★ **Stellar Environmental Solutions**

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Geoscience & Engineering Consulting

April 13, 1999

Ms. Madhulla Logan
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject: Workplan for Contaminated Soil Remediation
2144 Alvarado Street, San Leandro, California

Dear Ms. Logan:

INTRODUCTION AND BACKGROUND

Stellar Environmental Solutions (SES) is submitting this workplan for remediation of contaminated soil at the referenced site (Figure 1 is a site location map) on behalf of Mr. Don Coffel (property owner). Previous investigations conducted at the site since 1998 have documented onsite shallow soils contaminated by organochlorine pesticides associated with former site usage as pest control facility. It is inferred that surface spillage and/or equipment washdown in localized areas was the source of the shallow soil contamination. The site is zoned for both commercial and residential use, and is currently occupied by a commercial pest control company (tenant with option to purchase). The site is predominantly (95%) paved with only minor areas of exposed ground.

The site is not under a cleanup order by any regulatory agency, and investigations have been conducted proactively by the property owner in preparation for potential sale of the property. The results of previous investigations were summarized in the SES January 1999 report that was submitted to ACDEH, and this workplan also presents the results of the most recent soil sampling event that was requested by ACDEH in your March 23, 1999 letter.

Thirteen shallow soil borings have been advanced from which 19 soil samples have been collected to a depth of 5 feet for laboratory analysis. Four localized areas have been identified with organochlorine pesticide concentrations in excess of the cleanup goal requested by

ACDEH (discussed in detail in subsequent section). The maximum depth of concentrations above the PRGs is estimated to be approximately 1.5 to 3 feet (depending on location). A grab-groundwater sample collected in 1999 immediately downgradient of the highest detected soil contamination showed no detectable organochlorine pesticides, confirming the low mobility of these compounds in soil and the absence of potential impacts to groundwater. Other chemicals of potential concern (phenols and volatile organic compounds) were shown in previous soil samples to not be present above concentrations of concern. Figure 2 shows the locations of previous samples. Attachment A contains summary tables of all previous soil samples.

KEY OBJECTIVES AND APPROACH

The overall objective of the proposed remedial action is to remove soils contaminated above USEPA Preliminary Remediation Goals (PRGs) for residential properties, in order to preserve the maximum beneficial use of the property. In summary, the remedial activities will consist of the excavation and offsite disposal of an estimated 15 cubic yards (CY) of contaminated soil from four localized areas, confirmation soil sampling and laboratory analyses, site restoration, and documentation of findings. Because there are neither field indicators nor a reasonably cost-effective field-screening method for organochlorine pesticides, the prescribed extent of excavation at each localized area must be based on the limited data available and professional judgment. Therefore it is possible that confirmation sampling of the initial excavations may indicate the need to excavate in one or more direction to achieve the cleanup goal, requiring an additional mobilization for concrete removal and over-excavation.

In our previous discussions, you indicated that ACDEH would consider options to manage the contaminated soil other than its removal. One option would be to leave residual soil contamination in place, pave the areas of exposed soil with pesticide contamination, and implement an institutional control to manage the residual contamination, likely to be a risk management plan attached to a deed notification. Another option would be in situ tilling of the upper, contaminated soil to mix it with underlying, uncontaminated soil, followed by confirmation sampling to demonstrate that the tilled soil meets the cleanup goal. The property owner has elected to initially pursue the soil removal strategy as it is the most protective of the environment and land use, but may consider the other options if the proposed initial excavation activities do not fully remediate the site.

In brief, soil will be excavated at each location at a prescribed depth and lateral extent, confirmation soil samples will be collected for laboratory analysis and will be compared to residential PRGs, the established cleanup goal. In the event that confirmation soil samples are in

excess of the PRG(s), additional excavation and confirmation sampling will be undertaken, or the property owner may elect to discontinue remedial activities and pursue the residual contamination risk management option.

CLEANUP GOALS

Residential PRGs are the agreed-upon soil cleanup goal for the site. Three organochlorine pesticides have been detected in excess of residential PRGs, including:

- Chlordane (residential PRG = 1,600 µg/kg)
- 4,4-DDD (residential PRG = 2,400 µg/kg)
- 4,4-DDT (residential PRG = 1,700 µg/kg)

At all of the proposed excavation locations, chlordane exceeds its PRG; at some of the locations, DDE and/or DDT are also in excess of their respective PRGs.

As discussed in more detail later in this workplan, SES will collect confirmation soil samples from each proposed excavation area to determine if the cleanup goals have been met. Both the excavation base sample and the 4-point composite from the sidewalls will be directly compared to the compound-specific PRGs. If either the base or the sidewall 4-point composite sample exceeds any of the PRGs, SES will seek guidance from ACDEH as to whether additional soil excavation is practical or necessary. Achieving the cleanup goal in the sidewall samples may not be possible given the proximity of buildings.

HEALTH AND SAFETY ISSUES

Prior to soil excavation activities, SES will update the site-specific health and safety plan (HASP) to address the excavation. The excavation subcontractor will conform to the tenets of the SES HASP at a minimum. The HASP will conform to Federal and California Occupational Health and Safety Administration (OSHA) requirements [29 CFR 1910.120(j)] and will include a discussion of the following:

- Purpose, applicability and responsibility;
- Site contaminants and monitoring protocols;
- General health and safety emergency procedures;
- Levels of personal protection; and
- Site organization and control.

AREAS OF PROPOSED EXCAVATION AND CONFIRMATION SAMPLING

Three areas of contamination above the cleanup goal were identified in the SES January 1999 report. Following your review of that report, you indicated that ACDEH approval of site closure will be contingent upon collecting for laboratory analysis a limited number of additional shallow subsurface soil samples in areas not previously characterized, to identify any other locations that might also warrant remediation. Follow-on sampling was conducted on March 31, 1999. As shown on Figure 2, we created a grid overlay consisting of 8 cells of approximately 1,250 square feet, and eliminated cells in which samples were previously collected and/or that were primarily covered with building footprint. This resulted in 4 cells remaining that had no sample analytical representation. We collected one sample within each of the 4 cells (total of 4 additional samples) at approximately 0.5 feet depth which is the depth most likely to have the greatest contaminant concentrations. This brings the total number of shallow soil sampling locations to 13, corresponding to 1 sampling location per 450 square feet of area not covered by building footprint.

We initially composited the 4 additional samples prior to laboratory analysis by EPA Method 8080 for organochlorine pesticides, and retained the discrete samples for possible re-analysis in the event that the composite sample results exceeded the PRGs. The only organochlorine OC pesticides detected in the composite sample were heptachlor (5.1 µg/kg) and chlordane (300 µg/kg). These concentrations are well below the respective PRGs, even if all of the detected contamination was assigned to one of the four locations comprising the composite sample. Therefore no soil remediation is warranted in the four areas represented by the composite sample.

less than the PRG

360 x 4 = 1200
1 5 below PRG.

The following summarizes the proposed depth and lateral extent of each excavation area and the locations of confirmation soil samples. All samples will be analyzed for organochlorine pesticides by EPA Method 8080. The in-bank calculation of the cubic yards of excavated material is 12 CY but 15 CY is assumed for offsite disposal to account for the swell factor after excavation.

Excavation Area No. 1 (represented by soil boring S-3)

This area is located adjacent to the former insecticide storage shed. The lateral extent of pesticide contamination above PRGs is delineated on two sides by other borings located within several feet of S-3. The maximum depth of soil contamination above residential PRGs is estimated to be 1.5 feet. The proposed excavation dimensions are approximately 5 feet square

and 2 feet deep (approximately 2 CY), centered around the boring location. SES proposes to collect two confirmation samples: one composite sample from each of the four excavation sidewalls at 0.5 feet deep (the inferred depth of greatest contamination), and one discrete sample at the center of the excavation base.

Excavation Area No. 2 (represented by soil boring S-2)

This area is located in the covered parking area west of the former insecticide storage shed. The lateral extent of pesticide contamination above PRGs is delineated on one side by boring B-02 located within ten feet of S-2. Excavation to the north will be limited by the cinder block wall on the northern property line. The maximum depth of soil contamination above residential PRGs is estimated to be 2 feet. The proposed excavation dimensions are approximately 5 feet square by 2 feet deep (approximately 2 CY), centered around the boring location. SES proposes to collect two confirmation samples: one composite sample from each of the four excavation sidewalls at 0.5 feet deep (the inferred depth of greatest contamination), and one discrete sample at the center of the excavation base.

Excavation Area No. 3 (represented by soil boring B-01)

This area is located between the office area and the shed on the northern property line. Excavation to the east and to the north will be limited by the shed and cinder block wall, respectively. The maximum depth of soil contamination above residential PRGs is estimated to be 2.5 feet. The proposed excavation dimensions are approximately 5 feet square by 3 feet deep (approximately 3 CY), centered around the boring location. SES proposes to collect two confirmation samples: one composite sample from each of the four excavation sidewalls at 0.5 feet deep (the inferred depth of greatest contamination), and one discrete sample at the center of the excavation base.

Excavation Area No. 4 (represented by soil boring S-1)

This area of open ground is located in the 3-foot wide area between the small cinder block building and the northern property line, just west of the covered parking area. The lateral extent of pesticide contamination above PRGs is delineated on one side by boring B-02 located within ten feet of S-2. Excavation to the north and south will be limited by the cinder block wall on the northern property line and the building, respectively. The maximum depth of soil contamination above residential PRGs is estimated to be 2.5 feet. The proposed excavation will include the entire area of open ground (3 feet wide by 19 feet long) to a depth of 3 feet (approximately 6 CY). SES proposes to collect two confirmation samples: one composite sample from each of the

four excavation sidewalls at 0.5 feet deep (the inferred depth of greatest contamination) at 2 feet deep, and one individual sample at the center of the excavation base.

CONFIRMATION SOIL SAMPLING METHODOLOGY

Confirmation soil samples will be collected by SES for laboratory analysis to document that the soil cleanup goals have been met. Discrete soil samples will be collected from each excavation sidewall and base. Equal volumes of the sidewall samples from each excavation will be composited into one 4-point composite sample for analysis. The remaining sample volume will be submitted to the analytical laboratory and will be held pending analysis of the composite samples. In the event that a composite sample exceeds the cleanup goal, the discrete sidewall samples from that excavation will be analyzed to determine in which direction(s) over-excavation may need to be conducted. Soil samples will be collected with a clean trowel, and the soil will be immediately containerized in 8-oz glass jars with Teflon-lined lids. The sampling jars will be labeled, chilled and transported under chain-of-custody record to the analytical laboratory.

SOIL EXCAVATION AND SITE CONTROL

Overlying asphalt/concrete will be removed at each excavation. Soil will be excavated to the prescribed depth and lateral extent either with a small excavator or by hand, depending on access and excavation size. Excavated soil will be transferred to an onsite debris bin (see next section). During non-working hours each excavation will be covered with plywood or will be otherwise barricaded to prevent trips and falls. Based on the maximum estimated depth of excavation (3 feet), shoring of the excavations will not be required.

MANAGEMENT OF EXCAVATED MATERIAL

Excavated soil will be containerized onsite in a covered debris bin(s). Based on preliminary discussions with landfill facilities, it is anticipated that the excavated soil will be acceptable at a local Class III or Class II landfill. SES will collect the required stockpile waste profile samples for those facilities. In the event that the waste soil is not acceptable to Class II or Class III landfills, other disposal options will be pursued (e.g. Class I landfill or incineration). The waste concrete and asphalt will be transported offsite for disposal at a Class III landfill or construction materials recycling facility.

SITE RESTORATION

Following completion of excavation activities, the excavations will be backfilled with imported clean fill material, compacted and the surfaces will be completed with either asphalt or concrete to match existing.

PERMITTING AND NOTIFICATIONS

SES is not aware of any permits required for the proposed soil remediation activities. SES will notify ACDEH of the schedule for excavation and sampling activities in the event that ACDEH representatives elect to be present. Following receipt of analytical results, SES will prepare a letter of findings and tabular summary of analytical results for review and concurrence by ACDEH that the soil cleanup goals have been met, or that additional activities may be required.

DOCUMENTATION

The results of the proposed scope of work will be summarized in a comprehensive report that will include appropriate figures, tabular summary of analytical data and technical appendices (e.g. lab reports and waste disposal documentation). The report will specifically document remediation and confirmation methodologies utilized, extent of soil remediation, and determination that cleanup goals were met. The report will be certified by an SES California Registered Geologist.

SES TEAM RESPONSIBILITIES AND QUALIFICATIONS

Stellar Environmental Solutions will be responsible for overall project management, environmental sampling, documentation and regulatory agency liaison. A brief summary of our qualifications to conduct these activities is included in Attachment B. Soil excavation will be conducted by an as yet undetermined firm that maintains appropriate licenses for contaminated soil excavation and has the requisite HAZWOPER training. The contractor will be selected by a competitive bidding process. Laboratory analyses will be conducted by an as yet undetermined laboratory that maintains current DOHS ELAP certification. Contaminated soils will be transported offsite to the treatment/disposal facility by an as-yet undetermined, licensed hazardous waste hauling firm, under contract to the excavation contractor. The soil will be either treated or disposed of at an appropriately permitted facility, under contract to the excavation contractor.

ESTIMATED SCHEDULE AND WORK HOURS

Soil remedial activities are anticipated to begin in early to mid May, 1999, assuming ACDEH approval of this workplan by April 23, 1999. Confirmation sampling of all excavations will likely be conducted the week of May 10, 1999. Samples analysis turnaround may range from approximately 2 days to 2 weeks. Either site restoration or additional excavation will be initiated as soon as practicable following receipt of confirmation sample analytical results.

Soil remedial activities will be conducted between approximately 7 a.m. and 6 p.m. on weekdays. It is anticipated that work will be completed by June 1999.

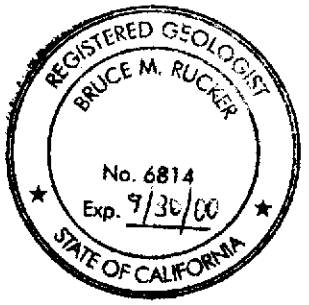
We are pleased to submit this workplan to ACDEH on behalf of Mr. Coffel. If you have any questions, please contact me directly at (510) 664-3123.

Sincerely,

Bruce M. Rucker

Bruce M. Rucker, R.G., R.E.A.
Project Manager

attachments



ATTACHENT A

Historical Analytical Results

Table 1
Phase I (October 1998) Soil Analytical Results
2144 Alvarado Street, San Leandro, California

(all concentrations in µg/Kg)

Sample I.D.	Sample Depth Interval (feet bgs)	Chlordane	4,4-DDD	4,4-DDE	4,4-DDT	Phenols	Volatile Organic Compounds
S-1A	0 to 0.5	**110,000**	**4,500**	< 1,200	< 1,200	NA	NA
S-1B	2.0 to 2.5	NA	NA	NA	NA	NA	ND
S-2A	0 to 0.5	**4,000**	< 120	**230**	**2,000**	ND	NA
S-2B	2.0 to 2.5	NA	NA	NA	NA	NA	ND
S-3A	0 to 0.5	**12,000**	**590**	< 120	< 120	**2,300** [(a)]	NA
S-3B	2.5 to 3.0	NA	NA	NA	NA	NA	ND
S-4A	0 to 0.5	**450**	< 60	< 60	< 60	NA	NA
S-4B	2.5 to 3.0	NA	NA	NA	NA	NA	ND
Regulatory Considerations							
PRG- Residential		1,600	2,400	1,700	1,700	160,000	Not applicable
PRG-Industrial		12,000	19,000	13,000	13,000	3,200,000	Not applicable
Soil Screening Level (DAF = 20)		10,000	16,000	54,000	32,000	1,000	Not applicable
Soil Screening Level (DAF = 1)		500	800	3,000	2,000	50	Not applicable

(a) 2,4-Dichlorophenol was the only phenol compound detected

bgs = below ground surface; DAF = Dilution-Attenuation Factor; NA = Not Analyzed; ND = Not Detected at levels above the method detection limit (see Appendix E for reporting limits); NL = Not Listed; PRG = U.S. Environmental Protection Agency Preliminary Remediation Goal (updated May 7, 1998)

Table 2
Phase II and III Soil Analytical Results
2144 Alvarado Street, San Leandro, California

(all concentrations in µg/Kg)

Sample I.D.	Sample Depth Interval (feet bgs)	Chlordane	4,4-DDD	4,4-DDE	4,4-DDT
Phase II (December 1998) Soil Samples					
B-01-1'	1.0 to 1.5	**7,200**	< 120	< 120	< 120
B-01-3'	3.0 to 3.5	**67**	< 6	< 6	< 6
B-01-5'	5.0 to 5.5	**98**	< 6	< 6	< 6
B-01-10'	10.0 to 10.5	< 30	< 6	< 6	< 6
B-02-2'	2.0 to 2.5	< 30	< 6	< 6	< 6
B-02-4'	4.0 to 4.5	< 600	< 120	< 120	< 120
B-02-7.5'	7.5 to 8.0	< 30	< 6	< 6	< 6
B-03-1'	1.0 to 1.5	< 30	< 6	< 6	< 6
B-04-1.5'	1.5 to 2.0	< 300	< 60	< 60	< 60
B-05-1'	1.0 to 1.5	< 300	< 60	< 60	< 60
Phase III (March 1999) Soil Sample					
Comp. B06/B07/B08/B09 (a)	0.5	**300**	< 6	< 2	< 6
Regulatory Considerations					
PRG- Residential		1,600	2,400	1,700	1,700
PRG-Industrial		12,000	19,000	13,000	13,000
Soil Screening Level (DAF = 20)		10,000	16,000	54,000	32,000
Soil Screening Level (DAF = 1)		500	800	3,000	2,000

(a) 4-point composite soil sample composed of equal volumes of soil from 4 sampling locations; heptachlor also detected (5.1 µg/kg)
bgs = below ground surface; DAF = Dilution-Attenuation Factor; NA = Not Analyzed; NL = Not Listed; PRG = U.S. Environmental Protection Agency Preliminary Remediation Goal (updated May 7, 1998)

ATTACHMENT B

SES QUALIFICATIONS

STELLAR ENVIRONMENTAL SOLUTIONS

Stellar Environmental Solutions was established in 1995 and provides a full range of environmental and engineering services needed for environmental and hazardous waste management projects throughout California. Our clients include both private sector (commercial, industrial, developers and utilities) and public sector (special districts, utilities city and municipal agencies). Services provided range from hazardous waste management planning, to identifying and assessing hazardous materials and soil and groundwater contamination, to designing, managing construction, and providing short-term operations and maintenance for remedial actions. Our geotechnical and environmental engineering capabilities have been used to solve problems related to third party reviews, environmental compliance audits, RCRA assessments, hazardous waste planning characterization of hazardous waste in air, soil and water, remediation design and implementation services, industrial facility closures, and site regulatory closures.

Stellar Environmental Solutions is a small and locally-focused (Bay Area) consulting firm with four senior principal/associates and a cadre of specialty subcontractors. Every SES project has a principal providing technical oversight and/or project management, bringing up to 20 years of experience to the project. The following are brief resumes of key personnel that will implement this project. The corporate qualifications of the sampling and analytical laboratory subcontractors are presented at the end of this section.

Richard Makdisi, R.E.A., R.G. – Principal

Education: MS, Geochemistry, California State University, 1980
BA, Geology, University of London, England, 1974

Registrations: Registered Geologist, California #4652, 1988
California Registered Environmental Assessor #00282, 1987

Mr. Makdisi, a California Registered Geologist (R.G.) and Registered Environmental Assessor (R.E.A.), is Principal of Stellar Environmental Solutions (SES). He has more than 20 years of experience in hazardous management, geoscience engineering, geochemistry, and geohydrology. Mr. Makdisi has hands-on experience managing U.S. EPA, and Cal EPA, RCRA and CERCLA remediation sites for commercial and government clients. He has conducted Remedial Investigation/Feasibility Studies (RI/FS), Remedial Action Plans (RAPs), Remedial Design, and remediation. Mr. Makdisi has extensive knowledge of California hazardous waste, solid waste, water code regulations, and ARAR development, and has provided client-regulatory agency liaison services on major remediation projects. He has implemented soil gas, geophysical, geotechnical, and hydropunch sampling investigations, and has extensive experience in

evaluating remedial technologies and overseeing their implementation. Mr. Makdisi has achieved site closures for numerous contaminated sites and completed facility closures (RCRA, PBR and non-RCRA sites) for manufacturing sites. He has also prepared Solid Waste Assessment Test and hazardous waste planning documents, including HWMDs, RMPPs and SPCCs. In addition to his hazardous waste investigations, Mr. Makdisi has provided geology, soils, seismicity, hazardous materials and risk assessment analyses for over 25 major Environmental Impact Reports/Environmental Impact Statements (EIR/EIS).

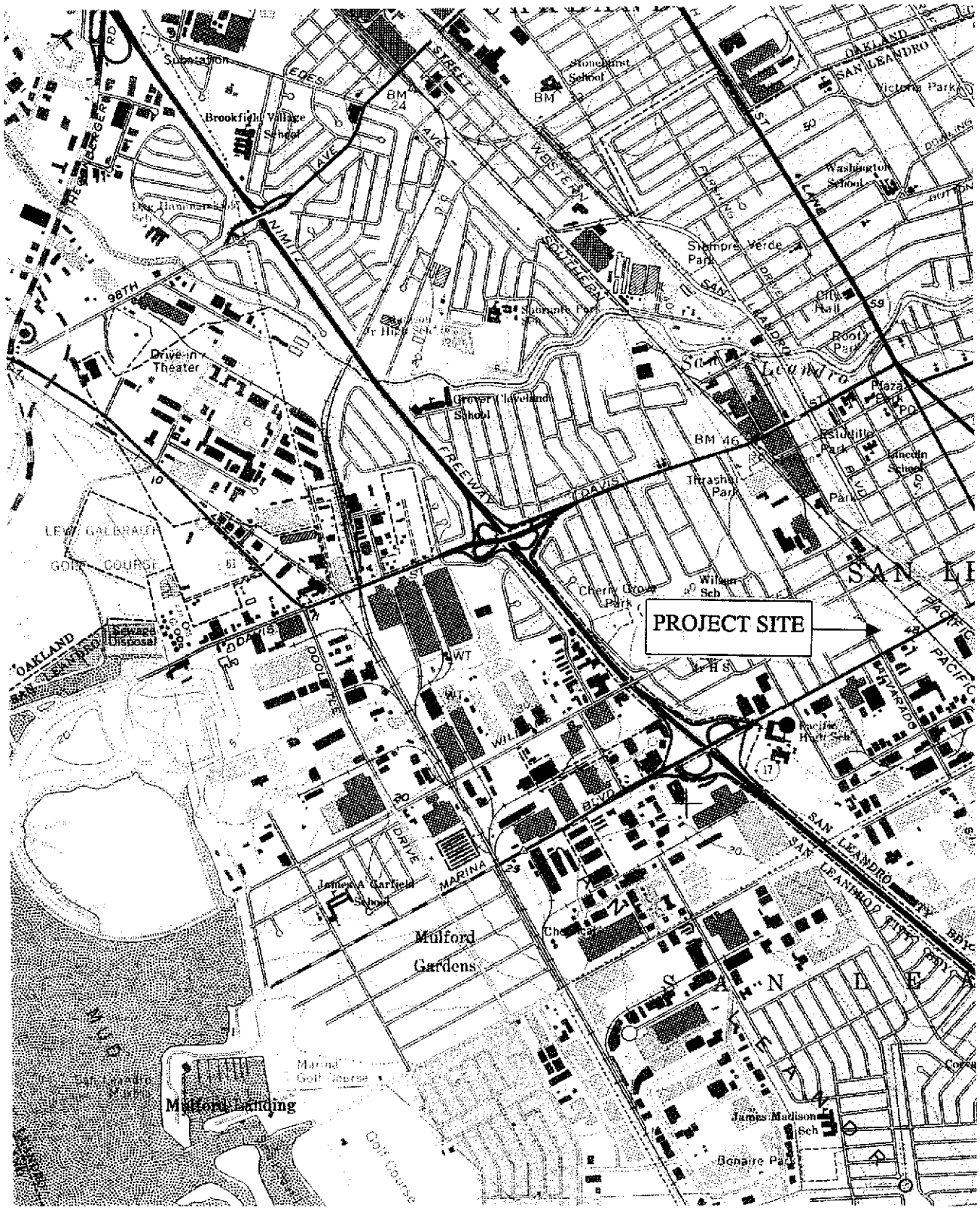
Bruce Rucker, R.E.A., R.G. – Project Manager

Education: MS, Geology, California State University, Hayward, 1996
BA, Environmental Sciences, University of Virginia, 1984

Registrations Registered Geologist, California #6814, 1998
California Registered Environmental Assessor #2465, 1990
Professional Certificate in Hazardous Materials Management, University of California, 1990

Mr. Rucker, a California R.G. and R.E.A., has over 10 years of experience in providing a broad range of environmental services to commercial and public sector clients. Mr. Rucker has been Project Manager for the Redwood Regional Park Service Yard project since its inception in 1993. His expertise includes: conducting Phase I environmental site assessments and hazardous materials sections of EIRs/EISs for transportation and water conveyance corridors and for individual properties; designing and implementing contaminant investigations; evaluating remedial options and implementing soil and groundwater remedial actions associated with a multitude of contaminant source types; post-remediation surface water and groundwater monitoring; risk-based evaluation of impacts from residual contamination; conducting facility regulatory compliance audits including asbestos surveys; air and noise monitoring; peer review of technical documents; NPDES Permit wastestream compliance monitoring and reporting; on-call, rapid-response construction-phase contaminant assessment; managing waste soil and water including landfarming and profiling for off-site treatment/disposal; and regulatory liaison including permitting, data reporting, and negotiating work scopes and cleanup standards. Mr. Rucker has demonstrated proficiency in designing and implementing investigations to both meet the needs of the client and to satisfy regulatory agency requirements in a cost-effective and technically excellent manner.

FIGURES



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SITE LOCATION ON U.S.G.S. TOPOGRAPHIC MAP

Coffel Property, 2144 Alvarado St., San Leandro	By: MJC	JANUARY 1999
	Figure 1	

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