENCE OWNER'S & CONTRACTORS PROTECTIVE FIRE DAMAGE LANY ONE FIRE MEDICAL EXPENSE (ANY ONE PEASON) \$ AUTOMOBILE LIABILITY \$1,200 X ANY AUTO BODILY
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ACCIOENTI X ALL DWINED AUTOS XISCHEDULED AUTOS 9/18/91 B1CLP05168765 9/18/80 X HIRED AUTOS NON-OWNED AUTOS GARAGE LIABILITY PROPERTY BAMABE EACH DECURRENCE AGGREBATE EXCESS LIABILITY 4,000. 12/01/91 \$4,000, 12/01/90 XM0033611 C_X OTHER THAN UMBRELLA FORM STATUTORY WORKERS' (EACH ACCIDENT) COMPENSATION AND EMPLOYERS' LIABILITY (DISEASE-POLICY_LIMIT) DISEASE-EACH EMPLOYED OTHER PER FORM 9/30/90 9/30/91 3AT58756400 В CONT. EQUIP

SITE APPRESS

OCNI DILVRION LEFERABLE:

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1432 Harrison Street Oakland, CA 94612 SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL OTO DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER, NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITE AGENTS OR REPRESENTATIVES.

BY

	DAILY FIE	LD REPORT		
PROJECT		PROJECT NO	DATE	
LOCATION		CLIENT		
CONTRACTOR		SUPERINTENDENT		
WEATHER CONDITIONS				
TRAVEL TIME				
EQUIPMENT USED				
TIME				·
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				11 grafie
ENGINEER/GEULOGIST/INSPECTOR				
REVIEWED BY		 	SHEET0	F
REVIEWED BY			SHEET O	

BORING LOG

	Project	Hole/Well #										
	Location				Diameter of Drill Hole							
	Job #				Total Depth of Hole							
	Geologist/Engineer				Date Started							
	Drill Agency	Date Completed										
DEPTH	WELL CONSTRUCTION DETAIL	N-VALUE	٣	GRAPHIC								
IN FEET	WELL GONOMOSTION DETAIL	/A - N	SAMPLE	SYMBOL	DESCRIPTION							
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GROUNDWATER SAMPLING DATA SHEET

Well No.: Monthly/Quarterly/Annual/Other (circle one) Samp									
	•	<u> </u>							
	Time:	Weather:							
Sampler Name:	Company:	Title:							
Sample No.:									
Type of Sampler/Pump U	sed:								
Groundwater Surface Ele	evation (ft.):								
Sample Depth:									
Describe Well Purging	Before Sampling:								
time pump on:	time pump off:								
Type, Volume, Details	of Sample Containers:								
Field Preservation of	Samples (if any) - Describe:								
	, How Packaged and Shipped, Dat								
Describe Analytical Tes	sting Requested:								
Analytical Results To I	Be Sent To:								
Field Parameters: Spec.	Conductance (umhos/cm)	рН							
Other Field Conditions:									
File No.:	Reviewed By:								
Remarks:									



CHAIN OF CUSTODY RECORD REQUEST FOR ANALYSIS



COMPANY NAME :				Ī	CARRIER:							TURNAROUND TIME REQUIRED:							
ADDRESS: SHIPMENT DATE:												NORMAL CONTRACTOR							
PHONE NUI	MBER:				"		SHIPPING	NUMBER :									_] 3-DAY		
P.O. NUMBER : NUMBER OF SAMPLES : PAGE							iE	c	F	·			IMMI	DIATE A	ATTENTION				
PROJECT N	AME:									7.5	A	NALY	SES	S REQUIRED			LAB ONLY		
PROJECT AL	DDRESS:							-, -,				T							1
PROJECT N	UMBER:																		
SAMPLER N	AME AND SIGN	ATURE :													1				
REPORTS T	OBE SENT TO	:		· · · ·															SAMPLE :
SAMPLE LD. NUMBER	SAMPLE DESCRIPTION	SAMPLE MATRIX	SAMPLE PRESERVATIVE(S)	CONTAINER SIZE/TYPE	DATE/TIME COLLECTED	FIELD TEMP.	FIELD pH	FIELD EC	SPECIAL PROGRAM REQUIREMENTS O EPA - SOP & CAM RE	A									CONDITION UPON RECEIPT
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SPECIAL INS	TRUCTIONS / C	OMMENTS:							· · · · · ·			Ц.,	<u>. </u>						
SPECIAL INSTRUCTIONS / COMMENTS:																			
RELINOUISHED	BY : (Signature)		DATE:	RECEIVE	D BY: (Signature)		RELINGUISHED BY : (Signature)			DATE:				RECEIVED BY : (Signature)					
COMPANY:			TIME :	COMPANY	7:		COM	PANY:			TIM	E :			COM	PANY:			