Appendix F2: Revised Work Plan, Preliminary Endangerment Assessment

Appendices

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REVISED WORK PLAN

PRELIMINARY ENDANGERMENT ASSESSMENT

La Puerta School
2475 North Forbes Avenue
Claremont, California

(DTSC SITE CODE 304393-11)

For:
Claremont Unified School District
2080 North Mountain Avenue
Claremont, California 91711

By:
Environmental Geoscience Services
909 Electric Avenue, Suite 312
Seal Beach, California 90740

JANUARY 21, 2003

ENVIRONMENTAL GEOSCIENCE SERVICES
909 Electric Avenue, Suite 312
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Phone: (562) 280-3481 Fax: (562) 280-3485

January 21, 2003

Department of Toxic Substances Control
School Property Evaluation and Cleanup Division
Attn: Rao Akula
1011 N. Grandview Avenue
Glendale, CA 91201

Subject: **REVISED WORK PLAN**
PRELIMINARY ENDANGERMENT ASSESSMENT
La Puerta School Site
2475 Forbes Avenue
Claremont, California
(DTSC SITE CODE 304393-11)

Dear Mr. Akula:

Environmental Geoscience Services (EGS) is pleased to present this Revised Work Plan, which is part of the Preliminary Endangerment Assessment for the La Puerta School site located at 2475 Forbes Avenue, Claremont, California.

This Revised Work Plan includes the Sampling Work Plan and the health and safety requirements, including a Site Safety Plan. The Revised Work Plan was prepared as a response and clarification to the comments presented in the DTSC's letter to the Claremont Unified School District dated January 15, 2003.

If you have any questions or comments regarding this Revised Work Plan, please call at your convenience.

Sincerely,
ENVIRONMENTAL GEOSCIENCE SERVICES

Henry Ames, R.G. 6304
Project Geologist

REGISTERED GEOLOGIST
HENRY B. AMES
No. 6304
Exp. 09/03
STATE OF CALIFORNIA

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SUBJECT: RESPONSE TO COMMENTS
Work Plan for PEA (December 2002)
La Puerta School Site, Claremont, California
(DTSC SITE CODE 304393-11)

Environmental Geoscience Services (EGS) offers the following response to the comments presented in the DTSC's letter dated January 15, 2003.

DTSC COMMENT	EGS RESPONSE
Table 1 (Soil Sample Description) indicates that samples HA-16 through HA-18, from depths of one foot and five feet bgs, will be tested for volatile organic compounds (VOCs). Testing for VOCs from the 1-foot depth samples is unlikely to reveal VOCs, due to weathering. DTSC recommends the sampling depths be revised to 5 and 10 feet bgs.	EGS concurs with this recommendation. See changes in the Revised Work Plan, specifically in Sections 2.3, 2.5 and Table 1.
Section 2.1, Page 2-1: Human Ecological Risk Division (HERD) is concerned about the source of the two areas of stockpiled soil in the undeveloped area of the site. HERD requires better documentation on the sources of these stockpiles before approval can be given limiting the analyses to organochlorine pesticides and arsenic. If adequate documentation can not be provided, HERD recommends that the stockpiles be sampled as proposed, but analyzed for the full suite of potential contaminants (volatile organic compounds from the deeper samples, semi-volatile organic compounds, organochlorine pesticides, CAM 17 metals, and PCBs).	EGS has contacted the Claremont Unified School District (CUSD) in an attempt to obtain any information concerning the origin of the stockpiled soil. The CUSD responded that no adequate documentation was available concerning the origin of the stockpiled soil. Therefore EGS has added the requested analyses to the sampling plan for the soil samples that will be collected in the areas of stockpiled soil. See changes in the Revised Work Plan, specifically in Sections 2.1, 2.3 and Table 1.
Section 1.0, page 1-1: Most PEA work plans include a section on how the data gathered in the PEA will be used in conducting a human and ecological risk assessment. A general outline of the approach to be taken is usually given, along with a discussion on how chemicals of potential concern will be identified (use of the background data), the source of toxicity values to be used and the algorithms to be used in calculating risk and hazard. HERD recommended that this information be provided, or alternatively, that the qualifications of the individual conducting the risk assessment be included in the work plan.	A qualified individual following the procedures outlined in the DTSC 1999 PEA Guidance Manual will carry out the risk assessment. EGS has included the qualifications of the individual who will conduct the human and ecological risk assessment in Appendix C. (No other changes were incorporated in the Revised Work Plan from this comment)

DTSC COMMENT	EGS RESPONSE
The Geological Services Unit (GSU) of the DTSC recommends that the appropriate information such as the site use history and environmental setting contained in the Phase I Environmental Site Assessment prepared by EGS (dated August 2002) should be included or summarized in the Draft Final PEA and a copy of the Phase I report should be appended to the report.	EGS will include appropriate information such as the site use history and environmental setting contained in the Phase I Environmental Site Assessment in the Draft Final PEA. EGS will include a copy of the text, photographs and aerial photographs from the Phase I Environmental Site Assessment as an appendix in the Draft Final PEA. (No changes were incorporated in the Revised Work Plan from this comment)
The PEA Work Plan does not state the objective of the PEA as stated in the Guidance Manual.	EGS has incorporated a statement of the objective of the PEA in Section 1.0 of the Revised Work Plan.
Boring logs should be included as an Appendix in the Draft PEA report and should be marked as either having been reviewed by a Registered Geologist (RG) or should be stamped by the RG.	EGS will include boring logs as an appendix to the Draft PEA report. The boring logs will be stamped by an RG, which will include the registration expiration date. See changes in the Revised Work Plan, specifically in Section 2.5.
The sampling rational should be based on a site-specific conceptual model (CSM). A discussion of CSM and how it provided the rationale for the proposed sampling and analysis at the site needs to be included in the Draft Final PEA report. In addition, the GSU recommended including a conceptual site model diagram, as illustrated in Section 2.1.2 of the DTSC PEA Guidance Manual.	EGS will prepare a site-specific conceptual model (SCM), which will be presented in the Draft Final PEA report. The SCM will identify the potential contamination sources and the links to the potential receptors. In the interim, EGS has prepared a Conceptual Site Model Diagram, as illustrated in Section 2.1.2 of the PEA Guidance Manual. EGS has incorporated changes in the Revised Work Plan, specifically in the opening paragraph of Section 2.1. In addition EGS has included a Conceptual Site Model Diagram, which is included as an Appendix of this Revised Work Plan.
The soil sampling for lead-based paint (LBP) should be conducted in accordance with DTSC's Interim Guidance for Evaluating Lead-Based Paint and Asbestos-Containing Building Materials at Proposed School Sites, dated July 21, 2001.	EGS has reviewed the referenced document and has modified the sampling plan. The modifications provide additional information concerning the sampling locations. See changes in the Revised Work Plan, specifically in Section 2.1 and Table 1.
Section 2.1, Page 2-2, The last sentence in this section is not complete.	EGS has removed this partial sentence.
Figure 2. For ease of review, GSU recommends that the area of Figure 3 be outlined on Figure 2.	EGS has made the requested revisions to Figure 2.

1.0 SITE BACKGROUND

The subject property is a square shaped parcel which measures approximately 660-feet by 660-feet (approximately 9.7 acres). For site location see **Figure 1: Site Location Map.** The site is essentially level with a slight gradient to the south-southwest with an overall elevation difference of 25 feet across the property. The northern portion of site is developed with three buildings (one of which is a temporary structure), which are currently used as an adult school. The central and southern portions of the site are vacant, undeveloped land. EGS understands that the Claremont Unified School District intends to renovate one building and construct several new buildings on the vacant, undeveloped portion of the site. The fully developed site will be used as an elementary school. The neighboring properties to the north, south, and east are developed with residences. The western adjacent property is a recreational park.

EGS prepared a *Phase I Environmental Site Assessment* (ESA) report, dated August 2002, which documented the current and previous land use and other historical information concerning the site and nearby properties. The findings presented in the ESA identified a recognized environmental concern related to the previous agricultural land use at the site. Given that the site is to be developed as a school, and in order to comply with two new laws (Assembly Bill AB387 and Senate Bill SB162), the ESA was submitted to the California Environmental Protection Agency, Department of Toxic Substances Control, School Property Evaluation and Cleanup Division (DTSC) for review. In order for the DTSC to provide oversight of the PEA, Claremont Unified School District executed an Environmental Oversight Agreement with the DTSC.

EGS attended a Scoping Meeting with DTSC on October 8, 2002 at which time the specific issues that need to be included with the PEA were discussed. This document was prepared to present the specific sampling and analysis plan for the PEA. Also included is Site Safety Plan, which presents the fieldwork protocol.

The specific objectives of this PEA include:

- Determining if a release of hazardous wastes/substances exist at the site and delineating the general extent of the contamination.
- Estimating the potential threat to the public health and/or environment posed by the site and providing an indicator of relative risk.

1.1 PREVIOUS FIELD EXPLORATION WORK

In anticipation of the planned site development work, Claremont Unified School District contracted to have a geotechnical study conducted at the subject site. EGS was provided with a copy of the *Preliminary Soils and Engineering Investigation Report*, dated February 14, 2002, prepared by GeoSystems. The description of the soil type encountered included the observation that stockpiles of artificial fill were located along the central and western portions of the site. It was also stated that "However, due to the past use of the site, various thickness of fill or demolition debris may remain at the site between the exploration borings." No additional background information was presented to support this statement.

The boring logs from the 14 soil borings drilled to depths up to 46 feet below grade at various areas throughout the site revealed that the subsurface soil is alluvial fan deposits which consist of gravelly silty sands, gravelly sands, cobbley sands and sandy gravels. The fan deposits were described as dark brown, brown, light brown, slightly moist to dry, dense to very dense, with numerous large granitic rock fragments. In general, the alluvial fan deposits are coarser and denser with depth. Based on a review of each of the 14 boring logs, artificial fill soil was not encountered at any of the boring locations.

Groundwater was not encountered in any of the 14 borings drilled at the site. Based on information presented in GeoSystems' report, the historic high groundwater in the vicinity of the site is greater than 50-feet below ground surface.

2.0 SAMPLING PLAN

2.1 SAMPLING STRATEGY

The sampling rational is based on an evaluation of the potential sources, potential release mechanisms and potential pathways and exposure routes. EGS has prepared a Conceptual Site Model Diagram, which is included as **Diagram 1**. As identified in the Diagram, there are no primary sources at the site. The potential secondary sources are the soil and the Diagram depicts the potential release mechanisms, potential pathways and exposure routes to human and nonhuman receptors. Therefore soil will be the only matrix sampled during this investigation (except for the travel and equipment blanks which will be water). Additional information concerning the site-specific conceptual model will be included in the Draft Final PEA report.

The specific areas to be sampled and the potential chemical(s) of concern include the following:

- **Subject site**: Based on the previous agricultural land use, EGS has developed a sampling and analysis plan to characterize the soil for the presence of residual agricultural chemicals. The chemicals of potential concern include organochlorine pesticides (EPA Method 8081A) and metals (CAM 17 metals, including arsenic). Since 1968, when the land use changed from agricultural to the present day school use, the soil at the site has been graded.

  In particular, there are two areas of stockpiled soil in the southwestern portion of the site and there is also a level 200' x 200' graded area just south of the main building. EGS contacted the Claremont Unified School District (CUSD) in an attempt to obtain any information concerning the origin of the stockpiled soil. The CUSD responded that there were no records on file that documented the origin of the stockpiled soil. Therefore, based on the absence of adequate documentation, EGS proposes to collect additional soil samples in these three areas of disturbed soil. Based on the specific comments presented in DTSC's letter of response, EGS has modified the proposed soil analyses to include the full suite of potential contaminates (volatile organic compounds from deeper samples, semi-volatile organic compounds, organochlorine pesticides, CAM 17 metals and PCBs).

  In addition, background soil samples will be collected from four off-site locations, which will only be analyzed for metals (CAM 17 metals including arsenic). Soil samples will be collected with hand auger equipment at each boring location. **Figure 2** presents the proposed locations where soil samples will be collected. **Table 1** presents the proposed sample depths and analyses for each soil sample collected.

- **Northeast corner of the property**: As presented in the ESA, a large aboveground storage tank (AST) was located in the northeast corner of the site. Information was not available concerning the contents of the AST. The AST may have contained water but also may have contained diesel fuel and/or organochlorine pesticides. EGS proposes to collect soil samples at three areas near the former AST (HA-16, HA-17 and HA-18). The chemicals of potential concern include total petroleum hydrocarbons (TPH: EPA Method 8015 modified; extractable hydrocarbons, carbon chain distribution), volatile organic compounds (EPA Method 8260B), semivolatile organic compounds including the polycyclic aromatic hydrocarbons (EPA Method 8270C), organochlorine pesticides (EPA Method 8081A), and arsenic (EPA Method 6010B). Soil samples will be collected with hand auger equipment at each boring location. The soil samples that will be analyzed for volatile organic compounds will be collected with a drive sampler. A photoionization detector (PID) will be used to field screen the soil samples collected in this area. **Figure 2** presents the proposed locations where soil samples will be collected. **Table 1** presents the proposed sample depths and analyses for each soil sample collected.

- **Concrete walled enclosure where the electrical transformers are located**: Based on the possible presence of polychlorinated biphenyls (PCBs) within the transformers, soil samples will be collected from the areas below the transformers and in the area adjacent to the transformers. The chemicals of potential concern include polychlorinated biphenyls (PCBs; EPA Method 8082). Soil samples will be collected with hand auger equipment at each boring location. **Figure 3** presents the proposed locations where soil samples will be collected. **Table 1** presents the proposed sample depths and analyses for each soil sample collected.

- **Areas around the existing structures:** Given that the existing structures were developed prior to 1978, lead-based paint may be present on the external surfaces of the structure and may have flaked or weathered and accumulated in the soil around the structure. According to the Claremont Unified School District, AAA Lead Consultants and Inspections, Inc. recently conducted a survey at the site. A complete copy of the *Lead Inspection Report*, dated November 7, 2002 was included in EGS's *Work Plan* dated December 2002. As presented in *Lead Inspection Report*, lead based paint with concentrations above the HUD action level of 1.0 mg/cm^3 was found on three exterior door jams of Building A, two down spouts at Building B, and the door and the door jam of the boiler room (adjacent to Building B).

  EGS has prepared the following soil sampling and analysis plan in accordance with DTSC's *Interim Guidance for Evaluating Lead-based Paint and Asbestos-Containing Building Materials at Proposed School Sites*, dated July 21, 2001. The site-specific plan includes the collection of four soil samples around each of the two buildings. The number of samples around each building is based on the fact that each building is less than 12,000 ft^2; therefore a minimum of 4 samples will be collected per building. The sampling will be conducted in areas of exposed soil around the drip line of the structures and specifically adjacent to the areas where lead-based paint had been detected (as reported in the *Lead Inspection Report).*

The sampling areas around Building A include two borings (HA-23 & HA-24) near the three exterior door jams (areas where lead-based paint had been detected) and two borings (HA-25 & HA-26) at other locations (areas were lead-based paint had not been detected). The sampling areas around Building B include three borings (HA-27, HA-28 and HA-29) near the two down spouts at Building B, and one boring (HA-30) near the door and the door jam of the boiler room (adjacent to Building B). Lead-based paint had been detected at each of these areas around Building B. **Figure 3** presents the proposed locations where soil samples will be collected. **Table 1** presents the proposed sample depths and analyses for each soil sample collected.

The specific analytes associated with each EPA Method and their respective method detection limits are presented on **Table 2**.

2.2 SAMPLING METHODS

Based on the background information and the potential chemicals of concern, soil will be the only matrix sampled during this investigation (except for the travel and equipment blanks which will be water). EGS proposes to collect the referenced soil samples with hand auger sampling equipment. At each of the proposed locations the hand auger bucket will be advanced to the target sampling depth. Then the hand auger bucket will be decontaminated in accordance with the procedures described in **Section 2.6.** It will then be placed into the open borehole and advanced to the target sample interval. Upon retrieval of the hand auger bucket, the soil will be transferred into a 2-inch diameter 6-inch long brass sleeve. Each end of the sleeve will be capped with a teflon sheet and sealed with a plastic end-cap. In general, the proposed laboratory analyses can be conducted from the soil contained in one brass sleeve. Therefore, only one brass sleeve will be collected from each depth interval sampled.

The only exception to this sampling method will be for the soil samples collected at the three boring locations in the northeast corner of the site (borings HA-16, HA-17 and HA-18). At each of these three locations the hand auger bucket will be advanced to the target sampling depth. Then the hand auger bucket will be removed and an AMS core sampler with a slid hammer apparatus will be used to collect an undisturbed soil sample from the target interval. The core sampler, which holds one 6-inch long brass tube, will then be placed on the bottom of the boring (at the target depth) and then physically pounded into the subsurface with a slide hammer to obtain an undisturbed soil sample. The sampler will then be retrieved from the borehole and the brass sample sleeve will be removed from the sampler. EGS will use an EnCore T-handle to fill the EnCore sample with the soil from the brass sleeve.

2.3 SAMPLE CONTAINERS AND PRESERVATION

The sampling plan presented herein involves the collection of soil samples from the near surface soils. Therefore, since the only matrix to be sampled is soil, EGS proposes to collect all of the samples for all of the proposed analyses in 2-inch diameter 6-inch long brass sleeves. EGS will use new brass sleeves for all samples collected. Prior to use, each sleeve will be washed with a non phosphate detergent and rinsed with clean water and finally rinsed with deionized water. Each sleeve will be air dried prior to use. In general, the proposed laboratory analyses can be conducted from the soil contained in one brass sleeve, therefore, at most sample depths, only one brass sleeve will be collected from each depth interval sampled.

One exception will be for the soil samples collected from a depth of 5 feet bgs at the three borings in the northeast corner of the site (HA-16, HA-17 and HA-18) and the soil samples collected from depths of 3 and 5 feet bgs at the five borings in the area of disturbed soil (HA-7 through HA-11). Given that volatile organic compounds (VOCs) are a possible contaminate of concern in these areas, EGS proposes to collect the samples to be analyzed for VOCs with an Encore sampler (in accordance with EPA Method 5035). The Encore samples will be used to contain a portion of the undisturbed sample collected in a brass sleeve (as collected from the AMS sampler described in **Section 2.2**). The Encore sample containers are factory sealed and therefore no pre cleaning will be needed for these samplers. Due to the number and variety of proposed analyses to be conducted on the 3 and/or 5 foot bgs samples collected from these borings, EGS proposes to collect one EnCore sample and two brass sleeves.

The other exception will be for the soil samples collected from a depth of 10 feet bgs at the three borings in the northeast corner of the site (HA-16, HA-17 and HA-18). These samples will be collected in an Encore sampler (in accordance with EPA Method 5035), as described above.

No preservatives will be used for any of the proposed soil samples.

2.4 SAMPLE PACKAGING AND SHIPMENT

Each soil sample will be collected in the containers described in **Section 2.2** and will be labeled with the information presented in **Section 2.5**. The samples collected from each boring will be placed into separate zip-lock freezer plastic bags. The zip lock bags will be placed into the ice chest, which will contain several bags of ice. The bags of ice will be double bagged to minimize leakage of water. Careful attention will be taken to ensure that the bags with the samples will be maintained above the bottom of the ice chest and prevent contact with any water from the melted ice. The samples will remain within the ice chest until delivered to the laboratory by the EGS field personnel. A chain-of-custody will be maintained for all samples from the time of sample collection until delivery to the laboratory.

2.5 SAMPLE DOCUMENTATION

During the fieldwork, EGS will maintain a field log that will include a chronological description of the events. The information to be recorded on the field log will include date and time of arrival at the site, start and stop time at each boring location, sample collection times, and deviations to the proposed sampling plan, and time of departure from the site.

In addition to the field log, EGS will maintain a boring log form for each boring. The boring log will include start time, sample collection time, and a description of the soils encountered. The boring logs will be stamped by a California Registered Geologist (RG), which will include the RG registration expiration date.

EGS will also maintain a chain of custody form to record the sample identification, sample collection time, and requested EPA Methods. The chain of custody will accompany the samples from time of collection until delivery to the laboratory.

Each soil sample collected will be labeled with a prepared label with specific information. The following is an example of the sample label information:

Project name: La Puerta Site
Consultant: Env. Geo. Services
Date: January 4, 2003
Time: 0755
Sample ID: HA-1
Sample Depth: A

In order to uniquely identify each sample, including the QA/QC samples, EGS offers the following sample depth description:

Sample Depth	Unique identification
0.5 feet	A
1.0 feet	B
2.5 feet	C
3.0 feet	D
5.0 feet	E
10.0 feet	F
QA/QC sample	G

2.6 DECONTAMINATION

All of the field investigation and sampling equipment will be decontaminated prior to use and between sample target depths with a three bucket wash and rinse system. This involves the use of three 5-gallon buckets. The first bucket will contain tap water with a non phosphate detergent. The equipment will be cleaned in this bucket with the use of a scrub brush. After the equipment is cleaned, it will be rinsed in the second bucket with tap water. The final bucket will contain deionized water which will be used for the final rinse process. The water in the buckets will be changed between each boring. The used water from the decontamination process will be stored in a 55-gallon drum with a sealed lid.

2.7 WASTE MANGEMENT

The field investigation work will be conducted with hand auger equipment. The drill spoil generated during the drilling of the borings will be placed next to the boring. When the final sample has been collected, EGS will use the drill spoil to backfill the boring. Therefore, no excess drill spoil will be generated during the field investigation work and therefore no disposal of drill spoil will be required as a result of this field investigation work.

As described in Section 2.6, EGS will contain the equipment decontamination water in a 55-gallon drum. EGS does not anticipate that more than one drum of wash water will be generated during this field investigation work. Upon receipt of the final laboratory analytical results, EGS will identify the proper disposal option for the water. The drum will then be transported from the site, under an appropriate manifest, for proper offsite disposal. Drum disposal records will be presented in the final report.

3.0 QUALITY ASSURANCE AND QUALITY CONTROL

To check the precision and accuracy of the field data, EGS proposes to collect one split replicate and one collocated replicate sample for each of the following EPA Methods: 8082, Title 22 metals, 6010 for lead, 8015 for total petroleum hydrocarbons, 8260B, and 8270C. EGS proposes to collect two split replicate samples and two collocated replicates samples for each of the following EPA Methods: 8081A and 6010 for arsenic. The proposed number of split replicate samples and collocated replicate samples is equal to or greater than 5% of the total number of samples.

In addition, EGS will include a travel blank (water sample) for each day of sampling. The travel blank will accompany the soil samples from the time of collection until delivery to the laboratory. EGS will also collect an equipment blank each day. The equipment blank (water sample) will be collected after the soil sampling equipment has been washed, as described in **Section 2.6**. The travel blank and the equipment blank will be analyzed in accordance with EPA Methods 8081A and 8260B.

4.0 COMMUNITY PROFILE & NOTIFICATIONS

Prior to conducting the proposed field work, a PEA Field Work Notification Letter will be prepared and mailed to each of the owners of the properties within the line of sight of the property. In addition, each of the faculty and staff at the La Puerta school site will also receive a copy of the Letter. A copy of the letter will also be sent to the DTSC Regional Records Office and to the DTSC Project Manager (Rao Akula).

EGS will provide DTSC with a 7 day advanced notice prior to commencement of the field work. Since the developed portion of the site is occupied by faculty and adult students, and the fact that there will be no young students at the site, EGS does not anticipate that there should be any site access restrictions or need to conduct the work during a weekend.

5.0 REFERENCES

Environmental Geoscience Services, *Phase I Environmental Site Assessment (ESA) Report*, La Puerta School Site, 2475 N. Forbes Ave., Claremont, CA, August 2002.

State of California, Department of Conservation, *Geologic Map of Orange County California: Compiled by P.K. Morton and R.V. Miller*, Scale 1:48,000, 1981.

State of California, Environmental Protection Agency, Department of Toxic Substances Control, *Preliminary Endangerment Assessment Guidance Manual*, June 1999.

Wachtell John K., *Soil Survey of Orange County and Western Part of Riverside County, California*, U.S. Department of Agriculture Soil Conservation Service and Forrest Service, in Cooperation with University of California Agriculture Experiment Station 147 pp., 1978.

United States Geological Survey (USGS), *7.5 Minute Series, Mount Baldy, California Quadrangle Topographic Map*, 1988 (Revision by the U.S.D.A. Forest Service, 1995).

TABLES

TABLE 1
SOIL SAMPLE DESCRIPTION

PRELIMINARY ENDANGERMENT ASSESSMENT
Claremont Unified School District
Proposed La Puerta Elementary School
(DTSC Docket Number HSA-A 02/03-060)

Sample Location Identification	Sample Depths	Description	Number of Soil Samples	Sample Analyses
HA-1 through HA-6	0.5' & 2.5'	Relatively undisturbed area of agricultural land use	12 samples to be submitted for analysis	- EPA Method 8081A (organochlorine pesticides) - EPA Method 6010 (arsenic)
HA-1, HA-3, HA-5	0.5'	Agricultural land use	3 samples to be submitted for analysis	- CAM 17 metals
HA-7 through HA-11	1', 3', & 5'	Stockpiled and graded soil (fill soil of an unknown origin)	15 samples to be submitted for analysis	- EPA Method 8081A (organochlorine pesticides) - CAM 17 metals - EPA Method 8270C for semivolatile organic compounds - EPA Method 8082 for polychlorinated biphenyls (PCBs)
HA-7 through HA-11	3', & 5'	Stockpiled and graded soil (agricultural land use)	10 samples to be submitted for analysis	- EPA Method 8260B for volatile organic compounds
HA-12 through HA-15	0.5'	Offsite Background Samples	4 samples to be submitted for analysis	- CAM 17 metals
HA-16 through HA-18	1' & 5'	Former AST area at northeast corner of site	6 samples to be submitted for analysis	- EPA Method 8081A for organochlorine pesticides - EPA Method 6010B for arsenic - EPA Method 8015 modified for extractable hydrocarbons (carbon chain distribution) - EPA Method 8270C for semivolatile organic compounds
HA-16 through HA-18	5' & 10'	Former AST area at northeast corner of site	6 samples to be submitted for analysis	- EPA Method 8260B for volatile organic compounds
HA-19 through HA-22	0.5' & 3'	Existing electrical transformer area	8 samples to be submitted for analysis	- EPA Method 8082 for polychlorinated biphenyls (PCBs)
HA-23 through HA-30	0.5'	Unpaved areas near the existing buildings	8 samples to be submitted for analysis	- EPA Method 6010B for total lead

Prepared by Environmental Geoscience Services Dated January 21, 2003

TABLE 2 - Laboratory Analytes

EPA Method	Analyte	Detection Limit	Units				
	Title 22 Metals						
6010B	Antimony	3.0	mg/Kg				
6010B	Arsenic	0.5	mg/Kg				
6010B	Barium	1.0	mg/Kg				
6010B	Beryllium	0.5	mg/Kg				
6010B	Cadmium	0.5	mg/Kg				
6010B	Chromium	1.0	mg/Kg				
6010B	Cobalt	0.5	mg/Kg				
6010B	Copper	1.0	mg/Kg				
6010B	Lead	0.5	mg/Kg				
6010B	Molybdenum	1.0	mg/Kg				
6010B	Nickel	1.5	mg/Kg				
6010B	Selenium	1.0	mg/Kg				
6010B	Silver	0.5	mg/Kg				
6010B	Thallium	1.0	mg/Kg				
6010B	Vanadium	0.5	mg/Kg				
6010B	Zinc	5.0	mg/Kg				
7471A	Mercury	0.14	mg/Kg				
	Total Extractable Petroleum Hydrocarbons						
8015	TEPH Diesel	10.0	mg/Kg				
	Organochlorine Pesticides						
8081A	4,4-DDD	0.004	mg/Kg				
8081A	4,4-DDE	0.003	mg/Kg				
8081A	4,4-DDT	0.003	mg/Kg				
8081A	Aldrin	0.002	mg/Kg				
8081A	Alpha BHC	0.002	mg/Kg				
8081A	Beta BHC	0.003	mg/Kg				
8081A	Chlordane	0.008	mg/Kg				
8081A	Delta BHC	0.005	mg/Kg				
8081A	Dieldrin	0.003	mg/Kg				
8081A	Endosulfan I	0.004	mg/Kg				
8081A	Endosulfan II	0.003	mg/Kg				
8081A	Endosulfan sulfate	0.003	mg/Kg				
8081A	Endrin	0.004	mg/Kg				
8081A	Endrin aldehyde	0.004	mg/Kg				
8081A	Heptachlor	0.002	mg/Kg				
8081A	Heptachlor epoxide	0.003	mg/Kg				
8081A	Lindane	0.003	mg/Kg				
8081A	Methoxychlor	0.025	mg/Kg				
8081A	Toxaphene	0.100	mg/Kg				
8081A	Trifluralin	63	mg/Kg				
8081A	Mirex	0.10	mg/Kg				
8081A	Chloroneb	100	mg/Kg				
8081A	DBCP	0.01	mg/Kg				
8081A	Hezachlorobenzene	0.3	mg/Kg				
	Polychlorinated bi-phenyls (PCBs)						
8082	PCB-1016	0.033	mg/Kg				
8082	PCB-1221	0.06	mg/Kg				
8082	PCB-1232	0.04	mg/Kg				
8082	PCB-1242	0.02	mg/Kg				
8082	PCB-1248	0.08	mg/Kg				
8082	PCB-1254	0.01	mg/Kg				
8082	PCB-1260	0.025	mg/Kg				

TABLE 2 - Laboratory Analytes

EPA Method	Analyte	Detection Limit	Units	EPA Method	Analyte	Detection Limit	Units
	Volatile Organic Compounds (VOCs)				**Volatile Organic Compounds (VOCs)**		
8260B	1,1,1,2-Tetrachloroethane	5	ug/Kg	8260B	Ethyl-tertbutylether (ETBE)	10	ug/Kg
8260B	1,1,1-Trichloroethane	5	ug/Kg	8260B	Hexachlorobutadiene	5	ug/Kg
8260B	1,1,2,2-Tetrachloroethane	5	ug/Kg	8260B	Iodomethane	5	ug/Kg
8260B	1,1,2-Trichloroethane	5	ug/Kg	8260B	Isopropyl ether (DIPE)	10	ug/Kg
8260B	1,1,2-Trichlorotrifluoroethane	5	ug/Kg	8260B	Isopropylbenzene (Cumene)	5	ug/Kg
8260B	1,1-Dichloroethane	5	ug/Kg	8260B	Methacrylonitrile	5	ug/Kg
8260B	1,1-Dichloroethene	5	ug/Kg	8260B	Methyl methacrylate	5	ug/Kg
8260B	1,1-Dichloropropene	5	ug/Kg	8260B	Methyl-tert-butylether (MTBE)	5	ug/Kg
8260B	1,2,3-Trichlorobenzene	5	ug/Kg	8260B	Methylene chloride	5	ug/Kg
8260B	1,2,3-Trichloropropane	5	ug/Kg	8260B	Naphthalene	5	ug/Kg
8260B	1,2,4-Trichlorobenzene	5	ug/Kg	8260B	Pentachloroethane	5	ug/Kg
8260B	1,2,4-Trimethylbenzene	5	ug/Kg	8260B	Propionitrile	5	ug/Kg
8260B	1,2-Dibromo-3-chloropropane	5	ug/Kg	8260B	Styrene	5	ug/Kg
8260B	1,2-Dibromoethane	5	ug/Kg	8260B	Tert-amylmethylether (TAME)	10	ug/Kg
8260B	1,2-Dichlorobenzene	5	ug/Kg	8260B	Tertiary butyl alcohol (TBA)	50	ug/Kg
8260B	1,2-Dichloroethane	5	ug/Kg	8260B	Tetrachloroethene	5	ug/Kg
8260B	1,2-Dichloropropane	5	ug/Kg	8260B	Toluene	5	ug/Kg
8260B	1,3,5-Trimethylbenzene	5	ug/Kg	8260B	Trichloroethene	5	ug/Kg
8260B	1,3-Dichlorobenzene	5	ug/Kg	8260B	Trichlorofluoro-methane	5	ug/Kg
8260B	1,3-Dichloropropane	5	ug/Kg	8260B	Vinyl acetate	50	ug/Kg
8260B	1,4-Dichlorobenzene	5	ug/Kg	8260B	Vinyl chloride	5	ug/Kg
8260B	1,4-Dioxane	200	ug/Kg	8260B	Xylenes, total	5	ug/Kg
8260B	1-Chlorohexane	5	ug/Kg	8260B	cis-1,2-Dichloroethene	5	ug/Kg
8260B	2,2-Dichloropropane	5	ug/Kg	8260B	cis-1,3-Dichloropropene	5	ug/Kg
8260B	2-Butanone (MEK)	100	ug/Kg	8260B	cis-1,4-Dichloro-2-butene	5	ug/Kg
8260B	2-Chloroethyl vinyl ether	5	ug/Kg	8260B	m and p-Xylene	5	ug/Kg
8260B	2-Chlorotoluene	5	ug/Kg	8260B	n-Butylbenzene	5	ug/Kg
8260B	2-Hexanone	5	ug/Kg	8260B	n-Propylbenzene	5	ug/Kg
8260B	4-Chlorotoluene	5	ug/Kg	8260B	o-Xylene	5	ug/Kg
8260B	4-Methyl -2- Pentanone	5	ug/Kg	8260B	p-Isopropyltoluene	5	ug/Kg
8260B	Acetone	5	ug/Kg	8260B	sec-Butylbenzene	5	ug/Kg
8260B	Acetonitrile	5	ug/Kg	8260B	tert-Butylbenzene	5	ug/Kg
8260B	Acrolein	200	ug/Kg	8260B	trans-1,2-Dichloroethene	5	ug/Kg
8260B	Acrylonitrile	5	ug/Kg	8260B	trans-1,3-Dichloropropene	5	ug/Kg
8260B	Allyl chloride	5	ug/Kg	8260B	trans-1,4-Dichloro-2-butene	5	ug/Kg
8260B	Benzene	5	ug/Kg				
8260B	Benzyl chloride	5	ug/Kg				
8260B	Bromobenzene	5	ug/Kg				
8260B	Bromochloromethane	5	ug/Kg				
8260B	Bromodichloromethane	5	ug/Kg				
8260B	Bromoform	5	ug/Kg				
8260B	Bromomethane	5	ug/Kg				
8260B	Carbon Disulfide	5	ug/Kg				
8260B	Carbon tetrachloride	5	ug/Kg				
8260B	Chlorobenzene	5	ug/Kg				
8260B	Chloroethane	5	ug/Kg				
8260B	Chloroform	5	ug/Kg				
8260B	Chloromethane	5	ug/Kg				
8260B	Dibromochloromethane	5	ug/Kg				
8260B	Dibromomethane	5	ug/Kg				
8260B	Dichlorodifluoromethane	5	ug/Kg				
8260B	Ethyl benzene	5	ug/Kg				
8260B	Ethyl methacrylate	5	ug/Kg				

TABLE 2 - Laboratory Analytes

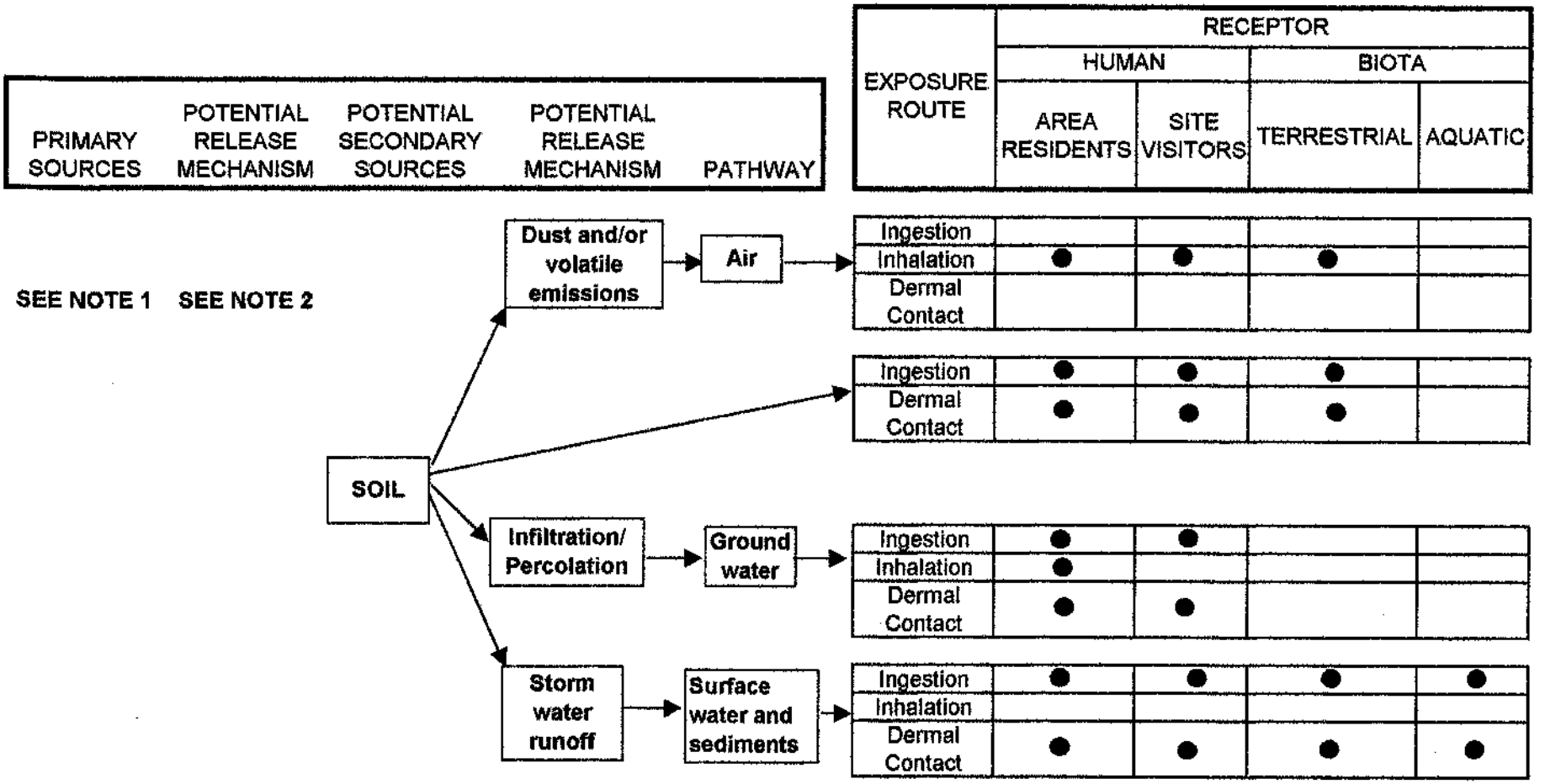
EPA Method	Analyte	Detection Limit	Units	EPA Method	Analyte	Detection Limit	Units
	Semivolatile Organic Compounds (SVOCs)				**Semivolatile Organic Compounds (SVOCs)**		
8270C	1,2,4-Trichlorobenzene	333	ug/Kg	8270C	Hexachlorocyclopentadiene	333	ug/Kg
8270C	1,2-Dichlorobenzene	333	ug/Kg	8270C	Hexachloroethane	333	ug/Kg
8270C	1,3-Dichlorobenzene	333	ug/Kg	8270C	Indeno(1,2,3-c,d)pyrene	333	ug/Kg
8270C	1,4-Dichlorobenzene	333	ug/Kg	8270C	Isophorone	333	ug/Kg
8270C	2,4,5-Trichlorophenol	1665	ug/Kg	8270C	N-Nitroso-di-n-propylamine	333	ug/Kg
8270C	2,4,6-Tribromophenol (sur)	%	ug/Kg	8270C	N-Nitrosodiphenylamine	333	ug/Kg
8270C	2,4,6-Trichlorophenol	1665	ug/Kg	8270C	Naphthalene	333	ug/Kg
8270C	2,4-Dichlorophenol	333	ug/Kg	8270C	Nitrobenzene	333	ug/Kg
8270C	2,4-Dimethylphenol	333	ug/Kg	8270C	Nitrobenzene-d5 (sur)	%	ug/Kg
8270C	2,4-Dinitrophenol	1665	ug/Kg	8270C	Pentachlorophenol	1665	ug/Kg
8270C	2,4-Dinitrotoluene	333	ug/Kg	8270C	Phenanthrene	333	ug/Kg
8270C	2,6-Dinitrotoluene	333	ug/Kg	8270C	Phenol	333	ug/Kg
8270C	2-Chloronaphthalene	333	ug/Kg	8270C	Phenol-d5 (sur)	%	ug/Kg
8270C	2-Chlorophenol	333	ug/Kg	8270C	Pyrene	333	ug/Kg
8270C	2-Fluorobiphenyl (sur)	%	ug/Kg	8270C	Terphenyl-d14 (sur)	%	ug/Kg
8270C	2-Fluorophenol (sur)	%	ug/Kg	8270C	bis(2-Chloroethoxy)methane	333	ug/Kg
8270C	2-Methylnaphthalene	333	ug/Kg	8270C	bis(2-Chloroethyl)ether	333	ug/Kg
8270C	2-Methylphenol	333	ug/Kg	8270C	bis(2-Chloroisopropyl) ether	333	ug/Kg
8270C	2-Nitroaniline	1665	ug/Kg	8270C	bis(2-Ethylhexyl)phthalate	333	ug/Kg
8270C	2-Nitrophenol	333	ug/Kg				
8270C	3,3-Dichlorobenzidine	333	ug/Kg				
8270C	3-Methylphenol	333	ug/Kg				
8270C	3-Nitroaniline	1665	ug/Kg				
8270C	4,6-Dinitro-2-methylphenol	1665	ug/Kg				
8270C	4-Bromophenyl-phenylether	333	ug/Kg				
8270C	4-Chloro-3-methylphenol	333	ug/Kg				
8270C	4-Chloroaniline	333	ug/Kg				
8270C	4-Chlorophenyl-phenylether	333	ug/Kg				
8270C	4-Methylphenol	333	ug/Kg				
8270C	4-Nitroaniline	1665	ug/Kg				
8270C	4-Nitrophenol	1665	ug/Kg				
8270C	Acenaphthene	333	ug/Kg				
8270C	Acenaphthylene	333	ug/Kg				
8270C	Anthracene	333	ug/Kg				
8270C	Benzidine	333	ug/Kg				
8270C	Benzo(a)anthracene	333	ug/Kg				
8270C	Benzo(a)pyrene	333	ug/Kg				
8270C	Benzo(b)fluoranthene	333	ug/Kg				
8270C	Benzo(g,h,i)perylene	333	ug/Kg				
8270C	Benzo(k)fluoranthene	333	ug/Kg				
8270C	Benzoic Acid	333	ug/Kg				
8270C	Benzyl alcohol	333	ug/Kg				
8270C	Butylbenzylphthalate	333	ug/Kg				
8270C	Chrysene	333	ug/Kg				
8270C	Di-n-butylphthalate	333	ug/Kg				
8270C	Di-n-octylphthalate	333	ug/Kg				
8270C	Dibenz(a,h)anthracene	333	ug/Kg				
8270C	Dibenzofuran	333	ug/Kg				
8270C	Diethylphthalate	333	ug/Kg				
8270C	Dimethylphthalate	333	ug/Kg				
8270C	Fluoranthene	333	ug/Kg				
8270C	Fluorene	333	ug/Kg				
8270C	Hexachlorobenzene	333	ug/Kg				
8270C	Hexachlorobutadiene	333	ug/Kg				

DIAGRAM

DIAGRAM 1

CONCEPTUAL SITE MODEL DIAGRAM

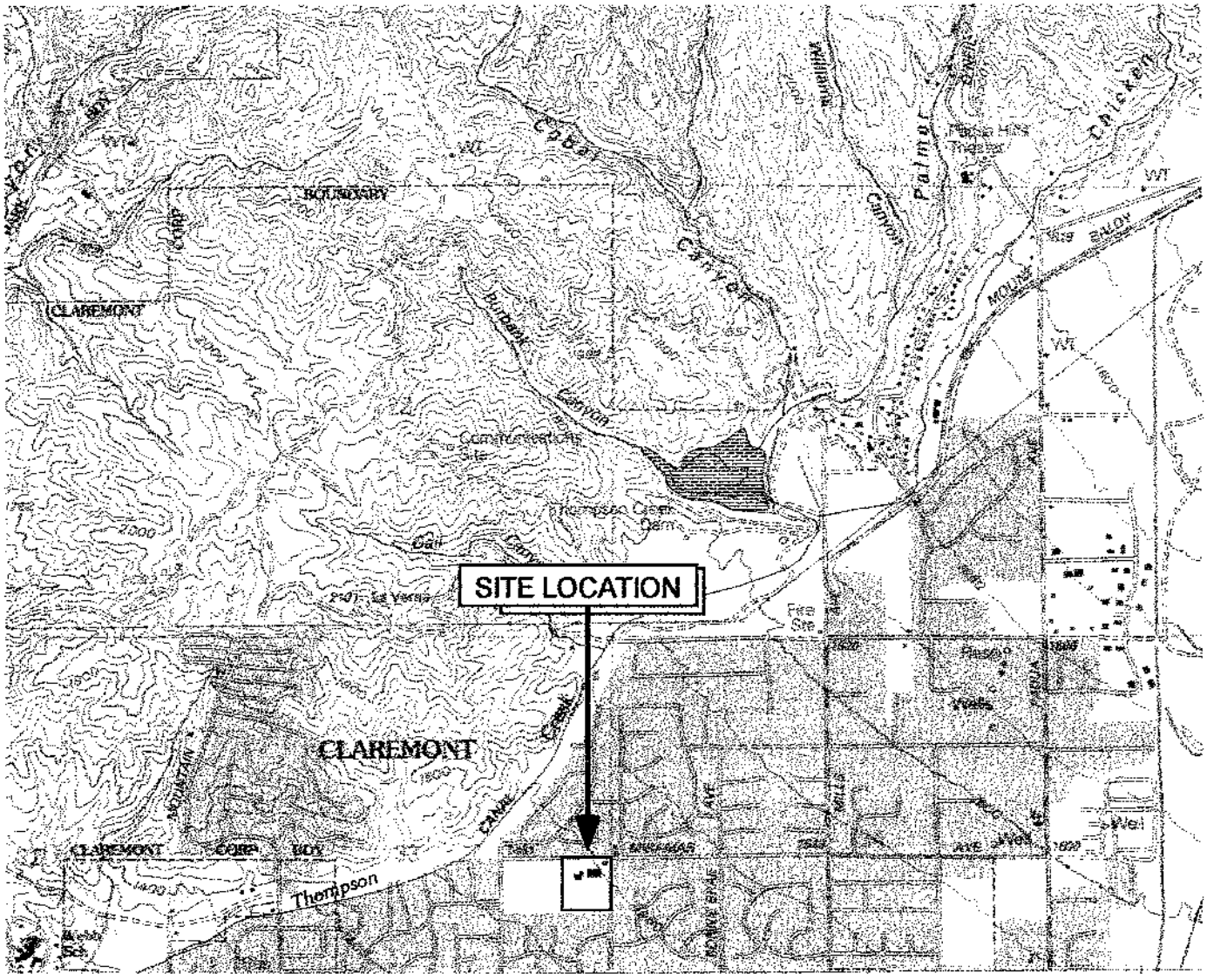
LA PUERTA ELEMENTARY SCHOOL, CLAREMONT, CA



Note 1: Primary sources have been removed from the property

Note 1: Given that the primary sources have been removed from the property, there are no potential release mechanisms from primary sources.

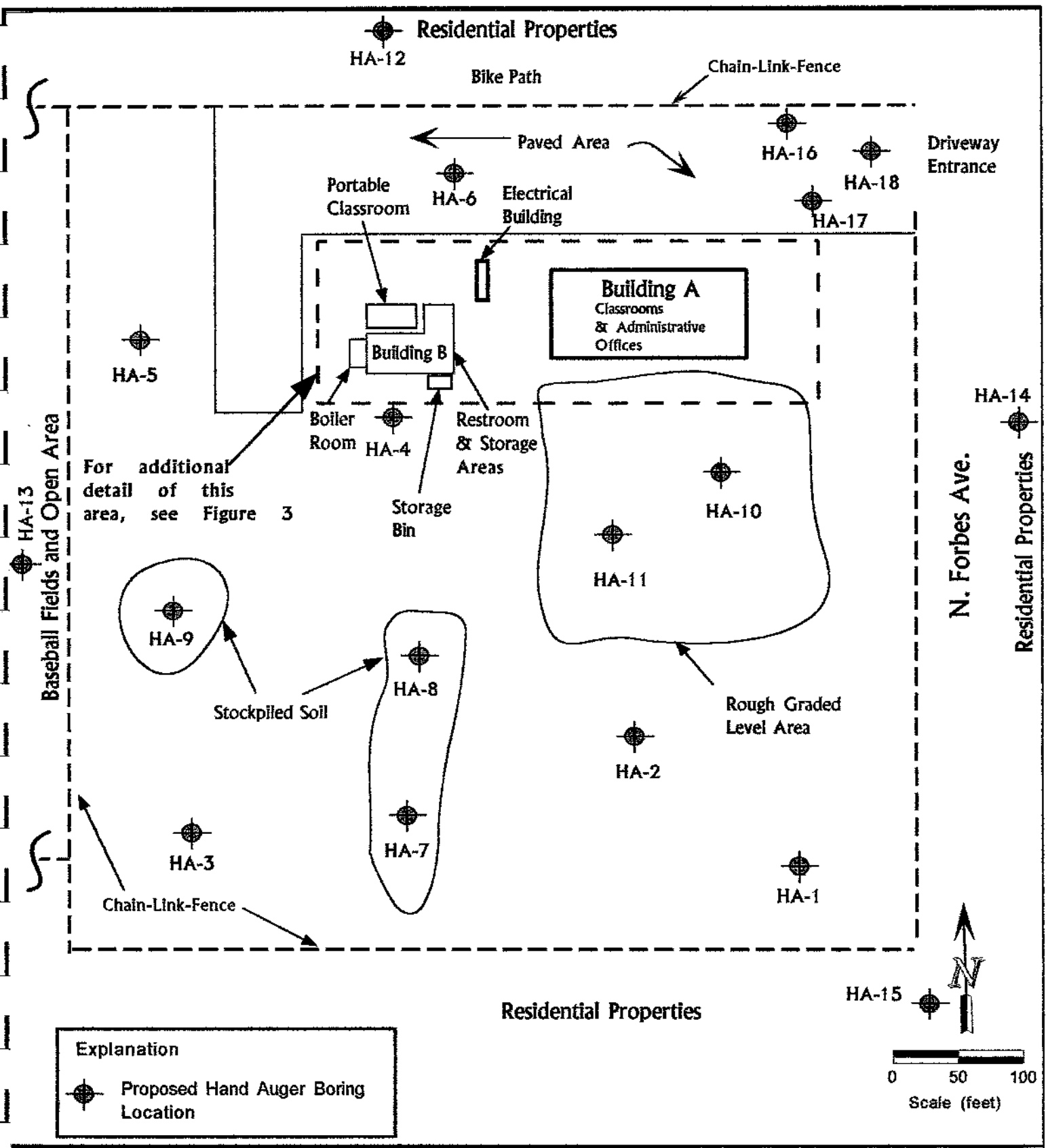
FIGURES



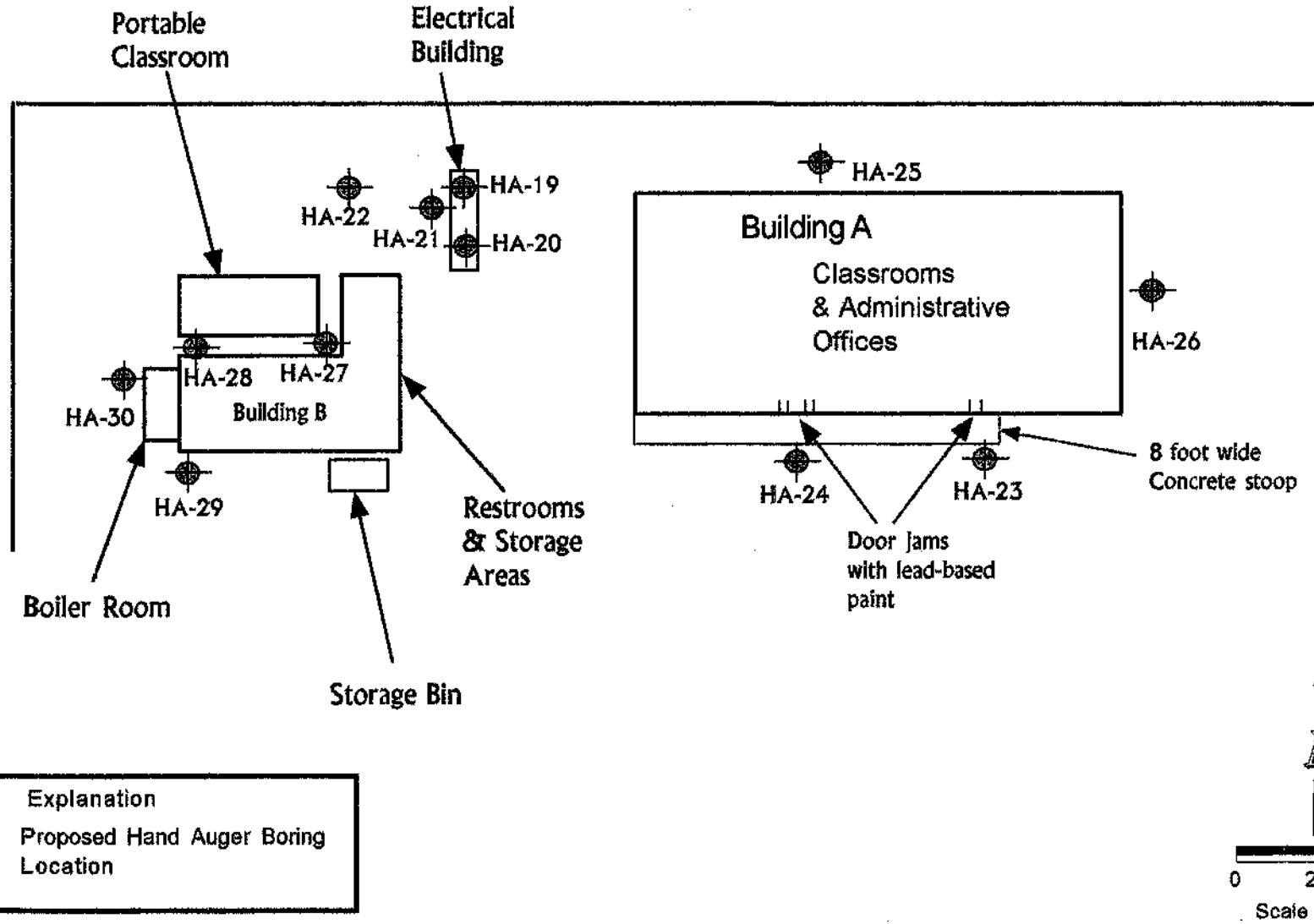
REFERENCE: USGS Topographic Map,
Mount Baldy, CA, 7.5 min. Quad

SITE LOCATION MAP

CLIENT: Claremont Unified School District	FIGURE 1
SITE: La Puerta School Site 2475 N. Forbes Avenue Claremont, CA	**ENVIRONMENTAL GEOSCIENCE SERVICES** 909 Electric Avenue, Suite 312 Seal Beach, CA 90740 (562) 280-3481



SITE PLAN - Agricultural Sampling Locations	DATE: January 2003	FIGURE 2
Project Location: La Puerta School, 2475 N. Forbes Avenue, Claremont, California	Client: Claremont Unified School District	ENVIRONMENTAL GEOSCIENCE SERVICES 909 Electric Avenue, Suite 312 Seal Beach, CA 90740 (562) 280-3481
Drawn By: H. Ames	Checked By: J. Findl	



F2-27

SITE PLAN - Other Sampling Locations	DATE: January 2003	FIGURE 3
Project Location: La Puerta School, 2475 N. Forbes Avenue, Claremont, California	Client: Claremont Unified School District	ENVIRONMENTAL GEOSCIENCE SERVICES 909 Electric Avenue, Suite 312 Seal Beach, CA 90740 (562) 280-3481
Drawn By: H. Ames	Checked By: J. Findl	

APPENDIX A

LEAD-BASED PAINT SURVEY

Not Included, see Work Plan dated December 2002

APPENDIX B

SITE SAFETY PLAN

Not Included, see Work Plan dated December 2002

APPENDIX C

Qualifications of the Individual Conducting the Risk Assessment

CLINT S. SKINNER, Ph.D.
Consultant in Toxicology

Skinner Associates
3985 Shooting Star Rd.
Creston, California 93432

(805) 238 1096
Fax 238-1228
SKINA1@TCSN.NET

CURRICULUM VITAE

PROFESSIONAL PROFILE

Dr. Skinner has a Ph.D. in Toxicology and over 20 years of experience with an emphasis in health risk assessment. Work as a NIEHS pre-doctoral fellow involved hazard evaluation of the toxicity of organophosphate insecticides. Research as a post-doc. at Battelle NW included evaluation of the carcinogenicity of energy related radioactive and organic carcinogens with dermal and inhalation exposure. As chronic study director and Head of Toxicology for Sandoz Agrodivision, Dr. Skinner performed risk assessments and toxicology studies for worldwide registration of agrochemicals and dyestuffs. Duties as a Toxicology Section Head for the EPA Office of Pesticide Programs in Washington DC involved secondary review, exposure and risk assessments, development of testing and GLP guidelines, and special reviews. For the last 15 years Skinner Associates has provided exposure and risk assessments for industrial clients to satisfy federal and state regulatory requirements and litigation support.

SERVICES

- Human and environmental exposure and risk assessments
- Regulatory toxicology support
- Legal support and expert witness

EDUCATION

Ph.D. Toxicology & Pharmacology, U. of California, Davis. 1979

B.S. Biology, Cal State University Hayward. 1974

B.A. Anthropology, UCSB, Santa Barbara. 1970

CERTIFICATION

Diplomate of American Board of Toxicology - 1983, 1988, 1994-1998 , 1999-2003

Curriculum vitae
Clint S. Skinner, Ph.D.

EXPERIENCE

President: June 1988-present
Skinner Associates

- Human and ecological exposure/risk assessments
- Regulatory support
- Toxicological evaluations
- Legal support and expert witness

Head of Toxicology: May 1986 - May 1988
Sandoz AgroDivision, Basel Switzerland

- Management of 18 person full-service toxicology lab
- Design and management of studies for all products worldwide (5 locations)
- Exposure/risk assessment and regulatory defense of studies and products
- GLP and occupational hygiene officer for Sandoz Agrodivision

Section Head, Hazard Evaluation Division: Dec 1984 - May 1986
EPA Office of Pesticide Programs, Washington DC

- Management of 11 professional review section
- Secondary review of toxicology data packages
- Special review of RPAR chemicals
- Development of guidelines for evaluation of data
- GLP harmonization with FDA

Toxicologist/Chronic Study Director: May 1980 - Dec 1984
Sandoz Agrodivision, San Diego CA. / Basel Switzerland

- Chronic and special study director
- Design, monitoring and defense of in-house and contract toxicology
- Management of in-house full-service chronic toxicology lab
- Management of histology and pathology
- Worker exposure / risk assessments
- Regulatory interface with EPA, CDFA and partner company toxicology

Research Toxicologist: March 1979 - March 1980
Battelle Northwest, Richland WA (Post Doc)

- Research associate in inhalation toxicity of radioactive species (transuranics)
- Research associate in dermal absorption of organic carcinogens

NIEHS Pre Doctoral Fellowship: Sept. 1974 - March 1979
UCD Davis Environmental Toxicology Dept.

- Development of an Animal Model for Hazard Evaluation of Worker Exposure to Pesticide Treated Fields. Wendell Kilgore major professor. (Publ. 1-4)

- Model involved original use of ChE ED50s, standard curves and dose responses using lab spiked leaves and was modified for CDFA Worker Safety Evaluations

AWARDS AND MEMBERSHIP

- American Board of Toxicology Diplomate 1983; 1988; 1994-98
- American Society of Toxicology
- American Chemical Society
- Society for Environmental Toxicology and Chemistry
- Genetic and Environmental Toxicology Association
- Society for Risk Analysis
- EPA Outstanding Achievement Award - 1986
- GIFAP Toxicology Committees - 1986-1987
- ECETOC Expert Committee - 1984-1985

REPRESENTATIVE PROJECTS AND EXPERIENCE

Exposure and Risk Assessments

Residential Health Risk Assessment involving pesticides and metals - for large subdivision in Bay Area. (Aug 2002)*

School Health Risk Assessment involving pesticides, Dioxins and metals for two sites in Indio CA. Performed for Cal/EPA DTSC. (March – Jan. 2002)*

Residential and Occupational Health Risk Assessment in former utility supply factory in NY State- Investigation involves multipathway exposure to trichoroethylene and congeners in soil and water by standard routes and vapor intrusion on-site and off-site. (Aug 2002)*

Residential and Occupational Health Risk Assessment in former metal plating site in Sacramento- evaluation involving heavy metals and 1,2DCA. Assessment required vapor intrusion and shallow and deep soil profiles. Fate and transport study also performed. (July 2001-present)*

Residential Health Risk Assessment of former brick factory – multipathway PEA evaluation involved contaminated fill including heavy metals and petroleum solvents. (May 2001)*

School Health Risk Assessment involving pesticides and metals in Ventura. Performed for Cal/EPA DTSC. (April 2001)*

School Health Risk Assessment involving pesticides and metals in Salinas. Performed for Cal/EPA DTSC. (March 2001)*

School Health Risk Assessment involving pesticides and metals in Kern Co.. Performed for Cal/EPA DTSC. (Jan 2001)*

Environmental exposure/hazard assessment at Air Force Base for exposure and bio-accumulation of heavy metals with open burn open detonation in Desert tortoise and Mojave ground squirrel. Performed for US Air Force. Lancaster California for Part B RCRA Permit (Jan. 2000)*

Human exposure/risk assessment for DDT DDD, DDE, Dieldrin, Endrin and Toxaphene contaminated site as future school site.- evaluated multipathway hazard and risk from soil

contamination with chlorinated insecticides in elementary school site on agricultural soil for King City School District. Submitted to DTSC (2000)*

Human exposure/risk assessment for exposure of workers in planned commercial buildings to heavy metals, TCE, TCA, PCE, vinyl chloride and xylene by oral and dermal and vapor intrusion. For RWQCB (2000)*

Human exposure/risk assessment for exposure of workers and residents in Mobile Home Park to lead and PAHs. Santa Cruz, CA. Submitted to DTSC (1999)*

Human exposure/risk assessment for exposure of residents and workers to water contaminated with solvents LA CA. Submitted to DTSC. (1999)*

Generated NSRLs and MADLs and risk assessment for Proposition 65 Listed agents generated by pyrolysis of parafins: Defense against Bounty Hunter for multinational retail chain. San Franciso CA. (1999)*

Human exposure/risk for air exposure to students to methyl bromide in agricultural fields: evaluated multipathway hazard for students and residents from air exposure to MeBr from nearby agricultural fields in elementary school site. Ventura County School District for DTSC. (1999)*

Human exposure/risk assessment for DDT DDD, DDE and Toxaphene contaminated site as future school site.- evaluated multipathway hazard and risk from soil contamination with DDT and congeners and Toxaphene in elementary school site. Ventura County School District. (1999)*

Human and Ecological Superfund exposure/risk assessment for residential/worker exposure to US military dump- evaluated multipathway hazard and risk from soil and dust exposure to 60 contaminants in a military medical dump on Oahu. Sixty contaminants included PAHs, PCBs, heavy metals, chlorinated aromatics, pesticides etc. Evaluated damselfly and other endangered species toxicological impacts. Final assessment submitted to Army. (1998)*

Human exposure/risk for air exposure to residents from Metal Recycler (AB2588) - Scoping multipathway hazard and risk from air and dust exposure to asbestos, heavy metals and PCBs. For CAL/EPA ARB (1997)*

Human exposure/risk assessment for residential exposure to steel factory- evaluated multipathway hazard and risk from soil, water, air and dust exposure to heavy metals, solvents and PAHs. Submitted to DTSC. (1997)*

Human exposure/risk assessment for residential exposure to electrical factory- evaluated multipathway hazard and risk from soil, water air and dust exposure to heavy metals and solvents especially perchloroethylene. Submitted to DTSC. (1997)*

Human and ecological exposure/risk assessment for residential exposure to diesel leakage- evaluated multipathway hazard and risk from soil, water air and dust exposure of nearby residential towers to diesel leakage site on Okinawa. Evaluated environmental impacts. Submitted to Army. (1996)*

Human exposure/risk assessment for DDT contaminated site as future school site.- Evaluated impact of soil contamination with DDT and congeners in Tehachapi CA. Submitted to County Environmental Health Authority. (1996)*

Human exposure/risk assessment - evaluated neurological deficits and chronic fatigue due to exposure to ammonium nitrate urea fertilizer and herbicides in possible overspray case. Provided reports. Toxic tort, Iowa. D (1995-1996)*

Human exposure/risk assessment for residential exposure to lead - evaluated multipathway hazard and risk from soil and dust exposure to lead contaminated soil from road traffic in mining area. (1995)*

Human exposure/risk assessments, MSDSs and labeling for a crackle medium art material manufacturer - evaluated multipathway acute and chronic hazard and risk from 9 acrylic monomers, ammonia, glycols and alcohols related to glass stains. For CPSC ATSM4236 / LHAMA certification. (1995)*

Human exposure/risk assessment for residential and occupational DDT, Dieldrin exposure- evaluated multipathway hazard and risk from soil residual insecticides in previous greenhouse/nursery site. Submitted to San Luis Obispo County Environmental Health (1995) *

Human exposure/risk assessment for residential Baygon exposure- evaluated acute and chronic hazard due to overspraying of propoxur in apartment complex. Litigation related. (1995) *

Human exposure/risk assessment for residential benzene and gasoline exposure- evaluated multipathway hazard and risk from BTEXN exposure from leaking gasoline tanks and overspills. Utah County Environmental Health and litigation related. (1994) *

Human exposure/risk assessment for formaldehyde and NOx from Gas Turbine Peaking Plant - assessment for occupants of shops alongside plant. Litigation related (1994)*

Development of Preliminary Remediation Goals for lead in soil at former foundry - PRGs or clean-up levels were determined for soil, based on soil, air and water exposure for workers and residents. Submitted to Los Angeles County Health Authorities (1994)*

Human exposure/risk assessment for Coastal Farmland Site- assessed exposure and risk to workers and residents due to soil contaminated with benzene, toluene and xylene from leaking gas tanks. Submitted to Monterey County Environmental Coordinator. (1993)*

Human exposure/risk assessment for Central Valley Development Site -assessed exposure and risk to workers and residents due to water contaminated with per, tri and dicloroethylene from cleaning solvents. Submitted to Los Angeles County Water Quality Control Board. (1993)*

Defense of PRP in Superfund site - evaluated hazard ranking and health risk based preliminary remediation goals and Ecological impact for 20 hazardous substances including heavy metals, asbestos, chromium, PCBs and solvents in ex-salvage yard. Reports presented at hearings with DTSC. Modesto, CA. D (1992-1993)*

Human exposure/risk and environmental assessment for camp development - evaluated risk to human health from mercury, crystalline silica, particulates and asbestos in road base through inhalation, oral and dermal routes for adults and children with road traffic. Submitted to San Luis Obispo Environmental Coordinator. (1992)*

Residential exposure/risk assessment for DDT in groundwater - performed a DHS baseline multipathway assessment to evaluate water cleanup level at mosquito abatement facility contaminated with DDT. Submitted to Coachella Valley WQCB. (1991)*

Superfund site human exposure/risk assessment - performed Cal Superfund Baseline multipathway public health exposure and risk evaluation for 100 chemicals in pesticide waste pits including pesticides, petroleum solvents, chlorinated solvents, chlorinated aromatics, PCBs, PAHs and metals. Assessment included occupational and residential exposure to soil, air and water by all routes. Submitted to CAL DTSC. (1991)*

Risk Assessment for benzene release in industrial park- performed risk assessment for workers in buildings near site of release of benzene from petroleum tanks in industrial park . Submitted to local Air Pollution Control Board (1990)*

Residential exposure to DBCP in groundwater - evaluated source and risk due to DBCP below family vineyard in Central Valley. (1991)*

Superfund site human exposure/risk assessment for PRP - performed EPA Superfund exposure and risk evaluation for occupational exposure to 61 industrial contaminants at partially remediated drum recycling site vs all routes. Contaminants included petroleum solvents, chlorinated solvents and PCBs, PAHs, chlorobenzenes, pesticides and metals. Assessment used for litigation involving CAL DTSC. (1991-1992)*

Occupational pesticide exposure - assessment of exposure and risk with inhalation exposure to pyrethrum pesticide. Used in litigation defense. (1991)*

Occupational pesticide exposure - assessment of exposure and risk with inhalation and dermal exposure to phosdrin during cyclone application of insecticide. Used in litigation support. (1991)*

Residential pesticide exposure - measured air concentrations in home and produced exposure/risk assessment and extrapolations to evaluate cause of childhood disease vs. exposure to Baygon insecticide. Used in litigation defense (1991-1992)*

Human exposure/risk assessment for pesticide use in planned golf course - evaluated hazard of turf pesticide and construction activities on drinking water reservoir as part of an expanded CEQA EIR for 18 hole golf course with 300 unit housing development. Submitted to San Luis Obispo County Environmental Coordinator. (1990)*

Human exposure/risk assessment for asbestos and mercury exposure - evaluated risk of exposure to mercury and asbestos in roads with mine tailings. Expanded CEQA EIR for housing development. Submitted to San Luis Obispo Environmental Coordinator. (1989)*

Criteria Document on residential exposure/risk for Hexachlorobenzene - Criteria Document included literature review and multipathway exposure and risk assessment for HCB. Submitted to Health and Welfare Dept., Canada (1989)*

Office workers pesticide exposure - produced exposure/risk assessment for occupational exposure to PCO pesticide residues of organophosphate pesticide in offices. Used in litigation defense. (1989)*

Dermal exposure/risk assessment for PCO household exposure - performed evaluation of dermal exposure of child to carpet PCO organophosphate residues. Submitted to EPA OPP Tox Branch (1988)*

Toxicology hazard evaluation - provided litigation support for occupational exposure to PCBs in transformer fire in One Market Plaza fire. Report. Toxic tort. SF. P (1989)*

Multipathway Air Toxics Risk Assessments- AB2588

Refined AB2588 Risk Assessment - performed CAPCOA risk assessment for Laymac natural gas lease site involving 10 sources and 9 toxicant. Submitted to Kern Co. APCD (l99l)*

Refined AB2588 Risk Assessment - performed CAPCOA risk assessment for Surgitek breast implant manufacture plant involving 3 sources/ 5 toxins. Submitted to SLO Co. APCD (l99l)*

Screening AB2588 Risk Assessment - performed CAPCOA risk assessment for Salz tannery involved 2 sources and 3 toxins. Submitted to Monterey Co. APCD (l99l)*

Screening AB2588 Risk Assessment - performed CAPCOA risk assessment for Failsafe Fiberglass Tank manufacturer, involved inventory and exposure risk assessment for styrene. Submitted to SLO APCD. (l99l)*

Recent Regulatory Toxicology and Critical Review

MSDS sheets for 4 major cosmetic and skin-care companies including:, 4 hand and foot creams, 12 lip color agents, 25 hair products and 3 air brush products. (2002-2003)*

ATSDR Medical Management Guidelines (MMGs) for Methyl Isocyanate and Sodium and Calcium Hypochlorite (2002)*

ATSDR Toxicological Profile Review for Hexachlorobezene (2001)*

Toxicological Profile for EU for major companies line and wrinkle make-up. Performed as Sub-contract to BioScreen Testing . (2001)*

ATSDR Skin Lesion Case Study Monograph for MDs – expanded and updated 90 page monograph on occupational and environmental skin lesions including toxic and allergic responses, mechanisms and treatment. (2001)*

LHAMA and MSDS sheets for 9 arts materials including: glass stains containing acrylic solutions. Evaluated hazard and risk from acrylic monomers, ammonia, glycols, silicone and alcohols related to glass stains, crackle medium, etc. For CPSC ATSM4236 / LHAMA certification. (l995-2000)*

MSDS sheets for Citrus hand cleaner and zinc skin ointments – (2000)*

Toxicology Profile for EU for Chromacolor UV Screen Ink – performed as sub-contract to BioScreen Testing. (2000)*

Peer Reviewer for EPA ATSDR Monographs on Toluene and S02 - provided scientific support for development of most complete EPA toxicology monographs. (l998)*

Evaluation of toxicology data base and regulatory support - evaluated toxicology data and developed recommendations to support EPA registration of fumigant with incomplete data base. (l994)*

Human exposure/risk assessment for Coastal Farmland Site- assessed exposure and risk to workers and residents due to soil contaminated with benzene, toluene and xylene from leaking gas tanks. Submitted to Monterey County Environmental Coordinator. (l993)*

Human exposure/risk assessment for Central Valley Development Site -assessed exposure and risk to workers and residents due to water contaminated with per, tri and dicloroethylene from cleaning solvents. Submitted to Los Angeles County Water Quality Control Board. (1993)*

Defense of PRP in Superfund site - evaluated hazard ranking and health risk based preliminary remediation goals and Ecological impact for 20 hazardous substances including heavy metals, *asbestos*, chromium and PCBs and other chlorinated and petroleum based solvents in ex-salvage yard. Expert for environmental law firm. Reports presented at hearings with DTSC. Modesto, CA. D (1992-1993)*

Environmental assessment for Maquilidora plant effluent - evaluated environmental and human health risk from spent solvent released to environment and arsenic contamination. (1992)*

Human exposure/risk and environmental assessment for camp development - evaluated risk to human health from mercury, crystalline silica, particulates and asbestos in roadbase through inhalation, oral and dermal routes for adults and children with road traffic. Submitted to San Luis Obispo Environmental Coordinator. (1992)*

Residential exposure/risk assessment for DDT in groundwater - performed a DHS baseline multipathway assessment to evaluate water cleanup level at mosquito abatement facility contaminated with DDT. Submitted to Coachella Valley WQCB. (1991)*

Superfund site human exposure/risk assessment - performed Cal Superfund Baseline multipathway public health exposure and risk evaluation for 100 chemicals in pesticide waste pits including chlorinated pesticides, petroleum solvents, chlorinated solvents and PCBs, PAHs and metals. Assessment included occupational and residential exposure to soil, air and water by all routes. Submitted to CAL DTSC. (1991)*

Risk Assessment for benzene release in industrial park- performed risk assessment for workers in buildings near site of release of benzene from petroleum tanks in industrial park . Submitted to local Air Pollution Control Board (1990)*

Residential exposure to DBCP in groundwater - evaluated source and risk due to DBCP below family vineyard in Central Valley. (1991)*

Superfund site human exposure/risk assessment for PRP - performed EPA Superfund exposure and risk evaluation for occupational exposure to 61 industrial contaminants at partially remediated drum recycling site vs all routes. Contaminants included petroleum solvents, chlorinated solvents and PCBs, PAHs, pesticides and metals. Assessment used for litigation involving CAL DTSC. (1991-1992)*

Occupational pesticide exposure - assessment of exposure and risk with inhalation exposure to pyrethrum pesticide. Used in litigation defense. (1991)*

Occupational pesticide exposure - assessment of exposure and risk with inhalation and dermal exposure to phosdrin during cyclone application of insecticide. Used in litigation support. (1991)*

Residential pesticide exposure - measured air concentrations in home and produced exposure/risk assessment and extrapolations to evaluate cause of childhood disease vs exposure to Baygon insecticide. Used in litigation defense (1991-1992)*

Human exposure/risk assessment for pesticide use in planned golf course - evaluated hazard of turf pesticide and construction activities on drinking water reservoir as part of an expanded CEQA EIR for 18 hole golf course with 300 unit housing development. Submitted to San Luis Obispo County Environmental Coordinator. (1990)*

Human exposure/risk assessment for asbestos and mercury exposure - evaluated risk of exposure to mercury and asbestos in roads with mine tailings. Expanded CEQA EIR for housing development. Submitted to San Luis Obispo Environmental Coordinator. (1989)*

Criteria Document on residential exposure/risk for HCB - Criteria Document included literature review and multipathway exposure and risk assessment for HCB. Submitted to Health and Welfare Dept., Canada (1989)*

Laboratory solvent, pesticide exposure - evaluated medical reports, produced exposure/risk assessment for technician exposure to various pesticides. Used in litigation defense. (1989)*

Office workers pesticide exposure - produced exposure/risk assessment for occupational exposure to PCO pesticide residues of organophosphate pesticide in offices. Used in litigation defense. (1989)*

Dermal exposure/risk assessment for PCO household exposure - performed evaluation of dermal exposure of child to carpet PCO organophosphate residues. Submitted to EPA OPP Tox Branch (1988)*

DHS Arts hazards risk assessments - developed risk assessment methods and evaluated 5 school art materials for elementary school use. Submitted to DHS Arts Hazards Program. (1988)*

Recent Litigation Support and Expert Witness

Occupational exposure to isocyanates from plating and surfacing- Irritation and lung effects (P) Ventura CA (2002-3)*

Exposure of consumer to acid on skin - (P) LA CA (2002)*

Exposure of pre-school to lead- CNS claims in a school exposure to lead. (D) LA CA (2002)*

Occupational exposure to Propetamphos-evaluating neurological effects leading to automobile crash associated with flea spray in office building. (P) LA CA (2001)*

Occupational exposure to Dursban – evaluated CNS claims in a janitorial exposure to ant spray. Court Testimony (D) Santa Rosa CA. (2001)*

Residential exposure to petroleum products in sewer – evaluated possible effect of crude oil disposal in nearby sewer on Crohne's disease. Court Testimony. (D) LA CA (2001)*

Residential exposure to cleaning products- evaluated dermal and pulmonary effects due to auto rug cleaner. Report. D Reno Nevada (D) (2001)*

Occupational exposure to gasses- evaluated exposure and pulmonary effects due to SO2 and Chlorine exposure. (P). Tulare, CA. (2001)*

Home/office exposure to pesticides – evaluated exposure and aplastic anemia with exposure to acephate .Deposition. (P). LA CA (2001)*

School exposure to pesticides – evaluated exposure and allergic effects in student exposure to pyrethrim and TCA aerosols in classrooms. Deposition and trial. (P) LA CA (2000)*

Occupational solvent exposure – evaluated exposure of spray painter to solvents and intoxication leading to fall. (D) San Diego CA (2000)*

Occupational exposure to gluteraldehyde – evaluated exposure and risk due to occupational exposure of office worker to clean-up products. (P) San Diego CA (2000)*

Mold contamination in hospital – evaluated risk of exposure to molds due to water damage in hospital. (D) Ventura CA (2000)*

Occupational drift from aerial application of Dursban – evaluated toxic effects of chlorpyrifos drift on farm workers. (D) LACA (1999)*

Occupational exposure to polyurethane floor sealant – evaluated potential of isocyanates and other ingredients in causation of multiple myeloma/adenocarcinoma. Report. (D) LA CA (1999)*

Residential exposure to leather cleaner – evaluated severe erythema reaction after exposure to leather cleaner with multiple ingredients. Report and deposition. (D) LA CA (1999)*

Proposition 65 defense for large retailer with scented candles- produced NSRLs and MADLs for benzene, carbon monoxide, soot and carbon black and risk assessment for candle emissions. (D) SF CA (1999)*

Performed as President of Skinner Associates - P = Plaintiff; D = Defendant

OPEN LITERATURE PUBLICATIONS

Skinner, C.S. and W.W. Kilgore -1978 -Development of an Animal Model for Prediction of Agricultural Field Re-Entry Hazard. Toxicol. Appl. Pharmacol. 45:234.

Skinner, C.S. and W.W. Kilgore -1982 -Percutaneous Penetration of 14C Parathion in the Mouse: Effect of Anatomical Region. J. Toxicol. Environ. Health 9:483-490.

Skinner, C.S. and W.W. Kilgore -1982 -Application of a Dermal Self Exposure Model to Prediction of Agricultural Re-Entry Hazard. J. Toxicol. Environ. Health 9:461-481

Skinner, C.S. and W.W. Kilgore -1982 -Acute Dermal Toxicities of Various Organophosphate Insecticides in Mice. J. Toxicol. Environ. Health 9:491-497.

Conklin, A.W.,and Skinner, C.S., Felton, T.L. and Sanders, C.L. 1982 -Translocation of Intratracheally Instilled 48V205 in Rats. Tox. Letters 11:199-203.

Gelman, R.A., and Skinner, C.S., 1980 -Percutaneous Penetration and Tissue Distribution of 14C Benzo(a)pyrene in the Mouse. Fed. Proc. 39:3230.

Sanders, C.L.,and Skinner, C.S., and Gelman, R.A. -1984 - Percutaneous Absorption of 7, 10 14C Benzo(a)pyrene and 7, 12 14C Dimethylbenz-anthracene in Mice. Environ. Res. 33:353 - 360.

Skinner, C.S.,and Klotzsche C. -1984 -"Toxicology of Acaricides," in Ullmann's Encyclopedia of Technical Chemistry, 5th Edition.

Art Materials (LHAMA) Risk Assessment For Acrylic Stains. C S Skinner, B L Rope and R E Sullivan–March 1999-The Toxicologist. 48: 399Abs 1882

RECENT PRESENTATIONS

EPA Task Force: Superfund Dermal Risk Assessment Guidelines: Dec 12 1998

Hazards of Lead Paint. Program Sponsored by State Bar of California Real Property Section, Environmental Subsection. Feb. 22 1995. Century City , CA.

Underground Storage Tank Conference: Cal. State Water Resources Control Board: Topic - Risk Assessment of Petroleum Hydrocarbons - March 1994, San Diego CA.

Cal Poly Industrial Technology Meeting: Toxicology and Industrial Hygiene - Nov 1990. San Luis Obispo CA.

RISK ASSESSMENT REFERENCES

Project: Residential and Occupational Health Risk Assessment in former metal plating site in Sacramento-evaluation involving heavy metals and 1,2DCA. Assessment required soil and water exposure assessment and vapor intrusion modeling and shallow and deep soil profiles. Fate and transport study also performed. Performed for AGE Nuel Henderson (209) 467 1006 (ongoing)

Project: Environmental exposure/hazard assessment at Air Force Base for exposure and bio-accumulation of heavy metals with open burn open detonation in Desert tortoise and Mojave ground squirrel. Performed for US Air Force. Lancaster California for Part B RCRA Permit. Geofon contractor. Garrett Weiss. (916) 681 3601. (Jan. 2000)

Project:. Human exposure/risk assessment for exposure of students as residents in school site. Contaminants included 7 chlorinated pesticides. King City CA. School District. Performed with Earth Systems Pacific. Tim Conroy (805) 544 3276 Submitted to DTSC (May 2000)

Project:. Human exposure/risk assessment for exposure of workers and residents in Mobile Home Park to lead and PAHs. Santa Cruz, CA. Performed for Weber-Hayes Geologists. Watsonville CA. (831) 722 1159. Submitted to DTSC (Sept. 1999)

Project: Residential human multipathway health risk assessment for heavy metals and solvents in factory site. Client: Mark Blair EMC Huntington Station CT. (203) 924 9544. Submitted to CAL/EPA DTSC (June 1999)

Project:. Human exposure/risk for air exposure to students to methyl bromide in agricultural fields: evaluated multipathway hazard for students and residents from air exposure to MeBr from nearby agricultural fields in elementary school site. Performed for England, Whitfield et. al. Oxnard, CA. M. Kahn. (805) 485 9627. Submitted to Ventura County School District. (March 1999)

Project. Human exposure/risk assessment for DDT DDD, DDE and Toxaphene contaminated site as future school site.- March 1999. Evaluated multipathway hazard and risk from soil contamination with DDT and congeners and toxaphene in elementary school site. Performed for England, Whitfield et. al. Oxnard, CA. M. Kahn. (805) 485 9627. Submitted to Ventura County School District. (April 1999)

Project: Refined Residential and Worker Human Multipathway Health Risk Assessment for 60 hazardous materials in military Superfund site. Client: Ernest Shih. Brewer Environmental. Honolulu, HI. 96817. (808) 832 7900 Authority: U.S. Army (Nov 1997)

Project: Residential Human Multipathway Health Risk Assessment for PAHs and BTEX in petroleum release site. Client: Ernest Shih. Brewer Environmental. Honolulu, HI. 96817. (808) 832 7900 Authority: U.S. Army (Sept 1996)

Project: Preliminary Residential Human Multipathway Health Risk Assessment for 60 hazardous materials in Navy Clean Assessment of Army medical dump. Client: Ernest Shih. Brewer Environmental. Honolulu, HI. 96817. (808) 832 7900 Authority: U.S. Army (Oct. 1995)