Preliminary Environmental Assessment Equivalent

Upper Plaza and Gymnasium Construction
LAUSD – Berendo Middle School
Los Angeles, California, 90006

PREPARED FOR:

Los Angeles Unified School District

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PRELIMINARY ENVIRONMENTAL ASSESSMENT EQUIVALENT

Upper Plaza and Gymnasium Construction

LAUSD – Berendo Middle School
Los Angeles, California, 90006

Prepared for:

Office of Environmental Health & Safety
Los Angeles Unified School District
333 South Beaudry Avenue, 21st Floor
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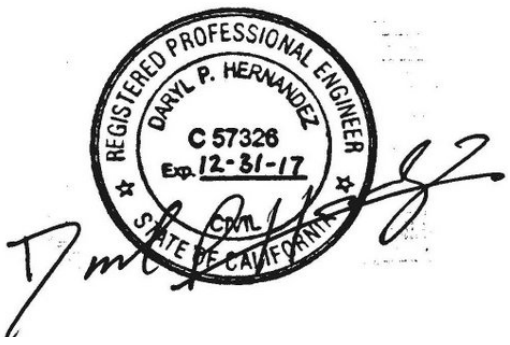

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Acronym List

µg/kg	Micrograms per kilogram
µg/l	Micrograms per liter
4,4'-DDD	4,4'-dichlorodiphenyldichloroethane
4,4'-DDE	4,4' dichlorodiphenyldichloroethylene
ACM	Asbestos Containing Material
ADA	Americans with Disabilities Act
APN	Assessor Parcel Number
BC Labs	BC Laboratories, Inc.
Cal-EPA	California Environmental Protection Agency
CF	cubic feet
CSM	Conceptual Site Model
COPCs	Chemicals of Potential Concern
CY	cubic yards
DOT	Department of Transportation
DTSC	Department of Toxic Substances Control
DUP	Duplicate
EB	Boring Number
E2	E2 ManageTech, Inc.
ELAP	Environmental Laboratory Accreditation Program
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
GPR	Ground Penetrating Radar
HERO	Human and Ecological Risk Office
HHRA	Human Health Risk Assessment
Inc.	Incorporated
LA	Los Angeles
LAUSD	Los Angeles Unified School District
LBP	Lead-Based Paint
mg/kg	milligrams per kilogram
mg/l	Milligrams per liter
MORCS	Monsenor Oscar Romero Charter School
OCPs	Organochlorine Pesticides
OEHS	Office of Environmental Health and Safety
PCBs	Polychlorinated Biphenyls
PE	Professional Engineer
PEA-E	Preliminary Environmental Assessment Equivalent
RECs	Recognized Environmental Conditions
RCRA	Resource Conservation and Recovery Act
RPD	relative percent difference
RSL	Regional Screening Levels
RSL-r	Regional Screening Levels-residential
SWRCB	State Water Resources Control Board
S.	South
sf	square-foot
Site	1157 S. Berendo Street, Los Angeles
SSLs	Soil Screening Levels
STLC	Soluble Threshold Limit Concentration
TCLP	Toxicity Characteristic Leaching Procedure
UCL	upper confidence level
USA	Underground Services Alert
WET	Waste Extraction Test

Executive Summary

This document presents the Preliminary Environmental Assessment Equivalent (PEA-E) for the Berendo Middle School Upper Plaza and Gymnasium Construction project, located at 1157 S. Berendo Street, in the city of Los Angeles (Site), and county of Los Angeles, California (Figure 1). On behalf of the Los Angeles Unified School District (LAUSD), E2 ManageTech, Inc. (E2) has prepared this PEA-E based on a PEA Work Plan equivalent document dated March 19, 2016 (E2, 2016a), and information provided in a Phase I Environmental Site Assessment (ESA) that was prepared for portions of the Site (TCP, 2013). This PEA-E was prepared in general accordance with the guidelines of the State of California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC) Preliminary Endangerment Assessment Guidance Manual (January 1994, Interim Final – Revised October 2013).

LAUSD is proposing to demolish four temporary buildings, a retaining wall and pavement to construct a 15,000 square-foot (sf) plaza, a new gymnasium, replace the retaining wall, and replace playfields in the lower playfield, within the Berendo Middle School Campus.

A Phase I ESA (TPC, 2013) for portions of the Berendo Middle School campus identified the following Recognized Environmental Conditions (RECs):

- *Lead Residues in Soil -- Due to the potential use of lead-based paint (LBP) in residential structures that historically occupied the Site, it is possible that elevated concentrations of lead could be present in shallow soil.*

- *Pesticide Residues in Soil -- Due to the potential use of organochlorine pesticides (OCPs) for termite control in residential structures that historically occupied [the Site], it is possible that elevated concentrations of OCPs could be present in shallow soil. Additionally, based on numerous environmental investigations at its existing school sites, the LAUSD has determined that arsenic residues may be present in soil due to the historical use of arsenical herbicides prior to 1950. Therefore, it is possible that elevated concentrations of arsenic may be present in shallow soil.*

- *Asbestos Containing Material (ACM) -- One of the portable buildings [at the school] has a posted notification warning sign of the presence of ACM. It is possible that other portable buildings at the Site could also contain ACM. Contractors should be made aware of possible presence of ACM in accordance with LAUSD guidelines, and testing may be required before the portable buildings are removed.*

The purpose of this PEA-E is to evaluate soil in the proposed construction areas for the presence of the noted chemicals of potential concern (COPCs) including arsenic, lead, and OCPs. Limited screening was also conducted for polychlorinated biphenyls (PCBs). The PEA-E focus area (Site) investigated is limited to the areas of future demolition/construction at the campus and does not include the entire Berendo Middle School campus. For the purposes of this report, the Site is divided into the following three subareas: 1) Lower Playfield/Gymnasium Area; 2) Upper Plaza Area; and 3) Ramp Area. Figure 2 illustrates the location of each subarea.

The soil sample analytical results indicate that OCPs and PCBs were not detected above their respective screening thresholds within the Site, and thus are not anticipated to pose a health risk through inhalation, ingestion, or dermal contact during planned excavation or construction activities.

E2 calculated the 95 percent upper confidence level (95% UCL) for the entire collected arsenic and lead concentration data sets using the EPA's ProUCL statistical software. The results indicated that overall the concentrations were below the applicable soil screening levels (SSLs) including the DTSC Screening Level for lead and DTSC Background Level for arsenic. The comparison is 75.6 milligrams per kilogram (mg/kg) versus 80 mg/kg for lead and 6.6 mg/kg versus 12 mg/kg for arsenic.

Although the overall data set is acceptable localized "hot spots" were identified. Soil sampling and step-out sampling in the Upper Plaza Area revealed lead concentrations above the SSL of 80 mg/kg at locations EB-24 and EB-24-2'N. Soluble lead testing showed concentrations that qualify as California-hazardous, non-RCRA waste; this area is paved and does not present an exposure pathway to students or faculty under current use conditions.

Soil sampling and step-out sampling in the Ramp Area Plaza Area revealed arsenic above the SSL concentration of 12 mg/kg at locations EB-35, EB-35-2'N, and EB-35-10'SE. Lead was also above the SSL of 80 mg/kg at location EB-35. Soluble lead testing showed concentrations that qualify as California-hazardous, non-RCRA waste. The area around EB-35 is covered with landscape, and behind fences and hand rails. Student and faculty access to this area is limited and therefore does not present an exposure pathway to students or faculty under current use conditions.

The proposed future modernization projects will disturb surficial soil and the Upper Plaza Area and Ramp Area sample locations of concern, which could result in a pathway for exposure to students, faculty, or construction workers. Prior to construction, E2 recommends the removal of approximately 4.5 cubic yards of soil (1.5 cubic yards of removal in EB-24 [Upper Plaza] and 3 cubic yards from EB-35 [Ramp Area]) and collection of confirmation samples in the areas of concern using the methods described in Section 7 of this report. A Soil Removal Report documenting the excavation activities, confirmation sampling, and hazardous waste disposition should be prepared and submitted to LAUSD's Office of Environmental Health and Safety (OEHS).

Section 1 Introduction

This document presents the Preliminary Environmental Assessment Equivalent (PEA-E) for the Berendo Middle School upper plaza, gymnasium and playfields construction project, located at 1157 S. Berendo Street in the city and county of Los Angeles (Site), California (Figure 1). The Los Angeles Unified School (LAUSD) is proposing to demolish four portable classroom buildings and make a number of improvements (including constructing an upper plaza, gymnasium, playfields, restroom renovations, Americans with Disabilities Act (ADA) access, and removal of four portable buildings to the Berendo Middle School campus.

The proposed project is anticipated to disturb and/or uncover soil in the areas of the current portable buildings (upper plaza), new gymnasium, and playfields. Based on the information provided in a Phase I Environmental Site Assessment (ESA) dated October 21, 2013, and prepared by the Planning Center (TPC, 2013), there is a potential for chemicals of potential concern (COPCs) to exist in shallow soil.

E2 ManageTech, Inc. (E2), prepared a Preliminary Environmental Assessment Scoping Document and Work Plan Equivalent (Work Plan) dated March 18, 2016 (E2, 2016a). The Work Plan addressed the planned areas of construction. The Work Plan and this PEA-E Report were prepared in general accordance with the guidelines of the State of California Environmental Protection Agency (Cal-EPA) Department of Toxic Substances Control (DTSC) Preliminary Endangerment Assessment Guidance Manual (January 1994, Interim Final – Revised October 2013). The scope of services for this PEA-E is set forth in a proposal from E2, dated December 2, 2015 (E2, 2015). The scope of services has been authorized under Master Services Agreement No. 1290031/4400000960, Work Authorization No. E-307455-4EMT, dated December 7, 2015.

The Phase I ESA Report (TPC, 2013) identified portions of the Berendo Middle School campus with the following Recognized Environmental Conditions (RECs):

- *Lead Residues in Soil -- Due to the potential use of lead-based paint (LBP) in residential structures that historically occupied the Site, it is possible that elevated concentrations of lead could be present in shallow soil.*

- *Pesticide Residues in Soil -- Due to the potential use of organochlorine pesticides (OCPs) for termite control in residential structures that historically occupied [the Site], it is possible that elevated concentrations of OCPs could be present in shallow soil. Additionally, based on numerous environmental investigations at its existing school sites, the LAUSD has determined that arsenic residues may be present in soil due to the historical use of arsenical herbicides prior to 1950. Therefore, it is possible that elevated concentrations of arsenic may be present in shallow soil.*

- *Asbestos Containing Material (ACM) -- One of the portable buildings [at the school] has a posted notification warning sign of the presence of ACM. It is possible that other portable buildings at the Site could also contain ACM. Contractors should be made aware of possible presence of ACM in accordance with LAUSD guidelines and testing may be required before the portable buildings are removed.*

The purpose of this PEA-E Report is to evaluate soil in the proposed construction areas for the presence of the COPCs. The scope of the evaluation is limited to the areas of demolition/construction and does not include the entire Berendo Middle School campus (Figure 2).

The Environmental Professional for the project is Travis Stravasnik and the subsequent soil sampling was performed by Benjamin Morgan and Gabriela Valenzuela from E2. Daryl Hernandez is the registered Professional Engineer responsible for the project.

Section 2 Site Description

Descriptions of the Site, PEA focus area, and Site Geology and Hydrogeology are included below.

2.1 Campus Description

The campus consists of approximately 10.4 acres of land. The campus is located approximately one-quarter mile northwest of the intersection between Highways 10 and 110, in the city of Los Angeles (Figure 1). The Berendo Middle School campus is addressed at 1157 S. Berendo Street, Los Angeles, California 90006, and comprises of 32 parcels with Los Angeles County Assessor's Parcel Numbers (APNs) 5078-024-910 through 925 and 5078-023-900 through 915; however, the PEA focus area occupies sixteen small parcels, 5078-024-910 through 925. The area of ramp improvements is entirely with APN 5078-024-910.

2.2 PEA Focus Area

The PEA focus area investigated is limited to the areas of future construction at the campus. For the purposes of this report, the PEA focus area is divided into the following three subareas.

- **Lower Playfield/Gymnasium Area** – corresponds to the future construction of the playfield and new gymnasium. The area is uniformly raised above the adjacent 11th Street and currently developed with asphalt-paved play areas and concrete racquetball courts.
- **Upper Plaza Area** – consists of the future location of an outdoor plaza and southerly entrance to the new gymnasium building. This area adjacent to the south of the Lower Playfield/Gymnasium Area and elevated by an approximately 10-foot-high retaining wall. The Upper Plaza Area is currently developed with four portable classroom buildings, landscaping, and exterior pavement.
- **Ramp Area –** is the location of a proposed new ramp that will provide ADA access to the Healthy Start Clinic and Administration Building. The area is currently developed with a cement concrete ramp and landscaping.

The Lower Playfield/Gymnasium Area, Upper Plaza Area, and Ramp Area are collectively referred to as the "Site," or "subject Site". Other areas of the Berendo Middle School campus are excluded from this PEA-E report.

2.3 Site Geology and Hydrogeology

The Site is shown on the U.S. Geological Survey (USGS), Hollywood, California, 7 1/2 – minute topographic quadrangle (USGS, 1966, photorevised 1994) at an elevation of approximately 200 feet above mean sea level (msl). The topography in the Site vicinity slopes along a moderate hillside that slopes from south to north.

An independent review of geology and hydrogeology was beyond the scope of this PEA-E report. However, previous information regarding geological conditions at the Site was provided in the 2013 Phase I prepared by TPC. This document reported the following:

> *The Site is located in the northern portion of the Downey Plain within the Transverse Range Province of California. The Downey Plain is the principal flood plain of the ancestral Los Angeles River and is*

characterized by its wide expanse and gentle relief. Structurally, the Site is located in the Central Block of the Los Angeles Basin and is bounded by physiographic features that include the Santa Monica Mountains to the northeast, Elysian Hills to the north, Baldwin Hills to the west, and Repetto Hills and Los Angeles River to the east. Uppermost sediments in the vicinity of the Site are mapped as older Quaternary alluvial basin fan deposits of the Lakewood Formation consisting of unconsolidated sand, silt, and clay, along with minor stream-channel deposits. Beneath the alluvium are marine and nonmarine late-Cretaceous to Pleistocene sedimentary rocks, along with some Miocene volcanics.

TPC conducted a literature review and reported that groundwater depth was estimated to be greater than 40 feet below ground surface (bgs) and flow in a southwesterly direction.

Section 3 Background

3.1 Site Status and History

Based on a review of historical sources included in the Phase I ESA, the school campus appears to have been developed with single-family residences and a roadway as early as 1900, but was gradually replaced with school facilities as the middle school expanded west. The last residences were reported to have been removed by 1976 and the buildings that currently reside on the Site were constructed after 1989 and before 1994. Other historical uses of the campus were not identified in the Phase I ESA.

Subsurface investigations and soil cleanup activities were performed on nearby portions of the current Berendo Middle School to the east of the Site under the oversight of DTSC (http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=60001988) in 2014 (Placeworks, 2015). This area is the planned location of a future Monsenor Oscar Romero Charter School (MORCS). According to a Supplemental Sampling Report prepared by Placeworks, dated February 9, 2015, shallow soil sampling for arsenic, lead, OCPs, and polychlorinated biphenyls (PCBs) was initially conducted in a general grid pattern with soil borings spacing of between 40 and 60 feet. This sample spacing and approach was approved by the DTSC.

Placeworks reported soil sampling activities in these areas revealed the presence of lead (up to 489 milligrams per kilogram [mg/kg]) and arsenic (up to 40 mg/kg) which were above relevant screening levels at the time. TPC suggested that these lead and arsenic impacts were the result of historical property usages, as all these impacts were all found beneath currently asphalt-paved playground areas. OCPs and PCBs were not detected above relevant screening levels. As of the date of the Phase I ESA a total of 2 cubic yards of lead-impacted soil in two areas and 0.8 cubic yard of arsenic-impacted soil from a single area were pending excavation and removal from the MORCS area (Placeworks, 2015).

3.2 Hazardous Material/Substance/Waste Management Information

A Site reconnaissance was conducted by TPC in 2013 as part of the Phase I ESA. No significant hazardous materials use, underground storage tanks, environmental cleanups, or spills were reported in association with the school operations. Limited amounts of hazardous materials were stored on the campus and hazardous wastes such as cleaning supplies and painting products were picked up for disposal by LAUSD Office of Environmental Health and Safety (OEHS) on an as-needed basis.

3.3 Records Review

Records review findings are discussed in the Phase I ESA (TPC, 2013). Asbestos-containing materials (ACMs), miscellaneous organic and inorganic wastes, laboratory chemicals, and PCBs were among the hazardous wastes documented to have been removed from the Site as part of routine maintenance and periodic modernization. The RECs associated with the Phase I are described in Section 1 of this PEA-E report.

3.4 Site Reconnaissance

Site reconnaissance findings are discussed in the Phase I ESA (TPC, 2013). As noted above, the RECs associated with the Phase I are described in Section 1 of this PEA-E report.

3.5 Interviews

Interviews are discussed in the Phase I ESA (TPC, 2013). As noted above, the RECs associated with the Phase I are described in Section 1 of this PEA-E report.

Section 4 Apparent Problem

This PEA-E was conducted to evaluate whether current or past chemical usage, storage, and/or handling practices on the Site have resulted in the release of hazardous substances to the environment in concentrations that may pose a threat to the public health or environment.

The field investigation evaluated soil at the Site for the presence of COPCs including arsenic, lead, and OCPs. Limited screening was also conducted for PCBs.

The Phase I ESA for the Site and PEA focus area (TPC, 2013) found the following RECs:

- *Lead Residues in Soil -- Due to the potential use of LBP in residential structures that historically occupied the Site, it is possible that elevated concentrations of lead could be present in shallow soil.*
- *Pesticide Residues in Soil -- Due to the potential use of OCPs for termite control in residential structures that historically occupied [the Site], it is possible that elevated concentrations of OCPs could be present in shallow soil. Additionally, based on numerous environmental investigations at its existing school sites, the LAUSD has determined that arsenic residues may be present in soil due to the historical use of arsenical herbicides prior to 1950. Therefore, it is possible that elevated concentrations of arsenic may be present in shallow soil.*
- *ACM -- One of the portable buildings [at the school] has a posted notification warning sign of the presence of ACM. It is possible that other portable buildings at the Site could also contain ACM. Contractors should be made aware of possible presence of ACM in accordance with LAUSD guidelines and testing may be required before the portable buildings are removed.*

ACMs are not addressed by this PEA-E and will be addressed during the construction process. In addition to the potential contaminants listed by TPC, limited testing for PCBs has been added to the scope of the investigation. There are no known spills or releases that have occurred at the Site.

Due to the planned demolition and construction activities at the Site, soil disturbance could result in completion of the potential exposure pathways (ingestion, inhalation, and dermal contact) as further described in Section 5.1.

Section 5 Environmental Setting

The environmental setting is described above in Section 2.3, and in the Phase I ESA (TPC, 2013) as well as the PEA Work Plan (E2, 2016a).

5.1 Conceptual Site Model

A preliminary conceptual site model (CSM) for the human health is presented in Appendix B. The CSM identifies the potential receptor groups, exposure media, and exposure pathways associated with the Site. COPCs are identified. The Work Plan stated that all chemicals detected in at least one sample would be included as COPCs.

For initial screening purposes, to evaluate whether further Human Health Risk Assessment (HHRA) activities are needed, the COPC concentrations were compared to soil screening levels (SSLs) from a variety of sources [e.g. background concentrations in Southern California, DTSC Human and Ecological Risk Office (HERO) Note 3, and U.S. Environmental Protection Agency (EPA) Region 9 Regional Screening Levels-residential (RSL-r).

Land use is considered residential in nature. The exposure pathways evaluated include incidental ingestion of soil, dermal contact with soils, and inhalation of fugitive dust. The scope of the field sampling did not include volatile chemicals and, therefore, the CSM does not consider inhalation of chemical vapors emanating into outdoor and indoor air.

The CSM describes the pathways by which receptors (i.e., humans) may be exposed to the COPCs on the Site. An exposure pathway describes the course a chemical will take from a source to an exposure point where a receptor can be exposed to the chemical. A complete exposure pathway has five components:

- Primary source of contamination (e.g., storage tank, land application of a pesticide),
- Secondary source of contamination (e.g., vapors, wind-blown dust, subsurface soil),
- Release mechanism (e.g., direct contact, fugitive dust, stormwater erosion, leaching),
- Transport media (e.g., surface soil, air, stormwater runoff), and
- Receptor (e.g., humans or biota).

A summary of the CSM process used for the Site is shown in Appendix B and discussed in the following paragraphs.

5.2 Source of Potential Contamination

Based on the background research, the potential sources that could possibly result in a release of hazardous substances to the environment were identified as lead due to the weathering of LBP (pre-1979 structures), and arsenic and OCPs as a result of possible pesticide application at the property. These sources for COPCs had the potential to occur at the Lower Playfield/Gymnasium Area, Upper Plaza Area, and the Ramp Area. A potential source of PCB has not been identified; however, it has been included in the CSM and sampling program based on LAUSD policy and recent experience.

5.3 Release Mechanism

Weathering, scraping, chipping and abrasion of potential LBP surfaces may cause lead to be released and accumulate in soil around PEA focus area structures. Use as a termiticide has been known to result in significant concentrations of OCPs around structures with wood components built prior to January 1, 1989. The age of the campus also means it is possible that herbicides containing arsenic were applied below the paved areas. In consideration of the age of existing structures arsenic, lead, and OCPs may have been released in near surface soils.

5.4 Transport Mechanism

Once released to soil, heavy metals, OCPs, and PCBs are relatively immobile. These substances are not easily soluble, will typically not leach into rainwater and migrate to groundwater, they will likely adsorb to soil particles, and they will not readily volatilize and migrate as vapors.

5.5 Exposure Point

The primary exposure point is expected to be dermal contact with surface soil-bearing COPCs. However, exposure could occur through inhalation of dust, or vapors containing COPCs. The incidental ingestion of surface soil is also a potential exposure point.

5.6 Potential Receptors

The potential receptors include construction workers involved in the development of the new facilities, the community members located adjacent to the school campus, and students and staff at the school. Appendix B presents a summary evaluation of exposure pathways for the Site.

Section 6 Sampling Activities and Results

The following sections described the sampling activities and results of the PEA-E activities at the Site.

6.1 Summary of Activities

Sampling was performed in accordance with the Work Plan and with the *Interim Guidance Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical Transformers* (DTSC, 2006).

Lower Playfield/Gymnasium Area Sampling

In accordance with the Work Plan, the initial sampling event consisted of advancing 18 soil borings (EB-01 through EB-18) located in paved recreational areas using a grid pattern with approximately 50-foot spacing between borings. No step-out borings were advanced in the Lower Playfield/Gymnasium Area. Lower Playfield/Gymnasium Area sample locations are shown on Figure 3.

Upper Plaza Area

A total of 16 initial borings were advanced in the Upper Plaza Area. Borings EB-19 through EB-29 were distributed near the drip lines around accessible sides of the four portable classroom buildings. Borings locations EB-30 through EB-34 were selected to provide coverage of the paved grounds and landscape areas near the southern border Upper Plaza Area.

Based on the lead concentrations detected in sample EB-24-00", step out sampling was conducted as described in Section 6.6, below. Upper Plaza Area sampling locations are shown on Figure 3.

Ramp Area Sampling

Boring EB-35 was advanced in an unpaved landscape area between the existing cement concrete ramp and the Administration Building. Based on the arsenic and lead concentrations detected in sample EB-35-00", step out sampling was conducted as described in Section 6.6, below. Ramp Area sampling locations are shown on Figure 3.

Deviations from the Work Plan

Sample locations EB-23 and EB-25 were not sampled due to lack of access. Other locations were sampled according to the PEA Work Plan.

6.2 Pre-Field Activities

Underground Services Alert (USA) was notified of the intent to conduct subsurface investigations at least 48 hours prior to initiation of intrusive field sampling. Proposed locations of subsurface investigation were clearly marked with white paint as required by USA. USA contacted utility owners on record within the Site vicinity to notify them of the intention to conduct subsurface investigations in proximity to buried utilities.

A geophysical survey was conducted to assess for subsurface lines and obstructions. Ground penetrating radar (GPR) and electromagnetic line location geophysical methods were used. Electromagnetics are used to identify underground tanks, drums, and conduits. These features are detected by those methods because of the ferrous and electrically conductive material of their construction. GPR was used as a follow up technology to characterize identified electromagnetic anomalies, or assess for subsurface voids.

6.3 Sampling Methods

Coring of the asphalt, brick, or concrete surface was conducted to allow for collection of samples at each 6-inch interval to a total depth of 36 inches bgs (as sample recovery allowed). Samples were named using the top of the interval. For example, the six soil samples from boring EB-30 included EB-30-00", EB-30-06", EB-30-12", EB-30-18", EB-30-24", and EB-30-30".

Soil sample collection was conducted through the use of hand auger and direct push drilling. Hand-auger soil samples were placed into laboratory-supplied glass jars sealed with a Teflon-lined lid. Direct push soil samples were cut from the acetate sleeve and capped with a Teflon-lined lid. The samples were labeled and placed into an insulated cooler with ice for transport under chain-of-custody procedures to BC Laboratories, Inc. (BC Labs), a state-certified laboratory for analysis.

Following collection of the soil samples at each location, the boreholes were backfilled with hydrated bentonite pellets. The upper two inches of the borehole was filled with bagged sand from a commercial source, to allow room for expansion of bentonite, and completed with asphalt patch to match the surrounding surface. Three inches of bagged sand from a commercial source was used for the surface completion of borings in unpaved areas

6.4 Field Quality Control (Duplicates)

Field duplicate samples (co-located samples) were collected and analyzed to evaluate sampling and analytical precision. Field duplicates, DUP-01-00, DUP-02-00, DUP-03-00 and DUP-04-00 were collected at EB-32-00", EB-27-00", EB-14-00", and EB-35-00", respectively; and analyzed for arsenic and lead in the same manner as the primary samples. Agreement between duplicate sample results indicates good sampling and analytical precision. The precision goal for field duplicate analyses as stated in the PEA Work Plan is plus or minus 100 percent relative percent difference (RPD) for soil samples. The RPD between the samples and respective duplicates ranged from 1.5 to 41.3 RPD, which is within the precision goal range.

6.5 Decontamination Procedures and Disposal of Investigation Derived Waste

The hand auger bit and direct push sampling equipment was decontaminated before the start of the first boring of the day, between each boring, and before departing the Site each day. Decontamination was achieved using a two-stage decontamination process consisting of a non-phosphate detergent wash and a distilled water rinse. Decontamination fluids were limited and collected by the drilling contractor for batch disposal at their facility.

Direct push sampling activities generated an acetate sample sleeve that was cut to the appropriate depth intervals and sent in its entirety to the laboratory for analysis. No excess soil was generated from the direct push activities. At the hand auger locations, excess soil cuttings generated from each boring were returned to

the boring in which they were removed. Other investigation derived waste, including sample container boxes and nitrile gloves, were disposed of in the garbage dumpster at E2's office.

6.6 Sample Analysis Strategy

Soil samples were submitted to BC Labs, a laboratory accredited by the State Water Resources Control Board (SWRCB) Environmental Laboratory Accreditation Program (ELAP), certificate #1186. Initial soil samples and selected step-down/step-out soil samples were analyzed as specified in the Work Plan by the following analytical methods:

- Arsenic using EPA Method 6010B
- Lead using EPA Method 6010B
- OCPs using EPA Method 8081A
- PCBs using EPA Method 8082

Selected soil samples with lead concentrations that indicated potential hazardous waste characterization were further prepared and analyzed for soluble lead using the Waste Extraction Test (WET) and/or the Toxicity Characteristic Leaching Procedure (TCLP). WET and TCLP results were used for comparison with the California Soluble Threshold Limit Concentration (STLC) and the Resource Conservation and Recovery Act (RCRA) toxicity criteria.

Sample EB-35-00" was analyzed as a discrete sample for OCPs. Other surface samples were composited for OCP analysis by the laboratory using the DTSC 2006 guidance at a 4:1 or 3:1 ratio for the following groups:

- Composite of C1 (A, B, C, D) from EB-01, EB-02, EB-03 and EB-04
- Composite of C2 (A, B, C, D) from EB-05, EB-06, EB-07 and EB-08
- Composite of C3 (A, B, C, D) from EB-09, EB-10, EB-11 and EB-12
- Composite of C4 (A, B, C) from EB-13, EB-14 and EB-15
- Composite of C5 (A, B, C) from EB-16, EB-17 and EB-18
- Composite of C6 (A, B, C) from EB-20, EB-24 and EB-26
- Composite of C7 (A, B, C) from EB-30, EB-31, EB-27
- Composite of C8 (A, B, C) from EB-32, EB-33 and EB-34

Subsurface samples were put on hold at the laboratory pending the results of the surface samples.

6.7 Results

Analytical results were compared to the SSLs as introduced above in Section 5.1. The applicable SSLs for compounds detected at the Site are listed below, with one-fourth values listed for comparison with OCP composite sample results.

- Arsenic – 12 mg/kg is the DTSC's upper bound estimate (95th percentile) for background concentrations in Southern California
- Lead – 80 mg/kg is the Residential DTSC-SL established in HERO Note 3
- OCPs – various threshold concentrations apply to OCPs:
  - 4,4'-dichlorodiphenyldichloroethane (4,4'-DDD) – 2,300 micrograms per kilogram (µg/kg) is the EPA Region 9 RSL-r (One fourth value is 575 µg/kg)
  - 4,4'-dichlorodiphenyldichloroethylene (4,4'-DDE) – 2,000 µg/kg is the EPA Region 9 RSL-r (One fourth value is 500 µg/kg)
  - 4,4'-dichlorodiphenyltrichloroethane (4,4'-DDT) – 1,900 µg/kg is the EPA Region 9 RSL-r (One fourth value is 475 µg/kg)
  - Chlordane – 440 µg/kg is the Residential DTSC-SL for chlordane (One fourth value is 110 µg/kg)
- PCBs – various EPA RSLs-r apply
  - Aroclor-1254 – 0.24 mg/kg is the EPA Region 9 RSL-r

Arsenic and lead sample results including soluble testing are provided in Table 1, OCPs results are provided in Table 2, and PCB results are provided in Table 3. The full laboratory analytical reports are provided in Appendix A.

Lower Playfield/Gymnasium Area Sampling

Arsenic or lead were not detected above their respective SSLs in any of the surface soil samples collected in the Lower Playfield/Gymnasium Area. Arsenic was detected in 14 of 18 surface soil samples at concentrations ranging from 0.53 to 3.4 mg/kg. Lead was detected in all of the 18 surface soil samples at concentrations ranging from 3.3 to 67 mg/kg. As none of the surface soil samples exceeded screening thresholds for arsenic or lead, the subsurface samples were not analyzed for arsenic or lead.

4,4'-DDD, 4,4'-DDE, and 4,4'-DDT were the only OCPs detected and were limited to composite sample *Composite of C4 (A, B, C).* Since the sample was composited 3:1, screening values were reduced from the RSL-r by 1/3 in order to ensure they reflect the screening level of the composited samples in a worst-case scenario. These OCPs were three to four orders of magnitude below the reduced SSLs.

Since none of the OCPs detected in composited surface soil samples exceeded 1/3 of their respective threshold screening concentrations, the surface soil samples were not analyzed discreetly and the subsurface samples were not analyzed for OCPs.

Surface sample EB-05-00" was analyzed for PCBs and did not have detectable concentrations.

Upper Plaza Area Sampling

Arsenic analysis was specified for eight of the 10 surface sample locations in Upper Plaza Area, and run incidentally along with lead in three of the step-out samples. Arsenic was detected in 10 of the 13 samples at concentrations ranging from 0.45 to 8.7 mg/kg. These concentrations are below the arsenic threshold and no subsurface samples or further step-out testing was conducted.

Lead was detected in all 11 of the specified surface soil samples at concentrations ranging from 6.8 to 800 mg/kg. Soil sample EB-24-00" had a lead concentration of 800 mg/kg and was the only location that exceeded the SSL of 80 mg/kg. Step-down soil sample EB-24-06" was subsequently analyzed for lead and had a concentration of 14 mg/kg, which is less than the applicable SSL.

On June 14, 2016, a step-out sampling event was conducted to collect step-out samples at three locations around EB-24. Two of the three surface step-out samples had concentrations below the applicable SSL. Boring location EB-24-2'N had lead soil sample results of 160 mg/kg at the surface, 260 mg/kg at 6 inches bgs, and 95 mg/kg at 12 inches bgs. Although these lead results exceeded the applicable SSL, no further step-out sampling was conducted due to access limitations from the adjacent portable classroom and adjacent retaining wall. This area is currently paved and does not present an exposure pathway to students or faculty.

Three soil samples collected at and around EB-24 were analyzed for soluble lead using the WET and TCLP methodologies. Three of the four WET results exceeded the STLC of 5 milligrams per liter (mg/L). None of the TCLP sample results exceeded the RCRA hazardous waste threshold of 5 mg/L.

4,4'-DDE, and 4,4'-DDT were the only OCPs detected and were limited to composite samples *Composite of C6 (A, B, C)* and *Composite of C8 (A, B, C).* Since the samples were composited 3:1, screening values were reduced from the applicable SSLs by 1/3 in order to ensure they reflect the screening level of the composited samples in a worst-case scenario. These OCPs were three orders of magnitude below the screening values.

Since none of the OCPs detected in composited surface soil samples exceeded 1/3 of their respective threshold screening concentrations, the surface soil samples were not analyzed discreetly and the subsurface samples were not analyzed for OCPs.

Surface sample EB-32-00" was analyzed for PCBs and did not have detectable concentrations.

Ramp Area Sampling

Soil sample EB-35-00" and its duplicate (DUP-04-00) contained arsenic concentrations of 33 and 34 mg/kg and lead concentrations of 160 and 170 mg/kg, respectively; thus both the arsenic and lead SSLs were exceeded. Step-down sample EB-35-06" contained arsenic at 1.7 mg/kg and lead at 13 mg/kg with both being less than the respective thresholds.

On June 14, 2016, an initial step-out sampling event was conducted at three step-out locations to further define arsenic and lead concentrations around EB-35. Borings were placed 2 feet to the north at EB-35-2'N, 4 feet to the south at EB-35-4'S, and 10 feet to the southeast at EB-35-10'S. All three locations were within the contiguous unpaved area between the Administration Building and the concrete ramp. A fourth boring EB-36

was placed approximately 20 feet to the west on the opposite side of the concrete ramp. With the exception of EB-35-2'N and EB-35-10'SE, all arsenic and lead concentrations from surface samples during the initial step-out event were below their respective SSLs.

Soil sample EB-35-2'N-00" contained arsenic at 15 mg/kg, which exceeded the threshold of 12 mg/kg. Step-down sample EB-35-2'N-06" had an arsenic concentration of 1.9 mg/kg, which is below the threshold.

Soil sample EB-35-10'SE contained arsenic at 17 mg/kg which exceeded the threshold of 12 mg/kg. Based on the continued discovery of elevated arsenic concentrations, a second step out event was planned to collect samples at six locations in the landscape area around EB-35 and EB-35-10'SE. No further room was available to sample around EB-35-2'N. On August 11, 2016, E2 collected samples from six borings designated EB-37 through EB-42. Surface soil samples from the six borings were analyzed for arsenic only and reported concentrations ranging from 4.0 to 9.1 mg/kg. Because the additional arsenic results were below the screening level of 12 mg/kg no further testing was conducted. The area around EB-35 is covered with landscape, and behind fences and hand rails. Student and faculty access to this area is limited and potential exposures are minimal.

Soil sample EB-35-00" was also analyzed for soluble lead using the WET and TCLP methodologies. The TCLP result of 0.057 mg/L was below the RCRA hazardous waste threshold of 5 mg/L. However, the WET result of 8.5 mg/L exceeded the STLC of 5 mg/L.

Chlordane was the only OCP detected and was reported in the duplicate pair EB-35-00"/DUP-04-00 at concentrations of 160 and 120 μg/kg, respectively. These samples were not composited and were below its SSL of 440 μg/kg. No step down or step-out samples were analyzed for OCPs.

Aroclor-1254 was the only PCB detected and was reported in the duplicate pair EB-35-00"/DUP-04-00 at concentrations of 0.022 and 0.053 mg/kg, respectively. These concentrations were well below the applicable SSL of 0.24 mg/kg. No step down or step-out samples were analyzed for PCBs.

Section 7 Limited Soil Removal

Overall the soil results are below their respective SSLs (Section 6.7 above and 7.2 below). Soil sampling results documented the presence of limited "hot-spot" areas with soil exceeding SSLs for lead in the Upper Plaza Area and arsenic and lead in the Ramp Area. These areas have not been evaluated for human health risks beyond the comparisons to referenced screening thresholds. Based on discussions with LAUSD this section of the PEA-E report has been prepared to plan for removing soil from the "hot-spot" areas as a conservative measure. An evaluation of present day and post-removal arsenic and lead concentrations is also provided.

7.1 Soil Removal Plan

The soil removal plan consists of removing soil from locations exceeding the arsenic and lead screening thresholds followed by collection and analysis of confirmation soil samples (Upper Plaza only).

Upper Plaza Area

A single area will be excavated to remove soil in the Upper Plaza Area around borings EB24 and EB24-2'N. Soil will be removed at sample location EB-24-00 to a depth of 9 inches bgs with excavation limits defined by EB-24-3'E (and retaining wall to the east), EB-24-2'S to the south, and the uncharacterized area two feet to the west where the portable classroom will be removed (Figure 6). A confirmation will sample will be collected at the west limit of this portion the excavation and analyzed for total lead by EPA method 6010B.

Excavation to the north will extend beyond EB-24-2'N and reach a depth of 15 inches bgs. This portion of the excavation will extend two feet to the north, east, and west of boring EB-24-2'N (Figure 6). Confirmation samples will be collected at the north and west limits of this portion the excavation and analyzed for total lead by EPA method 6010B. The total excavation volume for both portions of the Upper Plaza Area is approximately 40 cubic feet (CF) or 1.5 cubic yards (CY).

Ramp Area

Soil will be excavated around borings EB-35, EB-35-2'N, and EB-35-10'SE to a depth of 9 inches bgs. The excavation will remove all of the soil within the planter area to the north, east, and west and to boring EB-37-00 to the south (Figure 7). The excavation volume is approximately 72 CF or 3 CY.

Methodology

The excavation activities will be initiated following the removal of the portable classroom building at the Upper Plaza Area and notification by LAUSD OEHS. The proposed excavation areas will be delineated using white marking paint, stakes, or flags. One bush will need to be removed from the Ramp Area prior to excavation. USA will then be notified of the intent to conduct excavations investigations at least 48 hours prior to breaking ground. A geophysical survey will be conducted to assess for subsurface lines and obstructions. As noted during previous clearance for the boring activities, there are multiple utilities present especially in the Ramp Area.

Based on the small size and volume of the excavation areas, and on the prevalence of subsurface utilities, the soil removal will be conducted using hand tools. Excavation will stop a minimum of 3 inches from the limits of

marked live utilities. Soil surrounding other subsurface obstructions such as roots greater than 2 inches in diameter, debris, or abandoned lines will be completely removed and the obstacle left in place. If larger volumes of soil need to be removed based on confirmation results, excavation equipment and roll-off disposal bins may be warranted.

Excavated soil will be placed directly into Department of Transportation (DOT) –approved 55-gallon drums. The drums will be stored in a secure location at the Site designated by LAUSD pending off-Site disposal. Based on the estimated volume approximately 18 drums of soil will be generated. Hand tools will be decontaminated with a three-stage wash prior to demobilization, and the fluids will be collected in its own 55-gallon drum.

Waste Disposal

Based on the results of soluble lead testing, the areas to be excavated are considered California-hazardous, non-RCRA waste. Up to 18 drums of waste soil and 1 drum of non-hazardous decontamination fluids will be properly documented and disposed at an off-Site facility.

Cost Estimate

The following table provides a summary of rough costs that can be used for budgetary planning of the proposed soil removal. These activities do not include costs for public notices.

Soil Removal Cost Estimate

Task No.	Task Name	Cost
1	Project Management and Coordination	$1,000 - $2,000
2	Utility Clearance, Soil Removal and Oversight	$4,500 - $7,000
3	Hazardous Waste Disposal (Drums)	$3,000 - $4,000
4	Closure Report Letter	$1,500 - $2,000
	Total	**$10,000 - $15,000**

7.2 Pre- and Post-Removal Comparison

This section provides a comparison of the pre-removal and post-removal soil conditions. E2 calculated the 95 percent upper confidence level (95% UCL) for the entire existing arsenic and lead concentration data sets using the EPA ProUCL statistical software. The 95% UCL was also calculated for the hypothetical arsenic and lead data sets that would result from soil removal activities. The removal scenario consisted of removing the soil at the following sample locations.

- **Upper Plaza Area** – EB24-00", EB24-2'N-00", EB24-2'N-06", and EB24-2'N-12"
- **Ramp Area** – EB35-00, EB35-2'N and EB-35-10'SE

For duplicate samples, the higher of the two concentrations from a pair was used for calculation. The Site-wide 95% UCLs are presented in the following table.

95 Percent Upper Confidence Levels for Soil

Scenario	Arsenic – 95% UCL (mg/kg)	Lead – 95% UCL (mg/kg)
Pre-Removal	6.6	75.6
Post-Removal	3.9	28.1
Cleanup Goal	12	80

Notes:

Arsenic cleanup goal is based on the DTSC Background concentration.

Lead cleanup goal is based on the DTSC-SL.

The calculated arsenic and lead 95% UCLs are both less than the cleanup goal for the Pre-Removal and Post-Removal conditions. EPA ProUCL calculations are provided in Appendix C.

Section 8 Community Outreach

The following section describes the community outreach activities prior to the field work and following preparation of this draft report.

8.1 Pre-Work Notices

E2 provided an advance notice of the PEA-E activities in both English and Spanish to members of the community located near the PEA and the campus. The notices are attached in Appendix D.

8.1.1 Mailers

On March 16, 2016, E2 mailed copies of the Pre-Work Notice (both English and Spanish) to the parents of 845 students and to 5 elected officials. The mailing list was provided to E2 by OEHS.

8.1.2 Handouts

E2 hand delivered copies of the Pre-Work Notice in both English and Spanish to the homes, businesses, and properties that border the work line of sight on Berendo Middle School campus. Approximately 50 notices were delivered.

Approximately 100 copies of the Pre-Work Notice were also provided to the school administration who in turn provided the copies to faculty members.

8.2 Draft PEA-E Community Update and Notice of Availability

Copies of the Community Update in both English and Spanish were sent to the homes of students who attend Berendo Middle School. Copies of the Notice of Availability were published in local newspapers. The documents are attached in Appendix D.

8.2.1 Mailers

Copies of the Community Update in both English and Spanish were mailed to residences and businesses within 500 feet of the school, to parents of students, and to elected officials in the area of Berendo Middle School.

8.2.2 Handouts

E2 provided the school administration with English-language hard copies of the Community Update. The copies were be placed in the faculty in-boxes. Additionally, copies in English, Spanish, and Korean were made available in the office.

8.2.3 Newspapers

The Notice of Availability was published in the Los Angeles Daily News (English language), La Opinión(Spanish language), and the Korea Daily (Korean language) newspapers. Copies of the publications are provided in Appendix D.

8.2.4 Postings

The Notice of Availability in the English language, Spanish language, and Korean language were be posted on the outer fences on each of the four sides of the Berendo Middle School campus. Images of the postings are included in Appendix D.

8.3 Draft PEA Availability

E2 placed a copy of the Draft PEA-E in the Berendo Middle School campus library and an additional copy at the Pico Union Branch Library, a public library located 1 mile east of Berendo Middle School. The Draft PEA-E was also be made available on the LAUSD Office of Environmental Health and Safety Site Assessment web page located at: http://achieve.lausd.net/siteassessment. The Draft PEA was available for public review for a period of 30 days from newspaper publication of the Notice of Availability (November 8 to December 9, 2016) in each English, Spanish, and Korean language newspapers identified in Section 8.2.3 above.

LAUSD reported that no comments were received during the public comment period.

8.4 Community Profile

A limited community profile for the neighborhood zip code (90006) is provided in Appendix E.

Section 9 Conclusions and Recommendations

9.1 Conclusions

The soil sample analytical results reported above indicate that OCPs and PCBs were not detected above their respective SSLs within the three portions of the PEA focus area, and thus are not anticipated to pose a health risk through inhalation, ingestion, or dermal contact during planned excavation or construction activities.

Soil sampling and step-out sampling in the Upper Plaza Area revealed lead concentrations above the applicable SSL of 80 mg/kg at locations EB-24 and EB-24-2'N. Soluble lead testing showed concentrations that qualify as California-hazardous, non-RCRA waste; this area is paved and does not present an exposure pathway to students or faculty under current use conditions.

Soil sampling and step-out sampling in the Ramp Area Plaza Area revealed arsenic above the applicable SSL of 12 mg/kg at locations EB-35, EB-35-2'N, and EB-35-10'SE. Lead was also above the SSL at location EB-35. Soluble lead testing showed concentrations that qualify as California-hazardous, non-RCRA waste. The area around EB-35 is covered with landscape, and behind fences and hand rails. Student and faculty access to this area is limited and therefore does not present an exposure pathway to students or faculty under current use conditions.

A statistical analyses indicates that overall (95% UCL) lead and arsenic concentrations are below their respective SSLs. The removal of the above hot-spot areas was planned as a conservative measure.

9.2 Recommendations

The proposed future modernization projects will disturb surficial soil and the Upper Plaza Area and Ramp Area sample locations of concern, which could result in a pathway for exposure to students, faculty, or construction workers. Prior to construction, E2 recommends the removal of approximately 4.5 cubic yards of soil (1.5 CY of removal in EB-24 [Upper Plaza] and 3 CY from EB-35 [Ramp Area]) and collection of confirmation samples in the areas of concern using the methods described in Section 7 of this report. A Soil Removal Report documenting the excavation activities, confirmation sampling, and hazardous waste disposition should be prepared and submitted to LAUSD OEHS.

Section 10 References

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DTSC, Undated (accessed September 20, 2016). Determination of a Southern California Regional Background Arsenic Concentration in Soil, http://www.dtsc.ca.gov/upload/Background-Arsenic.pdf.

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The Planning Center (TPC), 2013. Phase I Environmental Site Assessment, Monsenor Oscar Romero Charter School, Areas A through D of LAUSD Berendo Middle School 1175 South Berendo Street, Los Angeles, California 90006, dated October 21.

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United States Environmental Protection Agency (USEPA). Regional Screening Levels for Chemical Contaminants at Superfund Sites, Generic Tables (May 2016). (accessed September 20, 2016). https://www.epa.gov/risk/regional-screening-levels-rsls

United States Geological Survey (USGS), 1966, photorevised 1994. 7 1/2 – Minute Topographic Map of Hollywood Quadrangle, California.

Tables

Table 1
Summary of Detected Lead and Arsenic in Soil Samples
Test Method EPA 6010B
LAUSD - Berendo Middle School
Los Angeles, California

Location	Field Sample ID	Depth (inches bgs)	Date	Metals (mg/kg)		TCLP (mg/L)	WET (mg/L)
				Arsenic	Lead	Lead	Lead
				7440-38-2	7439-92-1	7439-92-1	7439-92-1
Lower Playfield/Gymnasium Area							
EB-01	EB-01-00"	0-6	3/21/2016	**1.5**	**14**	NA	NA
EB-02	EB-02-00"	0-6	3/21/2016	**1.7**	**19**	NA	NA
EB-03	EB-03-00"	0-6	3/21/2016	**3.3**	**57**	NA	NA
EB-04	EB-04-00"	0-6	3/21/2016	**3.0**	**39**	NA	NA
EB-05	EB-05-00"	0-6	3/21/2016	**2.5**	**21**	NA	NA
EB-06	EB-06-00"	0-6	3/21/2016	**3.4**	**46**	NA	NA
EB-07	EB-07-00"	0-6	3/21/2016	**0.50 J**	**11**	NA	NA
EB-08	EB-08-00"	0-6	3/21/2016	ND (<0.40)	**6.6**	NA	NA
EB-09	EB-09-00"	0-6	3/21/2016	ND (<0.40)	**7.2**	NA	NA
EB-10	EB-10-00"	0-6	3/21/2016	**1.7**	**12**	NA	NA
EB-11	EB-11-00"	0-6	3/21/2016	**3.2**	**45**	NA	NA
EB-12	EB-12-00"	0-6	3/21/2016	**2.4**	**38**	NA	NA
EB-13	EB-13-00"	0-6	3/21/2016	**1.7**	**9.4**	NA	NA
EB-14	EB-14-00"	0-6	3/21/2016	ND (<0.40)	**7.3**	NA	NA
	DUP-03-00	0-6	3/21/2016	**0.62 J**	**7.9**	NA	NA
EB-15	EB-15-00"	0-6	3/21/2016	**0.81 J**	**10**	NA	NA
EB-16	EB-16-00"	0-6	3/21/2016	**0.53 J**	**3.5**	NA	NA
EB-17	EB-17-00"	0-6	3/21/2016	**0.96 J**	**4.3**	NA	NA
EB-18	EB-18-00"	0-6	3/21/2016	ND (<0.40)	**5.0**	NA	NA
Upper Plaza Area							
EB-19	EB-19-00"	0-6	3/21/2016	NA	**6.0**	NA	NA
EB-20	EB-20-00"	0-6	3/21/2016	**1.8**	**13**	NA	NA
EB-21	EB-21-00"	0-6	3/21/2016	NA	**3.3**	NA	NA
EB-22	EB-22-00"	0-6	3/21/2016	NA	**67**	NA	**3.1**
EB-24	EB-24-00"	0-6	3/21/2016	**8.7**	**800**	**0.12 J**	**18**
	EB-24-06"	6-12	3/21/2016	NA	**14**	NA	NA
	EB-24-2'S-00	0-6	6/14/2016	**5.3**	**54**	NA	NA
	EB-24-3'E-00	0-6	6/14/2016	**3.5**	**25**	NA	NA
	EB-24-2'N-00	0-6	6/14/2016	**3.0**	**160**	**0.058 J**	**11**
	EB-24-2'N-06	6-12	6/14/2016	NA	**260**	NA	**14**
	EB-24-2'N-12	12-18	6/14/2016	NA	**95**	NA	**0.41 J**
EB-26	EB-26-00"	0-6	3/21/2016	ND (<0.40)	**5.5**	NA	NA
EB-27	EB-27-00"	0-6	3/21/2016	**0.45 J**	**9.5**	NA	NA
	DUP-02-00	0-6	3/21/2016	**0.59 J**	**6.8**	NA	NA
EB-28	EB-28-00"	0-6	3/21/2016	NA	**11**	NA	NA
EB-29	EB-29-00"	0-6	3/21/2016	NA	**19**	NA	NA
EB-30	EB-30-00"	0-6	3/21/2016	**8.0**	**29**	NA	NA
EB-31	EB-31-00"	0-6	3/21/2016	**1.9**	**32**	NA	NA
EB-32	EB-32-00"	0-6	3/21/2016	**6.0**	**22**	NA	NA
	DUP-01-00	0-6	3/21/2016	**6.4**	**26**	NA	NA
EB-33	EB-33-00"	0-6	3/21/2016	**1.2**	**24**	NA	NA
EB-34	EB-34-00"	0-6	3/21/2016	**1.1**	**14**	NA	NA
Ramp Area							
EB-35	EB-35-00"	0-6	3/21/2016	**33**	**160**	**0.057 J**	**8.5**
	DUP-04-00	0-6	3/21/2016	**34**	**170**	NA	NA
	EB-35-06"	6-12	3/21/2016	**1.7**	**13**	NA	NA
	EB-35-2'N-00	0-6	6/14/2016	**15**	**71**	NA	**3.2**
	EB-35-2'N-06	6-12	6/14/2016	**1.9**	NA	NA	NA
	EB-35-4'S-00	0-6	6/14/2016	**5.3**	**24**	NA	NA
	EB-35-10'SE-00	0-6	6/14/2016	**17**	**72**	NA	NA
EB-36	EB-36-00	0-6	6/14/2016	**7.4**	**70**	NA	**3.2**
EB-37	EB-37-00	0-6	08/11/2016	**9.1**	NA	NA	NA
EB-38	EB-38-00	0-6	08/11/2016	**6.4**	NA	NA	NA
EB-39	EB-39-00	0-6	08/11/2016	**4**	NA	NA	NA
EB-40	EB-40-00	0-6	08/11/2016	**5.4**	NA	NA	NA
EB-41	EB-41-00	0-6	08/11/2016	**5.8**	NA	NA	NA
EB-42	EB-42-00	0-6	08/11/2016	**7.6**	NA	NA	NA
DTSC Background Level				12	-	-	-
Residential DTSC-SL				NA	80	-	-
California Hazardous Waste Threshold (STLC or TTLC)				500	1,000	-	5
RCRA Hazardous Waste Threshold - TCLP				-	-	5	-

Notes:

mg/kg - milligrams per kilogram

bgs - below ground surface

ND (<0.40) - denotes result was below the detection limit of 0.40 mg/kg

NA - denotes sample not analyzed

DUP - field duplicate

J - Estimated Value

^ - Detection and quantitation limits were raised due to matrix interference

* - Analytical data presented in mg/L

DTSC Background Level - Southern California Regional Background Arsenic Concentration in Soil

DTSC-SL - Department of Toxic Substances Control Screening Level from HERO Note 3, June 2016

TTLC - Total Threshold Limit Concentration

WET - Waste Extraction Test

STLC - Soluble Threshold Limit Concentration

TCLP - Toxicity Characteristic Leach Procedure

Red lettering indicates samples exceeding the relevant thresholds

Table 2
Summary of Detected Organochlorine Pesticides in Soil Samples
Test Method EPA 8081A
LAUSD - Berendo Middle School
Los Angeles, California

Location	Field Sample ID	Depth (feet bgs)	Date	Organochlorine Pesticides (mg/kg)			
				4,4'-DDD	4,4'-DDE	4,4'-DDT	Chlordane
				72-54-8	72-55-9	50-29-3	57-74-9
EB-35	EB-35-00"	0-6	3/21/2016	ND (<0.000094)	ND (<0.00011)	ND (<0.00018)	**0.16**
	DUP-04-00	0-6	3/21/2016	ND (<0.000094)	ND (<0.00011)	ND (<0.00018)	**0.12**
Composite of C1 (A, B, C, D)	Composite of C1 (A, B, C, D)	0-6	3/21/2016	ND (<0.0070)	ND (<0.0086)	ND (<0.013)	ND (<0.34)
Composite of C2 (A, B, C, D)	Composite of C2 (A, B, C, D)	0-6	3/21/2016	ND (<0.0070)	ND (<0.0086)	ND (<0.013)	ND (<0.34)
Composite of C3 (A, B, C, D)	Composite of C3 (A, B, C, D)	0-6	3/21/2016	ND (<0.00047)	ND (<0.00057)	ND (<0.00088)	ND (<0.023)
Composite of C4 (A, B, C)	Composite of C4 (A, B, C)	0-6	3/21/2016	**0.00066 J^**	**0.0011 J^**	**0.00054 J^**	ND (<0.012)
Composite of C5 (A, B, C)	Composite of C5 (A, B, C)	0-6	3/21/2016	ND (<0.000047)	ND (<0.000057)	ND (<0.000088)	ND (<0.0023)
Composite of C6 (A, B, C)	Composite of C6 (A, B, C)	0-6	3/21/2016	ND (<0.00047)	**0.00086 J^**	ND (<0.00088)	ND (<0.023)
Composite of C7 (A, B, C)	Composite of C7 (A, B, C)	0-6	3/21/2016	ND (<0.00024)	ND (<0.00028)	ND (<0.00044)	ND (<0.012)
Composite of C8 (A, B, C)	Composite of C8 (A, B, C)	0-6	3/21/2016	ND (<0.00024)	**0.0012 J^**	**0.0051 ^**	ND (<0.012)
			Residential DTSC-SL	-	-	-	0.44
			Residential Region 9 RSL	2.3	2	1.9	1.7

Notes:

mg/kg - miligrams per kilogram

bgs - below ground surface

ND (<X) - denotes result was below the detection limit of X µg/kg

NA - denotes sample not analyzed

DUP - field duplicate

J - Estimated Value

^ - Detection and quantitation limits were raised due to matrix interference

* - Analytical data presented in µg/L

DTSC-SL - Department of Toxic Substances Control Screening Level from HERO Note 3, June 2016

Region 9 RSL - Environmental Protection Agency (EPA) Regional Screening Level (May 2016 Update)

Table 3
Summary of Detected Polychlorinated Biphenyls (PCBs-Aroclors) in Soil Samples
Test Method EPA 8082
LAUSD - Berendo Middle School
Los Angeles, California

Location	Field Sample ID	Depth (feet bgs)	Date	Polychlorinated Biphenyls (mg/kg)	
				Aroclor-1254	Total PCB's (Summation)
				11097-69-1	1336-36-3
EB-05	EB-05-00"	0-6	3/21/2016	ND (<0.017)	ND (<0.027)
EB-32	EB-32-00"	0-6	3/21/2016	ND (<0.0032)	ND (<0.0050)
EB-35	EB-35-00"	0-6	3/21/2016	**0.022**	**0.022**
	DUP-04-00	0-6	3/21/2016	**0.053**	**0.053**
			Residential Region 9 RSL	0.24	0.23

Notes:

mg/kg - milligrams per kilogram

bgs - below ground surface

PCB - polychlorinated biphenyls

ND (<X) - denotes result was below the detection limit of X mg/kg

NA - denotes sample not analyzed

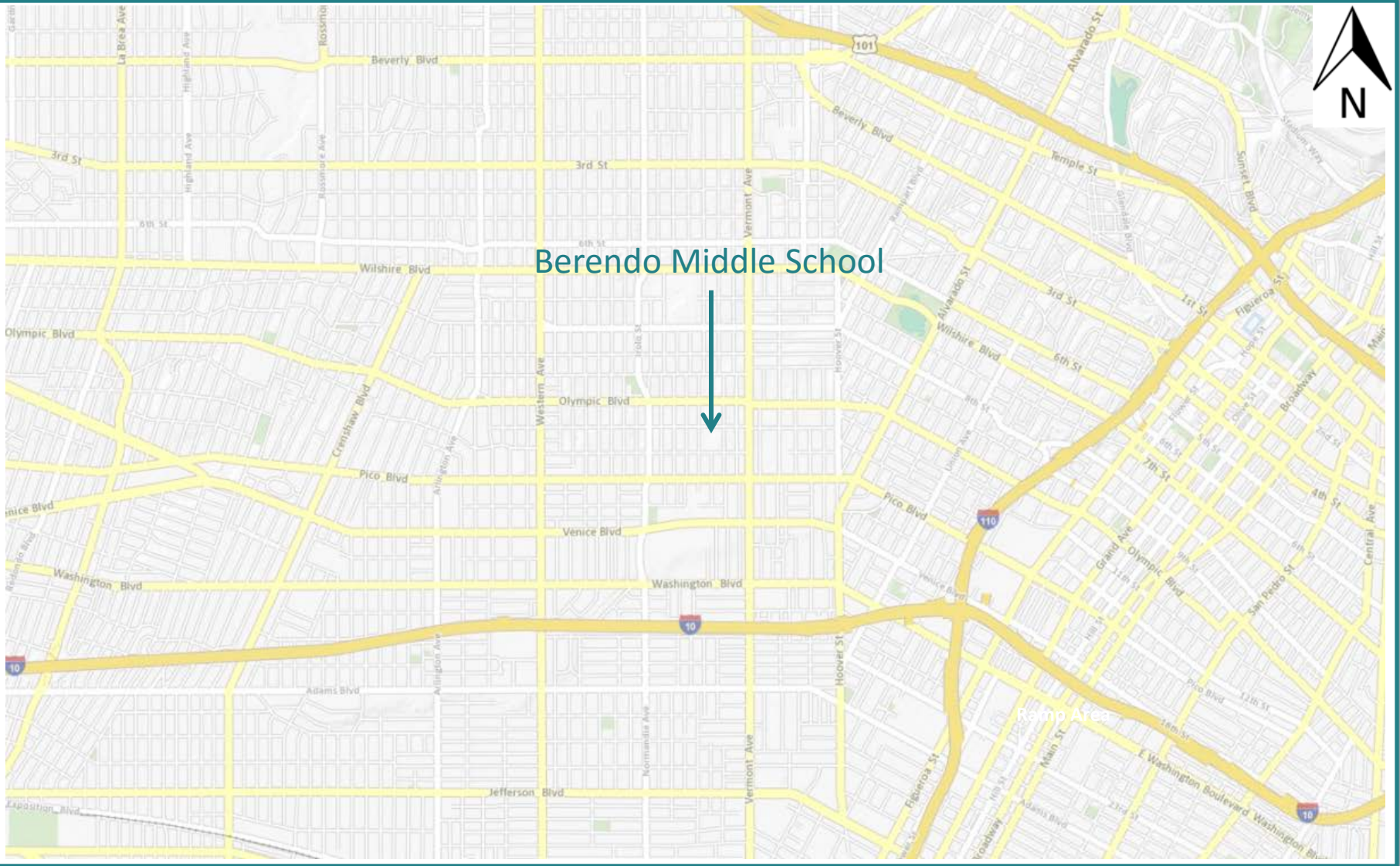
DUP - field duplicate

J - Estimated Value

^ - Detection and quantitation limits were raised due to matrix interference

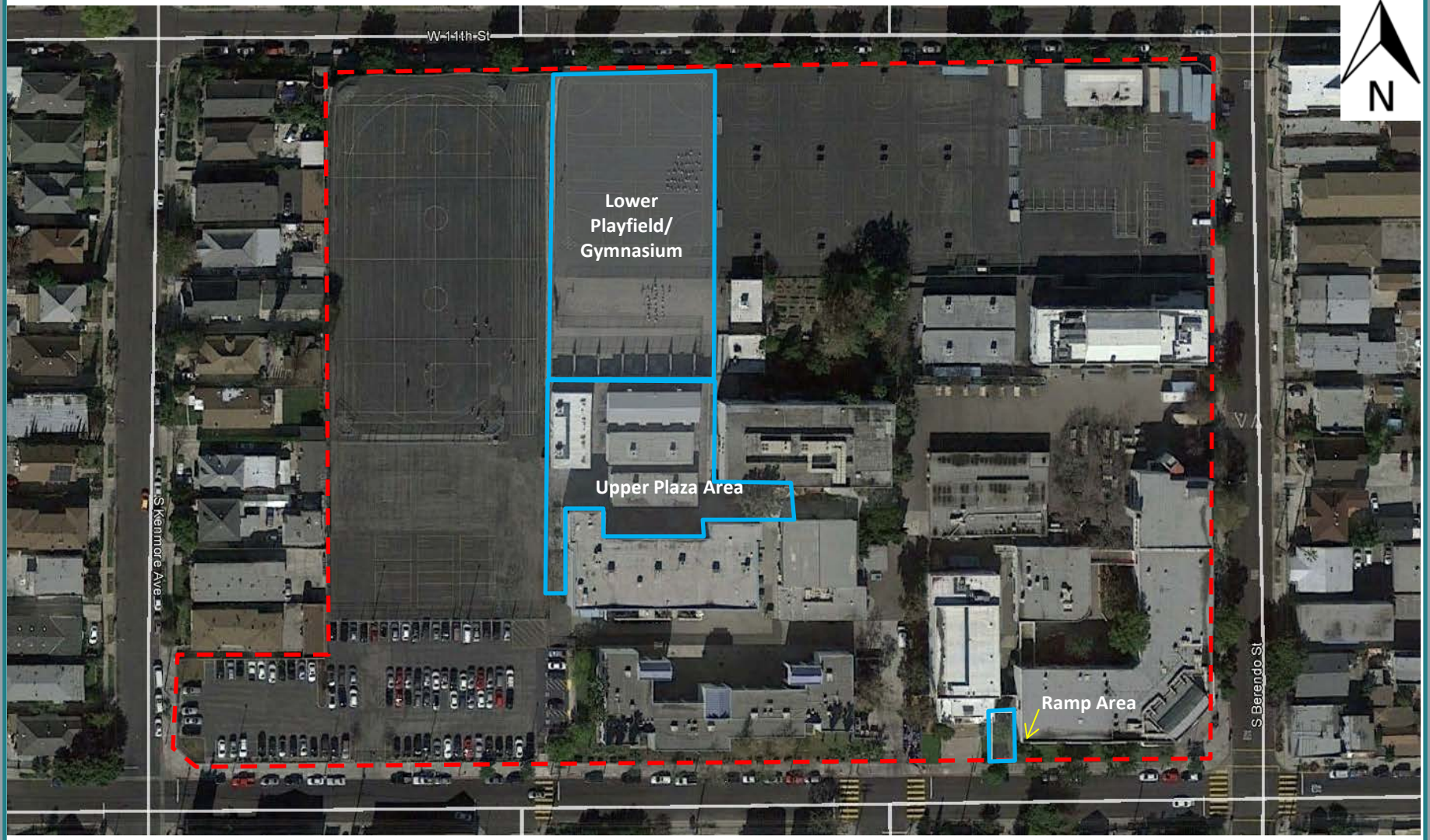
Region 9 RSL - Environmental Protection Agency (EPA) Re Region 9 RSL - Environmental Protection Agency (EPA) Regional Screening Level (May 2016 Update)

Figures



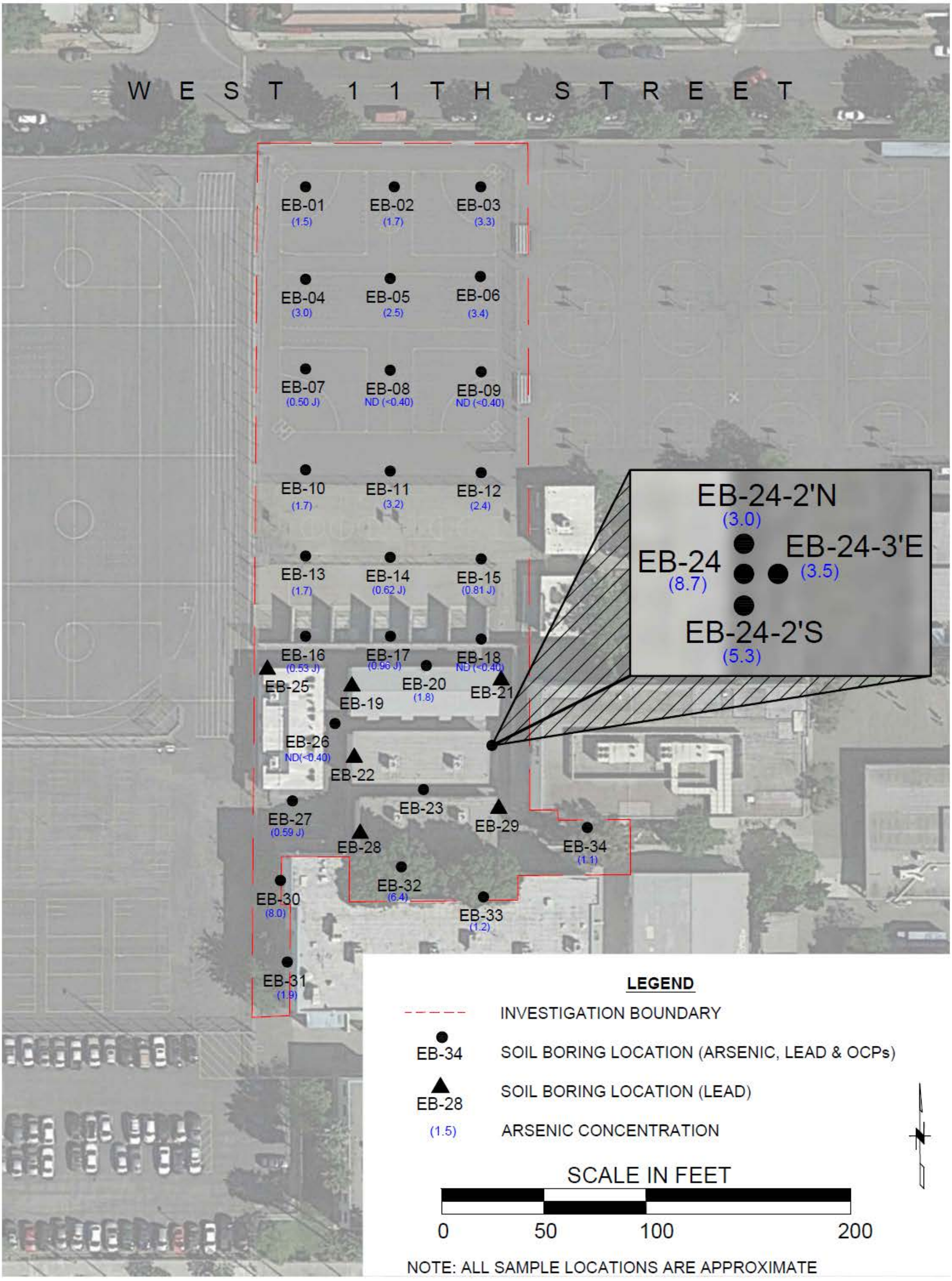
E2MANAGETECH
COLLABORATE | INNOVATE | DELIVER

Berendo Middle School 1157 South Berendo Street Los Angeles, California 90006		Site Location Map
Project Number: 16-201-001	Date: September 2016	Figure 1

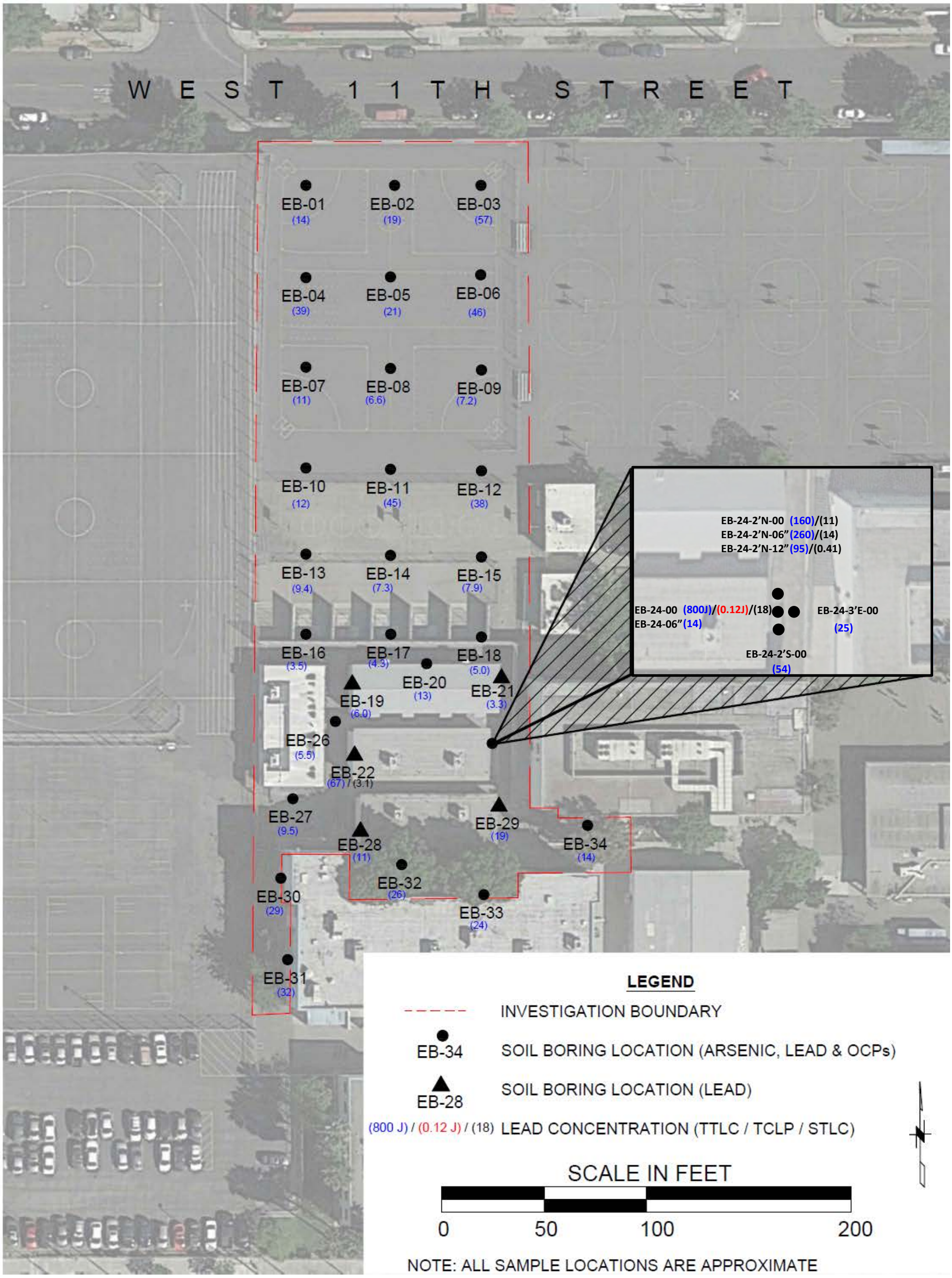


E2MANAGETECH
COLLABORATE | INNOVATE | DELIVER

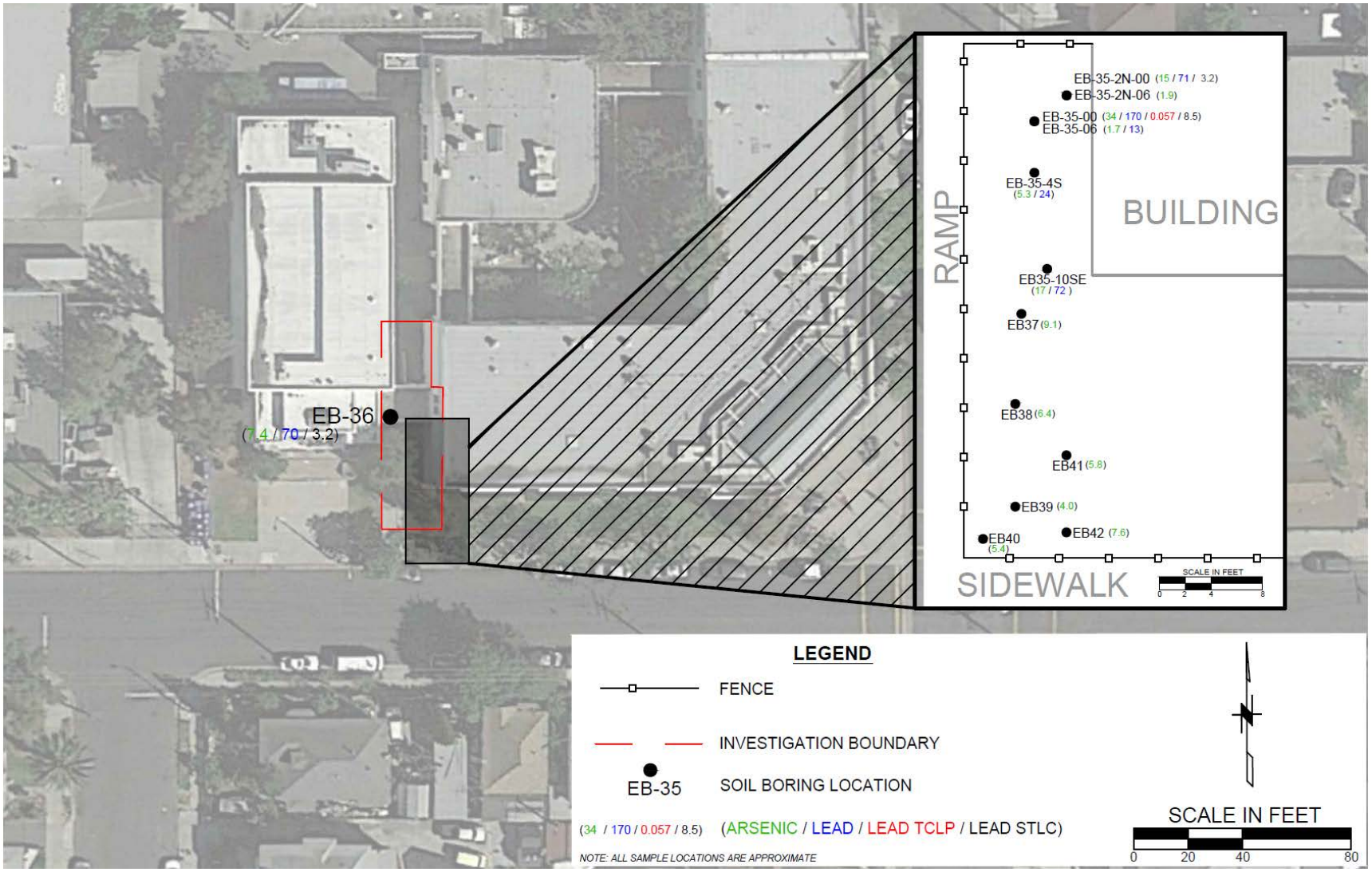
Berendo Middle School 1157 South Berendo Street Los Angeles, California 90006		Campus Map
Project Number: 16-201-001	Date: September 2016	Figure 2



E2MANAGETECH COLLABORATE | INNOVATE | DELIVER	Berendo Middle School 1157 South Berendo Street Los Angeles, California 90006	Arsenic Sample Results Lower Playfield/Gymnasium and Upper Plaza Areas
	Project Number: 16-201-001	Date: September 2016
		Figure 3



E2MANAGETECH COLLABORATE | INNOVATE | DELIVER	Berendo Middle School 1157 South Berendo Street Los Angeles, California 90006	Lead Sample Results Lower Playfield/Gymnasium and Upper Plaza Areas
	Project Number: 16-201-001	Date: September 2016
		Figure 4



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COLLABORATE | INNOVATE | DELIVER

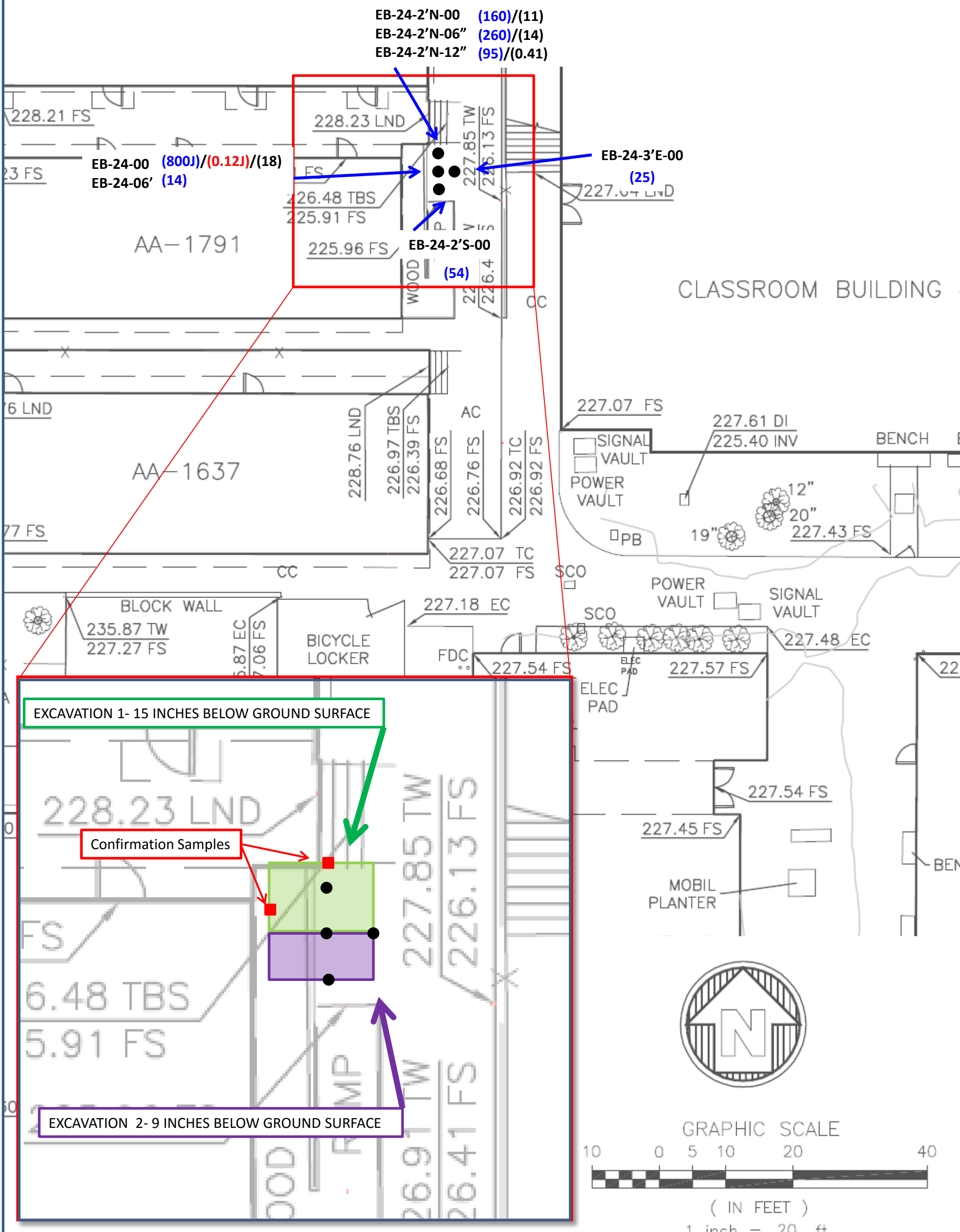
Berendo Middle School
1157 South Berendo Street
Los Angeles, California 90006

Arsenic and Lead Sample Results
Ramp Area

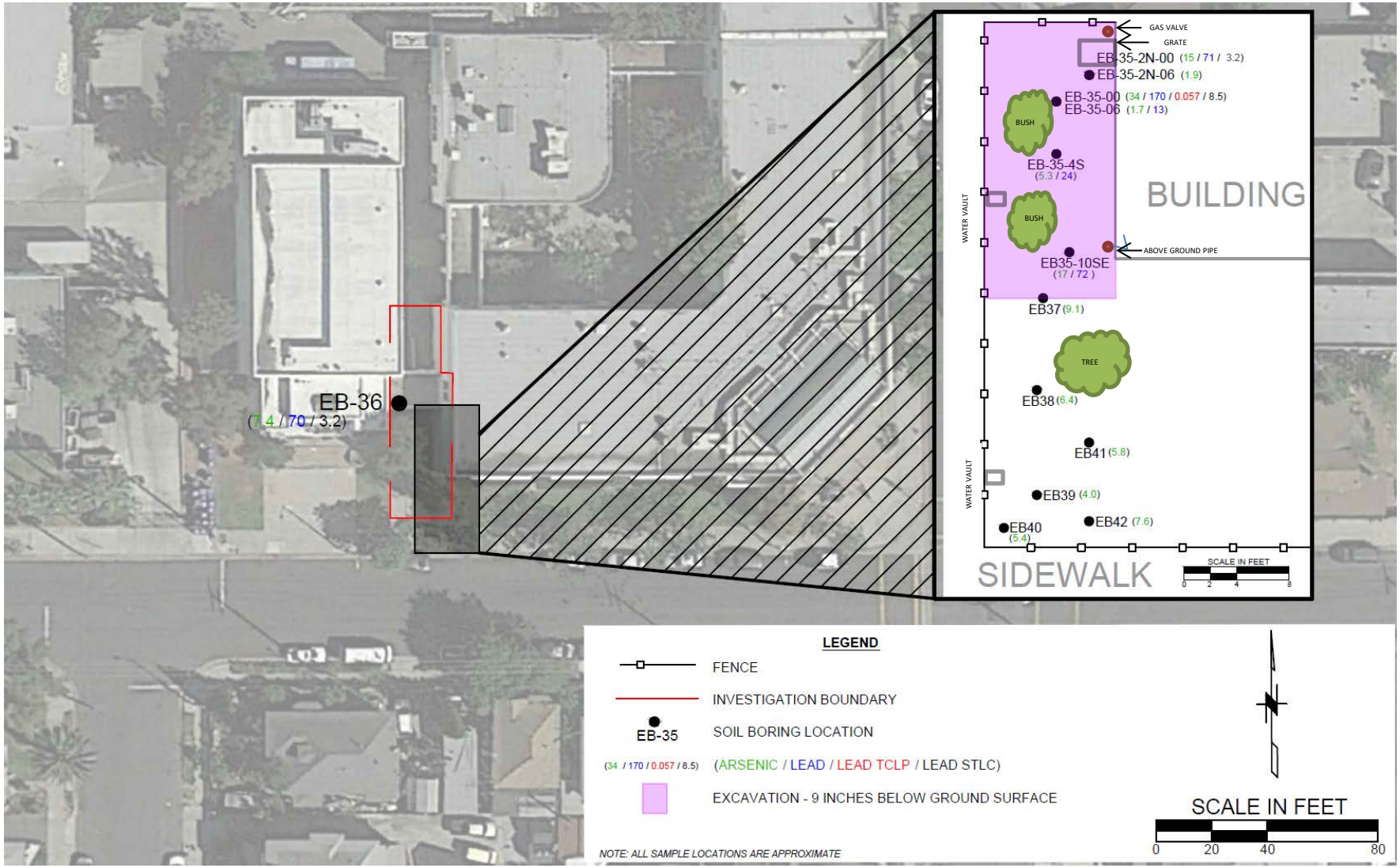
PROJECT NUMBER:
16-201-001

DATE:
September 2016

Figure 5



E2MANAGETECH COLLABORATE | INNOVATE | DELIVER	Berendo Middle School 1157 South Berendo Street Los Angeles, California 90006	Soil Removal Plan Lower Playfield/Gymnasium and Upper Plaza Areas
	Project Number: 16-201-001	Date: September 2016
		Figure 6



E2MANAGETECH
COLLABORATE | INNOVATE | DELIVER

Berendo Middle School
1157 South Berendo Street
Los Angeles, California 90006

Soil Removal Plan
Ramp Area

PROJECT NUMBER:
16-201-001

DATE:
September 2016

Figure 7