5/27/93 review within 2 weeks moving out by June 1993

STID 3932

AZURE ENVIRONMENTAL

May 13, 1993 AZ119-001

Susan L. Hugo
Alameda County Health Care Services Agency
Department of Environmental Health
80 Swan Way, Rm. 200
Oakland, California 94621

Re: Submittal of Workplan to Conduct a Preliminary Site Assessment, Copper and Brass Sales, Inc., Emeryville, California

Dear Ms. Hugo:

Enclosed is the document entitled "Workplan to Conduct a Preliminary Site Assessment, Copper and Brass Sales, Inc., Emeryville, California". This Workplan outlines an investigation program to assess the extent of petroleum hydrocarbons in soil and ground water at the Copper and Brass Sales, Inc. facility, located at 1295 67th Street in Emeryville. The Workplan is submitted on behalf of Copper and Brass Sales, Inc., pursuant to a letter issued by your agency on March 30, 1993.

Please call me at (415) 485-9740 should you have any questions or comments regarding this document.

Sincerely,

Jeff Hennier, R.G.
Principal Hydrogeologist

Enclosure

cc: George Blandino, Copper and Brass Sales, Inc.
Rich Hiett, RWQCB

new address per 6/16/93 → John Armstrong 1900 Embarcadero Suite 101 Oakland 946

6/16/93 called Jeff Hennier request for a copy of the monitoring well installation diagram.

1001 Lincoln Avenue, San Rafael, California 94901 Tel: 415.485.9740 Fax: 415.485.6062

WORKPLAN TO CONDUCT A PRELIMINARY SITE ASSESSMENT
COPPER AND BRASS SALES, INC.
1295 67th Street
Emeryville, California

May 13, 1993
AZ119-001

Prepared for:
Copper and Brass Sales, Inc.
1295 67th Street
Emeryville, CA 94608

AZURE ENVIRONMENTAL

May 13, 1993 AZ119-001

WORKPLAN TO CONDUCT A PRELIMINARY SITE ASSESSMENT
COPPER AND BRASS SALES, INC.
1295 67th Street
Emeryville, California

1.0 INTRODUCTION

On behalf of Copper and Brass Sales, Inc., we have prepared this Workplan to conduct a Preliminary Site Assessment (PSA) of the facility at 1295 67th Street in Emeryville, California ("the Site"). This Workplan presents Azure Environmental's (Azure) proposed scope of work to address the Alameda County Health Care Services Agency's (ACHCSA) request for a PSA, contained in their letter to Mr. George Blandino dated March 30, 1993. This Workplan to perform a PSA has been developed based on information from previous remedial activities conducted at the Site.

The objectives of this Workplan are to assess the lateral and vertical extent of hydrocarbons in soil and ground water at the Site. Previous investigations have found hydrocarbons in soil that appear to be associated with diesel storage in a 2,000-gallon capacity underground storage tank (UST) formerly located at the Site. Investigation data collected for the PSA will be evaluated to assess whether soil and/or ground-water remedial actions may be necessary at the Site.

As required by the ACHCSA, we have prepared this Workplan in accordance with their guidance document dated August 20, 1991, and with the Regional Water Quality Control Board's (RWQCB) "Tri-Regional Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites", dated August 10, 1990 ("Tri-Regional Guidelines"). Pursuant to the subject guidelines, the following Appendices are included with this Workplan: Appendix A - Statement of Qualifications; and Appendix B - Site Safety Plan.

2.0 SITE DESCRIPTION AND PREVIOUS INVESTIGATIONS

Site Description

The Site is located at 1295 67th Street in Emeryville, approximately 1/2 mile east of the San Francisco Bay (Figure 1). Copper and Brass Sales, Inc. built the present facility and have occupied the Site since the building was completed in 1964. Their operations at the facility involve the distribution of various types of non-ferrous metal rod and tubing.

The ground surface in the Site vicinity is approximately 30 feet above mean sea level and slopes gently toward the Bay. Due to the Site's proximity to the Bay, shallow-depth sediments in the Site vicinity are likely to consist of fine-grained silt and clay sediments deposited in tidal marsh and estuarine environments.

One 2,000-gallon capacity UST was previously located at the western boundary of the Site (Figure 2). The UST was reportedly installed at the Site in 1973 and was used to store diesel until October 1992. The tank was removed from the Site in December 1992. No other USTs are known to be present at the Site.

Previous Investigations

In December 1992, K.T.W. and Associates (KTW) conducted tank removal and soil sampling activities at the Site. These activities are described in KTW's report entitled "Tank Closure Report", prepared on December 29, 1992. KTW reported the presence of fuel hydrocarbons in soil samples collected from below the east and west ends of the former UST at a depth of 9 feet below grade. Chemical analysis of the soil samples indicated the presence of total petroleum hydrocarbons (TPH) as diesel (up to 1,800 ppm) and as gasoline (up to 6.5 ppm), benzene (up to 0.390 ppm), toluene (up to 0.380 ppm), ethylbenzene (up to 1.20 ppm) and total xylenes (up to 2.90 ppm). KTW reported that "a small amount of water with a sheen of free product" was present in the excavation pit. After collecting the soil samples, KTW reportedly removed an additional 75 cubic yards of soil from north, south and east walls of the excavation pit.

On February 22, Riedel Environmental Services (Riedel) collected verification soil samples from the north, south, east and west excavation walls at depths of 8 feet below ground surface. Analysis of the soil samples indicated fuel hydrocarbons were not detected, with the exception of 13 ppm of diesel found in the sample collected from the east excavation wall. A water sample collected from the tank pit detected relatively low concentrations of TPH as gasoline (0.120 ppm) and benzene (0.001 ppm). On April 27, the tank excavation was backfilled with imported fill.

Based on these results, the ACHCSA requested that a PSA be conducted at the Site in a letter dated March 30, 1993.

3.0 OBJECTIVES AND TECHNICAL RATIONALE

The objectives of this Workplan are to assess the extent of hydrocarbons in soil and ground water at the Site. The following general tasks are proposed to address the objectives of this Workplan:

- Drill one shallow soil boring at a location approximately 10 feet east of the excavation pit and collect a soil sample for chemical analysis
- Install a downgradient ground-water monitoring well within approximately 10 feet of the former UST location
- Collect a water-level measurement and a ground-water sample for chemical analysis from the newly installed well
- Evaluate investigation data and develop recommendations for appropriate remedial actions, if necessary

Locations of the proposed boring and monitoring well are illustrated in Figure 2. The soil boring is planned for the area adjacent (within approximately 10 feet) to where the soil sample from the east excavation wall detected 13 ppm of diesel. Fuel hydrocarbons were not found in samples collected from the north, south and west excavation walls. Data from the boring will be used to assess the extent of hydrocarbon-affected soils east of the former UST location.

A monitoring well will be installed within 10 feet downgradient of the former tank location to assess the presence, if any, of hydrocarbons in ground water at this area of the Site. The proposed well would be located at the southwest end of the former UST location, in the downgradient direction of ground-water flow. The estimated direction of ground-water flow is based on the topography in the site vicinity, which slopes gently to the southwest, toward the San Francisco Bay located approximately 1/2 miles to the west. Additionally, the estimated direction of ground-water flow is based on review of ground-water elevation data collected at nearby sites (i.e. Electro Coating, Inc. at 1401 Park Avenue in Emeryville), which indicate a general west to southwest ground-water flow direction toward the Bay.

4.0 SCOPE OF WORK

In accordance with the ACHCSA's request, a Scope of Work has been developed to further assess the extent hydrocarbons in the soil and ground water at the Site. The Scope of Work for the proposed PSA has been organized into the following specific tasks:

Task 1: Soil Sample Collection and Chemical Analysis
Task 2: Ground-Water Monitoring Well Installation
Task 3: Well Development, Ground-Water Sampling and Chemical Analysis
Task 4: Data Evaluation and Report Preparation

A detailed description of each task follows.

Task 1: Soil Sample Collection and Chemical Analysis

Soil samples will be collected from one proposed soil boring (Figure 2) to further assess the extent of affected soil in the east direction from the former UST. The boring will be drilled to the ground-water surface, which was reported in previous investigations to be approximately 9 feet below grade. A sample for chemical analysis will be collected from the boring at approximately 8 feet below grade.

Borehole Drilling and Soil Sampling Methods

The boring will be drilled by a licensed well drilling contractor using a truck-mounted drilling rig equipped with hollow-stem augers. Before drilling activities begin, Underground Service Alert (USA) and a underground utility locator subcontractor will survey underground utilities to clear the boring and well locations for access. All drilling activities will be conducted under the supervision of a California Registered Geologist. All down-hole drilling and sampling equipment

will be steam-cleaned prior to use at each drilling location to prevent potential cross-contamination between each location. The boring will be backfilled with cement-bentonite grout after drilling is completed.

Soil samples will be collected at approximately 2-1/2 foot intervals for lithologic description. Soil samples will be collected by driving a clean, 2-inch diameter split-spoon sampler lined with clean brass tubes ahead of the hollow-stem auger into undisturbed soil. The samples will be analyzed in the field for the presence of volatile hydrocarbons using a PID. The sample selected for chemical analysis will be sealed by installing plastic caps over the ends of the sample tube and then placed in a chilled cooler for transport to the analytical laboratory.

Soil Chemical Analyses

In accordance with the Tri-Regional Guidelines, the soil sample will be submitted to a California state-certified laboratory and analyzed for TPH characterized as diesel (EPA 3550/8015) and as gasoline (EPA Method 8015/5030), and BTEX compounds (EPA Method 8020).

Task 2: Ground-Water Monitoring Installation

One ground-water monitoring well will be installed at the location illustrated in Figure 2 to assess the possible presence of hydrocarbon-affected ground-water at the Site.

Based on the results of previous investigations at the Site, we anticipate that the total depth of the shallow well will be approximately 15 feet below grade. The actual length and depth of the screened interval in the well will be determined in the field by an Azure hydrogeologist, and will be based on the depth to ground water and the types, depths and thicknesses of the sediments encountered. To evaluate the possible presence of floating fuel product, the screened interval will extend above the water table.

Well installation procedures will conform to guidelines established by the California Department of Water Resources and the Alameda County Flood Control and Water Conservation District. Appropriate well permits will be obtained before drilling begins at the Site. All work will be performed under the direct supervision of a California Registered Geologist.

Monitoring Well Construction

The monitoring well will be constructed using flush-threaded, 2-inch-diameter polyvinyl chloride (PVC) casing with factory-slotted well screens. All drilling equipment, sampling tools, and well casing will be steam-cleaned before use at each drilling location. We anticipate using about 8 feet of slotted PVC casing, extending 1 to 3 feet above the ground-water surface.

The well casing will be placed in a completed borehole through the hollow stem auger. A filter pack of appropriately graded sand will be poured into the annular space between the hollow-stem auger and the slotted PVC well casing as the auger is gradually removed from the borehole.

The filter pack will extend 1-1/2 to 2 feet above the top of the slotted PVC casing. Bentonite will be placed above the filter pack to isolate the perforated interval from material above and prevent the entrance of grout into the filter pack. A cement-bentonite grout will be poured to fill the well annulus from above the bentonite seal to within two feet of grade to prevent surface-water infiltration into the well annulus. A locking cap will be placed over the top of the well casing to protect the well's integrity. A watertight well enclosure will be placed over the top of the well and set slightly higher than surrounding grade to restrict entrance of surface water run-off.

Task 3: Well Development, Ground-Water Sampling and Chemical Analysis

The newly installed well will be developed within approximately 72 hours of completing well installation activities. The well will then be sampled within approximately two weeks following completion of well development. Waiting two weeks to sample the well should allow adequate time for floating free product to enter the well, if present. Should the well contain floating product, a sample of the product (rather than the ground water) will be collected and analyzed by the laboratory for fuel characterization.

The following text describes the methods to be used to develop and sample the well and the chemical analyses to be performed on the collected ground-water sample.

Well Development

The well will be developed by pumping, bailing and/or surging the well to remove sediment from around the screened interval and to enhance hydraulic communication with the surrounding formation. Observations of the quality and clarity of water withdrawn, and measurements of water temperature, pH and specific conductivity will be recorded during this process. Well will be developed until relatively sediment-free water is produced and the above parameters have stabilized. To the extent possible, approximately ten well volumes will be removed during well development.

Ground-Water Sampling

A water-level measurement will be taken at the well prior to purging. Observations of the quality and clarity of water withdrawn, and measurements of water temperature, pH and specific conductivity will be recorded during well purging. Samples will be collected after purging approximately three well volumes and water parameters have stabilized. Ground-water samples will be collected from the well using a clean bailer. Samples will be gently poured into laboratory-supplied containers that are appropriate for the type of analysis to be performed on the sample. The containers will be filled so as to exclude air bubbles. This will minimize potential volatilization of chemical compounds in the samples.

Chemical Analysis

The ground-water samples collected from the newly installed well will be submitted to a state-certified laboratory for analysis for TPH as gasoline (EPA Method 8015/5030), TPH as diesel (EPA Method 8015/3550) and BTEX compounds (EPA Method 8020).

Drilling and Sampling Waste Management

Waste soil generated during drilling will be securely stored on-site in 55-gallon drums or on the ground surface surrounded by plastic sheeting. Waste water produced from well development and sampling will be stored on-site in 55-gallon drums. Sample analysis results will be used to evaluate proper disposal options for the waste soil and ground water.

Task 4: Data Evaluation and Report Preparation

Geologic, hydrogeologic and chemical data collected during performance of the PSA will be evaluated, summarized, and presented in a report prepared by a Registered Geologist, in accordance with the Tri-Regional Guidelines. The report will include the following:

- Detailed descriptions of the methodologies used to collect and analyze the data
- Descriptions of site geology, including boring logs illustrating soils observed in the field and well construction details
- Presentation and interpretation of soil and ground-water analysis results, including an assessment of the extent of chemicals in soils and ground water at the Site
- Recommendations for any additional investigations and remediation at the Site, if necessary

5.0 SCHEDULE

The total estimated time to complete the proposed Scope of Work is eight to ten weeks. Once approval of the PSA Workplan has been received from the ACHCSA, we anticipate that Tasks 1 through 3 can be completed in about six to eight weeks, assuming a normal two-week laboratory turnaround time for sample analysis. A technical report (Task 4) can be prepared within two weeks of Azure's receipt of the laboratory data.

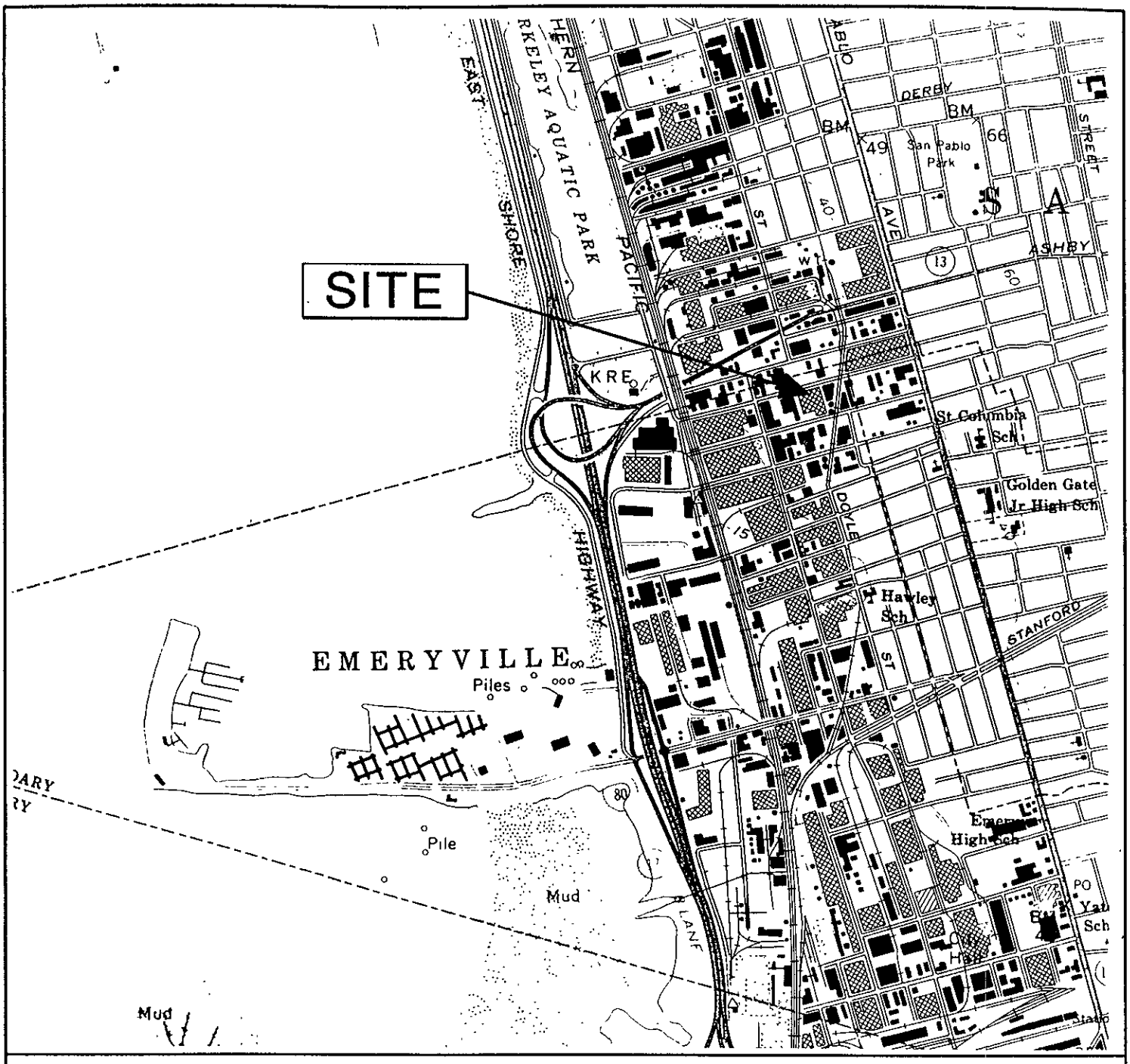

Figure 1: Site Location Map

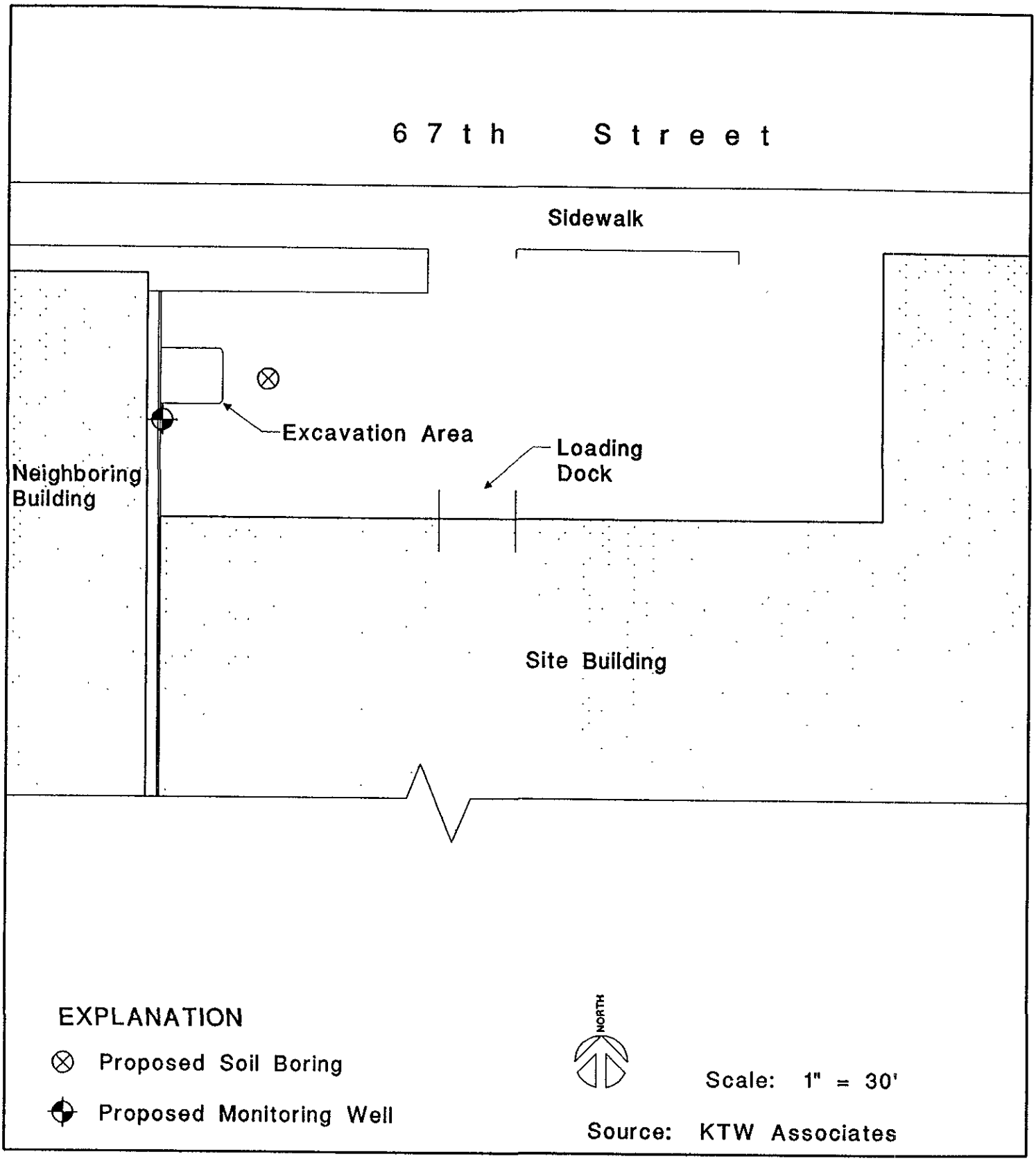

Figure 2: Site Map

AZURE ENVIRONMENTAL AZ119-001

APPENDIX A

AZURE ENVIRONMENTAL
STATEMENT OF QUALIFICATIONS

CAPABILITIES AND SERVICES

Azure Environmental is an environmental consulting firm comprised of geologists and engineers with extensive experience in the environmental field. Specific areas of expertise include:

- Hazardous Waste Management
- Remedial Investigations
- Feasibility Studies
- Remedial Action Plans
- Regulatory Agency Interface
- Environmental Site Assessments
- Environmental Audits
- Project Management

We provide geologic and engineering consulting services to both private and public clients including property management and development companies, legal counsel, industrial facilities, utilities, petroleum service stations, landfills, refineries, semiconductor manufacturers, financial institutions and insurance companies.

The services we provide include:

- Hazardous materials management
- Industrial waste characterization and process engineering
- Soil and ground-water investigations
- Ground-water monitoring well installation
- Monitoring well development and sampling
- Soil sampling for chemical analysis
- Hydraulic testing
- Development of conceptual geologic and hydrogeologic models
- Ground-water flow and chemical transport computer modeling
- Forensic studies
- Expert witness testimony
- Development of cleanup goals for soils and ground water
- Remedial system evaluation and design
- Construction management
- Technical and strategic review of on-going investigation and remediation projects
- Project cost estimating and review
- Presentations to private and public groups

Selected Resumes

hydrogeology
remedial investigation
project management

JEFF HENNIER, R.G.

EDUCATION B.S. and M.S. in Geology
Texas A & M University

REGISTRATION Registered Geologist in California (#4605)
Registered Geologist in Oregon
Professional Geologist in Wyoming

SUMMARY

Mr. Hennier has more than 10 years of experience in conducting and managing remedial investigations and cleanup actions for chemically contaminated soil and ground water at state and federal Superfund sites, landfills, surface mines, and petroleum service stations. His experience includes several years of developing and implementing ground-water investigation programs, evaluating site investigation data and computer model simulations for use in designing soil and ground-water remedial systems, and working with regulatory agencies to adopt environmental cleanup plans. He has authored and/or co-authored numerous documents, including RI/FS reports under CERCLA, and reports submitted in accordance with the State SWAT and LUFT programs.

Mr. Hennier has evaluated investigation data and recommended programs to remediate soil and ground water affected by a wide range of chemical compounds, including petroleum hydrocarbons, volatile and semi-volatile compounds, and metals. He has directed the operation of over 10 soil and ground-water remedial systems. Additionally, he has extensive experience as liaison between private sector clients, state, federal, and other involved regulatory agencies. He has conducted presentations at public meetings to present environmental cleanup plans to community groups.

EXPERIENCE

Azure Environmental - San Rafael, California
Principal Hydrogeologist:
Mr. Hennier is Principal Hydrogeologist and a founding partner at Azure Environmental. Mr. Hennier is responsible for project management and technical oversight of several environmental investigation and remediation projects.

EXPERIENCE (continued)

Levine-Fricke, Inc. - Emeryville, California
Geosciences Group Manager and Principal Hydrogeologist:
Mr. Hennier was the principal in charge of management and technical oversight of environmental investigation and remediation activities performed by a group of approximately 30 professional staff hydrogeologists and environmental scientists.

Espey, Huston and Associates - Austin, Texas
Staff Hydrogeologist:
Mr. Hennier evaluated data from ground-water investigation programs at several surface-mine operations to assess their potential impact on ground-water supply and quality.

AFFILIATIONS

National Ground Water Association
Groundwater Resources Association of California
Society of Exploration Geophysicists
American Association of Petroleum Geologists

PUBLICATIONS

Chambers, D. and Hennier, J. 1991, Soil-Gas Extraction Test and Analysis Techniques for Use in Design of Vapor Extraction Systems, AGWSE/API Conference on Petroleum Hydrocarbons and Organic Chemicals in Ground Water.

Hennier, J. and Chambers, D. 1990, Design of Vapor Extraction and Monitoring Wells and Vapor Pressure Testing in Heterogeneous Alluvial Sediments, ASTM Symposium on Vadose-Zone and Aquifer Testing.

Hennier, J. and Spang, J.H. 1983, Mechanisms for Deformation of Sedimentary Strata at Sheep Mountain Anticline, Bighorn Basin, Wyoming, Wyoming Geologic Association, 34th Annual Field Conference Guidebook.

hydraulic and sanitary engineering
hazardous waste remedial planning and design
hazardous waste management

PETER M. KRASNOFF, P.E.

EDUCATION
M.S., Sanitary/Environmental Engineering
University of California at Berkeley
B.S., Civil Engineering
Georgia Tech

REGISTRATION Professional Civil Engineer; California

SUMMARY

Mr. Krasnoff has managed all phases of projects involving hazardous site remediation, including preliminary investigations, permitting, design and construction for projects ranging from the removal/control of hazardous materials from gasoline service stations to state and federal Superfund sites.

Mr. Krasnoff has provided analysis and review of water and soil chemistry, hydraulic and hydrologic modeling and technical and economic evaluations of treatment systems for ground-water, soil and industrial waste for a variety of contaminants ranging from chlorinated organics to heavy metals removal. Mr. Krasnoff has also conducted regulatory negotiations to establish cleanup goals and obtain permits for site remediation and has prepared CEQA, CERCLA, BAAQMD and RWQCB documents.

Mr. Krasnoff's experience includes significant work in industrial waste water treatment design and construction. Mr. Krasnoff has provided complete process and control system design and construction management for projects ranging from a 1.5 mgd contact cooling waste water recycle treatment system at a metals foundry for solids and metals treatment to pretreatment compliance for organics in resins manufacturing facilities.

Mr. Krasnoff has worked extensively on the design and evaluation of domestic water/waste water treatment and conveyance systems. He has prepared municipal utility master plans and infiltration/inflow (I/I) study reports. He managed data collection/flow monitoring programs to evaluate I/I and storm water runoff impact for the cities of Vallejo, Los Angeles, Oakland, in California and Key West, Florida. These activities have been supported by Mr. Krasnoff's extensive experience with hydraulic, hydrologic and water quality computer modeling, including HEC-1, HEC-2, SWMM, THYSYS, HY8 and numerous other application-specific computer and physical models.

Mr. Krasnoff also has extensive experience in preparation of plans and specifications for construction. His many years as a construction contractor have resulted in cost effective design, accurate cost estimates as well as strong understanding of requirements for successful contract management.

EXPERIENCE

Azure Environmental - San Rafael, California
Principal Engineer:
Mr. Krasnoff is responsible for project management and technical management of all remediation and process engineering at Azure. His work includes hazardous materials management, remedial planning and design, plans and specifications, hydraulic and sanitary engineering, and construction management.

Levine-Fricke, Inc. - Emeryville, California
Senior Associate:
Mr. Krasnoff was group manager for preparation of plans and specifications. As group manager, Mr. Krasnoff was responsible for managing the engineering phases of site remediation projects including QA/QC, preparation of contract documents, and construction management. Mr. Krasnoff worked on the design of over 50 hazardous site remediation projects including projects ranging from service stations to federal Superfund sites. Mr. Krasnoff developed several innovative solutions to complex soil and ground-water remediation projects.

CH2M-HILL, Inc. - Emeryville, California
Project Engineer:
Mr. Krasnoff was responsible for the preparation of utility master plans and infiltration/inflow study reports. Mr. Krasnoff designed and managed the data collection for modeling of existing waste water collection/treatment systems. Mr. Krasnoff developed the cost data base that was used to evaluate the cost-effectiveness determinations for EPA grant funding. Mr. Krasnoff also worked on storm water management.

Eisenhour Construction Co., Inc.
Project Engineer/Estimator:
Mr. Krasnoff managed the construction of projects ranging from $6 - 20 million, primarily concrete, soil treatment and utility projects. His responsibilities on these projects included scheduling the labor, material and subcontractor work and providing complete cost control and project management. Additionally, Mr. Krasnoff prepared cost estimates and developed in-house software for construction cost analysis and scheduling.

U.S. Army Corps of Engineers, Waterways Experiment Station
Engineer Trainee:
Mr. Krasnoff worked on design and layout of scaled hydraulic and computer models to evaluate the effects of wave action on shoreline erosion. He calibrated models and evaluated the effects of proposed modifications to existing harbors and beach areas.

ASSOCIATIONS

American Society of Civil Engineers
Water Pollution Control Federation

APPENDIX B

SITE SAFETY PLAN

SITE HEALTH AND SAFETY PLAN
FOR

SOIL SAMPLING AND MONITORING WELL INSTALLATION AT THE
COPPER AND BRASS SALES, INC. FACILITY
1295 67TH STREET
EMERYVILLE, CA

Prepared by:
Azure Environmental
1001 Lincoln Avenue
San Rafael, California 94901

1.0 SITE BACKGROUND

The Site is located at 1295 67th Street in Emeryville, approximately 1/2 mile east of the San Francisco Bay (Figure 1). One 2,000-gallon capacity UST was previously located at the western boundary of the Site (Figure 2). The tank was removed from the Site in December 1992 and the tank excavation backfilled with imported fill. Chemical analysis of the soil samples indicated the presence of total petroleum hydrocarbons (TPH) as diesel (up to 1,800 ppm) and as gasoline (up to 6.5 ppm), benzene (up to 0.390 ppm), toluene (up to 0.380 ppm), ethylbenzene (up to 1.20 ppm) and total xylenes (up to 2.90 ppm).

2.0 OBJECTIVE

This document defines the Health and Safety considerations for the possible management of hazardous substances by Azure personnel and subcontractors. This document is required by Azure policies and procedures and may be required by OSHA 29 CFR 1910.120.

3.0 PROJECT STAFFING

	TITLE
Name Jeff Hennier	(Project Manager)
Name " "	(Site Safety Officer)
Name " "	(Emergency Coordinator)
Name _____	_____
Name _____	_____
Name _____	_____

4.0 SCOPE OF WORK

Check off appropriate categories:

o	TANK EXCAVATION	X	SOIL SAMPLING
o	SOIL EXCAVATION	o	CONSTRUCTION
o	POND CLEANUP	o	DEMOLITION
X	MONITORING WELL INSTALLATION	o	VAPOR SAMPLING
o	ON-SITE TREATMENT OF SOIL	o	OTHER _____
X	GROUND-WATER SAMPLING		_____
o	ON-SITE TREATMENT OF GROUND WATER		

Below is a brief description of this work:

- Drill one shallow soil boring at a location approximately 10 feet east of the excavation pit and collect a soil sample for chemical analysis
- Install a downgradient ground-water monitoring well within approximately 10 feet of the former UST location
- Collect a water-level measurement and a ground-water sample for chemical analysis from the newly installed well

Soil Sampling

Soil samples will be collected from one proposed soil boring (Figure 2). The boring will be drilled to approximately 9 feet below grade, the reported depth to ground water. Prior to conducting drilling activities, a survey of underground utilities will be conducted by Underground Service Alert (USA) and an underground utility locator subcontractor, to clear the boring and well locations for access. All down hole drilling and sampling equipment will be steam cleaned prior to use at each drilling location to prevent potential cross-contamination between each location.

Soil samples will be collected at approximately 2-1/2-foot intervals for lithologic data and possible chemical analysis. Soil samples will be collected by driving a clean, 2-inch diameter split-spoon sampler lined with clean brass tubes, ahead of the hollow-stem auger into undisturbed soil. The samples will be analyzed in the field for the presence of volatile hydrocarbons using a PID. One sample will be submitted to an analytical laboratory for chemical analysis. The sample selected for chemical analysis will be sealed by installing plastic caps over the ends of the sample tube and placed in a chilled cooler for transport to the analytical laboratory. The boring will be backfilled with cement-bentonite grout after completion of drilling.

Monitoring Well Installation

The monitoring well will be constructed using flush-threaded, 2-inch-diameter polyvinyl chloride (PVC) casing with factory-slotted well screens. All drilling equipment, sampling tools, and well casing will be steam cleaned before use at each drilling location. We anticipate using about 8 feet

of slotted PVC casing, extending 1 to 3 feet above the ground-water surface. The well casing will be placed in a completed borehole through the hollow stem auger. A filter pack of appropriately graded sand will be poured into the annular space between the hollow-stem auger and the slotted PVC well casing as the auger is gradually removed from the borehole. The filter pack will extend 1-1/2 to 2 feet above the top of the slotted PVC casing. Bentonite will be placed above the filter pack to isolate the perforated interval from material above and prevent the entrance of grout into the filter pack. A cement-bentonite grout will be poured to fill the well annulus from above the bentonite seal to within two feet of grade to prevent surface water infiltration into the well annulus. A locking cap will be placed over the top of the well casing to protect the well's integrity. A watertight well enclosure will be placed over the top of the well and set slightly higher than surrounding grade to restrict entrance of surface water run-off.

Well installation procedures will conform to guidelines established by the California Department of Water Resources and the Alameda County Flood Control and Water Conservation District. Appropriate well permits will be obtained prior to initiating drilling at the Site. All work will be performed under the direct supervision of a California Registered Geologist.

Well Development and Sampling

The well will be developed by pumping, bailing and/or surging the well to remove sediment from around the screened interval and enhance hydraulic communication with the surrounding formation. Observations of the quality and clarity of water withdrawn, and measurements of water temperature, pH and specific conductivity will be recorded during this process. The well will be developed until relatively sediment-free water is produced and the above parameters have stabilized. Following well development, a ground-water sample will be collected using a clean bailer and gently poured into laboratory supplied containers that are appropriate for the type of analysis to be performed on the sample. The containers will be filled so as to exclude air bubbles, in order to minimize potential volatilization of chemical compounds in the samples. The ground-water sample will be placed in a chilled cooler immediately after collection for transport to the laboratory.

Waste soil generated during drilling will be securely stored on-site in 55-gallon drums or on the ground surface surrounded by plastic sheeting. Waste water produced from well development and sampling will be stored on-site in 55-gallon drums. Sample analysis results will be used to evaluate proper disposal options for the waste soil and ground water.

4.0 HAZARD EVALUATION

A. List Physical Hazards (trenches, equipment, utilities, terrain, etc.):

Underground utilities

B. List chemical contaminants and concentrations that may be encountered during Site work:

CHEMICAL COMPOUND	CONC. (ppm)	~~TLV~~/PEL	ACTION LEVEL	MSDS AVAILABLE	HAZARD TO PERSONNEL
TPH	1,800	—	1,000 ppm	—	inhalation
Benzene	0.390	10 ppm	"	—	carcinogen
Toluene	0.380	200 ppm	"	—	inhalation
Ethylbenzene	1.20	100 ppm	"	—	"
Xylenes	2.90	100 ppm	"	—	"

CARCINOGENS? ~~x~~ YES o NO

If yes, list: Benzene

4.1 Task Specific Hazards

TASK: Soil Sampling and Well Installation

1. Drilling related hazards (i.e., equipment safety)
2. Chemical exposure (i.e., dermal contact)
3.
4.
5.
6.

TASK: Well Development and Sampling

1. Chemical exposure (i.e. dermal contact)
2.
3.
4.
5.
6.

TASK:

1.
2.
3.
4.
5.
6.

5.0 REPORTING AND RECORD KEEPING

5.1 General

Record keeping shall be consistent with OSHA regulations in all respects. The following records will be maintained in the Azure office and at the Site:

- **The Health and Safety Log** - The log documents the Site Safety officer's daily activities pertaining to site health and safety compliance.
- **OSHA 200 Log and Summary of Occupational Injuries and Illnesses** - Current within 72 hours. Will be maintained in the Azure office.
- **Respirator Fit Test Records**
- **Training and Medical Certificates**
- **Tailgate Safety Meeting Records**

6.0 ENVIRONMENTAL SAMPLING

SAMPLING REQUIRED? x YES o NO

Air Monitoring Equipment Used: NA
Methodology _____
Calibration _____

Soil Sampling Equipment Used: Drill rig
Methodology brass liners
Calibration NA

Water/Liquid Equipment Used: Bailer
Methodology bailing
Calibration _____

Other Equipment Used: _____
Methodology _____
Calibration _____

7.0 TRAINING

All personnel, including subcontractors, working on-site in the hazard zone must have completed 40 hours of health and safety training and the appropriate refresher courses. Safety briefings will be held in the field by the Azure Health and Safety Coordinator or the Project Manager prior to the initiation of work.

8.0 MEDICAL REQUIREMENTS

AZURE field personnel received a baseline physical at the start of employment and bi-annual physical examinations thereafter. Copies of medical records are maintained in AZURE's files.

9.0 CONTAMINATION CONTROL

The job site is partitioned into three distinct zones: the clean zone; the contamination reduction zone; and the exclusion zone. Workers may only enter and exit from the exclusion zone via the contamination reduction zone. Only authorized personnel are allowed to enter the exclusion or the contamination reduction zone. The definition and marking of the zones can be completed on the first working day, prior to initiating work. Section 14.0 describes the personnel and equipment decontamination procedures to be conducted in the contamination reduction area prior to personnel entering the clean zone.

10.0 WORKER PROTECTION

10.1 Personal Protective Equipment

(A separate description of personal protective equipment must be included for each work task)

1. WORK TASK: Soil Sampling and Well Installation

2. LEVEL o A o B o C ☒ D

3. RESPIRATORY PROTECTION

AIR PURIFYING
- o Half Mask
- o Full Mask
- o Other _____

Cartridge Type: _____

SUPPLIED AIR
- o SBCA
- o Airline
- o Escape Bottle
- o Other _____

4. PROTECTIVE CLOTHING

☒ Hard Hat

EYE PROTECTION
- ☒ Safety Glasses with side shields
- o Chemical Resistant Goggles
- o Face Shield
- o Other _____

BODY PROTECTION
- ☒ Tyvek - o Hooded
- o Polytyvek - o Hooded
- o Saranex - o Hooded
- o PVC
- o Neoprene
- o Raingear
- o Butyl
- o Other _____

GLOVES

- x Latex
- o Surgical Rubber
- o Viton
- o PVC
- o Neoprene
- o Neoprene (milled)
- o Leather
- o Cotton
- o Silvershield
- o Other

BOOTS

- x Leather - Steel Toed
- o PVC - Steel Toed
- o Neoprene - Steel Toed
- o Tyvek booties
- o Other _____

HEARING PROTECTION

- o Ear Muffs
- x Ear Plugs
- o Other _____

10.2 General Safety Equipment

CHECK SAFETY EQUIPMENT TO BE USED:

- o SAFETY SHOWER
- o LIFELINE/HARNESS
- o EYEWASH
- o EXTRACTION DEVICE
- o BARRIERS
- o AIR HORNS
- o WARNING SIGNS
- o BARRIER TAPE
- ☒ WATER/GATORADE
- ☒ DECON BARRELS
- o LIGHTING _____
- o FIRE EXTINGUISHERS _____
- o OTHER _____

DESCRIPTION OF COMMUNICATION SYSTEMS

_____

_____

_____

11.0 PERSONNEL MONITORING PLAN

Initial Air Monitoring Required o YES o NO

Explain Strategy _____

_____

SAMPLING EQUIPMENT

- o Combustible Gas/Oxygen Meter
- o Draeger Tubes
- o Photoionization Detector (PID)
- o Flame Ionization Detector (FID)
- o Infrared Detector
- o Aerosol Monitor
- o Sampling Pumps
- o AND Media _____

Other _____

Describe Routine Monitoring Procedures (location, frequency, etc.)

_____

_____

_____

Describe Calibration Procedures

_____

_____

Describe Sampling Methods

_____

_____

_____

ADDITIONAL MONITORING

Noise: o YES ~~o~~ NO
Describe Monitoring: _____

_____

Heat Stress o YES ~~o~~ NO
Describe Monitoring _____

_____

Other? o YES ~~o~~ NO
Describe _____

_____

Location of Monitoring Records:

_____

12.0 SITE SAFETY OFFICER RESPONSIBILITIES

The Site Safety Officer (SSO) or Designee will enter before any work begins and will verify that the established zones are identified and escape routes are clear.

The daily site entry procedure will include the following:

- Determine the wind direction and stay appraised of it throughout the stay. Identify the direction during the tailgate safety meeting or informally with each affected employee.
- Confirm the proper placement of emergency information and operational status of equipment and the decontamination facility.
- Monitor the air as necessary for conditions that may cause injury or exposure and record all data.
- Visually observe for signs of actual or potential life- or health-threatening hazards.
- Note physical conditions of the site. Determine potential exposure pathways.
- Use survey tape or markers to identify new boundaries of the zones.
- Document site activities in a daily log. Record observations related to field conditions and the site.

13.0 GENERAL SAFE WORK PRACTICES

- All accidents and incidents must be reported to the Project Manager immediately.
- All defects/malfunctions which appear during the course of the work shift must be reported to the Project Manager.
- No eating, drinking, smoking, chewing tobacco or gum is allowed in the exclusion or contamination reduction zones.
- Employees shall inform their supervisors of any prescription medications they are using while at work that can affect their abilities.
- Employees shall not remove or disturb any covering, guards, or safety devices placed on vehicles, gears, or other moving equipment or machinery, except to perform maintenance or repairs. Work on the equipment shall not commence until the equipment has been deactivated, sources of energy are removed, and controls are locked and tagged out.
- Before starting any vehicle or machinery, or turning on electricity, gas, steam, or air, employees will check the entire area to ensure that it is safe to proceed with the work.
- Employees shall maintain good housekeeping of the facilities and remove or dispose of all unnecessary materials.
- Trenching or excavations must be shored or sloped or appropriately prepared as required by OSHA standards. A description of the techniques to be used is included as an appendix, if appropriate.

14.0 DECONTAMINATION PROCEDURES

Describe Personnel Decontamination Procedures:
Protective clothing will be washed in a specified area on site.

Describe Equipment Decontamination Procedures:
Driller will provide self-contained decon equip.

How is contaminated equipment disposed of?
Stored in labeled drums.

15.0 AZURE ENVIRONMENTAL INTERNAL CALL LIST

In the event of injury, fire, explosion, spill, release, or other non routine events, immediately contact one of the following people, in the order listed:

	Name	Business Number	Home Number
1.	Jeff Heunier	415/485-9740	415/485-1878
2.	George Blanding	510/658-7212	
3.			
4.			

16.0 HAZARDOUS WASTE OPERATIONS CONTINGENCY PLAN IN CASE OF EMERGENCY

SITE OWNER/CLIENT'S NAME: Copper and Brass Sales, Inc.

WORK LOCATION: 1295 67th Street
Emeryville, CA

SITE CONTACT: George Blandino 510/658-7212
Name Phone Number

AZURE PROJECT MANAGER: Jeff Hennier

EMERGENCY PHONE NUMBERS:

POLICE: 911
INTERPLANT: —
FIRE: 911
HOSPITAL:
NAME: Alta Bates Hospital
ADDRESS: 2300 Ashby @ Colby
ROUTE: 67th east to Sacramento, left 2 blocks to Ashby, rt. approx. 10 blocks to Colby
(also see Figure 1 attached)

HOSPITAL CONTACT: 510/204-4444
AMBULANCE: 911

EVACUATION ALARM DESCRIPTION: NA

EVACUATION ROUTE DESCRIPTION: NA

ASSEMBLY AREA DESCRIPTION: NA

LIST OF CONTAMINANTS PRESENT AND SYMPTOMS OF EXPOSURE AND POSSIBLE MEDICAL EVALUATION/TREATMENT:

TPH - dizziness or nausea

BTEX- " "

SPILL/RELEASE PROCEDURE:

NA

REQUIRED SPILL/RELEASE EQUIPMENT:

NA