

APPENDIX B
LABORATORY TEST PROGRAM

APPENDIX B

LABORATORY TESTING PROGRAM

Tests were conducted in our laboratory on representative soil samples for the purpose of classification and evaluation of their relevant physical characteristics and engineering properties. The amount and selection of tests were based on the geotechnical requirements of the project. Test results are presented herein and on the Logs of Borings in Appendix A, *Field Exploration*. The following is a summary of the laboratory tests conducted for this project.

Moisture Content and Dry Density

Results of moisture content and dry density tests, performed on relatively undisturbed ring samples were used to aid in the classification of the soils and to provide quantitative measure of the *in situ* dry density. Data obtained from this test provides qualitative information on strength and compressibility characteristics of site soils. For test results, see the Logs of Borings in Appendix A, *Field Exploration*.

Expansion Index Test

A representative bulk sample was tested to evaluate the expansion potential of the near surface material encountered at the site. The test was conducted in accordance with California Building Code (CBC, 2001). The test result is presented in the following table.

Table No. B-1, Expansion Index Test Results

Boring No.	Depth (feet)	Soil Description	Expansion Index	Expansion Potential
BH-2	0-5	Sandy Silt (ML)	13	Very Low

Soil Corrosivity

A representative soil sample was tested to determine minimum electrical resistivity, pH, and chemical content, including soluble sulfate and chloride concentrations. The purpose of these tests was to determine the corrosion potential of site soils when placed in contact with common construction materials. These tests were performed by EGL, Santa Fe Springs, California. The test results received from EGL are included in the following table.



Table No. B-2, Soil Corrosivity Test Results

Sample Location (Boring/Depth)	pH (CALTRANS 643)	Soluble Sulfate (CALTRANS 417) (ppm)	Soluble Chlorides (CALTRANS 422) (% by weight)	Saturated Resistivity (CALTRANS 532) Ohm-cm
BH-2/0-5	8.38	0.006	215	2500

Grain-Size Analysis

To assist in classification of soils, mechanical grain-size analyses and hydrometer analysis were performed on two selected samples. Testing was performed in general accordance with the ASTM test method D-422. Grain-size curves are shown in Drawings No. B-1, *Grain Size Distribution Results*.

Maximum Dry Density Test

Laboratory maximum dry density-moisture content relationship tests was performed on a representative bulk sample. This test was conducted in accordance with ASTM S test method D-1557. The test results are presented on Drawing No. B-2 *Moisture-Density Relationship Results*.

Direct Shear

Direct shear test was performed on two relatively undisturbed samples at soaked moisture condition. For these tests, three specimens from each sample contained in brass sampler rings were placed, one at a time, directly into the test apparatus and subjected to a range of normal loads appropriate for the anticipated conditions. The samples were then sheared at a constant strain rate. Shear deformation was recorded until a maximum of about 0.25-inch shear displacement was achieved. Ultimate strength was selected from the shear-stress deformation data and plotted to determine the shear strength parameters. For test data, including sample density and moisture content, see Drawings No. B-3, *Direct Shear Test Results*, and in the following table.



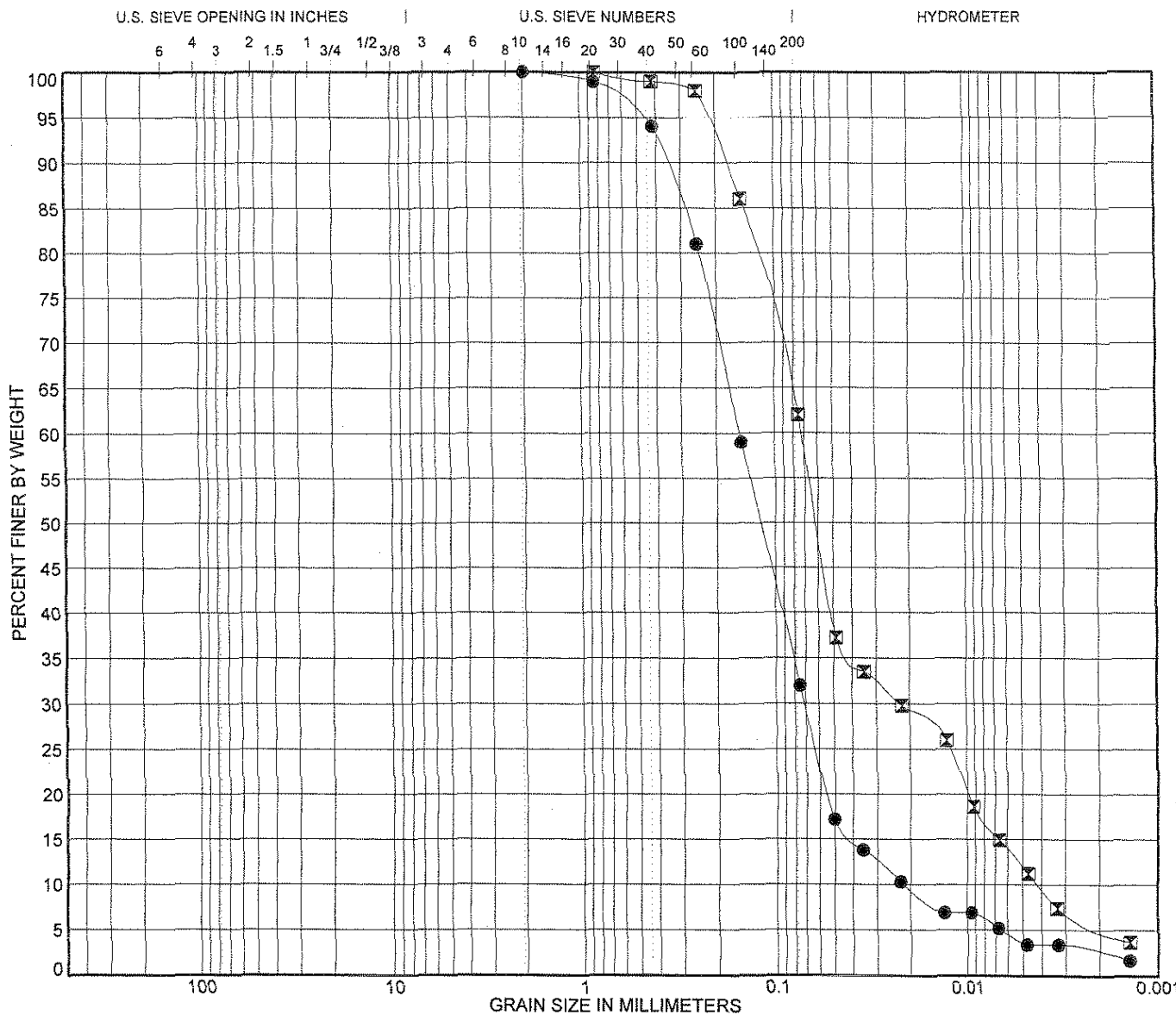
Table No. B-3, Direct Shear Test Results

Boring No.	Depth (feet)	Soil Classification	Peak Strength Parameters	
			Friction Angle (degrees)	Cohesion (psf)
BH-1	5.0	Silty Sand (SM)	30	100
BH-2	7.0	Silt (ML)	26	500

Sample Storage

Soil samples presently stored in our laboratory will be discarded 30 days after the date of this report, unless this office receives a specific request to retain the samples for a longer period.





COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu		
● BH-1	5	SILTY SAND (SM)				1.53	7.08		
☒ BH-2	7	SILT (ML)				1.67	17.23		
Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● BH-1	5	2	0.153	0.071	0.022	0.0	68.0	32.0	
☒ BH-2	7	0.84	0.072	0.023	0.004	0.0	38.0	62.0	

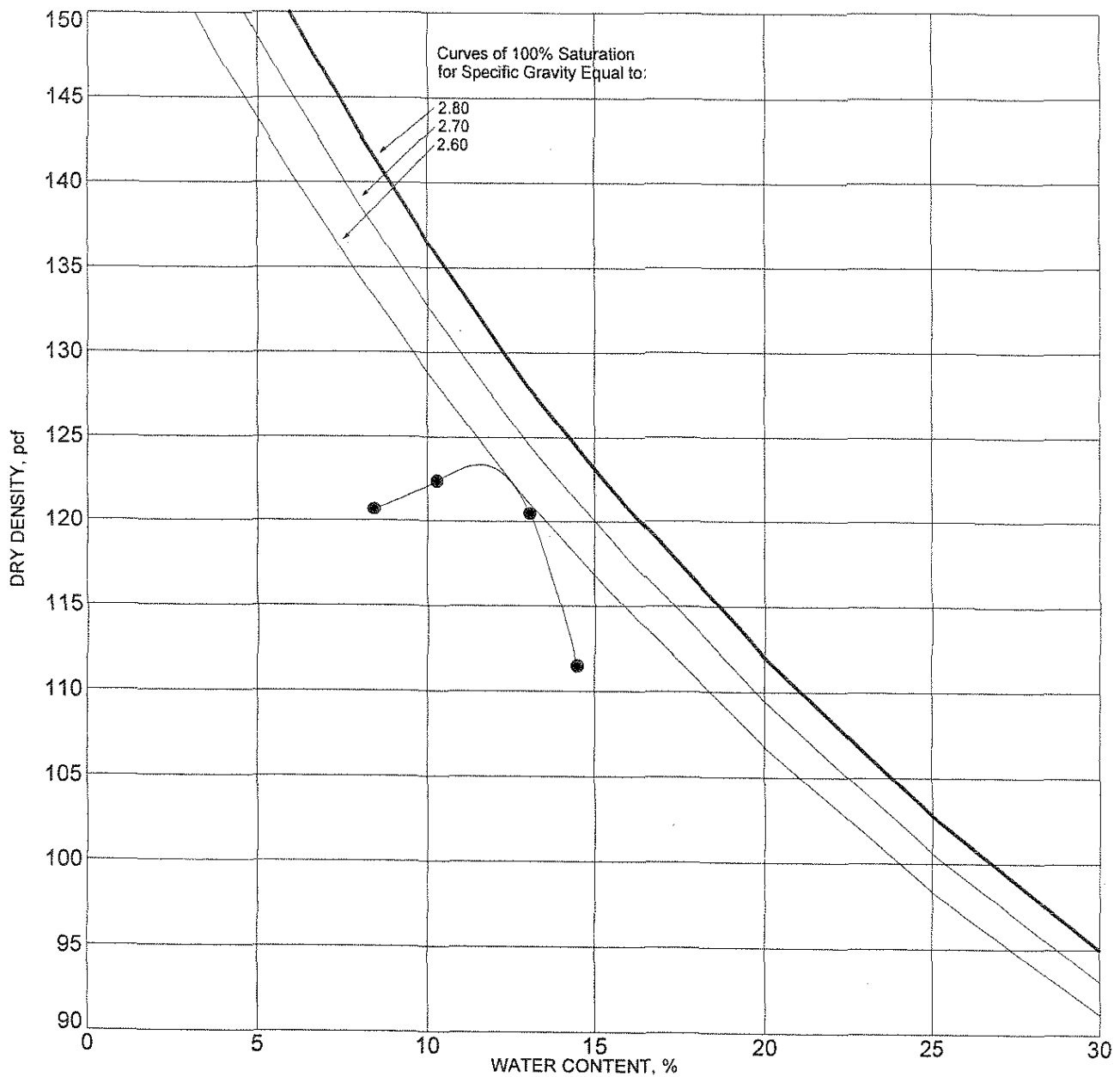
GRAIN SIZE DISTRIBUTION RESULTS



Converse Consultants

Project Name
PROPERTY LINE WALL
AT ATLAS METALS
FOR: SYSTEMS OPERATION SERVICES

Project No. 07-31-252-01
Drawing No. B-1



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	BH-2	0-5	SANDY SILT (ML)	D1557 Method B	11.5	123

MOISTURE-DENSITY RELATIONSHIP RESULTS

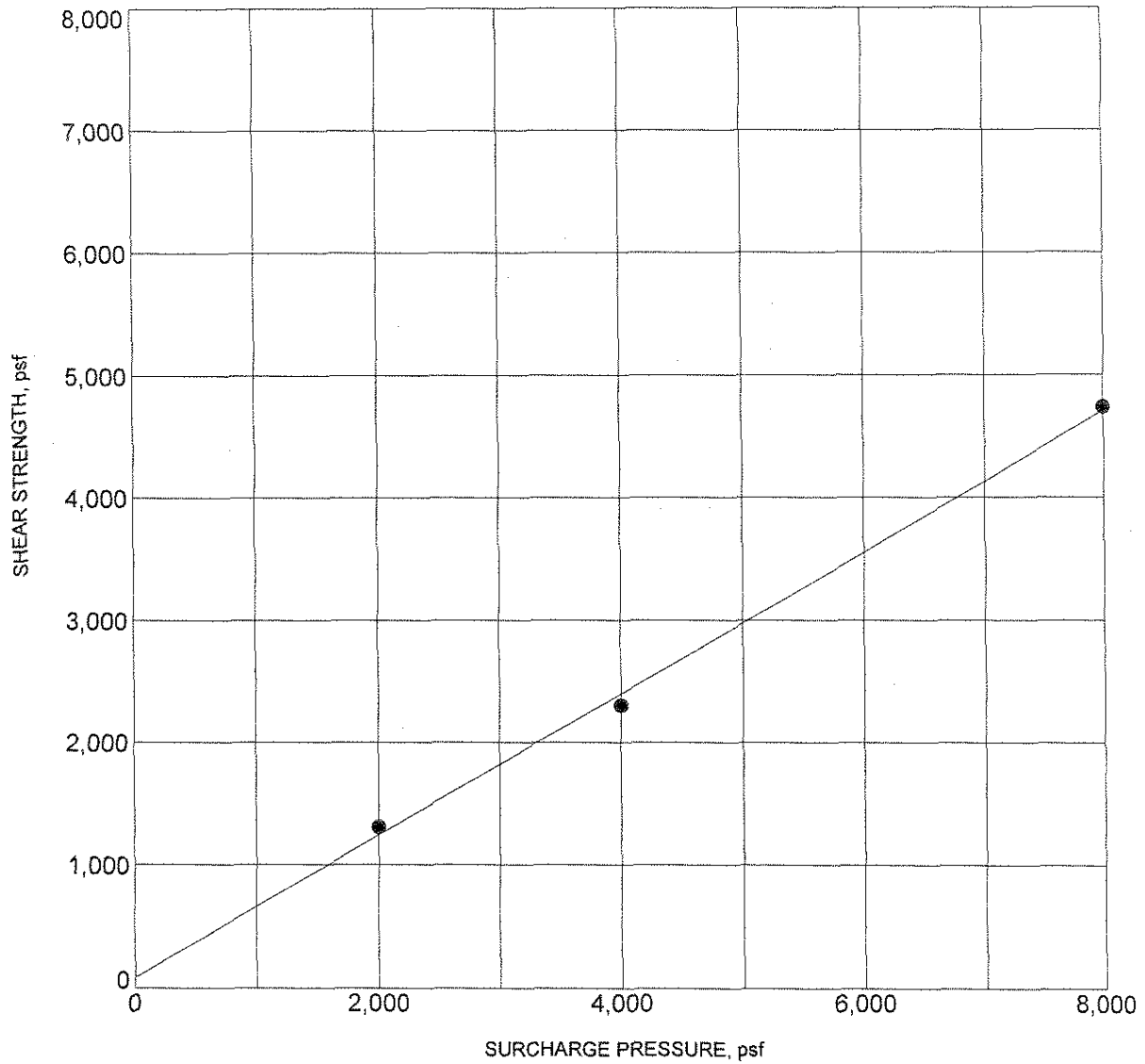


Converse Consultants

Project Name
PROPERTY LINE WALL
AT ATLAS METALS
FOR: SYSTEMS OPERATION SERVICES

Project No.
07-31-252-01

Drawing No.
B-2



BORING NO.	: BH-1	DEPTH (ft)	: 5
DESCRIPTION	: SILTY SAND (SM)		
COHESION (psf)	: 100	FRICION ANGLE (degrees):	30
MOISTURE CONTENT (%)	: 14.9	DRY DENSITY (pcf)	: 98.3

NOTE: Ultimate Strength.

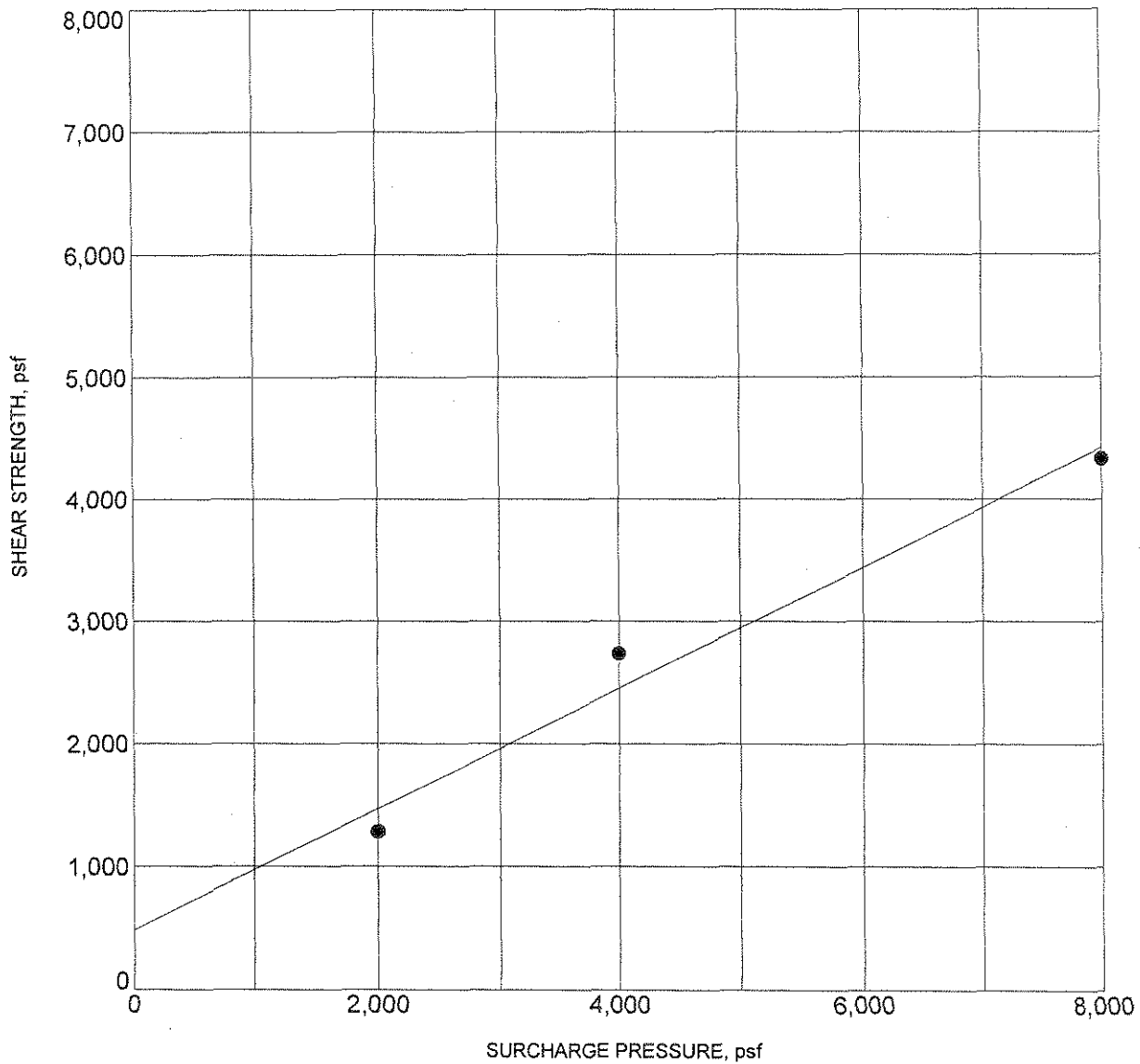
DIRECT SHEAR TEST RESULTS



Converse Consultants

Project Name
PROPERTY LINE WALL
AT ATLAS METALS
FOR: SYSTEMS OPERATION SERVICES

Project No. Drawing No.
07-31-252-01 B-3



BORING NO. :	BH-2	DEPTH (ft) :	7
DESCRIPTION :	SILT (ML)		
COHESION (psf) :	500	FRICION ANGLE (degrees):	26
MOISTURE CONTENT (%) :	24.1	DRY DENSITY (pcf) :	99.3

NOTE: Ultimate Strength.

DIRECT SHEAR TEST RESULTS



Converse Consultants

Project Name
PROPERTY LINE WALL
AT ATLAS METALS
FOR: SYSTEMS OPERATION SERVICES

Project No. Drawing No.
07-31-252-01 B-4

APPENDIX C
RECOMMENDED EARTHWORK SPECIFICATIONS

APPENDIX C

RECOMMENDED EARTHWORK SPECIFICATIONS

C1.1 Scope of Work

The work includes all labor, supplies and construction equipment required to construct the building pads in a good, workmanlike manner, as shown on the drawings and herein specified. The major items of work covered in this section include the following:

- Site Inspection
- Authority of Geotechnical Engineer
- Site Clearing
- Excavations
- Preparation of Fill Areas
- Placement and Compaction of Fills
- Observation and Testing

C1.2 Site Inspection

1. The Contractor shall carefully examine the site and make all inspections necessary, in order to determine the full extent of the work required to make the completed work conform to the drawings and specifications. The Contractor shall satisfy himself as to the nature and location of the work, ground surface and the characteristics of equipment and facilities needed prior to and during prosecution of the work. The Contractor shall satisfy himself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered. Any inaccuracies or discrepancies between the actual field conditions and the drawings, or between the drawings and specifications must be brought to the Owner's attention in order to clarify the exact nature of the work to be performed.
2. The *Geotechnical Investigation Report* by Converse Consultants may be used as a reference to the surface and subsurface conditions on this project. The information presented in this above referenced report is intended for use in design and is subject to confirmation of the conditions encountered during construction. The exploration logs and related information depict subsurface conditions only at the particular time and location designated on the boring logs. Subsurface conditions at other locations may differ from conditions encountered at the exploration locations. In addition, the passage of time may result in a change in subsurface conditions at the exploration locations. Any review of this information shall not relieve



the Contractor from performing such independent investigation and evaluation to satisfy himself as to the nature of the surface and subsurface conditions to be encountered and the procedures to be used in performing his work.

C1.3 Authority of the Geotechnical Engineer

1. The Geotechnical Engineer will observe the placement of compacted fill and will take sufficient tests to evaluate the uniformity and degree of compaction of filled ground.
2. As the Owner's representative, the Geotechnical Engineer will (a) have the authority to cause the removal and replacement of loose, soft, disturbed and other unsatisfactory soils and uncontrolled fills; (b) have the authority to approve the preparation of native ground to receive fill material; and (c) have the authority to approve or reject soils proposed for use in building areas.
3. The Civil Engineer and/or Owner will decide all questions regarding (a) the interpretation of the drawings and specifications, (b) the acceptable fulfillment of the contract on the part of the contractor and (c) the matters of compensation.

C1.4 Site Clearing

1. Clearing and grubbing shall consist of the removal from building areas to be graded: all existing pavement, utilities, and vegetation.
2. Organic and inorganic materials resulting from the clearing and grubbing operations shall be hauled away from the areas to be graded.

C1.5 Excavations

1. Based on observations made during our field explorations, the surficial soils can be excavated with conventional earthwork equipment.

C1.6 Preparation of Fill Areas

1. All organic material, organic soils, incompetent alluvium, undocumented fill soils and debris should be removed from the proposed construction area.
2. After the required removals have been made, the exposed native earth materials shall be excavated to provide a zone of structural fill for the support of footings, slabs-on-grade, exterior flatwork. All loose, soft or disturbed earth materials should be removed from the bottom of excavations before placing structural fill. As a minimum, the on site soils in the at grade building areas and to five feet beyond the building limits and appendages shall be removed and recompacted.



3. The subgrade in all areas to receive fill shall be scarified to a minimum depth of six inches, moisture-conditioned to between two and four percent over the optimum moisture, and then compacted to at least 90 percent of maximum dry density as determined by ASTM test method D1557. Scarification may be terminated on moderately hard to hard, cemented earth materials with the approval of the Geotechnical Engineer.
4. Compacted fill may be placed on native soils that have been properly scarified and recompacted as discussed above.
5. All areas to receive compacted fill will be observed and approved by the Geotechnical Engineer before the placement of fill.

C1.7 Placement and Compaction of Fills

1. Compacted fill placed for the support of footings, slabs-on-grade, exterior concrete flatwork, and driveways will be considered structural fill. Structural fill may consist of approved onsite soils or imported fill that meets the criteria indicated below.
2. Fill consisting of selected on-site earth materials or imported soils approved by the Geotechnical Engineer shall be placed in layers on approved earth materials. Soils used as compacted structural fill shall have the following characteristics:
 - a. All fill soil particles shall not exceed three inches in nominal size, and shall be free of organic matter and miscellaneous inorganic debris and inert rubble.
 - b. All imported fill materials shall have an Expansion Index (EI) less than 20.
 - c. Fill soils should be compacted to at least 90 percent of maximum dry density (ASTM test method D1557) within two percent of optimum.
 - d. Imported fill materials shall have less than 0.1 percent sulfate salts, if possible. If laboratory test results indicate import fill materials contain more than 0.1 percent sulfate salts, a concrete mix should be designed to resist the sulfate levels indicated by the laboratory test results.
3. Fill soils shall be evenly spread in maximum eight-inch lifts, moisture-conditioned to at least two percent over the optimum moisture, and then compacted to at least 90 percent of maximum dry density as determined by ASTM test method D1557. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer.
4. Representative samples of materials being used as compacted fill will be analyzed in the laboratory by the Geotechnical Engineer to obtain informa-



tion on their physical properties. Maximum laboratory density of each soil type used in the compacted fill will be determined by the ASTM test method D1557.

5. Fill materials shall not be placed, spread or compacted during unfavorable weather conditions. When site grading is interrupted by heavy rain, filling operations shall not resume until the Geotechnical Engineer approves the moisture and density conditions of the previously placed fill.
6. It shall be the Grading Contractor's obligation to take all measures deemed necessary during grading to provide erosion control devices in order to protect site areas and adjacent properties from storm damage and flood hazard originating on this project. It shall be the contractor's responsibility to maintain site in their as-graded form until all slopes are in satisfactory compliance with job specifications, all berms have been properly constructed, and all associated drainage devices meet the requirements of the Civil Engineer.

C1.8 Observation and Testing

1. During the progress of grading, the Geotechnical Engineer will provide observation of the fill placement operations.
2. Field density tests will be made during grading to provide an opinion on the degree of compaction being obtained by the contractor. Where compaction of less than specified herein is indicated, additional compactive effort with adjustment of the moisture content shall be made as necessary until the required degree of compaction is obtained.
3. A sufficient number of field density tests will be performed to provide an opinion to the degree of compaction achieved. In general, density tests will be performed on each one-foot lift of fill, but not less than one for each 500 cubic yards of fill placed.



APPENDIX D

**LIQUEFACTION ANALYSIS/
SEISMICALLY-INDUCED GROUND SETTLEMENT**

APPENDIX D

LIQUEFACTION ANALYSIS/ SEISMICALLY-INDUCED GROUND SETTLEMENT

The liquefaction and dry seismic (dynamic) settlement analysis were performed utilizing blow count (Ring and SPT) data obtained from Boring Nos. BH-1, and BH-2. These analyses were performed in accordance with the method published by Special Publication No. 117 and Southern California Earthquake Center (March 1999). Tokimatsu and Seed (1987) present a simplified method for the evaluation of settlement in sands due to earthquake loading.

Groundwater was encountered during this investigation within a depth of 43 feet below the ground surface. In addition, the site is within a mapped area of potential liquefaction as result of historical groundwater conditions. According to the Seismic Evaluation Report for the South Gate Quadrangle, historical high groundwater is at approximately ten feet below the ground surface.

Although the potential for groundwater returning the historical high conditions is unlikely, we have performed Computer analysis of liquefaction potential with the historical high groundwater condition. This analysis indicates that as a result of moderate to low blow counts there is a potential for liquefaction. The calculated settlement with the historical high groundwater during a DBE is 13.84 inches (see Plate D-1).

Analysis of the dry seismic (dynamic) induced settlement without groundwater indicate that the native soils within 50 feet of the ground surface will be subject to dynamic settlement. Calculations indicate that the expected settlement during the DBE the settlement is 2.66 inches (see Plate D-2). More detailed discussion of our analysis of the potential dry seismic settlement, including differential settlement, is presented in Appendix D, Liquefaction-Analysis.

The differential settlement resulting from seismic induced shaking may be taken as up to ½ of the estimated settlement over horizontal distance of 50 feet.

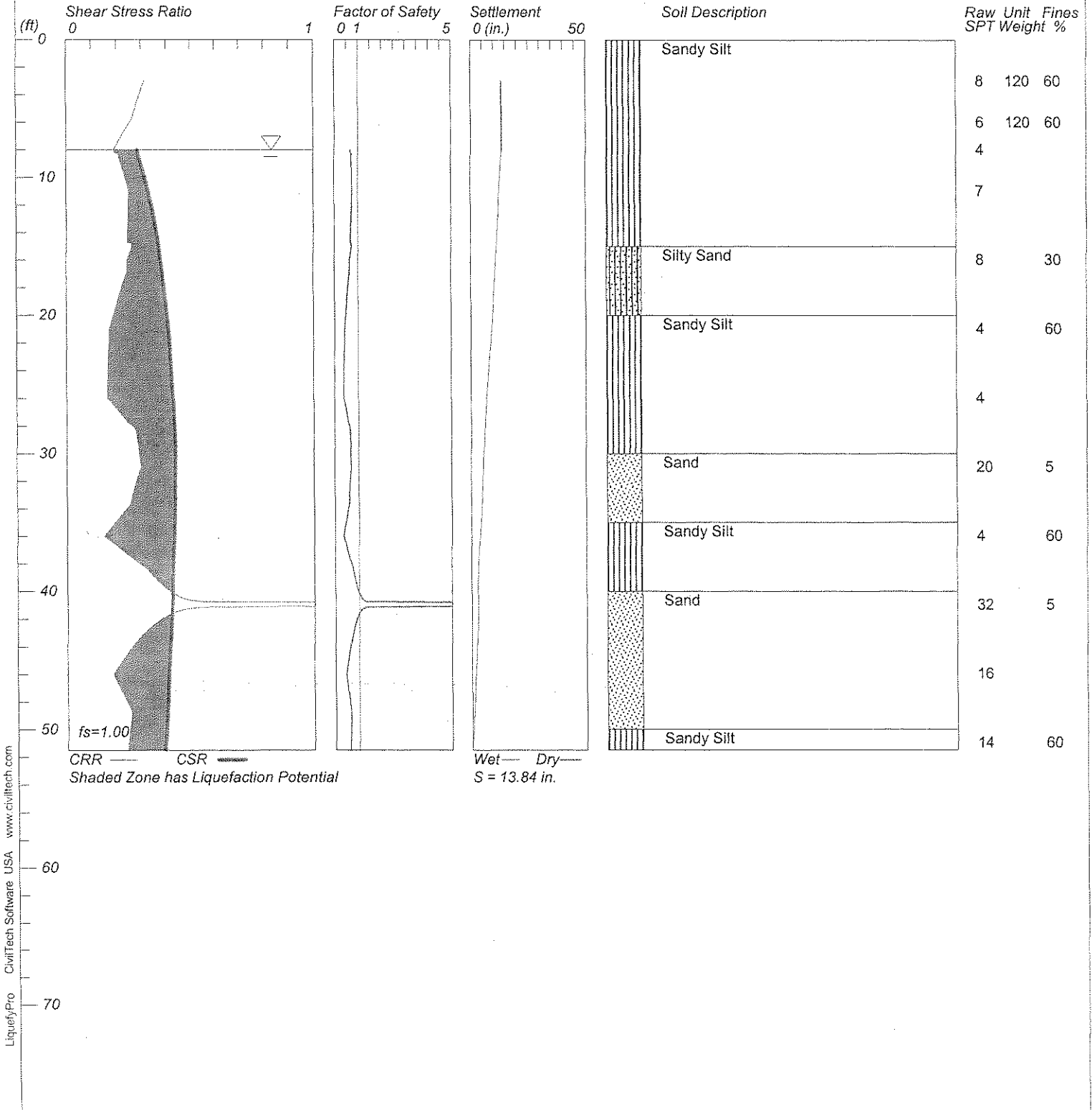


LIQUEFACTION ANALYSIS

Atlas Metals

Hole No.=BH-1 Water Depth=8 ft

Magnitude=6.8
Acceleration=0.45g



LiquefyPro CivilTech Software USA www.civiltch.com

LIQUEFACTION ANALYSIS CALCULATION SHEET
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Input File Name: Atlas Metals
 Title: Atlas Metals
 Subtitle: Proj No. 07-31-252-01

Surface Elev.=n/a
 Hole No.=BH-1
 Depth of Hole= 51.5 ft
 Water Table during Earthquake= 8.0 ft
 Water Table during In-Situ Testing= 43.0 ft
 Max. Acceleration= 0.45 g
 Earthquake Magnitude= 6.8
 User request factor of safty (applied to CSR), fs(user)=1
 fs=user, Plot two CSR (fs=1, fs=user)

Hammer Energy Ratio, Ce=1.5
 Borehole Diameter, Cb=1
 Sampeling Method, Cs=1
 SPT Fines Correction Method: Stark/Olson et al.*
 Settlement Analysis Method: Ishihara / Yoshimine*
 Fines Correction for Liquefaction: Stark/Olson et al.*
 Fine Correction for Settlement: Post-Liq. Correction *
 Average Input Data: Smooth*
 * Recommended Options

Input Data:

Depth ft	SPT	Gamma pcf	Fines %
3.0	8.0	120.0	60.0
6.0	6.0	120.0	60.0
8.0	4.0	120.0	60.0
11.0	7.0	120.0	60.0
16.0	8.0	120.0	30.0
21.0	4.0	120.0	60.0
26.0	4.0	120.0	60.0
31.0	20.0	120.0	5.0
36.0	4.0	120.0	60.0
41.0	32.0	120.0	5.0
46.0	16.0	120.0	5.0
51.0	14.0	120.0	60.0

Output Results:

Settlement of saturated sands=13.78 in.
 Settlement of dry sands=0.06 in.
 Total settlement of saturated and dry sands=13.84 in.
 Differential Settlement=6.920 to 9.134 in.

Depth ft	CRRm	CSRfs w/fs	F.S.	S_sat. in.	S_dry in.	S_all in.
3.00	0.32	0.29	5.00	13.78	0.06	13.84
8.00	0.19	0.29	0.66*	13.78	0.00	13.78
13.00	0.25	0.35	0.70*	12.08	0.00	12.08
18.00	0.22	0.39	0.56*	10.35	0.00	10.35

23.00	0.17	0.42	0.40*	8.28	0.00	8.28
28.00	0.26	0.43	0.61*	6.18	0.00	6.18
33.00	0.26	0.44	0.60*	4.85	0.00	4.85
38.00	0.29	0.43	0.68*	3.03	0.00	3.03
43.00	0.31	0.42	0.74*	2.47	0.00	2.47
48.00	0.24	0.40	0.59*	1.06	0.00	1.06

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units Depth = ft, Stress or Pressure = tsf (atm), Unit weight = pcf, Settlement

= in.

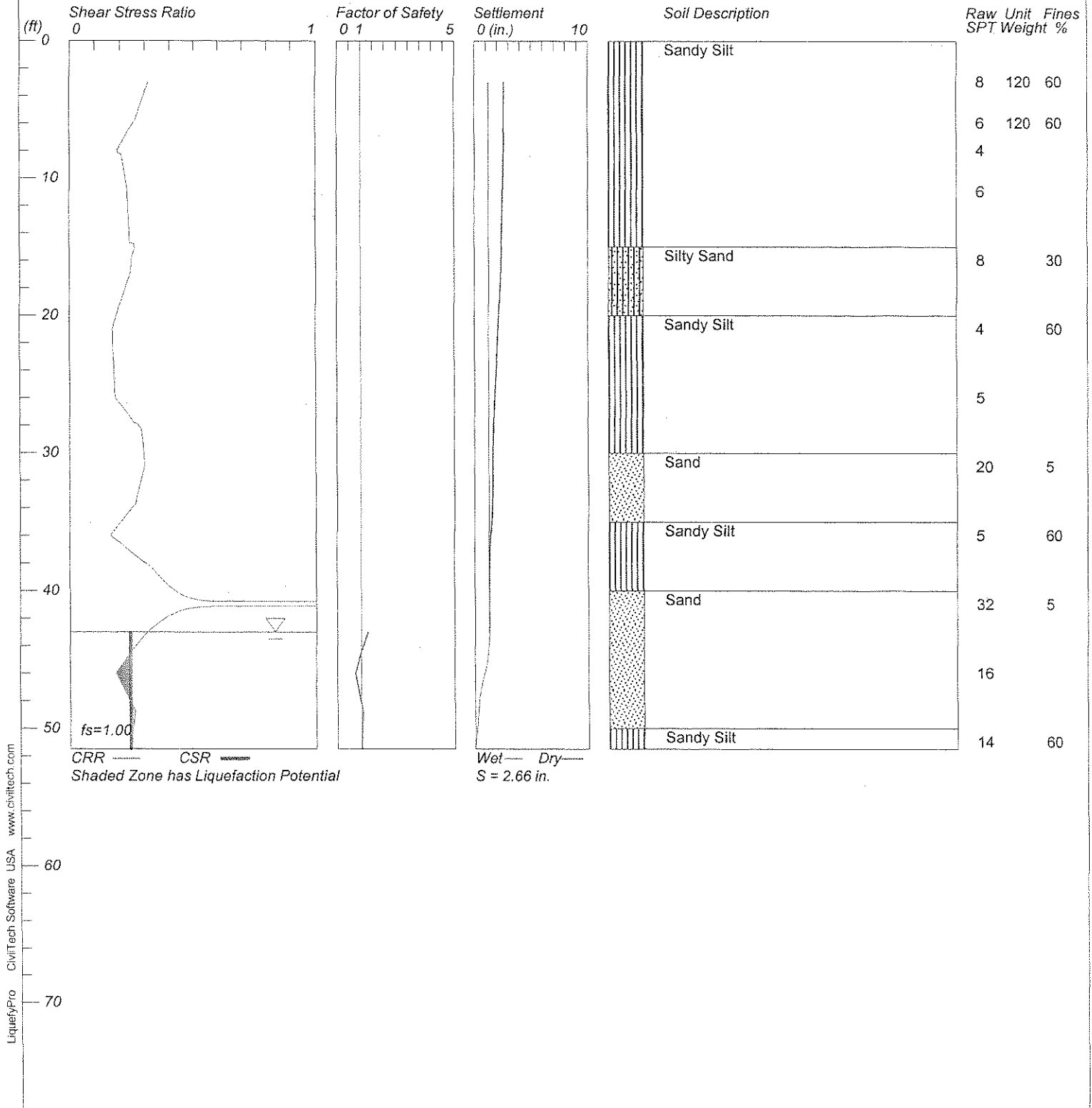
CRRm	Cyclic resistance ratio from soils
CSRfs	Cyclic stress ratio induced by a given earthquake (with user request
Factor of safety)	
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRfs
S_sat	Settlement from saturated sands
S_dry	Settlement from dry sands
S_all	Total settlement from saturated and dry sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Atlas Metals

Hole No.=BH-1 Water Depth=43 ft

Magnitude=6.8
Acceleration=0.45g



LIQUEFACTION ANALYSIS CALCULATION SHEET
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Input File Name: UNTITLED
 Title: Atlas Metals
 Subtitle: Proj No. 07-31-252-01

Surface Elev.=
 Hole No.=BH-1
 Depth of Hole= 51.5 ft
 Water Table during Earthquake= 43.0 ft
 Water Table during In-Situ Testing= 43.0 ft
 Max. Acceleration= 0.45 g
 Earthquake Magnitude= 6.8
 User request factor of safty (applied to CSR), fs(user)=1
 fs=user, Plot two CSR (fs=1, fs=user)

Hammer Energy Ratio, Ce=1.5
 Borehole Diameter, Cb=1
 Sampeling Method, Cs=1
 SPT Fines Correction Method: Stark/Olson et al.*
 Settlement Analysis Method: Ishihara / Yoshimine*
 Fines Correction for Liquefaction: Stark/Olson et al.*
 Fine Correction for Settlement: Post-Liq. Correction *
 Average Input Data: Smooth*
 * Recommended Options

Input Data:

Depth ft	SPT	Gamma pcf	Fines %
3.0	8.0	120.0	60.0
6.0	6.0	120.0	60.0
8.0	4.0	120.0	60.0
11.0	6.0	120.0	60.0
16.0	8.0	120.0	30.0
21.0	4.0	120.0	60.0
26.0	5.0	120.0	60.0
31.0	20.0	120.0	5.0
36.0	5.0	120.0	60.0
41.0	32.0	120.0	5.0
46.0	16.0	120.0	5.0
51.0	14.0	120.0	60.0

Output Results:

Settlement of saturated sands=1.26 in.
 Settlement of dry sands=1.40 in.
 Total settlement of saturated and dry sands=2.66 in.
 Differential Settlement=1.332 to 1.758 in.

Depth ft	CRRm	CSRfs w/fs	F.S.	S_sat. in.	S_dry in.	S_all in.
3.00	0.32	0.29	5.00	1.26	1.40	2.66
8.00	0.19	0.29	5.00	1.26	1.35	2.61
13.00	0.24	0.28	5.00	1.26	1.23	2.49
18.00	0.22	0.28	5.00	1.26	1.04	2.31

23.00	0.17	0.28	5.00	1.26	0.73	1.99
28.00	0.27	0.27	5.00	1.26	0.43	1.69
33.00	0.27	0.26	5.00	1.26	0.33	1.59
38.00	0.30	0.25	5.00	1.26	0.05	1.31
43.00	0.31	0.24	5.00	1.26	0.00	1.26
48.00	0.24	0.24	0.98*	0.38	0.00	0.38

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units Depth = ft, Stress or Pressure = tsf (atm), Unit weight = pcf, Settlement

in.

CRRm	Cyclic resistance ratio from soils
CSRfs	Cyclic stress ratio induced by a given earthquake (with user request
Factor of safety)	
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRfs
S_sat	Settlement from saturated sands
S_dry	Settlement from dry sands
S_all	Total settlement from saturated and dry sands
NoLiq	No-Liquefy Soils

APPENDIX E

**GUIDE SPECIFICATIONS
FOR
DRILLED PILE INSTALLATION**

APPENDIX E

GUIDE SPECIFICATIONS FOR DRILLED PILE INSTALLATION

1. Pile installation shall be performed during continuous observation by Converse Consultants to confirm that the recommended earth materials are penetrated, that dimensions of the installed piles are at least as large as that indicated on the foundation plan, and that pile installation has been performed as specified. The contractor shall provide access and necessary facilities, including droplights, at contractor's expense, to accommodate pile drill-hole observations.
2. Pile installation shall be performed such that compliance with all safety rules and requirements is achieved. Drilling equipment, casing, reinforcement, and other items required for installation shall be kept a safe distance from all overhead utilities, or other equipment, and structures.
3. Piles shall be located as indicated on the drawings. Any pile installed having a center more than 3 inches off plan centerlines will require structural analysis. The cost of such analysis and any work or materials resulting from correcting an error in location of piles shall be borne by the contractor.
4. Pile shafts shall be machine-drilled. Pile shafts shall be plumb to a tolerance of not more than 1 inch in 6 feet.
5. Although not generally expected at the project site, casing may be required to support some of the excavated pile shafts. If caving soils are encountered in backfill soils of existing walls, casing of these pile holes is recommended. When casing is required, the inside diameter of casing shall be larger than the diameter of the pile as indicated on the foundation plans, so that drilling can be accomplished within the casing. Concrete must be placed with a pipe or tremie extending to the bottom of the excavation.
6. At the completion of drilling, secure covers shall be placed over pile excavations. Concrete placement shall begin within 4 hours after completion of drilling. Concrete shall not be allowed to fall freely more than 6 feet. Concrete pumps, tremies or other such devices shall be used to comply with this requirement. Casing (if required) may be slowly raised as the pile shaft is filled with concrete, provided that the bottom of the casing is never less than 2 feet *below* the level of the concrete. Concrete placement shall continue until suitable concrete extends to the top of the pile shaft. The tremie or concrete pump pipe may be raised slowly as the pile shaft is filled with concrete, provided that the bottom of the pipe is never more than 6 feet



above the level of the concrete in dewatered shafts. Concrete placement shall be continuous without interruption, and at such a rate that fresh concrete will not be deposited on concrete hardened sufficiently to form seams or planes of weakness.

7. Pile shafts spaced closer than 5 diameters center-to-center shall be drilled and concreted alternately, allowing at least 12 hours after concrete placement in one shaft before drilling of an adjacent shaft.
8. Reinforcement shall be rigidly installed and secured to prevent movement or dislodgement during concrete placement.
9. In the event that pile installation procedures specified above are not adhered to, the contractor may be required to core the concrete pile to confirm that a continuous concrete pile has been installed. Coring costs shall be borne by the contractor.
10. Any piles deemed defective should be replaced with substitute piles as directed by the Structural Engineer. The cost of installation of such substitute piles will be borne by the contractor. Costs associated with analysis and design of substitute piles shall also be borne by the contractor.



ATTACHMENT F

**SITE-SPECIFIC HEALTH & SAFETY PLAN
FOR WORK TO BE PERFORMED AT ATLAS
IRON & METALS, INC.**

Atlas Iron & Metals, Inc.
10019 South Alameda Street, Los Angeles, California

**Prepared By:
REED International Ltd.
2140 Shattuck Ave, Ste 209
Berkeley, California 94704**

May 30, 2006

Rev 2 - August 7, 2006
Rev 3- June 22, 2007
Rev 4- August 10, 2007

**Atlas Iron and Metals
SITE-SPECIFIC HEALTH & SAFETY PLAN**

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Atlas Iron and Metals
SITE-SPECIFIC HEALTH & SAFETY PLAN

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Atlas Iron and Metals
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- Illness, Injury, and Unusual Occurrence Report
- Inspection Checklist (Field Environment)
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- Safety Health Non-Compliance Form
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- Visitor's Log
- Site Safety Plan Change Form
- Exposure Monitoring Records
- Emergency Response Procedures

Attachment B - CAL/OSHA Heat Advisory

SECTION 1.0
INTRODUCTION

1.0 INTRODUCTION

This site-specific Health and Safety Plan (HASP) establishes the policies and procedures, which protect site personnel and the public from potential hazards posed by the assessment, loading, and removal of recyclable materials in the storage piles at the Atlas Iron and Metals (Atlas) property located in Los Angeles, California. All project activities will be conducted in a manner that minimizes the probability of injury, accident or incident occurrence. All personnel, contractors, and visitors are required to read and sign the HASP prior to admittance to the site.

1.1 SITE DESCRIPTION AND CONTAMINANT CHARACTERISTICS

The Atlas site is located at 10019 South Alameda Street, in the City of Los Angeles, California (Figure 1). Access to the site is from Alameda Street. Atlas sorts and prepares for recycling metals of various types at the site.

In April 2003 and April 2004, DTSC conducted sampling at the Atlas site. DTSC collected samples of the two piles. On February 25, 2006, EPA collected samples from both piles. The EPA report identifies that samples from both piles contained material exceeding hazardous waste levels for copper, lead, and zinc (the California TTLC), that the EPA TCLP limit for lead was exceeded, and that levels of PCB and Poly Aromatic Hydrocarbons (PAH) . In addition, the EPA has identified that the samples contained materials with particle diameter of less than 0.1 mm, and some non-regulatory Preliminary Remediation Goals (PRGs) were exceeded for the materials lead and other heavy metals and some polynuclear aromatics (PNAs).

Activities at the site will include the grading of existing materials, backfill with certified clean fill, construction of a 5 inch thick reinforced concrete cap, and removal and disposal of materials from the existing block wall, and construction of a new 10 foot high post and panel wall and grade beam for same.

1.2 IONIZING RADIATION

The entire site was swept by the EPA START contractor prior to removal of the piles in August 2006. All readings were at or below typical background levels. No further evaluation will be conducted at this site.

1.3 SCHEDULE FOR REMEDIAL ACTIVITIES

The schedule for activities wherein hazardous monitoring activities of the site specific Health and Safety Plan will be utilized will be concluded within one week of the start of grading and backfilling. The entire range of activities will be completed within 90 days of the start of the Final Phase of Remediation. Work will begin as soon as the Atlas Work Plan is approved by DTSC.

SECTION 2.0

KEY PERSONNEL AND MANAGEMENT

2.0 KEY PERSONNEL AND MANAGEMENT

System Operation Services Inc (SOS) is the contractor selected by Atlas to perform the work on this site. SOS maintains a policy of providing its employees, subcontractors, and authorized visitors with information and procedures to protect them and the community from adverse effects that might result from work at a site involving hazardous agricultural and household supplies. SOS is responsible for the health and safety of its employees. Each party may adopt this health and safety plan, modify it, or supply another plan. All personnel adopting this plan will read and comply with all health and safety procedures set forth in this HASP. Their signatures serve as an acknowledgment of their understanding of these policies and procedures.

The Health and Safety Organization structure is presented below:

SOS Project Manager (PM)	Dr. Larry L. Russell, P.E.
Site Health & Safety Officer (SHSO)	John Pings
Atlas Representative	Gary Weisenberg

The following descriptions discuss the responsibilities, duties, and authorities for the above mentioned personnel.

2.1 SOS PROJECT MANAGER

Responsibilities of the PM include project scheduling, cost updating, and overall project direction and overseeing site safety. In addition, the PM is responsible for determining the extent and level of input required for technical issues that arise during the tenure of the project. The SOS PM will serve as the primary point of contact.

2.2 SITE HEALTH AND SAFETY OFFICER

SOS will designate a SHSO who implements and enforces the project safety program and procedures. The SHSO will be responsible for review and approval of the HASP. He has the authority to stop unsafe operations, recommend the removal of unqualified personnel from the work area, and approve changes to the site HASP.

The SHSO will have at least one year of health and safety experience. The SHSO will ensure that all site personnel review and comply with the terms of the Hasp. The SHSO performs duties such as confirming that personnel have appropriate training, coordinating emergency medical care, conducting a daily site safety inspection (if required), and inspecting health and safety equipment. In addition, the SHSO is responsible for maintaining safety equipment, providing site orientation safety training for all personnel actively involved in site work, and other site safety documentation. The SHSO takes the following action(s) when appropriate:

- Orders the immediate shut-down of site activities in the case of a medical

- emergency or unsafe practice.
- Ensures protective clothing and equipment are properly stored, used, and maintained.
- Ensure that the environmental and personnel monitoring operations are ongoing and in accordance with technical specifications and required procedures.
- Restricts visitors from areas of potential exposure to harmful substances.

A safety log will be kept for all activities. This log will include any daily safety meeting topics, training given, air monitoring information, first aid administered, visits of all outside personnel and any incidents of a health and safety nature. The SHSO will investigate all accidents and prepare an accident investigation report that will be forwarded to the PM. The SHSO will also maintain the OSHA Form Log 200. The Project Safety forms are located in Attachment A.

The SHSO has the responsibility for implementing and enforcing the site safety program and procedures. He/she will oversee any personnel monitoring and will decide when action levels have been reached which require more stringent personal protection. The SHSO establishes and enforces the protective equipment to be used for various site activities.

2.3 EQUIPMENT OPERATORS

The equipment operators within the exclusion zone will be SOS/Poseidon personnel. The loading of the trucks will be conducted by Poseidon personnel under the supervision of SOS.

2.4 EMPLOYEE SAFETY RESPONSIBILITY

Although Atlas/SOS/Poseidon are responsible for providing a safe and healthful work place, each employee is responsible for his/her own safety as well as the safety of those around them. Personnel shall use all equipment provided in a safe and responsible manner.

Each employee is responsible for reporting any injuries, incidents, and safety infractions to the SHSO so treatment can be obtained and/or corrective action taken.

2.5 LOGS, REPORTS, AND RECORD KEEPING

The following logs, reports, and records will be developed and maintained on site by project SHSO.

- Daily safety meetings (if the project requires more than one day to complete)
- Site Specific Health and Safety Plan
- Safety inspection logs
- Hazard communication records
- Injury and Illness Prevention Program Records

SECTION 3.0

HAZARDS

3.0 HAZARDS

This section addresses potential chemical, physical, and environmental hazards to workers on the site. Section 3.1 contains information about signs and symptoms of exposure to chemicals of concern. Section 3.2 discusses physical hazards identified with this site including those associated with construction, use of heavy equipment, and fire hazards. Environmental hazards, discussed in Section 3.3 are associated with the physical location of the site and weather conditions such as heat stress, noise, and flora and fauna contact.

If the project requires more than one day in the field, daily “Tailgate” safety meetings are held at the start of each shift, prior to the day’s activities to discuss and review any potential chemical, physical, and environmental hazards and preventative safety measures. Attendance is mandatory for all employees. Tailgate Safety Meeting Forms are provided in Attachment A.

3.1 CHEMICAL HAZARDS

Based on limited site-specific information regarding the site, EPA has identified that heavy metals, Polychlorinated Biphenyls (PCBs), Poly Aromatic Hydrocarbons (PAH), and Aerosol Particulate Matters may be found in some areas of the site. Based on previous site work all workers will be in Level D protection, with respirators available.

Protective equipment requirements combined with the requirement to wash arms, face, and hands before eating or smoking will help prevent exposure through inhalation and ingestion pathways. In addition, the SHSO will observe and outline the initial symptoms of chemical exposure. Compliance with all applicable federal, state, and local regulations will be observed for all potential chemical hazards encountered (lead, etc.). The amount of exposure, if any, depends primarily on the specific activities undertaken and the care with which the activities are performed. Symptoms associated with a hypothetical chemical exposure include:

- Dizziness or stupor
- Nausea, headaches, or cramps
- Irritation of the eyes, nose, or throat
- Euphoria
- Chest pains and coughing
- Rashes or burns

3.1.1 PCBs

According to recent data from 2006, there are trace levels of PCBs present in the existing soil. The results indicate that no material in the piles contains PCBs above 4 ppm. An MSDS for PCBs is presented in Attachment A. The MSDS provides a summary of toxicological data information, chemical properties, and proper handling procedures for the materials.

PCBs are a group of manufactured organic chemicals that contain over 200 individual chlorinated chemicals. PCBs are found as either oily liquids or as solids and are either colorless or light

yellow. They have no smell or taste. There are no known natural sources of PCBs. Some commercial PCB mixtures are known in the United States by their industrial trade name (e.g., Aroclor).

PCBs don't burn easily and are good insulating material. They have been used widely as coolants and lubricants in transformers, capacitors, and other electrical equipment. The manufacturing of PCBs stopped in the United States in 1977, because of evidence that they build up in the environment and cause harmful effects. Typical products which contain PCBs are old fluorescent lighting fixtures, PCB containing capacitors, old microscope oil, and hydraulic fluids.

Information suggests that people exposed to certain PCBs in the air for a long time may experience irritation of the nose and lungs, and skin irritations, such as acne and rashes. This information suggests that it is not known whether PCBs cause birth defects or reproductive problems in people. Some studies have shown that babies born to women who consumed PCB-contaminated fish had problems with their nervous systems at birth. However, it is not known whether these problems were due to PCBs or other chemicals. Skin exposure to PCBs in animals resulted in liver, kidney, and skin damage. The Department of Health and Human Services (DHHS) has determined that PCBs may reasonably be anticipated to be carcinogens.

3.1.2 Lead

Poison by ingestion. It is a suspected carcinogen of the lungs and kidneys. Human systemic effects by ingestion and inhalation may be loss of appetite, anemia, malaise, insomnia, headache, irritability, muscle and joint pains, tremors, flaccid paralysis without anesthesia, hallucinations and distorted perceptions, muscle weakness, gastritis and liver changes. The major organ systems affected appear to be the nervous system, blood system, and kidneys. Reversible kidney damage may also occur from acute exposure. Chronic exposure may lead to irreversible vascular sclerosis, tubular cell atrophy, interstitial fibrosis, and glomerular sclerosis. Very heavy intoxication can sometimes be detected by formation of a dark line on the gum margins, the so-called "lead line."

When lead is ingested, much of it passes through the body unabsorbed, and is eliminated in the feces. The greater portion of the lead that is absorbed is removed by the liver and excreted, in part, in the bile. For this reason, larger amounts of lead are necessary to produce symptoms. On the other hand, upon inhalation, absorption may take place easily from the respiratory tract and symptoms tend to develop more quickly. Therefore, inhalation is a potential pathway of concern. No appreciable absorption through the skin.

3.1.3 Other Heavy Metals

The term heavy metal refers to any metallic chemical element that has a relatively high density and is toxic, highly toxic or poisonous at low concentrations. Examples of heavy metals include arsenic (As), copper (Cu), and Zinc (Zn).

Heavy metals may be dangerous because they tend to bioaccumulate. If there is a potential for

certain occupational exposure to heavy metals, the workplace should have written protocols in place to minimize exposure. A variety of controls such as eliminating or minimizing the use of such materials, the use of fume hoods, respirator requirements, medical monitoring and more may be required.

3.1.4 Hazard Communication Program

The purpose of a Hazard Communication or Employee Right-To-Know program is to ensure that the hazards of all chemicals located at this field project site are communicated according to 8 CCR 5194 to all site personnel. Team members shall comply with all elements of Hazard Communication.

A written site-specific hazard communication program has been established by SOS and includes the following:

Container Labeling - SOS personnel will ensure that all containers are labeled according to content. These containers will include those from the laboratory and those produced on site by operations. All incoming and outgoing labels shall be checked for identity, hazard warning, and name and address of responsible party.

Employee Information and Training - Training employees on chemical hazards is accomplished through formal safety training conducted annually and informal safety meetings. Project specific chemical hazards are communicated to employees through an initial site orientation meeting and during daily safety meetings. An inventory of hazardous chemicals will be maintained on site.

At a minimum, personnel will be instructed on the following:

- Chemicals and their hazards in the work area (dust and odor suppressants).
- How to prevent exposure to hazardous chemicals.
- What has been done to prevent workers' exposure to chemicals.
- Procedures to follow if they are exposed to chemicals.
- How to read and interpret labels and MSDSs for potential hazardous substances found on the site.
- Emergency spill procedures.
- Proper storage and labeling.

When any new hazardous material is introduced or discovered on site, employees will be given information and training on this material at the daily safety meeting. This information will be recorded on the Tailgate Safety Meeting forms provided in Attachment A. The SHSO will be responsible for seeing that the MSDS on any new chemical or material is available on site. The written hazardous communication program will be kept on the site.

3.2 PHYSICAL HAZARDS

To minimize physical hazards, standard safety protocols have been developed and will be followed at all times. Failure to follow safety protocols or continued negligence of these policies will result in expulsion from the site as well as possible termination.

All personnel will be familiar with the field activities to be conducted at the site. They are trained to work safely under various field conditions. In addition, the SHSO will observe the general work practices of all personnel and enforce safe procedures to minimize physical hazards. Hard hats and steel-toed safety boots will be required in all areas of the site.

A job duty description and personnel protective equipment (PPE) matrix is presented in the following table.

3.2.1 Tripping, Slipping, and Falling Hazards

Personnel will be reminded daily to maintain sure footing on all surfaces. To minimize tripping hazards caused by debris, job supplies, and equipment, material will be removed daily from the work areas and stockpiled in their respective storage areas. This “housekeeping” effort will be enforced by the SHSO throughout the day.

3.2.2 Head and Back Injuries

As a minimum requirement, hard hats will be donned prior to performing any site activities. This will prevent minor injuries that may be caused by overhead obstructions. Personnel are instructed in proper lifting techniques and will be reminded not to lift heavy items without assistance at the daily safety meeting.

3.2.3 Falling Objects

The SHSO will ensure that an adequate area is clear of personnel while the equipment is in operation.

3.2.4 Heavy Equipment

The use of heavy equipment for debris removal, excavation, and lifting will present the greatest potential for injury to personnel. To minimize these hazards, designated routes will be established for mobilization through the facility and specific traffic patterns will be established. All trucks will have spotters for backing.

Only qualified personnel will operate heavy equipment. Those crew members directly involved with spotting for the operator will be the only personnel allowed in the vicinity of the heavy equipment. All others will remain a safe distance away from these operations.

Personnel needing to approach heavy equipment while operating will observe the following protocols:

1. Make eye contact with the operator (and spotter).
2. Signal the operator to cease heavy equipment activity.
3. Approach the equipment and inform the operator of intentions.

Personnel will follow all traffic rules. All vehicles will yield to all bikes, pedestrians, and railroad crossings. All vehicles must come to a complete stop at all railroad crossings.

All equipment must be in good working condition when it arrives at the site. Equipment that does not appear to be in good repair or appears to be unsafe will not be put into service until all necessary repairs are made. Proper lockout/blockout procedure in compliance with all applicable federal, state and local regulations will be observed for all hand and power tools as well as for field maintenance and repair activities on all machinery utilized on the site.

Only qualified operators familiar with the equipment to be used will be permitted to operate said equipment. SOS reserves the right to remove any operator from the project site if there is question or doubt concerning the operator's capabilities. Excavation activities conducted on site will be in compliance with all applicable federal, state and local regulations.

3.2.5 Confined Space Entry

A Confined Space (CS) is any enclosed area having a limited means of egress where ventilation is not adequate to remove a toxic or flammable atmosphere or oxygen deficiency which may exist. Examples of confined spaces include, but are not limited to the following: tanks, boilers, vessels, bins, manholes, tunnels, pipelines, underground utility vaults, or any open top space more than four feet in depth such as pits, tubes, trenches, or vessels.

No confined space entry will occur during this project.

3.3 ENVIRONMENTAL HAZARDS

Environmental hazards associated with this site will be discussed at the orientation meeting prior to start up of remediation activities. Personnel will be appraised of symptoms of exposure to certain biological hazards and heat stress.

3.3.1 Weather and Heat Stress

With the possible combination of ambient factors such as high air temperature, high relative humidity, low air movement, high radiant heat, and protective clothing, the potential for heat stress is a concern. The potential exists for:

- Heat rash
- Heat cramps

- Heat exhaustion
- Heat stroke

CAL/OSHA utilizes 8 CCR 3395 for their Heat Illness Prevention requirements. heat stress standard. Section 3395 defines environmental risk factors as including “air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.” Some of these factors, such as air temperature, radiant heat, air movement and conductive heat sources determine how much a worker’s body is heated from external sources. Relative humidity, air movement, protective clothing, and some personal protective equipment affect a worker’s ability to cool through the evaporation of sweat and contact with cooler air. Workload intensity and duration, which can be increased by use of personal protective equipment, add to the worker’s heat burden by producing metabolic heat.

Provision of Water. Employees shall have access to potable drinking water meeting the requirements of Sections 1524, 3363, and 3457, of 8 CCR as applicable. Water shall be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for drinking for the entire shift. Employers may begin the shift with smaller quantities of water if they have effective procedures for replenishment during the shift as needed to allow employees to drink one quart or more per hour. The frequent drinking of water, as described in Training, shall be encouraged.

Access to Shade. Employees suffering from heat illness or believing a preventative recovery period is needed, shall be provided access to an area with shade that is either open to the air or provided with ventilation or cooling for a period of no less than five minutes. Such access to shade shall be permitted at all times.

Training.

(1) Employee training. Training in the following topics shall be provided to all supervisory and non-supervisory employees.

- (A) The environmental and personal risk factors for heat illness;
- (B) The employer's procedures for identifying, evaluating, and controlling exposures to the environmental and personal risk factors for heat illness;
- (C) The importance of frequent consumption of small quantities of water, up to 4 cups per hour under extreme conditions of work and heat;
- (D) The importance of acclimatization;
- (E) The different types of heat illness and the common signs and symptoms of heat illness;
- (F) The importance of immediately reporting to the employer, directly or through the employee's supervisor, symptoms or signs of heat illness in themselves, or in co-workers;
- (G) The employer's procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become

necessary;

(H) Procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider;

(I) How to provide clear and precise directions to the work site.

(2) Supervisor training. Prior to assignment to supervision of employees working in the heat, training on the following topics shall be provided:

(A) The information required to be provided by section (e)(1) above.

(B) The procedures the supervisor is to follow to implement the applicable provisions in this section.

(C) The procedures the supervisor is to follow when an employee exhibits symptoms consistent with possible heat illness, including emergency response procedures.

The American Conference of Governmental Industrial Hygienists also has recommendations, however, the influence of protective clothing complicates the matter. At 75 degrees Fahrenheit ambient temperature, the SHSO will become keenly aware of the effects of heat stress on project personnel, and will alert the crew to become aware of any symptoms. The SHSO will also advise personnel to increase the amount of salt used on foods. SOS shall be responsible for performing all heat related monitoring for their employees in accordance with this document.

The symptoms of heat-related disorders and preventative measures will be discussed during a safety “tailgate” meeting. Workers are encouraged to increase consumption of water and electrolyte-containing beverages such as Gatorade during warm weather. At a minimum, workers will break every 2 hours for 10 to 15 minute rest periods. In addition, workers are encouraged to take rests whenever they feel any adverse effects, especially those effects that may be heat-related. The frequency of breaks may need to be increased upon worker recommendation to the SHSO. Other possible monitoring methods include core temperature and ambient conditions. Determination of work/rest cycles are Based on the recommendations from the TLVs and BEIs published by the American Conference of Governmental Industrial Hygienists (ACGIH).

3.3.2 Hearing Conservation Program

Employees may not be exposed to noise greater than the levels established by CAL/OSHA (85 dBA TWA for an 8 hour day). If levels are higher than this, engineering administrative, or work practice controls are required. Employee exposure to noise will comply with 8 CCR Group 15 Article 105. The SOS company procedures for hearing protection will be utilized as the standard for the workers in the exclusion zone.

3.3.3 Biological Hazards

Based on site observations and the limited site investigation conducted by DTSC there are no identified or observed biological hazards associated with the site. All first aid activities involving potential exposure of personnel to blood or blood-tainted (contaminated) body fluids shall be conducted in accordance with the requirements of the Bloodborne Pathogen Standard 29 CFR 1910.1030 and 8 CCR 5193.

However, the construction industry (Standard Industrial Classification Codes [SIC] 152-179) is specifically exempted from coverage under 5193, as stated in the Exception to 5193(a). However, construction industry employers still have a regulatory responsibility to protect their employees from bloodborne pathogens. Employees in the construction industry are not necessarily free of potential hazards related to bloodborne pathogens. For example, employees assigned to first aid duties may encounter such hazards. Employers in the construction industry are subject to the Injury and Illness Prevention (IIP) Program requirements of 8 CCR 3203, and to the requirement to provide hygiene facilities and personal protective equipment pursuant to Title 8 sections other than 5193. Pursuant to these other regulatory requirements, construction employers are required to provide appropriate protective measures to employees who may be subject to the hazard of exposure to bloodborne pathogens.

Personnel involved in first aid procedures shall don the proper PPE and dispose of blood-contaminated materials as required. Responding personnel will don surgical gloves and other PPE deemed necessary by the SHSO at the time of the incident. An adequate inventory of such PPE will be maintained with the first aid kit located at the first aid station near the decontamination area and in the SHSO office trailer. Contact with blood or blood-tainted body fluids during first aid procedures should be reported immediately to the SHSO.

3.4 INJURY ILLNESS PREVENTION PROGRAM

SOS will utilize its own IIPP and Atlas or DTSC may adopt or modify the SOS Injury Illness Prevention Plan (IIPP), or may provide their own IIPP. This plan must address all health and safety issues that may be anticipated by the scope of work at the Atlas site.

3.5 ACCIDENT PREVENTION

This HASP has been developed with accident prevention as the primary goal. Details are discussed throughout this HASP. This section will outline the Accident Prevention Plan for this project.

3.5.1 Administrative Responsibility

The PM is ultimately responsible for site health and safety, and will provide the materials and maintenance of equipment necessary to enhance and maintain safe site and work conditions.

The SHSO has the responsibility and the authority to control the day-to-day field activities. The SHSO will watch employees for signs of heat stress, excessive fatigue, and obvious signs of chemical exposure. In addition, the SHSO will ensure that equipment brought to the site is in proper working condition and inspected regularly.

The SHSO also reports to the PM and is responsible for overseeing work areas and identifying conditions that may pose a hazard to personnel or the public. The SHSO is required to conduct regular safety inspections.

3.5.2 Personnel Training

Prior to working on site, all personnel will undergo a health and safety orientation where the HASP and site conditions are discussed. Prior to each shift, a tail gate safety meeting will be held discussing the previous day's and current day's health and safety issues.

3.5.3 Team Members

All Team members are subject to the same training requirements as SOS personnel. Team members will be required to sign in daily and be required to attend a daily meeting discussing operations and safety issues.

3.5.4 Housekeeping

The project site will be kept in a neat and orderly fashion to prevent common injuries due to slips, trips, and falls, accumulation of trash to keep insects away, and to maintain a professional work site. Personnel shall not leave a work area in a disorderly condition. The SHSO is responsible for maintaining continued job cleanup and safety access and egress.

3.5.5 Emergency and Contingency Plan

Fire extinguishers (ABC type) in ready condition and with current inspection record will be provided at the job site. SOS has developed an emergency contingency plan provided in Section 8.0 of this HASP.

3.5.6 Safety Inspections

The SHSO and/or his designee will perform daily safety inspections. A report including results of the inspection and any corrective actions taken will be filed in the project files, with a copy to the DTSC Project Manager. Identified safety and occupational health deficiencies and corrective measures shall be recorded.

3.5.7 Accident Investigation

An injury that requires only minor first aid need only be recorded on a first aid treatment log, which will be maintained on file and available for review. All other injuries or occupational illnesses must be investigated and the Accident/Injury Report Form must be completed. The above forms are presented in Attachment A.

In the case of injury to an employee that requires medical treatment, the following steps will be followed:

1. Procure medical treatment for employee as described in Section 8.0 of this Hasp.
2. The SHSO will investigate the incident and fill out the Accident/Injury Report Form.
3. Employer's Report of Injury will be filled out and sent to the Worker's Compensation Insurance company within 48 hours of an injury or within 24 hours of a lost time injury or death. A claim for worker's compensation benefits must also be submitted.
4. Notify the SOS PM as soon as possible or within 24 hours depending on the seriousness of the injury.
5. OSHA Form 200 Log will be updated if the injury is reportable under CCR Title 8.
6. A report must be obtained from the physician clearing the employee to resume regular duties, describing modified work acceptable, or removing the employee from work duty.

In the case of a fatal injury or where five or more persons are admitted to the hospital for an overnight stay, OSHA and other appropriate agencies will be notified and an in-depth accident investigation will be conducted in addition to the steps identified above.

SECTION 4.0

WORK AND SUPPORT AREAS

4.0 WORK AND SUPPORT AREAS

To prevent migration of contamination caused by tracking of personnel or equipment, work areas and personal protective equipment will be clearly specified prior to beginning operations. SOS has designated work areas or zones as suggested by the NIOSH/OSHA/USCG/EPA's document titled "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities."

Upon entrance into the site, SOS personnel will control access to site work zones. Due to the layout of the project site, each work area will be divided into two work zones: a work zone and a support zone.

4.1 WORK ZONE

The work zone will consist of areas where inhalation, oral contact, or dermal contact with contaminants will be possible. The work zone will be identified on-site and defined by stakes. The work zone will incorporate the area that is actively being worked to reduce the materials piles and make them ready for removal by trucking. Workers within the work zone will be required to don the PPE as identified in Section 3.2.

Dust will be monitored by MiniRam units worn by appropriate SOS personnel and by the SHSO. The unit used by the SHSO will be used to determine levels of exposure outside at the edge of the work zone. The work zone criterion will be by the OSHA PEL for lead as defined by the following

$$\text{OSHA PEL}/(\text{highest \% concentration of contaminant in decimal form } *2) = \text{Action Level in mg/m}^3 - \text{ where 2 is the safety factor.}$$

Thus, the OSHA PEL for lead is 0.50 mg/m^3 and the highest level alleged by EPA for lead was 56,200 ppm or 0.0562 in decimal form.

$$\text{Thus, the Action Level} = (0.05 \text{ mg/m}^3)/(0.0562*2) = 0.44 \text{ mg/m}^3$$

This Action Level is lower than the OSHA particulates not otherwise regulated (PNOR) of 5 mg/m^3 and the 0.44 mg/m^3 will be the Action Level utilized to determine if the PPE level of protection must be increased from Level D to Level C. Based on the data collected and the appropriate OSHA PEL, it is recognized that the lead Action Level will be the controlling Action Level.

4.2 SUPPORT ZONE

The support zone will consist of a clearly marked area where the support equipment will be located. Smoking, drinking, and eating will be allowed only in designated areas in the support zone. The location of the support zone may be changed in the event of a sustained change in the prevailing wind direction or other unpredictable events.

4.3 ACCESS CONTROLS

The SHSO shall establish the physical boundaries of each zone and shall instruct all workers and visitors on the limits of the restricted areas. No one shall be allowed to enter the restricted area without the required protective equipment for that area. The SHSO shall ensure compliance with all restricted area entry and exit procedures.

The SHSO shall also designate a decontamination point for personnel to exit from the contamination area and enter into the clean area where personnel may rest and drink.

4.4 VISITOR ACCESS

Visitors should check in immediately upon arrival with the SHSO. Only authorized visitors will be allowed access to the contaminated areas. Visitors will be required to provide and wear the necessary protective equipment for use during the visits and shall be escorted by SOS personnel. Other site visitors will not be admitted to the exclusion and contamination reduction zones. All visitors and SOS personnel will be required to sign a safety plan acknowledgment sheet (presented in Section 10.0) to certify that they have read, understand, and will comply with the site HASP.

Failure to comply with this site entry procedure will result in expulsion from the site. A visitor's log will be kept by the SHSO. The visitor's log form is presented in Attachment A.

SECTION 5.0

PROTECTIVE EQUIPMENT

5.0 PROTECTIVE EQUIPMENT

This section describes the personal protective equipment and respiratory protection required for this project. All personnel must wear appropriate protective equipment when activities involve potential exposure to hazards, which cannot be adequately or feasibly controlled by engineering or administrative controls. Respiratory protection, skin, hand, and foot protection are required when activities are known or suspected to result in chemical hazards such as atmospheric contamination in excess of action levels in the form of dusts, mists, fumes, vapors, gases, when direct contact with them may be a health hazard.

The following list briefly describes four EPA Level categories:

1. Level A: Used when the greatest level of skin, eye, and respiratory protection is required and consists of a totally encapsulated suit with supplied breathing air.

2. Level B: Used when a high level of respiratory protection is required but a lesser level (than Level A encapsulated suit) of skin protection is required.

3. Level C: Used when criteria for using air purifying respirators are met and a lesser level of skin protection is required.

4. Level D: Used only as a work uniform and in an area where no skin protection is required.

5.1 REASSESSMENT OF PERSONAL PROTECTION EQUIPMENT (PPE)

The level of protection listed in this section shall be upgraded or downgraded on the results of personal air monitoring, action levels from direct reading instruments or a change in site conditions. The PPE selection will be based on the anticipated chemical and physical hazards associated with each work zone and job function included in the Removal Action Work Plan. The PPE selection may be modified if project hazards or air monitoring results identify higher-than-anticipated or lower than anticipated levels of lead exposure. The PPE Program will be in compliance with all applicable federal, state, and local regulations. Changes in protection levels require the completion of the Site Safety Plan Change Form, available in Attachment A, which must be approved and signed by the following site personnel:

- ! EPA Representative
- ! EPA Project Manager

- ! PHSO
- ! SHSO
- ! Client

If the level of protection is to be downgraded, then personnel will continue to work in the original level of protection until the SHSO and the PM have discussed air monitoring results and rationale for downgrade. After an agreement has been reached and the change is recorded on the Site Safety Plan Change Form, PPE may be modified. Level of protection for any task may be upgraded at any time and documented.

The following list defines the required personal protection equipment for each work zone based on the information provided to date.

5.2 WORK ZONE

- EPA Level: D
- Head: Hard hat
- Hand: Work gloves
- Boots: Steel toe work shoes
- Hearing: Ear plugs, as necessary
- Eye: Safety glasses
- Respirator: none

Previous work on the piled materials indicated that there was no hazard from breathing the dust generated during removal of the piles. During the covering of the piles, it would be hard to conceive that sufficient dust would be generated to require upgrading to Level C. The PPE level will only be upgraded according to procedures described in Section 5.1.

5.3 SUPPORT ZONE

Personnel working in the support zone will use the following modified Level “D” protective gear:

- ! Steel Toe Work Shoes
- ! Hard Hat
- ! Work gloves

Eating, drinking, and smoking will be allowed only in designated areas in the support zone.

5.4 AIR-PURIFYING RESPIRATORS

Personnel working or visiting in the exclusion zone will not be required to wear air-purifying respirators unless the Minirams indicate that the conditions are such that Level C PPE is required as noted in 5.1. Full-face respirators would be required when working in areas where severe metals contamination is suspected. Half-face respirators will be acceptable during all other work. Care should be taken when wearing respirators, especially while working on hot days, to prevent sweat from affecting the ability of half-face respirators to stay in place. The Respiratory protection program will be in compliance with all applicable federal, state and local regulations.

All employees must be trained in accordance with one CAL/OSHA Respirator Standard. Additional criteria for upgrading respiratory protection levels are provided in Section 7.1.

5.5 RESPIRATOR CARTRIDGES

The crew members working in Level “C” will wear respirators equipped with combination organic vapor and high efficiency particulate filter (HEPA) air purifying cartridges.

5.6 CARTRIDGE CHANGES

All cartridges will be changed a minimum of once daily. However, water saturation of the HEPA filter or dusty conditions may necessitate more frequent changes. Changes will occur when personnel begin to experience increased inhalation resistance, or breakthrough of a chemical warning property.

5.7 INSPECTION AND CLEANING

Respirators will be checked periodically by the SOS and the SHSO and inspected before each use by the wearer. All respirators and associated equipment will be decontaminated and hygienically cleaned after use.

5.8 FIT TESTING

Respirator fit tests are required every six months of all personnel wearing negative pressure respirators. A positive and negative fit test shall be conducted each time a respirator is donned.

5.9 FACIAL HAIR

No personnel who have facial hair which interferes with the respirator's sealing surface will be permitted to wear a respirator.

5.10 CORRECTIVE LENSES

Normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the respirator's sealing surfaces. For workers requiring corrective lenses, special spectacles designed for use with respirators will be provided.

5.11 MEDICAL CERTIFICATION

Only workers who have been certified by a physician as being physically capable of respirator usage will be issued a respirator for use in the exclusion zone.

SECTION 6.0

DECONTAMINATION PROCEDURES

6.0 DECONTAMINATION PROCEDURES

This section describes the procedures necessary to ensure that both personnel and equipment are free from any potential contamination when they leave the work site. A step-by-step description of decontamination procedures has been delineated below.

Air monitoring instruments may be wrapped while using them in the exclusion zone to avoid contamination in very dusty atmospheres. Where conditions are relatively clean, instruments may be wiped down with a damp cloth in the transition zone.

Sweeping will be conducted by SOS personnel in the exclusion zone while they are suited up in Level D PPE.

6.1 PERSONNEL DECONTAMINATION

Decontamination of personnel shall be accomplished to ensure that any material, which personnel may have contacted in the work zone is removed. Decontamination of personnel exiting the work zone will utilize the following steps as appropriate to the specific work area:

- Step 1: Wet wipe boots.
- Step 2: Remove gloves and protective clothing.
- Step 3: Remove the hard hat and wipe clean.
- Step 4: Remove respirators and suitably store while on breaks and during lunch. At the end of the shift, discard the cartridges and then clean, disinfect, rinse and air-dry the respirator.
- Step 5: Remove work clothes and boots and place in designated laundry receptacle.
- Step 6: Wash hands, face, and neck before breaks, lunch, and site departure.
- Step 7: Leave transition zone in clean street clothes.

Once the clean fill is placed, no further decontamination will be required.

6.2 PERSONAL HYGIENE

Before any eating, smoking, or drinking, personnel will wash hands, arms, neck, and face. Washing facilities with soap will be available in the support zone.

6.3 EQUIPMENT DECONTAMINATION

Any equipment and vehicles that come in contact with contaminated soil will undergo decontamination prior to exiting the work zone. An area within the support zone will be designated for final decontamination. Each party will be responsible for final decontamination of their equipment.

6.4 WASTE HANDLING

Contaminated clothing will be placed in a box lined with a polyethylene bag. Solid wastes, waste water, and activity-derived wastes (IDW) generated on site will be disposed of in temporary waste storage areas set up within the work zone. Decontamination activities will be in compliance with all applicable federal, state and local regulations as required.

SECTION 7.0

AIR MONITORING

7.0 AIR MONITORING

To ensure an effective program of sampling and monitoring air quality, both in the work zones and at the site perimeter, the air monitoring at the site and employee exposure to chemical hazards will comply with all applicable federal, state and local regulations. Due to the alleged exposure potential to airborne particulate matter, the use of personal protective equipment may be put into practice. Engineering controls (water truck and hose sprayer) to minimize airborne emissions will be conducted. Air monitoring, including the use of Miniram Aerosol Monitors (Miniram) and direct reading Organic Vapor Analyzers (OVM) will be used to monitor airborne emissions.

The Miniram monitoring level has been established at 0.44 ppm based on the highest lead concentration encountered during sampling and the calculations show in Section 4.1. The standards for the OVM analyzer will be on site for use if required. Based on the previous field and lab work, no organic vapors or volatile organics were encountered and it would be hard to conceive of how these vapors would be encountered during the clean fill backfilling of the excavated areas.

The air monitoring program will include the collection of personnel and perimeter air samples and the use of real-time monitoring equipment, that comply with all applicable federal, state and local regulations. Two of the perimeter air monitors will be installed at the southwest and northeast corners of the excavated area to monitor the grading and backfilling operations (these are essentially the same locations used previously). The third unit will be installed approximately 100 feet to the east of the south end of the excavated area.

The chosen locations were in accordance with the directive of the government, to monitor the lead concentration in the dust at the site. The filters will be replaced daily and delivered to the laboratory for analysis of lead. The average results indicated that the monitoring results were approximately two orders of magnitude below the OSHA PEL for lead of 50 Fg/m³ (0.05 mg/m³). The samples will be analyzed for lead by AmeriSci Laboratories in Carson, CA.

The high volume air samplers are Tisch Model TE 5170D fixed throat air monitors. The units were individually calibrated at the beginning of the job. The air flow rate was approximately 1.25 m³/minute. Each of the meters has an elapsed time meter and an automatic time clock that was set to start at 05:30 and to shut off at 16:30 daily. The filters used were 8 inch by 10 inch Whatman #100 glass fiber filters.

SECTION 8.0

EMERGENCY RESPONSE

8.0 EMERGENCY RESPONSE

Prior to field activities, the supervisor shall plan emergency egress routes and discuss them with all personnel who will be conducting the fieldwork. Initial planning includes establishing emergency warning signals and evacuation routes in case of an emergency. The site specific Emergency Contingency Plan will be discussed in detail in the pre-job site safety orientation meeting.

8.1 EMERGENCY SERVICES

A tested system shall exist for rapid and clear distress communication. All personnel shall be provided concise and clear directions and accessible transportation to local emergency services. A map illustrating the locations of the following equipment will be posted in the support and contamination reduction zone. Unless otherwise specified, the equipment will be staged in the contamination reduction zone. A map showing directions to the nearest hospital will be posted on site. Fire extinguishers and an industrial first aid kit shall be present on the site.

8.2 MEDICAL EMERGENCY PROCEDURES

The following procedures should be observed if an accident occurs:

Minor Injury

- ! Contact the SHSO.
- ! Have qualified first aid personnel treat injury.
- ! Record injury and include name of injured person, nature of injury, and treatment given.

In the event of a medical emergency when actual or suspected serious injury occurs, the following procedures shall be implemented:

- ! Survey scene and evaluate whether the area is safe for entry.
- ! Remove the exposed or injured person(s) from immediate danger.

- ! Render first aid if necessary. Decontaminate affected personnel after critical first aid is given.

- ! Obtain paramedic services or ambulance transport to local hospital. This procedure shall be followed even if there is no visible injury.
 1. Call 911.
 2. Identify location, request medical assistance, provide name and phone number.
 3. Request assistance from emergency medical service and/or additional assistance.

- ! Other personnel in the work area shall be evacuated to a safe distance until the SHSO determines that it is safe for work to resume. If there is any doubt regarding the condition of the area, work shall not commence until all hazard control issues are resolved.

- ! Fill out accident reporting forms and associated documents.

If a fatal injury occurs, the following additional steps will be followed:

- ! Notify immediate supervisor.

- ! Notify PHSO.

- ! SOS will initiate contact with CAL OSHA and other appropriate agencies.

- ! All work activities on the project must be stopped on the project for 24 hours.

- ! Assist CAL OSHA as directed.

Any personnel requiring emergency medical attention shall be evacuated immediately from exclusion and contamination-reduction zones. Personnel shall not enter the area to attempt a rescue if their own lives would be threatened. The decision whether or not to decontaminate a victim prior to evacuation is based on the type and severity of the illness or injury and the nature of the contaminant. For some emergency victims, immediate decontamination may be an essential part of life saving first aid. For others, decontamination may aggravate the injury or

delay life saving treatment. If decontamination does not interfere with essential treatment, it should be performed.

If decontamination can be performed:

- Wash external clothing and cut it away.
- Wrap victim in clean blanket or towel if necessary.

If decontamination cannot be performed:

- ! Wrap the victim in blankets or plastic to reduce contamination of other personnel.
- ! Alert emergency and off-site medical personnel to potential contamination, instruct them about specific decontamination procedures.
- ! Send along site personnel familiar with the incident.

8.2.1 First Aid

Qualified personnel only shall give first aid and stabilize an individual needing assistance. Life support techniques such as CPR and treatment of life threatening problems such as airway obstruction, and shock will be given top priority. Professional medical assistance shall be obtained at the earliest possible opportunity.

To provide first-line assistance to field personnel in the case of sickness or injury, the following items will be immediately available:

- ! First aid kit.
- ! Portable emergency eye wash.
- ! Supply of clean water.
- ! Blanket.

The location of the above items will be established prior to beginning work and will be discussed in detail at the site safety orientation meeting.

8.3 SPILL RESPONSE PROCEDURES

SOS does not expect a risk of leaks or spills of contaminated liquids or hazardous liquids. In the case of a spill of such contaminated or hazardous materials, the following procedures shall be followed:

- ! Determine a spill has occurred.
- ! Notify the SHSO.
- ! Identify protective clothing or equipment required to respond.
- ! Contain the spill.
- ! Document the incident.

8.4 EARTHQUAKE RESPONSE

If an earthquake should occur during the course of site activities, the following steps should be taken:

- ! Stop working. Remain calm and do not panic.
- ! If indoors, stay indoors away from windows and take cover under heavy furniture or inside walls if possible.
- ! Do not use or do anything that might be a source of ignition (i.e., smoking, cutting, or welding).

If outdoors, stay away from power lines, power poles, and windows.

8.5 SITE EVACUATION PLAN

In the general case of a large fire, explosion, or toxic vapor release, the site must be evacuated. Personnel must evaluate the situation and assess the upwind direction. Personnel must evacuate to an upwind location following these steps:

- ! All personnel will assemble in an upwind area when the situation permits, a head count will be taken.

- ! Determine the extent of the problem. Dispatch a response team in appropriate protective clothing to evacuate any missing personnel or to correct the problem.

- ! The above procedures will apply to all Team members and will be discussed with them prior to the commencement of work.

- ! The meeting location will be in front of the Atlas building between the building and Alameda St.

8.6 EMERGENCY AND HOSPITAL INFORMATION

The nearest hospital to the job site is:

Lynwood Industrial Medical Center
3611 Martin Luther King Jr. Blvd.
Lynwood, CA 90262-2682
Phone: (310) 638-2800

A map to the hospital is provided as Figure 2.

SECTION 9.0

TRAINING REQUIREMENTS

9.0 TRAINING REQUIREMENTS

9.1 SITE SPECIFIC PRE-JOB SAFETY ORIENTATION

All personnel entering the exclusion zone will be trained in the provisions of HASP and be required to sign the site Health and Safety Plan Acknowledgment, which is included as Section 10. Training requirements for hazardous waste site and Emergency response work in accordance with OSHA 29 CFR 1910.120. Copies of the current training certificates for all personnel must be provided to the SHSO before beginning work. In the event that any worker's annual training will expire during the course of the project, he must complete the required refresher training prior to the expiration date. All work will be conducted during daylight hours or provide minimum illumination requirements specified in 8 CCR, 5192(m).

A site safety orientation meeting will be held discussing the following topics:

- ! Names of personnel responsible for site safety
- ! Names of CPR and first aid trained personnel
- ! Health and Safety Hazards on site
- ! Explanation of effects of toxic chemicals identified at the site
- ! Air monitoring program
- ! Prohibited actions or procedures
- ! Personal Protective Equipment (use and care)
- ! Location of Safety Equipment such as fire extinguishers
- ! Site Standard Operating Procedures and Safe Work Practices
- ! Work Zones and site Control Measures
- ! Hazard Communication Program includes discussion of MSDSs on site
- ! Emergency and Spill Response and Contingency Plans
- ! Awareness of local residents and precautions working around homes and property

In addition, training in hazards associated with exposure to heavy metals, Poly Aromatic Hydrocarbons (PAHs), and PCBs will be conducted as following:

1. The specific nature of the operations which could result in exposure to heavy metals, PAHs and PCBs above action levels.
2. The purpose, proper selection, fitting, use and limitations of respirators.

3. A description of the medical surveillance program and health hazards associated with heavy metals, PAHs and PCBs. Medical Surveillance will comply with all applicable federal, state and local regulations.

9.2 DAILY TAILGATE MEETINGS

Daily safety meetings will be held for all personnel at the site. During these meetings, there will be a discussion of any safety concerns, changes in site conditions, monitoring results, or other safety-related topics for the Atlas pile removal activities. Periodic retraining on important site-specific safety issues may also be addressed. Attendance lists, including signatures and topics discussed for all safety meetings will be maintained as part of the project safety records.

9.3 WORK HOURS

All work related to the removal of the subject wastes at the site will be conducted during daylight hours. In the event that work is necessary after daylight hours, then a nighttime illumination program will be initiated in accordance with 8 CCR 5192(m).

SECTION 10.0

APPROVALS

10.0 APPROVALS

HEALTH AND SAFETY PLAN ACKNOWLEDGMENT FORM

The undersigned field personnel have been briefed about the contents of this Site Health & Safety Plan, and intend to comply with its provisions:

SIGNATURE

NAME

DATE
