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Transmittal

Date	3 November 1998	**Transmitted Via**
To	Ms. Juliet Shin	☐ Messenger
	Senior Hazardous Materials Specialist	☐ U.S. Mail
	Alameda County Health Care Services Agency	☐ Overnight Mail
	1131 Harbor Bay Parkway 2nd Floor	Tel. #
	Alameda, California	☐ Fax
Project Number	5018	Fax #
Project Name	ESA Development, Parcel C, Marina Village, Alameda (SLIC Site 3843)	Total Pages

Item	Description
1	Revised letter to ESA Management regarding Environmental Health and Safety Guidelines, Soil and Surface Water Management Plan, and Other Construction Considerations, Marina Village Parkway near Mariner Square Drive, Alameda, California

Remarks:

Juliet,

Per our meeting yesterday, the plan has been revised. Please call with questions, or if you would like to discuss the letter in more detail. Also, thanks for reviewing the draft and meeting with us on such short notice yesterday – we appreciate it!

Sincerely, Elizabeth Nixon

From: Elizabeth Nixon

cc: Steve Pieters, ESA Management, 408-229-9554

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3 November 1998
Project 5018

Mr. Steve Pieters
ESA Management, Inc.
58 Mitchell Boulevard
San Rafael, California 94903

Subject: Environmental Health and Safety Guidelines
Soil and Surface Water Management Plan
Other Construction Considerations
Marina Village Parkway near Mariner Square Drive
Alameda, California

Dear Steve:

At your request, Geomatrix Consultants, Inc. (Geomatrix) has developed guidelines for contractor health and safety during earthwork construction, and a soil and surface water management plan, to be implemented during upcoming property development by ESA Management, Inc. (ESA) or its subsidiaries. We also have identified and addressed other environmental issues that may arise during project construction. The guidelines and materials management procedures contained herein pertain to existing environmental conditions at the property, and are consistent with the Site Management Plan (SMP) that was developed and approved by the Alameda County Health Care Services Agency (ACHCSA). Approval was issued in a Remedial Action Completion Certification Letter dated 14 February 1997 (ACHSA site identification is SLIC 3843). Per your request, this letter is being submitted to the ACHSCA for their concurrence and approval.

SITE CONDITIONS

Environmental investigations carried out at the property indicate that shallow fill soil (depths up to 13 feet below current grade) contains high-boiling petroleum hydrocarbons at concentrations up to 28,000 milligrams per kilogram (mg/kg) and total lead at concentrations ranging from 33 to 520 mg/kg. Additionally, separate-phase petroleum hydrocarbon product is present at the approximate depth of the water table beneath a portion of the property. The petroleum hydrocarbons have been characterized as weathered crude oil, diesel, and motor oil/waste oil, and were introduced to the property during historical industrial uses dating from the early 1900s through approximately the 1950s. A risk-evaluation performed by Geomatrix in 1996 concluded that both the petroleum hydrocarbons and lead are not expected to pose a significant human health risk under commercial development scenarios where the property would be covered by buildings, asphalt and landscaping.

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Specific environmental conditions relevant to the health and safety guidelines, soil and surface water management plan, and other construction considerations are described below. Locations of these features are shown on Figure 1.

- ***Stockpiled soil.*** There is a large stockpile of soil (more than 5,000 cubic yards) that was derived from another nearby location and placed at the property in 1993. This stockpile contains relatively lower petroleum hydrocarbon concentrations compared with those in subsurface fill, ranging in concentration from 87 to 630 mg/kg. Lead concentrations in the stockpile have been measured at approximately 120 to 200 mg/kg. Results of sampling and analysis of the stockpile, which have occurred during three phases of work, are attached to this letter (Table 1). A total of 37 samples have been collected and composited into 20 samples for petroleum hydrocarbon analyses, and the results are representative of the stockpile. A total of 9 samples have been collected and composited into 3 samples for lead analyses, and the results are representative of the stockpile.

- ***Separate-phase product.*** Separate-phase product occurs beneath about 1 acre of the property. It occurs intermittently at depths ranging from the water table (which is about 3 to 6 feet below current grade) to several feet below the water table. The thickness of the separate-phase product typically ranges from a sheen to several inches, or is present as an oily sludge mixed with sediment. The product is typically black and viscous, exhibits very low solubility, and occasionally has a strong odor. The product tends to occur where there is debris, such as wood and abandoned piping.

- ***Petroleum-affected soil.*** Soil that contains petroleum hydrocarbons is located beneath most of the property, except near the shoreline. Typically, the upper 3 to 7 feet of fill does not contain petroleum hydrocarbons, but underlying soil to depths up to approximately 13 feet below current grade contains petroleum hydrocarbons. Underlying soft Bay Mud provides a vertical boundary for the affected material, and is encountered beneath the project area at depths ranging from approximately 9 to 15 feet below grade. Results of sampling and analysis of the soil, which have occurred during three phases of work, are attached to this letter (Table 2). A total of 32 samples have been collected for petroleum hydrocarbon analyses, and the results are representative of subsurface conditions.

- ***Lead-affected soil.*** In addition to the stockpile soil, the shallow fill soil across the property contains lead at concentrations ranging from approximately 33 to 520 mg/kg. Results of sampling and analysis of the soil, which have occurred during two phases of

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work, are attached to this letter (Table 2). A total of 6 samples have been collected at randomly selected locations and analyzed for lead.

- ***Groundwater quality.*** Groundwater does not contain dissolved petroleum hydrocarbon constituents. However, where groundwater is in contact with separate-phase product, surface sheen or oily residue may appear on the water surface. A summary of groundwater quality is attached as Table 3.

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PROJECT DESCRIPTION

ESA intends to build a 4-story hotel at the property, with associated parking lots and landscaping. The attached plate shows the project layout. Preliminary plans from the project architect (Architectural Dimensions), the structural engineer (Simpson, Gumpertz, & Heger), the civil engineer (Psomas and Associates) and the geotechnical engineer (Raney Geotechnical) indicate that the following earthwork activities will take place during construction.

- ***Site clearing.*** Surface vegetation and debris will be removed. Any underground utilities that exist beneath the building area, within a depth of 2 feet below final grade, are to be removed.

- ***Grading.*** Preliminary grading plans developed for the project show that final site grades will range from approximately 5 to 8 feet relative to City of Alameda Datum (CAD), which is approximately 1 to 4 feet above existing grade. The primary source of fill used to raise the grade will be the existing soil stockpile. The existing concrete slab located at the south end of the site will be removed, and the void beneath the slab will be filled with soil from the stockpile. Grading is being designed to balance cut and fill so that no significant off-haul of soil will be necessary.

- ***Subgrade preparation.*** Loose, soft or unstable soils, such as those expected beneath the existing concrete slab, will be excavated to expose firm soil. Disturbed surface soils will be overexcavated to at least six inches.

- ***Subgrade compaction.*** Prepared subgrades will be scarified to a depth of eight inches and recompacted.

- ***Building foundation system.*** A deep-pile foundation system will be used to support the building. Preliminary plans show that 14-inch precast, prestressed concrete piles, spaced approximately 7 feet apart, will be installed to depths approaching 100 feet below grade. The top 12 feet will be predrilled, using 12-inch diameter holes. This depth corresponds approximately to the top of the soft Bay Mud, and is several feet below the groundwater table. The piles will be driven below a depth of 12 feet.

- ***Slab on grade.*** The building slab will be underlain by a minimum 4-inch thick layer of free-draining granular material to serve as a capillary moisture barrier. The free-draining granular material will be covered with a minimum 10-mil plastic membrane and protected by one to two inches of sand.

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- ***Shallow spread-footings.*** Ancillary structures (such as signs and trash enclosures) may be supported on shallow spread-footings, set at a minimum depth of 12 inches below final grade.

- ***Pavement.*** Pavement sections will be constructed using a 2- to 3-inch layer of asphalt over a 5- to 10-inch layer of Class 2 aggregate base.

- ***Landscaping.*** New landscaping is restricted to islands in the parking lot area, and around the hotel. Some existing landscaping will remain (such as areas adjacent to Marina Village Parkway). Although current plans do not specify construction of the landscaped areas, a 1-foot thick layer of clean soil will be placed at the surface in areas to be landscaped, per the existing SMP for the property. It is anticipated that landscaping will consist of shrubs, lawn, and possibly trees.

- ***Utilities.*** Sanitary sewer, water supply, fire water, storm drain, electrical, and gas utilities will be installed. All new utility laterals will be connected to utility mains located beneath Marina Village Parkway. No new storm drain outfalls to the adjacent harbor will be constructed, and no other utilities will terminate at or near the adjacent harbor. Excavations for these utilities within the site will consist of shallow (approximately 4 feet deep or shallower) trenching, with the exception of the sanitary sewer, which may be deeper. With the exception of the sanitary sewer, it is anticipated that utilities will be installed in shallow fill soil above the groundwater table. Depending on the elevations of the utility mains beneath Marina Village Parkway, the terminus of some of the utilities (beneath Marina Village Parkway) may intercept the groundwater at their connecting points. The elevation of the new sanitary sewer lateral is controlled by the elevation of the existing sanitary sewer system, which is approximately –3.5 feet CAD (invert) at Marina Village Parkway. The estimated elevation of the new sanitary sewer lateral invert is –2.0 feet at the south end of the building, sloping to approximately –3.5 feet at Marina Village Parkway. Groundwater elevation in this area is approximately –2.5 to –3.5 feet, so a portion of the utility trench and sanitary sewer line may intercept the groundwater. Depending on construction techniques, localized dewatering of the sanitary sewer trench, and possibly other utility trenches at their connections beneath Marina Village Parkway, may occur.

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ENVIRONMENTAL HEALTH AND SAFETY GUIDELINES

These health and safety guidelines have been developed to address the potential occupational exposure to petroleum-hydrocarbon affected soil and separate-phase petroleum product that may be encountered by earthwork contractors during property development. These guidelines were developed to prevent worker exposure to chemicals, and are limited to chemical exposure hazards from petroleum hydrocarbons. As discussed below, potential worker exposure to lead in soil should not be a concern during construction. These guidelines should be implemented at the time that petroleum-containing soil and separate-phase product are encountered.

HAZARD COMMUNICIATION TRAINING

Site conditions do not warrant that construction workers be 40-hour health and safety trained according to California's Occupational Safety and Health Administration (OSHA) HAZWOPPER regulations. However, workers need to be informed of site conditions, instructed on exposure prevention, supplied with appropriate personal protective gear, and trained in decontamination procedures before leaving the site. All construction work should be completed according to a Contractor Health and Safety Plan; the guidelines presented below pertaining to environmental conditions should be incorporated into the Contractor Health and Safety Plan. We advise meeting with the general contractor to discuss environmental conditions and the recommended health and safety guidelines prior to initiation of site work. We also advise that the contractor have a site safety officer assigned to oversee appropriate work practices to minimize worker exposures and off-site migration of potentially affected soil.

CHEMICAL EXPOSURE HAZARD ASSESSMENT FOR LEAD AND RECOMMENDED HEALTH AND SAFETY PROCEDURES

The primary routes of exposure to lead for on-site workers are inhalation of lead-containing dust, dermal absorption from contact with lead-containing soil, and inadvertent ingestion of lead from eating or smoking with dirty hands. The Cal/OSHA's Lead in Construction Standard Title 8, CCR Section 1532.1 applies to construction workers who are handling materials that contain lead at concentrations greater than 600 mg/kg, and outlines procedures to verify that workers are not exposed to lead above permissible action levels. At concentrations below 600 mg/kg, Cal/OSHA does not require that personal protective measures be implemented. Because the concentrations of lead in site soil are below 600 mg/kg, no personal protective measures for workers specific to lead are being recommended. However, we do recommend the following procedures be implemented to address Proposition 65 and public access issues:

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- ***Tailgate health and safety meetings.*** The existence of residual lead in soil should be addressed during normal tailgate safety meetings and workers should be provided appropriate warnings per Proposition 65 (California Safe Drinking Water and Toxics Enforcement Act of 1986).

- ***Dust and erosion control.*** Per the soil and surface water management plan, generation of dust and erosion of sediment should be minimized.

- ***Project area fencing.*** All excavations should be fenced appropriately to restrict public access to exposed soil.

CHEMICAL EXPOSURE HAZARD ASSESSMENT FOR PETROLEUM HYDROCARBONS AND RECOMMENDATIONS FOR HEALTH AND SAFETY PROCEDURES

Total petroleum hydrocarbons (TPH) is a non-specific measurement of any of a number of individual petroleum compounds falling into several broad chemical categories of widely varying physical, chemical, and toxicological properties. In general, the majority of the compounds present in mixtures of petroleum hydrocarbons are of minimal concern with regard to human health. Characterization of petroleum hydrocarbons at the property indicate that only medium to high-boiling mixtures are present, and that aromatic compounds (benzene, toluene, ethylbenzene, and xylenes, collectively referred to as BTEX) are absent. Polynuclear aromatic hydrocarbons (PNAs) are expected to be present in the heavier fuels and oils. The general toxicological characteristics of these PNA compounds are discussed below.

PNAs represent a group of polycyclic (i.e., multiple rings) compounds that are common components of heavier (i.e., higher boiling) petroleum products. Based on their size, vapor pressure, and propensity to bind strongly to organic matter, the majority of the PNAs are relatively non-volatile and immobile in soil, although a number of the smaller PNAs (e.g., naphthalene) have sufficiently high vapor pressures to represent potential airborne hazards. PNAs range from slightly water soluble to insoluble. PNAs are also subject to slow rates of biodegradation, and are considered moderately persistent in the environment. The toxicity of PNAs varies widely. Several PNAs are classified by the EPA as probable human carcinogens based on the results of chronic animal studies. Other PNAs may affect the liver, kidney, or blood following long-term exposure to low doses.

The most likely route of exposure to these chemicals during work for this project is dermal absorption through exposed skin that is in contact with affected soil or separate-phase

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product. Therefore, the following health and safety guidelines focus on preventing dermal exposure to the chemicals and controlling public access.

- ***Tailgate health and safety meetings.*** The existence of petroleum hydrocarbons in soil should be addressed during normal tailgate safety meetings.

- ***Personal protective equipment.*** When TPH-affected soil or separate-phase petroleum product is encountered during the course of construction work the following personal protective equipment (PPE) should be used by personnel in contact with affected soil:

  - ✓ disposable coveralls
  - ✓ nitrile rubber gloves
  - ✓ rubber boots
  - ✓ face and eye protection during pile driving, as needed

- ***Personal decontamination.*** Workers should be instructed to wash their hands after exposure to subsurface soil and to remove mud from work clothing and work boots prior to leaving the site. Workers required to wear PPE should be instructed to remove coveralls and gloves prior to taking work breaks and to leave rubber boots at the work site. A hand washing station and area to discard PPE and remove mud from work clothing should be provided near where workers take breaks and leave the site.

- ***Explosivity monitoring.*** Petroleum hydrocarbons may form explosive atmospheres. Combustible gases should be monitored for prior to performing "hot work."

- ***Air monitoring.*** Air monitoring for petroleum hydrocarbons is not recommended as a matter of routine. However, if strong odors are encountered, air monitoring or air sampling should be conducted. Air samples should be tested for the aromatic hydrocarbons BTEX, and for PNAs. If BTEX or PNAs are detected at or above Cal/OSHA action levels, or if the strong odors persist, a certified industrial hygienist (CIH) should be consulted regarding additional health and safety measures to be undertaken.

- ***Dust and erosion control.*** Per the soil and surface water management plan, generation of dust and erosion of sediment should be minimized.

- ***Project area fencing.*** All excavations should be fenced appropriately to restrict public access to exposed soil.

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SOIL AND SURFACE WATER MANAGEMENT PLAN

Development of the property will include construction of a 4-story building supported on pile foundations, and grading, paving, utility installation and landscaping activities. The property is subject to a SMP approved by the ACHCSA that includes requirements for managing and handling soil that is moved or excavated during construction, and controlling surface water runoff during construction activities. This soil and surface water management plan outlines procedures that will be followed when conducting earthwork and foundation construction activities at the property.

- ***Dust control.*** Human exposure to the affected soil should be minimized by implementing dust control measures during earthwork activities. Dust control measures could include water spraying or application of dust suppressants and should be implemented during all construction activities. Areas where high-use vehicle traffic is expected can be gravelled to help suppress dust generation.

- ***Temporary storage of excavated fill materials.*** Fill materials excavated during utility trenching, pre-drilling for piles, surface clearing, and surface preparation should be stockpiled and covered with a minimum of 10-millimeter plastic sheeting in a manner that prevents runoff or discharge of chemically-affected soil, water, or dust. At the end of each work shift, the plastic sheeting should be anchored to prevent rainwater infiltration or dust generation. If weather and site conditions warrant, runoff and discharge of soil and water from the stockpile should be contained in suitable containment structures or devices placed around the stockpiles.

- ***Re-use of excavated fill materials.*** If suitable from a geotechnical and construction standpoint, stockpiled fill material from excavations should be reused during site grading activities. These materials should be covered by buildings, pavements, asphalt, or, in landscaped areas, at least one foot thickness of imported, clean fill. At the completion of construction, all areas of the site should be landscaped, paved, or otherwise covered to prevent human exposure to the underlying fill material.

- ***Off-site disposal of excavated material.*** If off-site disposal of excavated fill material is required due to construction or geotechnical considerations, the material should be tested to determine appropriate handling and disposal options.

- ***Surface water runoff controls.*** Surface water runoff should meet Regional Water Quality Control Board (RWQCB) water quality criteria for discharge to the storm

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drain. A National Pollution Discharge Elimination System (NPDES) permit, or waiver, may be required if discharged water is expected to contain petroleum hydrocarbons in excess of 3 mg/l or 0.5 mg/l, respectively. The project also may be subject to the State Water Resources Control Board's General Construction Activity Storm Water Permit requirements.

- ***Dewatering.*** Groundwater generated from dewatering activities should be handled similarly to surface water runoff such that uncontrolled discharge from the site is prevented.

- ***Decontamination of equipment.*** A wash-down area should be provided for trucks and equipment prior to leaving the site to prevent transport of affected soil off-site. Wash water should be handled similarly to surface water runoff described above.

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OTHER CONSTRUCTION CONSIDERATIONS

EXISTING GROUNDWATER MONITORINGWELLS

There are seven shallow groundwater monitoring wells remaining within the project area boundaries, including one that is beneath the existing stockpile of soil. These wells should be properly decommissioned according to the requirements of Alameda County Flood Control and Water Conservation District, Zone 7, prior to construction activities.

PILE DRIVING THROUGH PETROLEUM-AFFECTED MATERIALS

Foundation support piles will be driven through areas known to contain separate-phase petroleum product. Environmental concerns include the potential to distribute the petroleum product deeper, and to cause adverse impacts to underlying (deep) groundwater. In 1991, the RWQCB-San Francisco Bay Region developed criteria to evaluate proposals to install foundation piles through landfills (Executive Officer Summary Report, Meeting Date: April 17, 1991, Criteria for the Evaluation of Proposal to Install foundation Piles through Closed Landfills, and Review and Subsequent Revisions, dated March 13, 1991). This document describes criteria in which the potential for contaminant migration can be evaluated for projects proposing deep foundations. Though the ESA project site is not a landfill, the RWQCB evaluation criteria can be applied to assess whether there is a significant risk for adverse effects to groundwater quality due to pile installation. Evaluation criteria applicable to the site include:

- ***Sufficient hydrogeologic characterization has been completed.*** The property has been adequately characterized, and subsurface conditions and contaminant distribution are well understood. The separate-phase product beneath the site is a highly weathered, heavy oil that exhibits very low solubility characteristics in groundwater. The product occurs intermittently in fill soil that overlies native young Bay Mud. The thickest accumulation of oil that has been observed beneath the site is several inches.

- ***Sediments below the contaminant area must be plastic or non-brittle and of sufficient thickness and sealing properties such that the natural material can be expected to reconsolidate around the pile to create a tight seal.*** Recent geotechnical studies conducted by Raney indicate that young Bay Mud underlies the surface fill materials to depths of 39 to 70 feet below grade. Young Bay Mud is a soft, estuarine clay deposit. Underlying the young Bay Mud is a 10- to 20-feet thick unit of interlayered silty to clayey fine sands, clays, and silts. Old Bay Mud (a stiff clay unit) underlies this unit, to depths of approximately 125 feet, where sands and gravels were encountered. The properties of the young Bay Mud are well known to exhibit sealing

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properties, and are expected to reconsolidate around the piles to create a tight seal. Additionally, the thickness of this unit is sufficient to provide an effective barrier to vertical transport of the petroleum hydrocarbons.

Based on the site stratigraphy and hydrogeology, pile design, and pile installation method, it is unlikely that the pile construction will adversely affect contaminant distribution or groundwater quality beneath the site.

POTENTIAL PLACEMENT OF UTILITIES IN CONTACT WITH SEPARATE-PHASE PETROLEUM HYDROCARBONS

If utility trenches intercept areas where separate-phase petroleum product is present, the utility should be constructed with materials compatible with petroleum hydrocarbons. It is not expected that utility trenches will create conduits in which separate-phase product can migrate, because the product is relatively viscous and exhibits low mobility characteristics, and the trench backfill materials are not expected to be more pervious than surrounding fill materials. Therefore, we do not recommended isolating trench segments that may intercept separate-phase product for the purpose of migration control. However, as a precautionary measure and at the request of ACHCSD, we recommend that no trenches extending below the water table be terminated at the harbor, so that there is no possibility of creating conduits whereby separate-phase product could discharge to the harbor.

PLANTING TREES IN LANDSCAPED AREAS

The current SMP assumes that no trees will be planted in areas where soil contains petroleum hydrocarbons. This constraint to landscaping activities was developed as a measure to prevent future landscape workers from being inadvertently exposed to petroleum hydrocarbons during future maintenance. Trees were distinguished from other plants (shrubs, lawn) because maintenance activities could involve digging below the 1-foot thick layer of clean soil stipulated for landscape areas.

ESA may wish to plant trees at the site for aesthetic purposes and to be consistent with nearby landscaping. The locations, although not yet selected, may be in areas where petroleum hydrocarbons-affected soil is present. Therefore, ESA is requesting a variance from the SMP with regard to planting trees. We have developed the following protocol for tree planting that will be protective of future landscape maintenance workers and propose to the ACHCSA that the SMP be modified accordingly to allow trees to be planted.

- Tree installation will occur at the time of property development, and it will be completed according to the project-specific Health and Safety Guidelines and Soil and Surface Water Management Plan.

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- Preparation for tree installation will consist of excavating a hole large enough to contain the tree roots when the tree is full-grown.
- The hole will be backfilled with clean soil, and the surface will be covered with a 1-foot layer of clean soil.
- Soil excavated to create the hole will be handled according to the project-specific Soil and Surface Water Management Plan.

If these protocols are followed, then future maintenance workers would have a very low likelihood of encountering petroleum-affected soil during routine maintenance activities, or during tree replacement.

PROPERTY DEVELOPMENT DOCUMENTATION

The ACHCSA should be notified if there are significant modifications from the development plans described herein. The ACHCSA will review these modifications for consistency with the SMP. The ACHCSA should be provided with a set of final plans for construction, including grading, utility, landscaping and foundation plans.

After construction is completed, ESA should provide the ACHCSA with construction as-builts. Final disposition of affected soil should be documented in a report to the ACHCSA, and the existing SMP be revised, as necessary to reflect new site conditions.

If you have any questions or need additional information, please call either of the undersigned.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

Mary Sue Philp, C.I.H.
Senior Scientist

Elizabeth Nixon, P.E.
Senior Engineer

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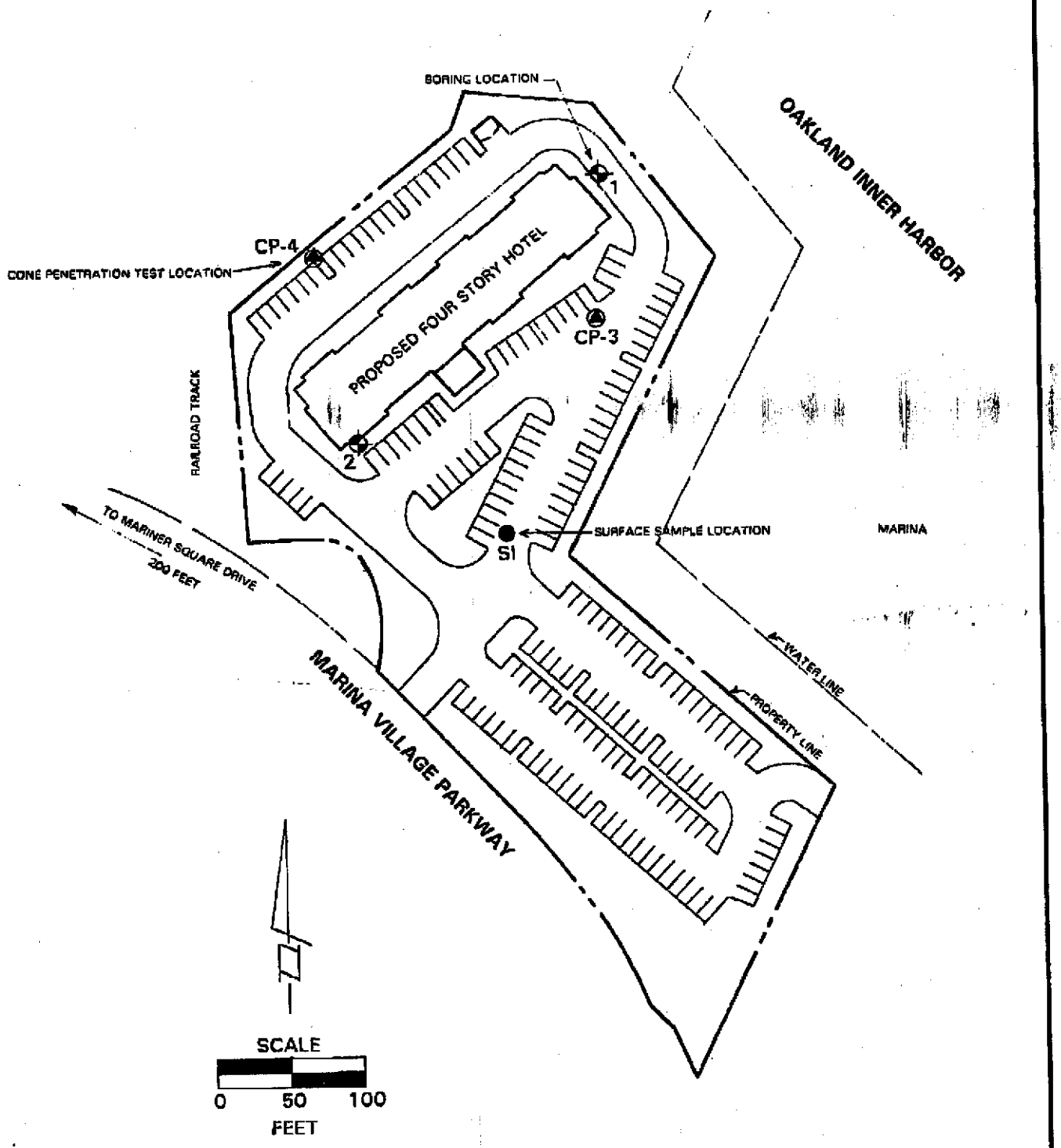
Attachments: Plot Plan, from Raney Geotechnical
Figure 1: ESA Development: Environmental Conditions
Table 1: Historical Summary of Petroleum Hydrocarbons, Toluene, and Lead detected in Stockpiled Soil Samples
Table 2: Historical Summary of Petroleum Hydrocarbons, Toluene, and Lead detected in Soil Samples, Parcel C
Table 3: Summary of Petroleum Hydrocarbons and BTEX detected in Groundwater Monitoring Wells, 1995 and 1996

cc: Ms. Juliet Shin, Senior Hazardous Materials Specialist, ACHCSA

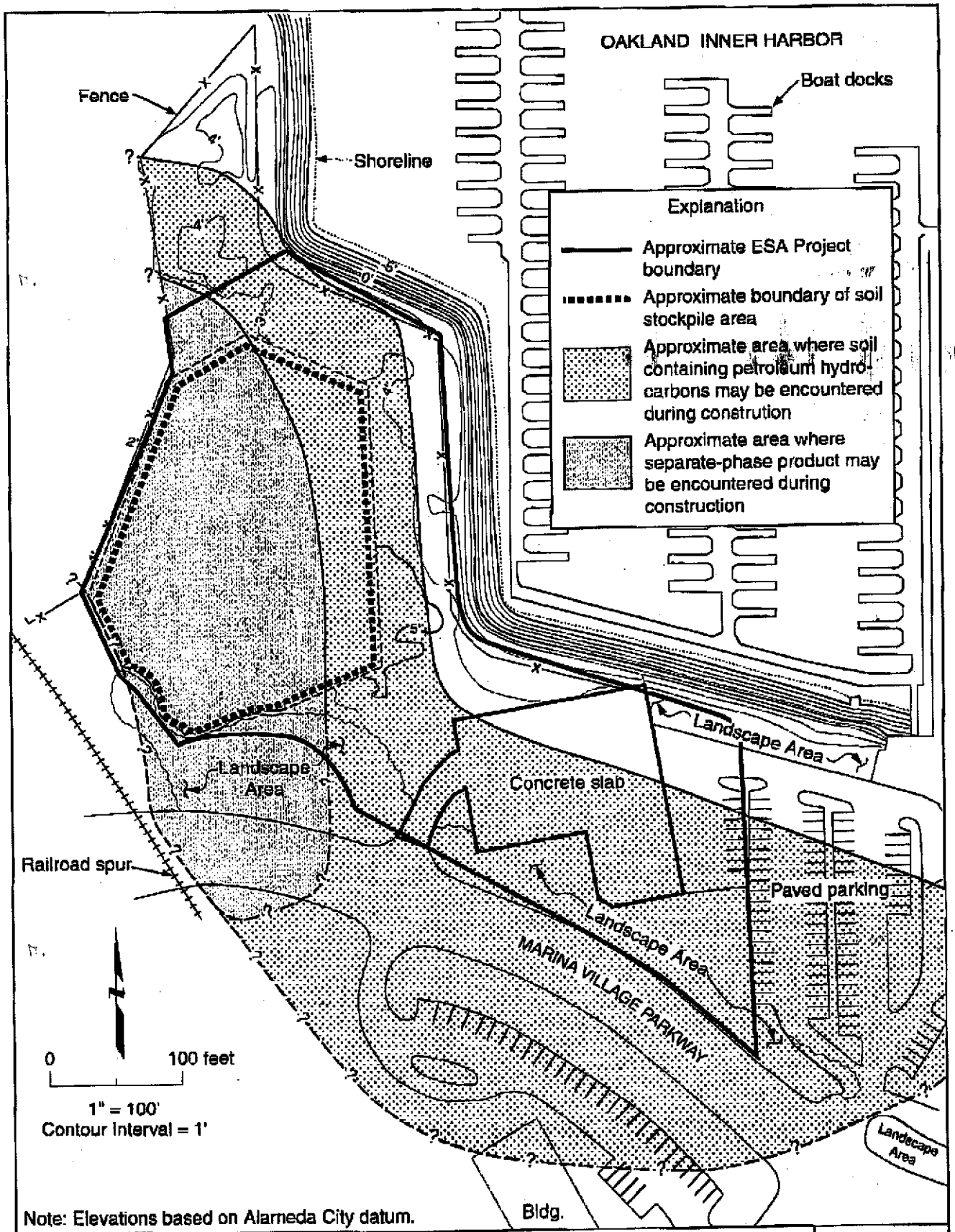


NOTES:

1. BORING, CONE PENTRATION TEST, AND SAMPLING LOCATIONS SHOWN ARE APPROXIMATE ONLY.
2. PREPARED FROM A PRELIMINARY SITE PLAN BY ARCHITECTURAL DIMENSIONS.

PLOT PLAN

Raney Geotechnical



GEOMATRIX	ESA PROJECT AREA: ENVIRONMENTAL CONDITIONS Marina Village Alameda, California	Figure 1 Project No. 5017

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TABLE 1

HISTORICAL SUMMARY OF PETROLEUM HYDROCARBONS, TOLUENE AND LEAD DETECTED IN STOCKPILED SOIL SAMPLES

Northwest Area
Marina Village
Alameda, California

Units are in milligrams per kilogram (mg/kg)

Sample Location	Date Collected	TPH	Toluene	Lead
PHFSP-1,2	6/23/88	170	--	--
PHFSP-3,4	6/23/88	230	--	--
PHFSP-5	6/23/88	85	--	--
PHFSP-6,7	6/24/88	320	--	--
PHFSP-8,9	6/24/88	300	--	--
PHFSP-10,11	6/24/88	170	--	--
PHFSP-12,13	6/24/88	87	--	--
PHFSP-14,15	6/24/88	150	--	--
PHFSP-16,17	6/24/88	98	--	--
PHFSP-18,19	6/24/88	280	--	--
PHFSP-20,21	6/24/88	190	--	--
PHFSP-22,23	6/24/88	160	--	--
PHFSP-24,25	6/24/88	150	--	--
PHFSP-26,27	6/24/88	370	--	--
PHFSP-10	6/24/88	--	0.014	--
PHFSP-11	6/24/88	--	0.018	--
PHFSP-26	6/24/88	--	0.013	--
PHFSP-27	6/24/88	--	0.014	--
TP-5	7/2/96	--	--	200
SPA, SP-B, SP-C	9/9/98	350	ND	200
B2-1, B2-2, B2-3	9/10/98	630	ND	120

Notes:
All samples represent composites collected from the stockpiled soil. Samples showing results for toluene also were analyzed for benzene, ethylbenzene and xylenes (BEX); no BEX were detected in the samples.
1988 data from Levine-Fricke, Inc.
1996 data from Geomatrix, Inc.
1998 data from Raney Geotechnical, Inc.
"--" = not analyzed.
TPH = Total petroleum hydrocarbons (extractable).
ND = not detected.

TABLE 2

HISTORICAL SUMMARY OF PETROLEUM HYDROCARBONS, TOLUENE, AND LEAD DETECTED IN SOIL SAMPLES

Northwest Area
Marina Village
Alameda, California

Units are in milligrams per kilogram (mg/kg)

Sample Location	Date Collected	Depth (feet)	TPHd	TPHmo/wo	Lead	Toluene
NWPIT2	3/14/88	7-9	--	52	--	--
NWPIT4	3/14/88	9-10	--	260	--	--
NWPIT9	3/14/88	4-5	--	110	--	--
NWPIT11	3/15/88	6.5	720	--	--	--
NWPIT11	3/15/88	8	11,000	--	--	--
NWPIT12	3/15/88	6	1000	--	--	--
5NW-2A	2/17/89	7-7.5	--	--	--	0.045
5NW-1A	2/17/89	7.5-8	2000	<100	--	0.70
5NW-2A-2B	2/17/89	7-8	<10	710	--	--
5NW-3A	2/17/89	7-7.5	<10	<20	--	0.023
5NW-4B	2/17/89	8-8.5	<5000	28,000	--	--
5NW-5A	2/17/89	7-7.5	<500	4600	--	0.46
5NW8	3/9/89	8-10.5	<500	1400	--	--
5NW10	3/9/89	10.5-11	<10	120	--	--
5NW12	3/9/89	9.5-10	<10	260	--	--
5NW12	3/9/89	11-11.5	<10	280	--	--
5NW7	3/9/89	7.5-8	<20	570	--	--
5NW7	3/9/89	10-10.5	<10	73	--	--
5NW9	3/9/89	8-10	<1000	4600	--	--
5NW6	3/9/89	7-9	<30	150	--	--
5NW6	3/9/89	10-12	<300	910	--	--
5NW6	3/9/89	13-13.5	<600	2000	--	--
5NW11	3/9/89	6.5-7.5	<20	1500	--	--
LF11	3/9/89	7-8	<10	32	--	--
5NW13	3/10/89	7-9	<20	740	--	--
LF13	3/10/89	6-8	<4000	8000	--	--
LF12	3/9/89	7.5-8.5	<20	140	--	--
5NW14	3/13/89	9-13	<20	280	--	--
1NW1	3/13/89	3-4.5	<200	1600	--	--
1NW2	3/13/89	7-9	<200	5700	--	--
5NW4B	3/16/89	8-8.5	--	--	520	--
5NW6B	3/16/89	11.5-12	--	--	130	--
TP-1	7/2/96	0-4	--	--	230	--

TABLE 2

HISTORICAL SUMMARY OF PETROLEUM HYDROCARBONS, TOLUENE, AND LEAD DETECTED IN SOIL SAMPLES

Northwest Area
Marina Village
Alameda, California

Sample Location	Date Collected	Depth (feet)	TPHd	TPHmo/wo	Lead	Toluene
TP-2	7/2/96	0-4	--	--	400	--
TP-3	7/2/96	0-4	--	--	33	--
TP-4	7/2/96	0-4	--	--	130	--

Notes:
1988 and 1989 data from Levine•Fricke, Inc. Samples showing results for toluene also were analyzed for benzene, ethylbenzene and xylenes (BEX); no BEX were detected in the samples.
1996 data from Geomatrix, Inc.
"--" = not analyzed.
comp. = Composite sample.
TPHd = Total petroleum hydrocarbons as diesel.
TPHmo/wo = Total petroleum hydrocarbons as motor oil or waste oil.

TABLE 3

SUMMARY OF PETROLEUM HYDROCARBONS AND BTEX DETECTED IN GROUNDWATER MONITORING WELLS, 1995 AND 1996

Northwest Area
Marina Village
Alameda, California

Units are in milligrams per liter (mg/l)

Sample Location	Sample Date	TPHd	TPHmo/wo	Benzene	Ethylbenzene	Toluene	Xylenes	Petroleum Product Thickness (inches)
LF-6	7/12/95	<0.05	<0.2	--	--	<0.007	--	--
	4/17/96	<0.05	<0.25	--	--	<0.0005	--	--
LF-7	7/13/95	<0.05	<0.2	<0.0005	<0.0005	<0.0005	<0.002	--
	4/17/96	<0.05	<0.25	0.0007	<0.0005	0.0007	<0.0005	--
LF-8	7/11/95	--	--	--	--	--	--	Approx. 6
	4/17/96	--	--	--	--	--	--	Approx. 2
LF-9[1]	--	--	--	--	--	--	--	--
LF-11	7/13/95	<0.05	<0.2	--	--	--	--	--
	4/17/96	<0.05	<0.25	--	--	--	--	--
LF-12	7/13/95	<0.05	<0.2	--	--	--	--	--
	4/17/96	<0.05	<0.25	--	--	--	--	--
LF-13	7/14/95	--	--	<0.0005	<0.0005	<0.0005	<0.002	--
	7/14/95 (filtered)	<0.05	<0.2	--	--	--	--	--
	4/17/96	<0.05	<0.25	<0.0005	<0.0005	<0.0005	<0.0005	--
LF-15[2]	4/17/96	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--

Notes:
"--" = not analyzed.
TPHd = Total petroleum hydrocarbons as diesel.
TPHmo/wo = Total petroleum hydrocarbons as motor oil or waste oil.
Petroleum product characterized as weathered crude oil.
[1] Monitoring well is not accessible.
[2] This sample is a blind duplicate of LF-7.