

# **FINAL CLOSURE REPORT LEAD CONTAMINATED SOIL REMOVAL**

## **Point Vicente Interpretive Center Rancho Palos Verdes, California**

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**CD-ROM #1**      **Final Closure Report (Text, Tables, Figures, Appendices A-J, and Additional Project Photographs)**

**CD-ROM #2**      **Project Video Documentation**

## LIST OF ACRONYMS

bcy	bank cubic yards
bgs	below ground surface
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
mg/m <sup>3</sup>	milligrams per cubic meter
CAL OSHA	California Occupational Safety and Health Administration
CCB	continuing calibration blank
CDQMP	Chemical Data Quality Management Plan
CFR	Code of Federal Regulations
CIH	Certified Industrial Hygienist
DDE	dichlorodiphenyldichloroethylene
DDT	dichlorodiphenyltrichloroethane
DERP	Defense Environmental Restoration Program
DOT	Department of Transportation
DPW	Department of Public Works
DTSC	Department of Toxic Substances Control
DVR	data validation report
EPA	United States Environmental Protection Agency
FUDS	Formerly Used Defense Site
ICS	interelement correction factor standard
IDW	investigation-derived waste
ITSI	Innovative Technical Solutions, Inc.
KD	known distance
LDC	Laboratory Data Consultants, Inc.
MS/MSD	matrix spike/matrix spike duplicate
PRAC	Pre-Placed Remedial Action Contract
PVIC	Point Vicente Interpretive Center
PVMR	Point Vicente Military Reserve

QA	quality assurance
QCSR	Quality Control Summary Report
RA	Removal Action
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
RPD	relative percent difference
SAIC	Science Applications International Corporation
SAP	Sampling and Analysis Plan
SOW	Scope of Work
STLC	Solubility Threshold Limit Concentration
SVOC	semivolatile organic compound
TCLP	Toxicity Characteristic Leaching Procedure
TDC	Transportation and Disposal Coordinator
TRPH	total recoverable petroleum hydrocarbons(s)
USA	Underground Service Alert
USCS	Unified Soils Classification System
USACE	United States Army Corps of Engineers
VOC	volatile organic compound
XRF	X-ray fluorescence

## EXECUTIVE SUMMARY

This Final Closure Report (Report) was prepared by Innovative Technical Solutions, Inc. (ITSI) for the United States Army Corps of Engineers (USACE) under the Formerly Used Defense Site (FUDS) Defense Environmental Restoration Program (DERP) for the Point Vicente Interpretive Center (PVIC) in Rancho Palos Verdes, California (Figures 1 and 2). This Report provides a detailed discussion of the technical methods and field activities that were used for the investigation and subsequent removal of lead-contaminated soil from the site.

The goal of this Removal Action (RA) was to identify, delineate, and remove from the site soil with lead concentrations greater than the remedial action level of 250 milligrams per kilogram (mg/kg). The areas of contamination are comprised of 5 hot spots (Area A) and the broader Area of Concern (Area B), Figure 3. The soil that contained lead concentrations above the remedial action level was identified through preliminary sampling (and subsequent confirmation sampling), and was excavated, stockpiled, analyzed for waste characterization, and shipped to an off-site disposal facility. One foot of soil within the Area of Concern (the area shown in green on Figure 3) was removed from the ground and either disposed off site, or reused as backfill within "Hot Spots" if the lead concentration was below the action level. After the results of the confirmation samples indicated that the action level cleanup goals had been achieved, the excavations were backfilled with imported soil. A one-foot cap of imported soil was placed throughout the Area of Concern. The site was hydroseeded, a temporary sprinkler system was installed, a fence was erected around the utility area, and the parking lots were swept clean.

ITSI also performed post-remediation sampling during the installation of the storm drain by the City of Rancho Palos Verdes. During this activity, some soil above the action level was identified, excavated, and shipped off site for disposal.

During the site activities, the USACE, City of Rancho Palos Verdes and their representatives, Department of Toxic Substances Control (DTSC), and ITSI attended weekly meetings. Field decisions were made during the meetings that facilitated the project execution. These meetings

kept all vested parties apprised of minor changes made to the Work Plan due to site conditions that varied from original expectations

## 1.0 INTRODUCTION

The PVIC is located at the former U.S. Army Known Distance (KD) Rifle Range, which was active from 1955 to 1974 and was part of Tract 8 of the former Point Vicente Military Reserve (PVMR). This Report documents the soil removal action at the PVIC in Rancho Palos Verdes, California, conducted by ITSI from September 16 to December 13, 2002. The work was performed under the Pre-placed Remedial Action Contract (PRAC) DACA05-99-D-0014, Task Order CQ-07, and was based upon the Scope of Work (SOW) dated February 21, 2002.

## 2.0 CLOSURE REPORT ORGANIZATION

This Report provides a detailed discussion and the backup documentation of the remedial action conducted to support site closure. The field effort included soil sampling, excavation of lead-contaminated soil, backfill procedures, and related tasks as required by the Final Work Plan (ITSI, 2002). The remedial action activities are presented in the following sections. Sections 1 and 2 provide the introduction to the project and describe the organization of the report. Section 3.0 discusses the remedial action level used during the project. Section 4.0 discusses the remedial action activities including community interaction during fieldwork, soil sampling and excavation activities, waste disposal activities, and site restoration activities. Section 5.0 presents the related chemical data Quality Control Summary Data Report. Section 6.0 presents conclusions of the remedial action, and Section 7.0 provides the references for this project.

Supporting field documentation for the remedial action is provided in Appendices A through J.

Appendix A—Photographic Documentation, is provided as a hard copy in this report. Because a large volume of data was generated during the course of this project, Appendices B through J are provided on compact disc (CD-ROM #1) to conserve paper (electronic copies of this Report and Appendix A also are included on CD-ROM #1). This compact disc is organized using bookmarks (in Adobe Acrobat format: click on “show/hide navigation pane” to access the bookmarks), which allows the reader to view any part of the document easily. The appendices are further organized by date. A paper copy of the Appendices will be provided by ITSI on request. A second compact disc (CD-ROM #2) contains a thirty-minute video that depicts each phase of the Removal Action.

### 3.0 REMEDIAL ACTION LEVEL

The investigative and remedial phases of this project confirmed the findings of the previous descriptions of both the site geology and the areas of contamination (the 5 Hot Spots, Area A) and the broader Areas of Concern (Area B) (Figure 3). The information collected during this project added more detail and delineation to the existing site database. The remedial action level of 250 mg/kg total lead was established in the *Final Remedial Action Plan (RAP), Point Vicente Interpretive Center* (Science Applications International Corporation [SAIC] 2002c). Section 4.4.1 discusses the accuracy of the XRF field analysis with respect to laboratory correlation samples. It also discusses the determination of a suitable “cut-off” value for the XRF to insure that the actual value of lead concentrations remaining in the soil were not above the 250 mg/kg remedial action level.

## 4.0 SCOPE OF WORK

The SOW that was prepared by the USACE fulfills the requirements of the City of Rancho Palos Verdes and DTSC to facilitate future use (i.e., development) of this site. The City- and Agency-approved SOW was modified during the course of fieldwork to address unknown or changed field conditions. The modifications are listed below, and a full description of each change or variance is included in the appropriate section of the text:

- The number of preliminary (pre-excavation) samples was increased by 128 samples because the depth to bedrock was deeper than expected and areas of contamination extended outside the known Hot Spot areas as shown in Figure 3.
- The alignment of Storm Drain B and subsequent preliminary sample locations were relocated to protect a large palm tree.
- The alignment of the future utilities and subsequent preliminary sample locations were changed based on updated utility plans provided by the City of Rancho Palos Verdes.
- The X-ray fluorescence (XRF) action level for field screening was initially 212 mg/kg, as stated in the Work Plan. This value was increased to 250 mg/kg total lead after sufficient correlation data was evaluated during a weekly stakeholder meeting on September 25, 2002.
- Samples of soil excavated from the Area of Concern were sampled for total lead concentration prior to being used for backfill in the Hot Spot areas.
- More trees and brush were cleared and removed from the site than originally planned due to the size of the Hot Spots, and the extension of the Hot Spots into existing vegetation.
- The majority of soil requiring off-site disposal was disposed of as a California Hazardous Waste. It was initially expected that most would be characterized as Special Waste.
- Approximately 3 feet of soil was removed from the entire building pad for the future expansion. This soil was below the remedial action level and was reused as backfill on site under the one foot of imported cover material. Structural fill was imported and

stockpiled on site to replace the soil removed from the building pad for the future expansion.

- The hydroseed mix was changed at the request of the City of Rancho Palos Verdes. The trees to be planted on site were left in the delivery crates for later planting as requested by the City of Rancho Palos Verdes.

Investigative and remedial activities were discussed in weekly site meetings with the USACE, the City of Rancho Palos Verdes Department of Public Works (DPW), DTSC, and the City's consultant, The Source Group. Revisions of and variances to the Final Work Plan were approved by all stakeholders during these meetings. The meeting minutes are included in Appendix G.

#### **4.1 COMMUNITY RELATIONS**

The USACE developed a Community Relations Plan (SAIC, 2002b) prior to the beginning of remedial activities conducted under this Task Order. This plan was developed to encourage local citizen participation in the environmental investigation and to encourage dialogue between the community and the organizations responsible for conducting the site investigation and remedial action. The public reviewed the plan from February 26 through March 28, 2002, without comment. A community meeting was held to discuss the project on March 19, 2002, at Fred Hesse, Jr. Park, 29301 Hawthorne Boulevard, Rancho Palos Verdes, California. All public comments were in favor of starting the remediation project as soon as possible.

In addition to the meeting, ITSI mailed a fact sheet to members of the community and other interested parties in accordance with the DTSC Public Participation Department (ITSI, 2002). Project information such as the scheduled start and finish dates, work hours, traffic routes, and contact names were provided. The Removal Action was announced prior to the start of field activities in two local newspapers, the *Daily Breeze* in Torrance, California and the *Palos Verdes Peninsula News* in Rancho Palos Verdes. Information was also provided by the *Palos Verdes Peninsula News* on their Community Events web page at [www.pvnews.com](http://www.pvnews.com). The Community Relations flyer and newspaper articles are presented in Appendix B.

Community relations continued during the execution of the project field activities. Both papers mentioned above asked to visit the site to take photographs and interview personnel to write articles for publication in their newspapers. At the request and with the approval of the USACE, ITSI prepared a News Media Plan that provided instructions for both ITSI and media personnel with respect to site access, health and safety requirements, and authorization for the transfer of information. This plan is included in Appendix B.

#### **4.2 MOBILIZATION AND SITE PREPARATION**

Field activities began the second week of September, 2002, when the equipment and supplies required to complete the remedial activities were mobilized to the site. The site facilities included a temporary storage trailer for construction materials and small equipment, and a temporary office trailer. ITSI established the utility hookups (i.e. power, water, phones, and limited sanitary facilities) required during the field implementation phase of the project. ITSI stored all supplies within a designated fenced area at the site. Smaller supplies were stored in the office trailer. ITSI completed the following preconstruction tasks in accordance with the Final Work Plan, (ITSI, 2002):

- A Pre-construction meeting was held on August 19, 2002, at the City DPW and attended by USACE and ITSI personnel. During this meeting, all phases of the field effort were discussed. The purpose of the meeting was to establish project requirements and to review the scope of work and technical approach, field implementation, and procedures.
- At least 48 hours prior to excavation activities, the relevant regulatory agencies and appropriate persons were notified, including the City of Rancho Palos Verdes and the USACE.
- ITSI set up site security to prevent unauthorized access to the site. Access to the property along the western edge (bluff) was prevented with temporary fencing. ITSI established and delineated the exclusion zone, contaminant reduction zone, and other work areas.
- ITSI provided Lead Awareness training by a Certified Industrial Hygienist (CIH) to all personnel that had the potential to be exposed to lead-contaminated soil.

- ITSI provided Lead Blood Baseline analysis for site personnel prior to mobilizing to the site and after demobilizing from the site. (See Section 4.5).
- ITSI located underground utilities, surveyed the topographical configuration of the site, and surveyed and delineated the sample collection grid.

#### **4.2.1 Permits**

No permits were required for performance of the tasks associated with this Removal Action. ITSI's annual California Occupational Safety and Health Administration (CAL OSHA) excavation permit (2002-904276) was current for excavation greater than five feet below ground surface (bgs). Underground Service Alert (USA) was notified 48 hours prior to conducting intrusive fieldwork (sampling and excavation). Transportation and disposal of soil was documented under the appropriate waste manifests (copies are included in Appendix H).

#### **4.2.2 Site Survey**

After mobilization to the site, the survey crew located the building pad, storm drains and other utilities, and the sample grids for the Hot Spots (Figure 3). The survey data for future utility alignments was based on Merit Engineering plans and construction drawings, as shown in the drawing included in the Final Work Plan (ITSI, 2002). Merit Engineering modified the location of Storm Drain B to save several trees on site. Merit Engineering provided topographical surveys of the site prior to excavation activities (Figure 2), after the excavations had been completed (Figure 4), and after the site was backfilled and graded (Figure 5). The contour lines in these figures were based on the surveys conducted by Merit Engineering. The surveys were used to determine the quantity of soil excavated, and the quantity of fill required by the final design grades and elevations.

### **4.3 CLEARING AND GRUBBING**

Clearing activities included the removal of trees, stumps, roots, brush, and other vegetation from the site. Trees, brush and other vegetation were cleared both prior to and after the sampling effort. The grubbing of roots and debris, and stripping of vegetation, took place after the preliminary (pre-excavation) sampling event had been completed. The areas within the Hot Spots were cleared as needed. Trees and vegetation left standing were protected from damage

incidental to clearing, grubbing, and construction operations by barriers or other means as required.

A large tree between the building and Hot Spot 1 was marked for preservation, but because the contamination encroached upon its root zone, the tree could not be saved. Due to the location of Hot Spot 4, additional clearing, grubbing, and tree removal was required to collect samples and remove soil. Excavation of the top one foot of soil is discussed in Section 4.6, Soil Excavation.

The following specific activities were implemented:

- Approximately 2 acres, mostly overgrown vegetation, was cleared.
- About 12 trees were removed.
- The lower branches of large trees were trimmed as necessary to allow workers to remove and replace soil around the trees.
- Roots, brush, wood, and other refuse from clearing and grubbing operations was mulched and disposed to a permitted Class III landfill by Waste Management.
- The existing fence around the sewage lift station was removed and disposed, and a new chain link fence with a locking gate was installed to keep out unauthorized personnel.
- Some of the native sagebrush on the southeast side of the site near Hot Spot 4 had to be removed due to the occurrence of a high concentration of lead in soil, which required a step-out in that area. However, the majority of the sagebrush that encroached on the Area of Concern was spared.
- The *E. Parvifolium* plant located in the demonstration garden just west of the existing PVIC structure was protected from construction on the east side with 1/8-inch thick plywood. This plant remains fully intact following field activities, and the plywood was left in place to protect the plant during the installation of the storm drain by the City of Rancho Palos Verdes.

#### 4.4 SOIL SAMPLING

There were three discrete sampling events during the course of the remedial action. The first sampling event (Preliminary Sampling) was completed prior to remedial activities to determine

the lateral and vertical extent of soil exceeding the remedial action level. This included the step-out sampling. The second sampling event (Confirmation Sampling) took place after most of the contaminated soil had been removed from the excavation areas to confirm that the cleanup level had been achieved. This event is described in the discussion of excavation activities (Section 4.6). The third sampling event (Post-Remediation Sampling) was conducted to provide proper soil management if the City of Rancho Palos Verdes' utility contractor encountered lead-impacted soil during its construction of the underground storm drains. Other samples collected during the remedial activities included waste characterization and import soil analysis, and air monitoring. Documentation for the sampling events (e.g., site photos, analytical data, daily field logs, and chains-of-custody) is provided in Appendices A through J.

The sampling events are described in the following sections. The results of sample analysis are summarized in Tables 1 through 6. The laboratory reports and data are included in Appendices C and D. Chains of custody are included in Appendix I. Figure 3 shows the preliminary sampling boring locations and Figure 4 shows the locations of the post-excavation confirmation samples. Not all sample locations were plotted on the above figures due to the large number of samples collected; only the confirmation samples collected to document the final excavated limits are shown in detail. Figure 5 shows the locations of all of the post-remediation samples.

#### **4.4.1 Preliminary Sampling**

Preliminary sampling was conducted from September 16 through September 27, 2002, in accordance with the Final Work Plan (ITSI, 2002). The sample locations were based on previous investigations in the five known Hot Spots, along two proposed storm drains, and in areas of the future proposed building pad and future utility locations (Figure 3). The preliminary sampling was used to better define the lateral and vertical extent of contamination prior to mobilizing excavation equipment and personnel. Preliminary sampling was conducted with a Simco 2800 Drill Rig using direct push technology (Geoprobe), and samples were collected in translucent tubes within the drive casings.

As part of the sample collection procedure, each sample was assigned a unique sample number that included a lettering code as a prefix (i.e., HS1 indicates Hot Spot 1), a grid location

identification number, and the sample depth. Boring logs included a description of the subsurface materials, including the type of earth materials found, notes on ease of drilling or hardness of material, depths at which bedrock was encountered, and other important notes on geologic conditions. Boring logs are included in Appendix F.

During the preliminary sample collection, the subsurface materials were identified and given a unified soils classification (USCS). The soil was described and documented as import soil, native fill material, undisturbed native soil, or bedrock. Distinguishing properties of soil units were also noted. Sampling depths were increased in Hot Spot areas because the depth to bedrock was deeper than expected, and the subsurface material appeared to be one homogenous fill (no distinction could be made between native fill and undisturbed native fill).

The previous investigations indicated that lead contamination was limited to the upper unit of disturbed native fill material. However, the ITSI preliminary sampling investigation revealed a bullet at 6 feet bgs in Hot Spot 1. To avoid potential data gaps, as well as to ascertain that all lead-contaminated soil above the remedial action level was removed, the sampling depths and frequency were increased.

The number of preliminary sample borings also was increased, as several areas in Hot Spots 1 and 2 were higher than the action level. This required additional “step-out” borings to delineate the edges of the contaminated areas. The boring locations for the preliminary samples are shown on Figure 3 and the boring logs are presented in Appendix F. Sample results are presented in Table 1.

In addition to the samples collected from the drill rig, preliminary samples were collected within soil from the Area of Concern that was proposed to be re-used as backfill in the Hot Spots (the Area of Concern is defined as the green area shown on Figure 3). This soil was sampled and analyzed for total lead at a frequency of approximately 1 sample per 150 cubic yards. Several areas had total lead levels greater than the action level. This soil was not used for backfill, and was excavated and placed in the stockpiles for off-site disposal. The locations where samples were collected in situ are shown on Figure 3.

During preliminary sampling it was found that the XRF field analytical method could not prepare and analyze the samples as quickly as planned. Typically at the end of each work day, the remaining soil samples collected during the day that were not analyzed by XRF were sent to the laboratory for total lead analysis. The analytical method used was the same method as used to confirm the XRF accuracy. The laboratory analytical reports are presented in Appendix C, and the XRF field data is presented in Appendix D. Table 1 shows a direct comparison of the XRF and laboratory results.

Generally, areas of high lead contamination coincide with the previous investigations in the Hot Spot areas (Figure 4). However, the vertical extent of the lead contamination was unknown, and was found to be deeper than expected in Hot Spots 1 and 2. In areas of known lead contamination, previous investigations had not reached the bedrock depth of approximately 8 to 12 feet bgs.

One unexpected area with lead concentrations above the remedial action level was in the area of Storm Drain A, at Station 15+60. It was determined this area included Cells C6 and C7 as shown on Figure 3. The results of the samples SDA-15+60-1-216 and 217, along with SDA-C6-SO-3-248 and SDA-C7-SO-1-254 ranged from 254 ppm to 329 ppm (see Table 1 pages 2, 11, and 13 respectively). Step-out samples (all labeled with the prefix "SDA") were collected in Cells B6, D6, D7, and C8 with results all below the action level, which showed that the contamination was confined to Cells C6 and C7. See Table 1, pages 11, 13, and 14 for step-out sample results. The affected soil was removed, and confirmation samples were collected to document the complete removal of the affected soil. Figure 4 shows the locations and Table 2 the results of the confirmation sampling.

Because XRF instrumentation had an accuracy of approximately plus or minus 15 percent, an initial upper limit of 212 mg/kg was used to define the soil that was to be removed from the site. After the XRF sample was analyzed, ten percent of the XRF samples were sent to a fixed laboratory (Associated Laboratories, Inc. in Orange, California) for lead analysis by United States Environmental Protection Agency (EPA) Method SW 6010B to evaluate the accuracy of

XRF field analysis. A detailed statistical analysis of the XRF and fixed-laboratory data was prepared by the ITSI Project Chemist and reviewed by The Source Group and other stakeholders. During the September 25, 2002, weekly site meeting, the recommendation that the XRF action level be raised to 250 mg/kg was unanimously agreed to. This decision was immediately implemented in the field on the same date. This evaluation is presented in Section 5.0. The XRF and laboratory results, along with the differences between the results, are presented in Table 1–Preliminary Sample Results.

The majority of samples collected for correlation analysis had XRF results near the action level of 250 mg/kg. In most cases, the exact specimen read by XRF was sent to the lab for analysis. If either result was greater than 250 mg/kg, the result for that location was considered above the action level. If lead fragments were found during the sample collection, sample screening, or sample homogenization, the sample results were considered above the action level of 250 mg/kg. Only the No. 10 sieve was used to process the XRF samples, as specified in the Final Work Plan (ITSI, 2002). The following six samples contained visible lead fragments: HS1-J9-4-230, HS1-I9-4-232, HS2-I12-4-238, SDB-15+00-4, HS1-J11-SO-2-249, and SS-BF-J13-262. All samples had XRF analysis greater than the remedial action level except SDB-15+00-4, which when analyzed by XRF had results less than 50 ppm. This sample was determined to be a metal other than lead. The soil within the vicinity of the samples represented by the lead fragments was treated as contaminated and the soil was removed to a depth of at least one foot below the fragment and the area was resampled. The subsequent sampling provided the evidence that the lead contamination was removed. Table 1 shows the XRF and laboratory results of the samples containing lead fragments.

For every ten XRF samples analyzed, one duplicate was submitted to the laboratory as a quality control XRF correlation sample. For every 10 quality control XRF correlation samples sent to the lab, one duplicate was submitted as a quality assurance (QA) sample to the USACE Laboratory in Omaha, Nebraska. At the time of this writing, the USACE had not indicated to ITSI that any unusual discrepancies were found during its Quality Assurance testing. It is the USACE's general policy not to release its Quality Assurance test results. Therefore, no USACE Quality Assurance test results are included in this report.

Laboratory Data Consultants (LDC) located in Carlsbad, California, conducted the third-party validation on the lead sample analysis. Ninety percent of the samples analyzed by the fixed laboratory received a Level III validation, and the remaining 10 percent received a Level IV data validation. Samples that received data validation included the quality control XRF laboratory correlation samples, the laboratory excavation confirmation samples, and the post-remediation samples. No data validation was performed on the waste characterization samples or the import soil analysis. The ITSI Project Chemist reviewed the data validation reports and completed a Quality Control Summary Report (QCSR) in Section 5.0 of this Report. The data validation laboratory packages from Associated Laboratories and data validation reports from LDC are included in Appendix C.

#### 4.4.1.1 Hot Spot 1

The 36 locations (33 originally planned plus 3 additional step-out locations) in Hot Spot 1 revealed no distinguishable upper and lower fill units in this area. Bedrock ranged from about 8 to 10 feet bgs. Boring logs in Appendix F provide details. The fill unit was a dark black clay material that appeared homogeneous, without the expected delineation between the fill and the underlying undisturbed native soil. The presence of a piece of a bullet from a copper-coated bullet found at six feet bgs at location HS1-J8 resulted in drilling and sampling to bedrock at that location. The Final Work Plan only included the collection of 3 samples per boring in the Hot Spot areas. After it was determined that the depth of lead contamination extended to the bedrock layer, the sample collection frequency was increased to approximately 5 samples per boring. The increase in sample collection provided sample results at two-foot vertical intervals from the ground surface to bedrock in all Hot Spot areas.

Lead-contaminated soil was encountered from 2.5 to 9 feet bgs within Hot Spot 1. Step-outs were conducted on 20-foot adjacent grids, at vertical depths equivalent to the contamination and at two feet both above and below the known elevation of contamination. Figure 3 presents the preliminary sampling boring locations and the number of samples collected at each boring. Figure 4 indicates the final excavation limits, which were based on data from preliminary, step-out, and confirmation sampling.

Lead contamination above the remedial action level was found in the following sample locations in Hot Spot 1: HS1-J8-3, (“HS1” indicates Hot Spot 1, “J8” is the 20 by 20 grid number, as shown on Figure 3, and “3” indicates the depth of the sample in feet bgs), HS1-J8-6, HS1-I8-3, HS1-H6-4-224 HS1-J7-3, HS1-J7-3-225, HS1-J7-5-226, HS1-I6-2.5, HS1-J9-4-230, HS1-J9-8.5-234, HS1-I9-4-232, HS1-I9-9-231, HS1-J10-4-233, and HS1-I10-4. The two hundred series number at the end of some sample IDs indicates that the sample is a duplicate and was sent to either Associated Laboratories or the USACE QA laboratory.

Step-out samples that contained lead above the action level included the following: HS1-H5-SO-6-250, HS1-J11-SO-2-249, HS1-J11-SO-2, and HS1-J11-SO-4-252. A second round of step-outs was conducted based on these sample locations. All samples taken following the second step-outs were below the action level, and laboratory confirmation samples were then collected on the bottoms and the sidewalls of the excavations. Several of the confirmation samples contained lead above the action level, so additional step-outs were conducted to delineate the areas to be excavated. Confirmation sampling methodology is described in Section 4.6.1.1.

#### 4.4.1.2 Hot Spot 2

Drilling at the nine planned locations in Hot Spot 2 did not reveal the “layers” that had previously been described. Deep fill was encountered at the edge of the parking lot, and sampling depths were increased to bedrock in this area. The location of one boring (IJ-9/10) was adjusted to accommodate the corner of the sidewalk. From the sampling records, this location is actually part of Hot Spot 1. Bedrock in Hot Spot 2 ranged from about 8 to 10 feet bgs. Accordingly, sampling depths were increased. In this area, lead-contaminated soil was encountered at depths ranging from 2 to 5.5 feet bgs.

Lead contamination above the remedial action level was found in the following locations: HS2-I13-2, HS2-J12-2, HS2-I12-2, HS2-I12-4, HS2-I12-4-238, HS2-I12-5, HS2-I12-5-236, HS2-I12-5.5-237, and HS2-I14-4-239. Step-out excavations and step-out sampling were conducted using the same methodology as was used in Hot Spot 1 (i.e., on 20 by 20 foot adjacent grids, at the elevation of the known contamination and both two feet above and below the elevation of the

known contamination). All step-out samples were below the remedial action level, and laboratory confirmation samples were collected at the bottoms and on the sidewalls of the excavations. Four of the confirmation samples contained lead above the remedial action level, and additional step-out excavation and step-out sampling were conducted until the limits of the contamination were defined, as was done in the hot spot areas. Section 4.6.2.1 discusses confirmation sampling. Table 1 summarizes the sample results.

#### 4.4.1.3 Hot Spot 3 and Building Pad

Drilling at the 36 planned locations in Hot Spot 3 and the future proposed building pad location revealed fill materials overlying bedrock that ranged from approximately 8 to 10.5 feet bgs. Lead-contaminated soil above the remedial action level ranged from 2 to 4 feet bgs.

Lead contamination above the remedial action level was found in the following locations: HS3-O19-4-247, HS3-P18-2, HS3-P17-2-253, and HS3-P16-2-251. Contamination was limited to the area west of the future proposed building pad foundation. Figure 4 indicates the final excavation limits based on the preliminary sampling, step-out sampling, and confirmation sampling

Step-out excavation and sampling were conducted using the same methodology as was used in all hot spots. All step-out samples were below the remedial action level, and laboratory confirmation samples were collected at the bottoms and on the sidewalls of the excavations. One confirmation sample contained lead above the remedial action level, and a subsequent step-out was conducted until the limits of the lead contamination at this location were determined. Section 4.6.2.1 discusses confirmation sampling.

#### 4.4.1.4 Hot Spot 4

Drilling at the 15 planned locations at Hot Spot 4 revealed bedrock at depths ranging to 8 feet bgs (Appendix F). Samples were collected at depths to bedrock. No lead-contaminated soil above the remedial action level was encountered in this area.

#### 4.4.1.5 Hot Spot 5

Drilling at the two planned locations at Hot Spot 5 revealed bedrock at depths ranging to 8 feet bgs (Appendix F). Samples were collected at depths to bedrock. No lead-contaminated soil above the remedial action level was encountered in this area.

#### 4.4.1.6 Storm Drain A

Drilling at the planned 26 locations and 6 step-out locations along Storm Drain A between Stations 14+00 and 19+00 revealed shallow bedrock at the southern end of the line (Station 19+00), deepening to the north (Appendix F). In the northern area of the parking lot, bedrock daylighted near the eastern edge. An area of fill in the northern portion of this area near the parking lot (Station 15+60) contained lead-contaminated soil in the upper one foot. Two adjacent step-outs in grids C6 and C7 also contained lead-contaminated soil above the remedial action level (Figure 3). Additional step-outs were conducted in adjacent 20 by 20 foot grids at the elevation of the contamination and two feet above and below the elevation of known contamination. These additional step-outs were conducted using the same methodology as was used for all other hot spot areas. The step-out samples were below the remedial action level, and laboratory confirmation samples were collected at the bottoms and on the sidewalls of the excavations. Section 4.6.2.1 discusses confirmation sampling. Sample boring locations are shown on Figure 3.

#### 4.4.1.7 Storm Drain B

Drilling at the 28 planned locations at twenty-foot intervals along Storm Drain B between Stations 11+20 and 16+60 revealed bedrock to 13 feet bgs in the vicinity of Hot Spot 1 (Appendix F). Lead-contaminated soil above the remedial action level was encountered in only one sample along Storm Drain B: at 10 feet bgs at Station 11+60. Figure 3 shows the location and number of samples collected at each boring along the alignment of Storm Drain B.

#### 4.4.1.8 Future Utilities

Drilling in the area of the proposed utilities (Grids I18 through I22) extended to a depth of six feet bgs. Lead-contaminated soil above the remedial action level was not found in these samples. The locations of the utilities as shown in Figure 3 of the Final Work Plan (ITSI, 2002) were

revised in the field based on information provided by the City of Rancho Palos Verdes. The actual boring locations are shown on Figure 3.

#### 4.4.1.9 Area of Concern

Surface soil within the Area of Concern (as defined on Figure 3) was sampled at two different times during Preliminary Sampling. The first round of sampling was a deviation from the Final Work Plan (ITSI, 2002). This sampling was conducted at the request of the City of Rancho Palos Verdes, and was conducted to characterize soil proposed for re-use as backfill. Surface samples were collected at a frequency of at least one per every 150 cubic yards within the Area of Concern located adjacent to the Hot Spots. These samples were collected about 6 inches bgs, with a shovel, and analyzed by XRF analysis. Three of these samples contained lead above the remedial action level: SS-BF-J13-262, (Surface soil, backfill, grid ID#, QC/QA ID #), SS-BF-J13, and SS-BF-G15-267. The surface soil from these and adjacent grids was removed and stockpiled for off-site disposal. See Figure 3 for the sample boring locations.

The second round of surface soil sampling was conducted following removal of the upper one foot of soil, as described in the Final Work Plan (ITSI, 2002). Samples were collected about 6 inches bgs to confirm that soil left in place did not contain lead above the remedial action level. Samples were collected every 1600 square feet (one for every 40-foot by 40-foot grid section) and shipped for laboratory analysis. These samples are labeled "AC-SW" with an appropriate sidewall designation number, or "AC-CS" (indicating confirmation sample) with an appropriate grid ID number (Figure 4). Two of the sidewall samples, AC-SW-01-0.5 and AC-SW-03-0.5 contained lead-contaminated soil above the remedial action level. Additional excavation was conducted on the sidewall and bottom of this location to remove this contamination, and additional confirmation samples were collected to show that the lead contamination had been removed. This sampling event is also briefly discussed in Section 4.6.1.1, Confirmation Sampling.

#### **4.4.2 Post-Remediation Sampling**

After the last of the contaminated soil was removed from the site and the excavations were backfilled, the City of Rancho Palos Verdes utility contractor mobilized to the site. For

approximately two weeks, the utility contractor was working within the portion of Storm Drain A and B that had lead concerns. ITSI provided a sample technician onsite during these construction activities to insure that this contractor did not encounter and remove contaminated soil that had not been detected during the remediation activities. The sample technician periodically collected soil samples from the excavation spoils as the contractor worked. The samples were shipped to the fixed laboratory and analyzed for total lead content (EPA Method SW6010B). The turnaround time for the results was 24 hours. No monitoring was required for the building footing excavation because ITSI had removed the three feet of soil from the building pad area during the remediation activities.

Samples were collected from the trench spoils stockpiled adjacent to the storm-drain alignment. Three samples were collected from each twenty-foot interval throughout the storm drain alignments. The sample locations were staggered between the preliminary sample locations, such that the total combined spacing of samples along the storm drain was every 10 feet.

Two areas along Storm Drain A and two areas along Storm Drain B were found to have lead concentrations in excess of the action level. In these cases, the utility contractor was ordered to stop work in the affected area. ITSI remobilized to the site, excavated and stockpiled the affected soil, collected excavation confirmation samples, and also collected waste characterization samples from the stockpiles. The stockpiles were covered with plastic and later the soil was loaded into trucks and hauled to the Bradley Landfill as Special Waste. Confirmation samples were collected on the excavation sidewalls and bottoms to insure complete removal of contaminated soil. Approximately 134 samples were collected during the post-remediation activities. The limits of the excavations and the post remediation sample locations are shown on Figure 5.

The sample technician also placed dust monitors on the utility contractor's personnel and on the perimeter of the site. Samples of dust were collected using low-volume samplers that were attached to personnel working on the storm drain installation. The samples were sent to Forensic Laboratory in Berkley, California, for analysis. All results were non-detect. The real-time

perimeter dust monitor results were well below the action level. The results of the dust monitoring are shown in Table 6–Air Monitoring Results.

#### **4.5 HEALTH AND SAFETY AND AIR MONITORING**

The air-monitoring program described in the ITSI Final Work Plan (ITSI, 2002) was followed. The Site-Specific Health and Safety Plan provided the detailed process of monitoring for human health exposure to airborne particulates. Water for dust control during sampling and excavation activities was provided from water hoses and a sprinkler, when needed. Stockpiles of contaminated soil were covered with plastic sheeting to help minimize dust emissions.

Perimeter air monitoring was conducted throughout the duration of the project with direct-reading instruments (Dataram, PDR 1000 Dust/Aerosol Monitors) placed at four locations around the perimeter of the site. These real-time instruments measured dust emissions throughout the day, and the time-weighted average concentration was recorded for each location on a daily basis. The instruments were zeroed daily, in accordance with the manufacturer's instructions.

The perimeter Action Level for the project activities was set at 1 milligram per cubic meter ( $\text{mg}/\text{m}^3$ ). The perimeter dust measurements exceeded the Action Level on several occasions throughout the project. Site personnel remained vigilant of the site conditions to mitigate dust levels and to determine why the exceedances were occurring. Water application for dust control remained a high priority during the earthwork. After consultation with the ITSI Corporate Certified Industrial Hygienist (CIH), and after noting that no lead was detected in any of the perimeter air samples, it was determined that the fog conditions at the site were likely contributing to the Personal Dataram measurements, and that airborne dust levels were not likely to actually exceed the designated action level.

During the first week of preliminary sampling, first week of excavation activities, and the first week of post-remediation sampling, airborne lead dust samples were collected at the site. The dust samples were collected using 0.8 micron pore-size, mixed cellulose ester filters in line with Gilian Personal Sampling Pumps. The pumps were calibrated daily, to deliver a flow rate of

approximately 2 liters per minute. Exposure samples were collected in the breathing zones of personnel working in the operations/areas expected to produce the highest lead concentrations. Samples were also collected around the perimeter of the site during the preliminary sampling event. The air samples were collected and analyzed in accordance with National Institute of Occupational Safety and Health (NIOSH) methodology. The samples were sent, with Chain-of-Custody documentation, to Forensic Analytical Laboratory in Hayward, California, for analysis. The Forensic laboratory is accredited by the American Industrial Hygiene Association.

None of the lead dust sample concentrations were found to exceed the detection limit for the method of sampling and analysis. The air monitoring results are summarized in Table 6–Air Monitoring Results. The laboratory reports are included in Appendix E–Air Monitoring Data.

In addition to the dust monitoring, and despite the expectation that the lead exposure levels for the project would be well within Cal-OSHA requirements, two employees had blood samples collected before and after the project to determine if a measurable absorption of lead had occurred. In light of confidentiality requirements to protect the privacy of ITSI employees, the identity of the employees and the results of the blood work are not included in this report. However, no measurable amount of lead was found for either of the employees.

The personnel working in the exclusion zone at the project site were provided with modified Level D protective clothing. The protective clothing included at a minimum: hard hats, steel-toed shoes, safety glasses, gloves, and under certain conditions, Tyvek coveralls. Tailgate safety meetings were held each morning prior to starting field activities. A lead awareness program was conducted by the ITSI CIH for some of the site personnel prior to mobilizing to the site. The Site Health and Safety Officer provided the on-site lead awareness training. Appendix J contains the Health and Safety Reports and Tailgate Safety Meeting Reports.

## 4.6 SOIL EXCAVATION

At least 48 hours prior to the beginning of excavation activities, relevant regulatory agencies and interested parties were contacted. The entities contacted included DTSC, the City of Rancho Palos Verdes, and the USACE.

The principal areas of excavation included Hot Spots 1, 2, and 3 and the Area of Concern. Other areas of excavation included an area along Storm Drain A around Station 15+60, and a section of Storm Drain B at Station 11+60. These areas were expanded slightly during the post-remediation sampling and are described in detail in Section 4.4.2—Post-Remediation Sampling (Figure 5).

Figure 4 includes contour lines that show the vertical and lateral extent of excavation required to remove soil that exceeded the action level for lead, and for the Area of Concern. A survey was conducted after each phase of excavation was completed. In some cases, confirmation samples collected on the bottoms and sidewalls of the excavations exceeded the action level, so more soil was excavated and additional confirmation samples were collected. The contour lines shown in the drawings represent the final excavation surfaces. Only the confirmation samples that document that the excavation bottoms and sidewalls were less than the action level are plotted on the figure. The topographic contours shown in the drawings were surveyed and mapped by Merit Engineering.

The RAP (SAIC, 2001) estimated that the total volume of excavation required would be 4,800 bank cubic yards (bcy). The actual quantity of soil excavated slightly exceeded it by less than 5 percent.

### 4.6.1 Hot Spot Excavation (Area A)

This section describes the excavation of the known “Hot Spot” soil areas defined as Area A. Area A includes the five hot spots, and the future proposed building pad as it coincides with Hot Spot 3. The limits of the excavations and the locations of final confirmation samples are indicated on Figure 4. Several step-outs were conducted in the areas defined as Hot Spots 1, 2, and 3. Hot Spots 4 and 5 were found to have no soil that exceeded the remedial action level.

Laboratory confirmation sampling was conducted in each excavation and is discussed in Section 4.6.1.1

#### 4.6.1.1 Confirmation Sampling

Standard laboratory methods were employed for confirmation sampling of the Hot Spots, and these analyses were conducted in accordance with the Final Work Plan (ITSI, 2002). After the soil was excavated to the known limits of soil above the action level as determined by the preliminary sampling, confirmation samples of the bottoms and sidewalls of the excavations were collected and analyzed for total lead by EPA Method SW 6010B at Associated Laboratories in Orange, California. In some cases, this confirmation sampling identified remaining contaminated soil that was missed during the investigative phase; in other cases, the samples were below the action level and confirmed that the extent of the excavation met the remedial action requirements. In general, one bottom sample was collected for each 20-foot grid, and one sidewall sample was collected for each 40 lineal feet of wall.

Confirmation sampling revealed lead-contaminated soil in each of the three Hot Spots (1, 2, and 3). In Hot Spot 1, six confirmation samples were above the remedial action level and additional step-outs were conducted. In Hot Spot 2, five confirmation samples required step-outs, and in Hot Spot 3, one confirmation sample required a step-out. After the step-out excavations were conducted, additional laboratory confirmation samples were collected and submitted for analysis. This process continued at each location until soil above the remedial action level was removed.

Soil was excavated with standard construction equipment such as excavators, backhoes, dozers, and loaders. Several methods were employed because of the variation in terrain and limited accessibility in the areas of existing structures. Soil exceeding the action level was excavated and placed in stockpiles located either on the lower parking lot adjacent to the building, or on the upper parking lot. In general, the soil suspected of being characterized as California Hazardous Waste was confined to the lower parking lot. Care was taken to avoid cross-contamination or spilling of soil as it was transported to the stockpiles. The stockpiles were managed as described in Section 4.7, Stockpile Management.

#### 4.6.1.2 Expansion of Excavation Limits

Excavation limits were expanded as required based on step-out sampling and confirmation sampling. Step-outs were initially defined during Preliminary Sampling with the direct push drill rig (Gepoprobe) and using XRF analysis. Once excavations were defined laterally and vertically, post-excavation sampling was conducted using the backhoe to collect bottom and sidewall samples at the depths that corresponded to known contamination.

Confirmation samples were collected and shipped to the laboratory for analysis, and additional 20-foot by 20-foot grids were excavated as warranted. The expansion of the excavations due to “hot” confirmation samples generally included the removal of an additional foot off the bottom of the impacted 20-foot by 20-foot grid area. If a sidewall sample was “hot,” an additional foot of soil was excavated laterally for the entire wall height by the 20-foot width of the wall, and the location was re-sampled. Step-out and confirmation sampling is summarized in Tables 1 through 3, and the laboratory reports are included in Appendices C and D.

ITSI removed soil below the action level from within the building pad of the future expansion to a depth of approximately 3 feet bgs as a result of a modification of ITSI’s contract with the USACE. This material was re-used as backfill, primarily within the Area of Concern and some Hot Spot areas, as agreed by all stakeholders during the weekly site meeting on October 16, 2002. This material used for backfill was all covered by imported one-foot soil cover layer. “Clean” structural fill was imported to replace the soil removed from the building pad.

#### **4.6.2 Area of Concern Excavation (Area B)**

Area B is defined as the area within the Area of Concern, excluding the areas of the Hot Spots and the existing building (Figure 3). In accordance with the SOW and RAP (SAIC, 2000c), ITSI removed approximately one foot of soil from this area, including Hot Spots 4 and 5. The soil was sampled to determine its suitability for use as backfill material in the Hot Spot areas; then it was excavated and placed in stockpiles separate from the Hot Spot stockpiles. Surface soil samples SS-BF-J13, SS-BF-K16-266, and SS-BF-G15-267 contained lead above the remedial action level. This soil was not used for backfill, but was disposed off site with other contaminated soil. Soil from the adjacent 20-foot by 20-foot grids also was not used for backfill

but was grouped into the potentially lead-contaminated stockpile, to insure that no soil containing lead above the remedial action level was re-used at the site.

Some areas were not excavated to the full extent of the Area B boundaries. The southeast side of the site is home to Coastal Scrub Sage, and this vegetation was protected to the fullest extent possible. An area of about 50 feet by 30 feet within the Area B was not excavated; however, some of this sage unfortunately did have to be removed because it coincided with an area of high lead-contamination that was found during confirmation sampling of the Area A sidewall. An area approximately 10 feet by 40 feet was excavated in this area (Figure 4, near sample location AC-SW-SO-3-0.5).

Several mature trees were removed as approved by the City of Rancho Palos Verdes. However, as much as possible, trees were preserved. The large tree near Hot Spot 2 remains intact. Mature palms on the northern edge of Hot Spot 1 were preserved, and the Storm Drain B alignment was slightly shifted to preserve a large palm (Figure 3). The tree by Hot Spot 2 was trimmed of its lower branches so that ITSI employees could get small equipment close to the trees and remove surface soil.

#### 4.6.2.1 Confirmation Sampling

Within Area B, and including Hot Spots 4 and 5 and the building pad, ITSI conducted excavation laboratory confirmation sampling on a 40-foot by 40-foot grid on the excavation bottom, and sidewall samples were collected along the outer sidewall every 100 linear feet. Using the established grid system, these sample locations required some flexibility to ensure that a confirmation sample was collected at a frequency of one per 1,600 square feet. ITSI personnel also conducted visual inspections for bullets and/or bullet fragments during the confirmation sampling event. ITSI personnel found no bullets or fragments.

At two locations along a sidewall, confirmation samples contained lead above the remedial action level. These were samples AC-SW-01-0.5 and AC-SW-03-0.5. A one-foot deep strip of soil approximately 40 feet long and 10 feet wide was removed in each area, and the area was re-sampled. The second set of sample results for each of these locations was below the remedial

action level. The final excavation limits and confirmation sample locations are shown on Figure 4.

### **4.6.3 Storm Drains and Future Utilities**

Storm drains and future utilities were located within Area B. Sampling locations in the area of the future utilities were adjusted in the field to meet the latest plans provided by the City of Rancho Palos Verdes. Actual preliminary sampling locations for storm drains and future utilities are indicated on Figure 3. Lead-contaminated soil was not encountered along the proposed utility alignments.

#### **4.6.3.1 Confirmation Sampling**

In the storm drain corridor areas where lead was encountered above the remedial action level, step-outs and confirmation sample collection were conducted on 20-foot by 20-foot adjacent grid sections at the elevation of the known contamination and at both two feet above and two feet below the elevation of the known contamination. Lead-contaminated soil was excavated from both the Storm Drain A and Storm Drain B alignments. Confirmation sample locations and the final limits of excavations are presented on Figure 4.

Lead-contaminated soil above the remedial action level was encountered in the Storm Drain A corridor at Station 15+60. Levels of lead also were above remedial action level in two step-outs in this area: SDA-C6-SO-3-248, and SDA-C7-S0-1-254. Additional step-outs were conducted in adjacent 20-foot by 20-foot grid sections. All secondary step-out samples were below the remedial action level, and laboratory confirmation samples were collected at the bottoms and on the sidewalls of the excavations. Figure 4 presents the final limits of the excavations and final confirmation sample locations.

Lead-contaminated soil above the remedial action level also was encountered in the Storm Drain B corridor at Station 11+60, and soil was removed at that grid location.

In the area of the future utilities, located in grids I18-I22, excavation below the one-foot surface soil scraping was not required. Lead-contaminated soil above the remedial action level was not

encountered in this area. As specified in the Final Work Plan (ITSI, 2002), one sample was collected for every 1600 square feet to ascertain that no soil containing lead above the remedial action level remained.

#### 4.6.3.2 Expansion of Excavation Limits

The excavated area of Storm Drain A is located at Station 15+60, and includes two adjacent excavated step-outs. One excavated area in the southern portion of Storm Drain B coincides with Hot Spot 3. Storm Drain B also was excavated at Station 11+60. Figure 4 presents final limits of these excavations and the final confirmation sample locations.

### **4.7 SOIL STOCKPILE MANAGEMENT**

Several potential categories of waste were applicable to the excavated soil, and separate stockpiles were used for the different categories as outlined in the Final Work Plan (ITSI, 2002). The investigative phase of the project provided the preliminary information required to determine the appropriate waste categories. ITSI segregated excavated soil into categories for evaluation. These included Area of Concern soil with total lead concentrations less than 250 mg/kg, California Non-Resource Conservation and Recovery Act (RCRA) Hazardous Material, and RCRA Hazardous Material (see Section 4.8.1 for classification details). Area of Concern soil containing lead concentrations below the action level was stockpiled at the very north end of the lower parking lot, and positioned for re-use in Hot Spots 1 and 2 below the one-foot cap of clean import soil. The California Non-RCRA Hazardous Material was stockpiled in the center of the lower parking lot, and the California Non-Hazardous or Special Waste was stockpiled in the upper or southern parking lot. No RCRA Hazardous material was identified. Stockpiles were kept segregated and covered with plastic sheeting (i.e. Visqueen®) as specified in the Final Work Plan (ITSI, 2002). During stockpile construction, water was applied to the stockpiles to prevent dust emissions.

No stockpiles were left on the site for more than 90 days. Asphalt beneath soil stockpiles prevented infiltration; hence no plastic was required beneath the piles. The covers were readjusted on the stockpiles as material was accumulated. The tops of the stockpiles were flattened to allow easier access and to aid in statistical sampling. The covers were tied down and

anchored to prevent them from being blown away. A temporary soil berm was constructed around the perimeters of the hazardous piles to prevent soil erosion and dispersion of potentially lead-contaminated soil. The piles remained protected in place from wind and rainfall erosion while appropriate soil characterization and profiling was completed prior to disposal.

Periodic maintenance of the stockpiles took place during the course of the project. The parking area was swept with a power broom to minimize the potential for lead-contaminated soil to be dispersed from the site. During loading and transportation activities, the stockpiles were uncovered and recovered as the operation progressed. Following loading activities, the loading area was again swept with a power broom or sprayed with a water truck to minimize dispersion of dust and potential lead contamination.

#### **4.8 TRANSPORTATION AND DISPOSAL**

ITSI designated the Site Superintendent to act as the Transportation and Disposal Coordinator (TDC) for this contract. The TDC served as the point of contact for environmental regulatory matters and had the responsibility for environmental compliance at the site. That responsibility included accurate identification and classification of hazardous waste and hazardous materials; determination of proper shipping names; identification of marking, labeling, packaging and placarding requirements; and completion of waste profiles, hazardous waste manifests, bills of lading, and all other disposal documentation. Copies of this information are included in Appendix H.

##### **4.8.1 Waste Characterization Sampling**

Prior to disposal, the stockpiled soil was characterized to determine the category of the waste and define subsequent disposal requirements. The number of soil samples collected and the analytical methods used were determined by the disposal facility, Waste Management. The stockpiled soil was characterized for off-site disposal as one of three categories: RCRA hazardous waste, California Non-RCRA hazardous waste, or non-hazardous special waste.

Through previous investigations, the only chemical of concern identified for this site was lead. Therefore, lead analysis was the principal focus for characterizing the soil for disposal. ITSI

collected profile samples at a frequency of one per 500 cubic yards of stockpiled soil. A four-point composite sample was collected from each stockpile or portion of stockpile that represented approximately 500 cubic yards and was shipped to the lab for analysis. The analysis included four test methods: Cam17 Metals, Total Lead by EPA Method SW6010B, Solubility Threshold Limit Concentration (STLC) procedure for soluble lead; and RCRA Toxicity Characteristic Leaching Procedure (TCLP) protocol for soluble lead. Initially the sample was analyzed for Cam 17 metals, total lead, and STLC. If the STLC results were greater than 5 milligrams per liter (mg/L), the same sample was further analyzed for TCLP. Some of the soil had STLC results greater than 5 mg/L, which characterized the soil as California Hazardous material, but no soil had TCLP results greater than 5 mg/L, which would have required RCRA disposal requirements.

#### **4.8.2 Transportation and Waste Manifest**

The transportation of the waste began with the loading of the contaminated soil into the trucks with a wheel loader. The loading area was kept clean with a power broom and water truck when necessary. The tires of the trucks were swept clean of soil prior to leaving the site. The work schedule was modified when loading trucks that required a long haul to the disposal facility. Truck loading began as early as 6:00 am so that the trucks could reach the disposal facility before it closed for the day.

Waste Management provided a “turn-key” service for both transportation and disposal. Waste Management subcontracted trucking of waste to Denbeste Trucking, Inc., which provided their own trucks and brokered to independent truckers. Denbeste Trucking, Inc., possessed a current certificate of registration issued by the Research and Special Programs Administration of the United States Department of Transportation (DOT) as required by 49 Code of Federal Regulations (CFR) 107, Subpart G. Waste soil transported off site was transported in accordance with local, state, and federal laws and regulations.

Subcontracted drivers staffed for this project had the necessary DOT training as specified in 49 CFR 172. The transporter used trucks capable of transporting a nominal 25-ton load. All trucks

were inspected by the California Highway Patrol, and had appropriate required insurance. Trucks were covered and secured as required by law.

ITSI coordinated with the USACE to obtain a State EPA ID Number in the name of the generator from the DTSC for shipment of non-RCRA hazardous waste from the site. This number is CAC0022557764. The USACE signed the manifests prior to shipping waste, except for the last 11 loads, which were hauled to Bradley Landfill as Special Waste. The ITSI Project Manager, Mr. Eric Munro, P.E., signed the bills of lading for those loads. Copies of the manifests and bills of lading are provided in Appendix H.

Traffic control was implemented at the entrance to the site off Palos Verdes Drive as necessary to protect motorists. Drivers carried CB radios or cellular phones for accessibility at all times. There were no cases of accidents or spills while hauling waste soil during this project. The haul route from the site was south on Palos Verdes Drive West, north on Western Avenue, and South on the Pacific Coast Highway to the Harbor Freeway, as specified in the Final Work Plan (ITSI, 2002).

#### **4.8.3 Disposition of Contaminated Soils**

The following three categories were used for waste soil disposal: soil reused on site; soil disposed as California Non-hazardous Special Waste; and soil disposed as California Non-RCRA Hazardous Waste. The records and documents for the transportation and disposal are included in Appendix H—Waste Transportation Records.

Approximately 1,200 bcy of soil excavated from the Area of Concern was re-used on site as backfill in Hot Spots 1 and 2 and Storm Drain A. It was placed below the final one foot of clean imported material.

The Special Waste was transported and disposed at the Bradley Landfill, a Class III Landfill located just north of Los Angeles, California. Most of the soil was used as daily cover by this facility. Some truckloads contained high quantities of rock, plastic piping, and other debris that made the loads unacceptable for use as a cover, so it was disposed as trash. Approximately

1,400 tons of soil were disposed at Bradley Landfill as daily cover material and 369 tons of the soil/debris mix were disposed as trash.

California Hazardous Waste was disposed at the Kettleman Hills Landfill in Kettleman Hills, California. Approximately 2,863 tons of soil were classified and disposed of as California Hazardous Waste. The laboratory analytical reports for waste characterization are included in Table 4 and Appendix C.

#### **4.9 SITE BACKFILL**

In general, the site was restored to the condition it was in prior to the beginning of remediation activities. Approximately 1,200 bcy of soil was re-used as backfill at the site. The remaining amount of soil required to establish the finish grade was imported from local sources. The types of soil imported were dependent on available sources at the time of backfilling, and the geotechnical requirements of the fill. Approximately 2,000 bcy of soil were imported from a construction site located on Yacht Harbor Way, approximately 5 miles south of PVIC. ITSI performed chemical analysis on the soil, and the City of Rancho Palos Verdes approved this import material (except an area that tested positive for low concentrations of DDT) for all landscaping and as topsoil, but not for use under building elements. The chemical sampling event is described below.

The source for structural fill was West Coast Sand and Gravel, Inc., in Buena Park, California. On November 1, 2002, Steven Kolthoff of Group Delta, the geotechnical consultant for the City of Rancho Palos Verdes, approved the geotechnical material prior to importation of the material. On that same day, Fred Clark, of The Source Group, stated that this material was from a known, virgin borrow source that shipped material throughout southern California, and therefore no chemical testing of the material was required. Approximately 2,200 cubic yards of structural fill were imported.

##### **4.9.1 Area of Concern (Area B) Backfilling**

The one foot of backfill which caps most of Area B (including the Hot Spots) is considered a clean cap over the existing soil. The cap was constructed from import fill material from the

Yacht Harbor Drive site. The clean fill material was placed in one or two lifts and compacted only with the dozer, loader, and trucks used to spread the material. No compaction testing was performed, but the finish product was inspected and approved by the City of Rancho Palos Verdes.

Soil excavated from the building pad (not including Hot Spot 3) was determined to have lead concentrations well below the action level. The stakeholders agreed during the weekly meetings that this soil was suitable for re-use on site, as long as it was placed under the clean cap. Approximately 800 cubic yards of soil were excavated and placed southeast of the proposed building expansion. The area included Hot Spots 4 and 5. The soil was placed and compacted to approximately 85 percent relative compaction. The soil was later covered with one foot of the Yacht Harbor import topsoil material. In these areas, the final elevation was as much as 2 feet higher than the original surface elevation. The mounds and final contours created by this fill were inspected and approved by the City of Rancho Palos Verdes, and their engineer, Merit Engineering. The backfilling and compaction process did not significantly affect drainage, but several adjustments were made after placement to facilitate drainage. Figure 5 shows the contour lines representing the final topographic configuration of the site.

#### **4.9.2 Hot Spot (Area A) Backfilling**

Portions of the Hot Spots and Storm Drain A were backfilled with soil originating from the Area of Concern. Before this material was used, the City of Rancho Palos Verdes requested that the soil be sampled and analyzed for total lead content at a frequency of about one sample per 150 cubic yards. Three samples came back with lead concentrations greater than the action level, and this soil and surrounding soil was not used as backfill. Soil was not re-used if it contained roots, large rocks, vegetative matter, or plastic pipe from the pre-existing irrigation system. This material was only placed in areas where the one-foot clean cap could be placed above it. The material was compacted with the wheels of the loader and normal construction traffic, to approximately 90 percent of the maximum dry density. No compaction testing was required or planned for the placement of fill. After the Areas of Concern soil was placed and compacted in the Hot Spots, a one-foot cap of the Yacht Harbor topsoil material was placed, compacted, and

finish graded. In general, as much of the Areas of concern soil was reused on site as possible. The remainder was placed in stockpiles and hauled off site for disposal.

In Hot Spot 2, soil from the Area B was initially used to backfill the excavation; however, after the backfill was completed, the geologist for the City of Rancho Palos Verdes realized that the material would not be suitable for the future “sitting wall” and concrete slab that was to be constructed in this area. The City of Rancho Palos Verdes then contracted ITSI to remove the soil and replace it with imported structural fill. This fill was compacted to 95 percent of the maximum dry density as determined by ASTM D1557. The fill was compacted in 6-inch lifts and tested by the City’s geotechnical firm. The City of Rancho Palos Verdes also contracted ITSI to compact the structural fill adjacent to the existing building to protect it during the wet winter months, and to compact structural fill in the Hot Spot 3 area to eliminate the potential for water to pond in the excavation.

#### **4.9.3 Import Soil Chemical Analysis**

This import soil from the construction site at Yacht Harbor Way was sampled for chemical analyses as specified in the Final Work Plan (ITSI, 2002). One four-point composite sample was collected and a full suite of analyses was conducted for every 500 cubic yards of import material purchased from and hauled by Mesa Construction. The analytes included volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), herbicides, pesticides, total recoverable petroleum hydrocarbons (TRPH), and Title 22 metals. The results were presented to and approved by the City of Rancho Palos Verdes, USACE, and DTSC. One sample had elevated levels of dichlorodiphenyltrichloroethane (DDT) and dichlorodiphenyldichloroethylene (DDE). These results were below the Preliminary Remediation Goal, but it was decided by all stakeholders that soil from the area represented by that sample would not be used. The City of Rancho Palos Verdes and the other stakeholders agreed that the levels of arsenic, barium, and cadmium were in the range of normal (background) for the native soil conditions in the area. The ambient or background levels that were used are presented in Table 4-2 and Table 4-5 of the *Remedial Investigative Report* (The Source Group, 2002). The results of the chemical analysis are included in the laboratory data presented in Appendix C.

#### **4.10 SITE RESTORATION**

The site was restored to the original grade on the north side of the building and somewhat above original grade south of the building expansion area. Approximately 1,000 cubic yards of structural fill were stockpiled behind the construction trailer for later placement by the City of Rancho Palos Verdes in the building pad area. An above-ground sprinkler system was installed on both sides of the building, at the direction of the City of Rancho Palos Verdes. The system on the north side of the building was later dismantled by the utility contractor to complete their work. The City of Rancho Palos Verdes took responsibility for re-installing the irrigation system after the storm drains were installed. The City of Rancho Palos Verdes also took responsibility for controlling, activating, and maintaining the irrigation system.

Sandbags were placed along the downstream side of the entry road and lower parking lot to provide storm water runoff control. ITSI constructed a chain link fence and a locking gate approximately five feet high around the existing sewage lift station and electrical utility area. Paved areas were swept clean and waste materials were removed from the site. The storm drain utility contractor moved in immediately after ITSI cleaned the area, and site access control was relinquished to them. Figure 6 shows the condition of the site after ITSI demobilized from the site.

##### **4.10.1 Site Revegetation**

The backfilled areas and disturbed areas were hydro-seeded by ITSI as directed by the City of Rancho Palos Verdes. The hydroseed subcontractor was requested to mobilize to the site twice. The south side of the site was seeded prior to demobilization and the north side of the site was hydroseeded after the storm drain contractor completed the storm drain installation. This grass cover is primarily for the purpose of erosion control during the period prior to completion of the PVIC building expansion in 2003.

At the request of the City of Rancho Palos Verdes, the seed mix described in the Final Work Plan (ITSI, 2002) was changed to better protect the site from erosion. The following seed mix was used to reestablish the grass turf at the site: Fiber Mulch at 1,800 pounds per acre,

commercial fertilizer (15-15-15) at 300 pounds per acre, M-Binder at 150 pounds per acre, and Agronotec Slope Saver II at 10 pounds per 1,000 square feet.

Ten trees that met the request of the City of Rancho Palos Verdes were delivered to the site by ITSI. The City of Rancho Palos Verdes has taken responsibility for the trees to insure that they are properly watered and cared for until they are planted. The specific trees delivered were six 24-inch box Aleppo Pines and four 24-inch box Western Redbuds.

#### **4.11 DEMOBILIZATION**

After the site was restored, the project facilities were removed from the project site. The office trailer and equipment were demobilized and temporary power and communications hookups were disconnected. All personnel returned to their home offices except for the sample technician who remained on site to conduct post-remediation sampling during installation of storm drains and utilities. Following demobilization, site security was returned to the City of Rancho Palos Verdes. Figure 7–Completed Construction Schedule, shows the actual start and completion dates for each activity.

## 5.0 DATA QUALITY ASSESSMENT

A total of 732 samples were collected between September 16, 2002, and December 6, 2002, for analysis of lead by field XRF, laboratory analysis by EPA Method 3050A/6010B, or both. Of this total, 439 samples for lead were collected and forwarded under proper chain-of-custody procedures to Associated Laboratories, Inc. in Orange, California. Due to the rate at which fieldwork was proceeding, some of the samples originally intended for analysis by XRF were forwarded to the laboratory for analysis instead. None of the XRF results were intended to undergo data validation or verification. A total of 129 samples originally intended for analysis by XRF are in this category and were therefore not required to undergo data validation.

A comparison between the lead XRF results and the laboratory results was performed early in the project, and is included with the XRF results in Appendix D. The XRF results generally were in good agreement with the laboratory results when the concentration of lead was near the project action limit of 250 mg/kg. However, when higher concentrations of lead were present, the XRF technique was not able to accurately analyze the sample due to highly localized concentrations from fragments. This effect was noted early in the project, and incorporated into the decision-making process. It was decided by consensus to base project decisions, particularly as to whether the cleanup goal was met, only on the laboratory results. The XRF results are usable as long as the known effects from fragments are incorporated into the decision-making process.

A total of 310 samples were originally scheduled for laboratory analysis. The data packages for these 310 samples were forwarded to Laboratory Data Consultants, Incorporated (LDC) in Carlsbad, California for independent data verification and data validation. Results from 31 samples, or 10%, underwent comprehensive "Level IV" data validation. The remaining 90% of the results underwent "Level III" data verification. LDC performed data validation and data verification in accordance with the following documents:

- Innovative Technical Solutions, Inc. (ITSI), 1999. *Chemical Data Quality Management Plan (CDQMP)*.
- ITSI 2002. *Lead Removal Action Final Work Plan, Point Vicente Interpretive Center, Rancho Palos Verdes, California, September*.
- EPA 2002. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. EPA 540-R-01-008.

Each laboratory data report was evaluated by LDC, and a data validation report (DVR) was produced. All DVRs are included with the laboratory data in Appendix C.

Import soil was analyzed by standard analytical methods in accordance with the Sampling and Analysis Plan (SAP). Results for the import soil did not undergo independent data evaluation. Investigation-derived waste (IDW) was also sampled in accordance with the requirements specified in the SAP and the disposing facility. Results for waste characterization did not undergo independent data evaluation. Results for import soil and waste characterization are included in Appendix C of this Report, and were not evaluated further.

## 5.1 FINDINGS

The following general findings were noted by LDC:

- All data were determined to be usable. A minimal number of results were qualified.
- The interelement correction factor standard (ICS) specified by the analytical method (EPA Method SW6010B) was not analyzed for many of the individual sample delivery groups.
- A matrix spike/matrix spike duplicate (MS/MSD) pair was not included with all analytical batches, as specified in the SAP.
- A field duplicate was not included with all analytical batches, as specified in the SAP.
- A small concentration of lead was detected in several continuing calibration blank (CCB) check samples.

## 5.2 IMPACT OF FINDINGS ON RESULTS

### **Interelement correction factors**

EPA Method SW6010B is a spectroscopic method where an aqueous medium (or as in this case, an acid-digested sample) is volatilized into a plasma. All components of the sample are vaporized and emit light on wavelengths that are characteristic to each specific element. The intensity of each specific wavelength is proportional to the concentration of the individual metal, which in turn is proportional to the concentration of the metal in the original sample.

The presence of a high concentration of one element may interfere marginally with the measurement of a different element. These interelement effects must be empirically determined for each specific instrument, and a correction factor is determined and is subsequently applied to all samples and standards measured on that specific instrument. Once interelement correction factors have been determined, the factors are normally stable and are checked and updated only annually. The correction that is applied is normally small (less than 5 percent of the measurement).

EPA Method SW6010B does specify that an ICS be analyzed after the calibration of the instrument has been performed (usually daily, before samples are analyzed). Due to a personnel change at the laboratory, this standard was omitted from many of the sample analytical batches.

Because interelement correction factors are normally stable, and later analytical batches did include the ICS, which showed a recovery generally within the acceptance range, no change would have been made to the interelement correction factors that were applied to the results. The effect on the data is minimal. LDC did note when an ICS was not analyzed, and it is included as a note in Table 7. LDC did not qualify any results because of the absence of an ICS.

### **Matrix spike/matrix spike duplicates**

The SAP required that a MS/MSD pair was to be analyzed in every analytical batch. However, it is our technical opinion that sufficient MS/MSD pairs were collected and these MS/MSD pairs

generally indicated the absence of matrix interferences. The laboratory did include a laboratory control sample and a method blank for internal laboratory quality control. EPA Method SW6010B recommends the use of a MS/MSD only when a new or unusual sample matrix is encountered. Samples from PVIC generally had similar compositions. LDC noted the absence of the MS/MSD pair in each DVR. LDC did not qualify any results because of the absence of a MS/MSD.

### **Field Duplicates**

The frequency of field duplicates specified in the SAP is 1 in every 10 samples. Due to the importance of the confirmation sample events, more field duplicates were scheduled for these analytical delivery groups. The frequency of 10 percent of field duplicates was met by ITSI.

The results from many of the field duplicates showed a relative percent difference (RPD) that exceeded the acceptance limit of 50 RPD. This effect is consistent with fragmentation of lead particles, as previously concluded from the evaluation of the field XRF results to the laboratory results presented in Appendix D.

### **Continuing Calibration Blanks**

Several times during an analytical sequence a CCB is analyzed. In several delivery groups, a small amount of lead was detected above the instrument method detection limit. There are several possible reasons for this detection, which range from random instrument noise to sample carryover in the instrument itself.

When a CCB shows a positive result, an evaluation of the concentration in the CCB relative to the concentration of the samples is performed. If necessary, the sample results may be accepted, qualified or rejected, depending upon the concentrations of the analyte in the sample and blank. A low concentration of an analyte in a blank may have no impact on a higher concentration of the analyte in a sample, and therefore the sample result can be accepted. Where the concentration of the blank is comparable (within a factor of 5) to the concentration of the sample, the sample results may be accepted with qualification (J-flagged as estimated, UJ-flagged as

estimated and not detected, or the reporting limit may be raised to the concentration in the sample). Where the concentration of the analyte in the blank is significantly greater relative to the concentration of the analyte of the sample, the result may be rejected as unusable.

As a result of this evaluation, a total of 13 results were qualified as estimated; estimated and not detected; or not detected with an elevated reporting limit. No results were rejected.

### **5.3 DATA QUALITY OBJECTIVES**

The data collected for this effort met all of the data quality objectives set forth in the Work Plan's SAP (ITSI, 2002). The laboratory reporting limit is well below the cleanup action limit of 250 mg/kg. Sufficient laboratory quality control and field quality control samples were collected to provide confidence in the analytical process. Independent data validation and data verification identified some analytical and procedural problems that warranted qualification of a minimal portion of the data set. No results were rejected, and all data were usable.

## 6.0 CONCLUSIONS

Close coordination with and participation of the interested parties (project stakeholders, USACE, and ITSI) during the weekly site meetings provided real-time problem resolutions and direction to the project, and allowed fieldwork to be completed ahead of schedule and within budget.

The preliminary sampling activities successfully provided the information necessary to delineate the areas of lead contamination within a time-frame that allowed site personnel to begin remedial activities prior to completing the preliminary sampling event. The XRF field screening analysis assisted in determining the limits of lead contamination soon after the samples had been collected by providing “real-time” data for identifying when step-out samples were required during excavation activities. A statistical analysis comparing the XRF field and fixed laboratory analytical results showed an acceptable correlation between the two techniques. The project stakeholders unanimously agreed that the XRF technique was suitable for preliminary sampling use.

The excavation and stockpiling of soil material progressed as planned with more than sufficient room to stockpile soil on the upper and lower parking lots. There were no significant weather events during the remedial activities, and no incidental off-site wind- or water-borne transportation of lead contamination occurred. The plastic sheeting covering the stockpiles maintained its integrity throughout the duration of the project. There were no complaints about dust emissions during the project from neighbors or stakeholders, and air monitoring records documented insignificant dust levels at the site perimeter. One significant rain event occurred near the end of the project, but the stockpiles of soil had already been removed from the site and most excavations had been backfilled, so there were no stormwater runoff issues.

Transportation and disposal activities were also completed as planned, with no incidents of spills or releases. The only complaint (from concerned neighbors) resulted from several trucks parked along the side of Palos Verdes Drive West approximately 3 miles from the site; within one hour of the complaint, all truck drivers were notified and moved to the proper staging area on the site.

Backfilling of the site progressed as planned. Based on the analytical results and subsequent approval of all stakeholders, soil from an adjacent project in Rancho Palos Verdes was used as topsoil and landscape soil. To the satisfaction of the City of Rancho Palos Verdes, the hydroseed placed within the range of the temporary irrigation system is growing green and lush. The compaction of the structural fill placed under the “sitting wall” adjacent to the building and in Hot Spot 3 was paid for by the City of Rancho Palos Verdes. Their contracted geotechnical testing company observed the placement, and has approved the fill as suitable for future construction. More rework will be required for the building pad area, for which the City of Rancho Palos Verdes will be responsible. The civil engineering firm representing the City of Rancho Palos Verdes has acknowledged that ITSI has stockpiled sufficient import structural fill on site to complete the building pad construction. The City of Rancho Palos Verdes is responsible for placing and compacting this structural fill.

In addition to the confirmation samples, which documented that lead concentrations in the bottoms and sides of excavations were all below the remedial action level, there were many more sample results that represent the concentrations of lead in the soil that remained on site. These soil samples were collected during the preliminary sampling event in areas that were subsequently not excavated. Seven hundred and twenty preliminary samples were collected and analyzed for total lead. Of these sample locations, approximately 134 were removed with the soil above the action level. During and after excavation activities, 68 confirmation samples were collected to confirm that the excavation activities had effectively removed any soil above the action level. Approximately 12 of the confirmation sample results were greater than the remedial action level and were removed during further excavation. During post-remediation sampling, more than 134 samples were collected and analyzed for total lead. Approximately 25 of the post remediation sample results were above the remedial action level and were used to delineate the final post-remediation soil removal excavation limits.

Including the preliminary sampling, confirmation sampling, and post remediation sampling, the total number of samples with results below the remedial action level was approximately 751. The locations of these 751 samples represent approximately 1.5 acres of the site. This is a

sample density greater than one sample per 100 square feet, or more than one sample per 20 “in place” cubic yards of soil. This density of sample collection exceeded the typical practices for confirming that an area has been remediated. The average detection for these samples, representing the soil remaining on site, is approximately 35 mg/kg total lead.

The project stakeholders have always understood that lead-contaminated soil has been spread throughout the site, and that a 100-percent removal of all lead-contaminated soil and bullets would be unfeasible. The preliminary sampling and subsequent excavation redefined the boundaries of the Hot Spots as presented in the RAP. The final boundaries of the excavations revealed that the distribution of the lead was generally confined to the previously defined hot spots, specifically hot spots 1, 2, and 3. Hot spots 1 and 2 coincide with the former shooting range berm; and, as can be seen in Figure 4, the contaminated soil was not as widespread throughout the site as previously expected. Because of the large number of samples collected, there is a high level of confidence that the majority of soil above the action level has been removed, and that any remaining hot spots would be very small and localized.

The scope of this project did not include collection of samples from under the building or the existing asphalt covered parking lot. Soil under the building and parking lot were not sampled because the building and asphalt paving provide an effective “cap” which cuts off exposure pathways. With the exception of two samples (Storm Drain A, Stations 16+70 and 16+10), the samples collected along the perimeter of the parking lot and along Storm Drain A (under the parking lot) were below the action level.

Approximately 120 samples were collected along the parking lot perimeter and under the parking lot with results less than the remedial action level. The two areas from which the Storm Drain A, Stations 16+70 and 16+10 samples were collected were remediated.

ITSI certifies that the services involved have been performed in accordance with the contract, contract drawings, the USACE SOW, the ITSI project Work Plan, and the RAP (SAIC, 2002c).

## 7.0 REFERENCES

Innovative Technical Solutions, Inc. (ITSI), 1999. *Chemical Data Quality Management Plan (CDQMP), SMART (Small Action Remediation Type) Services, Contract No. DAC05-98-R-0007.*

ITSI, 2002. *Lead Removal Action Final Work Plan, Point Vicente Interpretive Center, Rancho Palos Verdes, California, September.*

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U. S. Environmental Protection Agency (EPA) 2002, *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review. EPA 540-R-01-008.*

## Tables



TABLE 1  
 PRELIMINARY SAMPLE RESULTS  
 POINT VICENTE INTERPRETIVE CENTER  
 RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	XRF No.	Visible Lead	Total Lead EPA 6010B (mg/kg)	XRF Lead (ppm)	Relative % Difference	Soil Removed ?	Comments	Lab Request Number
SDA-19+00-01'	09/16/02		6	No	NA	32.3		No		
SDA-19+00-3'	09/16/02		7	No	NA	11.4		No		
SDA-19+00-5'-201	09/16/02		10	No	1.34	1.3	-3%	No		99128
SDA-19+00-7'-202	09/16/02		12	No	0.00	15.7	200%	No		99128
SDA-19+00-9'-200	09/16/02		9	No	0.00	5.2	200%	No		99128
SDA-18+80-1'	09/16/02		15	No	NA	18.9		No		
SDA-18+80-3'-203	09/16/02		14	No	1.22	30.6	185%	No		99128
SDA-18+80-5'-204	09/16/02	X	16	No	1.00	15.2	175%	No		99128
SDA-18+80-7'	09/16/02		13	No	NA	-1.4		No		
SDA-18+80-9'-205	09/16/02		18	No	2.49	-1.6	-919%	No		99128
SDA-18+80-11'	09/16/02		19	No	NA	-7.9		No		
SDA-18+60-1'	09/16/02		20	No	NA	53.7		No		
SDA-18+60-3'-206	09/16/02		21	No	0.00	8.0	200%	No		99128
SDA-18+60-5'	09/16/02		23	No	NA	-8.7		No		
SDA-18+60-7'-207	09/16/02		22	No	2.74	7.7	95%	No		99128
SDA-18+60-7-210	09/16/02		NA	No	2.84	NA		No		99128
SDA-18+60-9'	09/16/02		24	No	NA	9.8		No		
SDA-18+40-1'	09/16/02		25	No	NA	29.9		No		
SDA-18+40-3'-208	09/16/02		26	No	0.00	15.6	200%	No		99128
SDA-18+40-5'	09/16/02		27	No	NA	10.6		No		
SDA-18+40-7'	09/16/02		28	No	NA	7.4		No		
SDA-18+40-9'-209	09/16/02		29	No	24.20	31.0	25%	No		99128
SDA-18+20-1'	09/16/02		30	No	NA	38.9		No		
SDA-18+20-3'	09/16/02		31	No	NA	3.0		No		
SDA-18+20-5'	09/16/02		32	No	NA	-0.4		No		
SDA-18+20-7'	09/16/02		33	No	NA	7.4		No		
SDA-18+00-1'	09/16/02		36	No	NA	20.2		No		
SDA-18+00-2'	09/16/02		35	No	NA	20.8		No		
SDA-18+00-3.5'	09/16/02		34	No	NA	11.6		No		
SDA-17+80-1'-211	09/16/02		44	No	4.01	-1.9	-560%	No		99200
SDA-17+80-3'-212	09/16/02		45	No	0.00	0.6	200%	No		99200
SDA-17-80-5'	09/16/02		46	No	NA	8.2		No		
SDA-17+60-1'	09/17/02		47	No	NA	VOID		No		
SDA-17+60-3'	09/17/02		48	No	NA	12.8		No		
SDA-17+60-5'-213	09/17/02		53	No	2.65	-5.2	616%	No		99200
SDA-17+40-1'	09/17/02		54	No	NA	49.7		No		
SDA-17+40-2'	09/17/02		55	No	NA	3.1		No		
SDA-17+40-3'	09/17/02		56	No	NA	3.5		No		
SDA-17+20-1'	09/17/02		59	No	NA	81.1		No		
SDA-17+20-2'	09/17/02		60	No	NA	24.4		No		
SDA-17+20-3'	09/17/02		58	No	NA	18.7		No		
SDA-17+00-1'	09/17/02		57	No	NA	55.1		No		
SDA-17+00-2'	09/17/02		62	No	NA	56.0		No		
SDA-17+00-3'	09/17/02		61	No	NA	59.2		No		
SDA-16+80-0.5'-214	09/17/02		63	No	49.00	74.7	42%	No		99200
SDA-16+80-1'-215	09/17/02		64	No	133.00	161.0	19%	No		99200
SDA-16+80-1.5'	09/17/02		68	No	NA	25.2		No		
SDA-16+60-1'	09/17/02		65	No	NA	67.3		No		
SDA-16+60-1.5'	09/17/02		66	No	NA	103.0		No		
SDA-16+60-2'	09/17/02		67	No	NA	46.2		No		
SDA-16+40-0.5	09/17/02		69	No	NA	63.5		No		
SDA-16+40-1	09/17/02		70	No	NA	50.9		No		
SDA-16+40-1.5	09/17/02		71	No	NA	21.2		No		
SDA-16+40-2	09/17/02		73	No	NA	9.9		No		
SDA-16+20-0.5	09/17/02		74	No	NA	28.6		No		

TABLE 1  
 PRELIMINARY SAMPLE RESULTS  
 POINT VICENTE INTERPRETIVE CENTER  
 RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	XRF No.	Visible Lead	Total Lead EPA 6010B (mg/kg)	XRF Lead (ppm)	Relative % Difference	Soil Removed ?	Comments	Lab Request Number
SDA-16+20-1.5	09/17/02		77	No	NA	41.1		No		
SDA-16+00-0.5	09/17/02		75	No	NA	49.6		No		
SDA-16+00-1.5	09/17/02		78	No	NA	28.2		No		
SDA-15+80-1.0	09/17/02		76	No	NA	125.0		No		
SDA-15+80-1.5	09/17/02		82	No	NA	74.3		No		
SDA-15+80-2	09/17/02		79	No	NA	129.0		No		
SDA-15+60-1-216	09/17/02		80	No	221.00	295.0	29%	YES	hot spot	99200
SDA-15+60-1-217	09/17/02		86	No	235.00	302.0	25%	YES	hot spot	99200
SDA-15+60-3	09/17/02		81	No	NA	9.9		No		
SDA-15+60-4.5	09/17/02		95	No	NA	12.3		No		
SDA-15+40-1	09/17/02		87	No	NA	105.0		No		
SDA-15+40-3	09/17/02		88	No	NA	24.5		No		
SDA-15+40-5	09/17/02		94	No	NA	32.5		No		
SDA-15+40-7	09/17/02		92	No	NA	20.2		No		
SDA-15+20-1	09/17/02		83	No	NA	56.2		No		
SDA-15+20-3	09/17/02		85	No	NA	44.3		No		
SDA-15+20-5	09/17/02		93	No	NA	15.2		No		
SDA-15+20-7	09/17/02		90	No	NA	11.1		No		
SDA-15+20-9	09/17/02		89	No	NA	9.7		No		
SDA-15+20-11	09/17/02		91	No	NA	9.9		No		
SDA-15+00-1-223	09/17/02		119	No	116.00	152.0	27%	No	Dup 217 listed on XRF Form	
SDA-15+00-3	09/17/02		97	No	NA	7.7		No		
SDA-15+00-5	09/17/02		98	No	NA	32.6		No		
SDA-15+00-7	09/17/02		99	No	NA	34.3		No		
SDA-15+00-9	09/17/02		100	No	NA	33.5		No		
SDA-15+00-11	09/17/02		120	No	NA	14.3		No		
SDA-14+80-1	09/17/02		110	No	NA	21.9		No		
SDA-14+80-3	09/17/02		109	No	NA	40.0		No		
SDA-14+80-5	09/17/02		111	No	NA	41.5		No		
SDA-14+80-7	09/17/02		118	No	NA	28.4		No		
SDA-14+80-9	09/17/02		112	No	NA	22.1		No		
SDA-14+80-11	09/17/02		114	No	NA	11.0		No		
SDA-14+60-1	09/17/02		115	No	NA	17.1		No		
SDA-14+60-3	09/17/02		116	No	NA	20.1		No		
SDA-14+60-5	09/17/02		117	No	NA	11.9		No		
SDA-14+60-7	09/17/02		121	No	NA	15.4		No		
SDA-14+60-9	09/17/02		122	No	NA	26.2		No		
SDA-14+60-11	09/17/02		123	No	NA	25.4		No		
SDA-14+40-1	09/17/02		124	No	NA	38.1		No		
SDA-14+40-1.5	09/17/02		125	No	NA	83.9		No		
SDA-14+40-3	09/17/02		126	No	NA	76.8		No		
SDA-14+40-5	09/17/02		127	No	NA	35.1		No		
SDA-14+40-7	09/17/02		128	No	NA	59.6		No		
SDA-14+20-1	09/17/02		132	No	NA	178.0		No		
SDA-14+20-1-218	09/17/02		167	No	66.00	98.5	40%	No		99269
SDA-14+20-3	09/17/02		129	No	NA	17.2		No		
SDA-14+20-5	09/17/02		130	No	NA	16.4		No		
SDA-14+20-7	09/17/02		131	No	NA	21.2		No		
SDA-14+00-1	09/17/02		133	No	NA	61.3		No		
SDA-14+00-3	09/17/02		134	No	NA	25.8		No		
SDA-14+00-5	09/17/02		135	No	NA	22.1		No		
SDA-14+00-7	09/17/02		136	No	NA	26.3		No		
SDB-11+20-1	09/17/02		137	No	NA	73.0		No		
SDB-11+20-3	09/17/02		138	No	NA	41.8		No		
SDB-11+40-1-219	09/18/02		142	No	126.00	134.0	6%	No		99269

TABLE 1  
PRELIMINARY SAMPLE RESULTS  
POINT VICENTE INTERPRETIVE CENTER  
RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	XRF No.	Visible Lead	Total Lead EPA 6010B (mg/kg)	XRF Lead (ppm)	Relative % Difference	Soil Removed ?	Comments	Lab Request Number
SDB-11+40-1.5	09/18/02		147	No	NA	34.0		No	XRF ID 11+40-2	
SDB-11+60-1	09/18/02		139	No	NA	34.0		remove	partial removal only	
SDB-11+60-3	09/18/02		143	No	NA	27.0		remove	partial removal only	
SDB-11+60-5	09/18/02		145	No	NA	24.1		remove	partial removal only	
SDB-11+60-7	09/18/02		140	No	NA	34.8		remove	partial removal only	
SDB-11+60-10-221	09/18/02		141	No	0.00	16.0	200%	remove	partial removal only	99269
<b>SDB-11+60-10-224</b>	<b>09/18/02</b>		<b>193</b>	<b>No</b>	<b>0.00</b>	<b>347.0</b>	<b>200%</b>	<b>YES</b>	<b>Lab reanalyzed sample</b>	<b>99269</b>
SDB-11+80-1	09/18/02		144	No	NA	27.4		No		
SDB-11+80-3	09/18/02		146	No	NA	17.4		No		
SDB-11+80-5	09/18/02		149	No	NA	23.6		No		
SDB-11+80-7	09/18/02		155	No	NA	14.3		No		
SDB-11+80-9	09/18/02		152	No	NA	15.0		No		
SDB-11+80-11	09/18/02		153	No	NA	0.0		No		
SDB-11+80-13-222	09/18/02		150	No	ND	9.5		No		99269
SDB-12+00-1-220	09/18/02		151	No	86.50	87.2	1%	No		99269
SDB-12+00-3	09/18/02		158	No	NA	65.1		No		
SDB-12+00-5	09/18/02		156	No	NA	35.6		No		
SDB-12+00-7	09/18/02		160	No	NA	51.7		No		
SDB-12+00-9	09/18/02		161	No	NA	19.6		No		
SDB-12+00-11	09/18/02		163	No	NA	36.1		No		
SDB-12+00-13	09/18/02		NA	No	NA	NA		No	Sample Not Analyzed	
SDB-12+20-1	09/18/02		NA	No	3.80	NA		No		99269
SDB-12+20-3	09/18/02		NA	No	21.20	NA		No		99269
SDB-12+20-5	09/18/02		NA	No	2.58	NA		No		99269
SDB-12+20-7	09/18/02		NA	No	5.17	NA		No		99269
SDB-12+20-9	09/18/02		NA	No	4.50	NA		No		99269
SDB-12+20-11	09/18/02		NA	No	2.95	NA		No		99269
SDB-12+20-13	09/18/02		159	No	NA	13.1		No		
SDB-12+40-1	09/18/02		162	No	NA	54.7		No		
SDB-12+40-3	09/18/02		164	No	NA	37.0		No		
SDB-12+40-5	09/18/02		NA	No	5.48	NA		No		99269
SDB-12+40-7	09/18/02		NA	No	3.19	NA		No		99269
SDB-12+40-9	09/18/02		NA	No	2.74	NA		No		99269
SDB-12+40-11	09/18/02		NA	No	2.45	NA		No		99269
SDB-12+40-13	09/18/02		NA	No	1.13 U	NA		No	Qualified	99269
HS1-M8-1	09/18/02		NA	No	56.20	NA		No		99269
HS1-M8-5	09/18/02		NA	No	4.72	NA		No		99269
HS1-M8-7	09/18/02		NA	No	2.88	NA		No		99269
HS1-M8-13	09/18/02		NA	No	1.38	NA		No		99269
HS1-L8-1	09/18/02		NA	No	2.62	NA		No		99269
HS1-L8-3	09/18/02		NA	No	2.76	NA		No		99269
HS1-L8-7	09/18/02		NA	No	3.19	NA		No		99269
HS1-K8-1	09/18/02		NA	No	60.20	NA		No		99269
HS1-K8-3	09/18/02		NA	No	1.76	NA		No		99269
HS1-K8-7	09/18/02		NA	No	3.40	NA		No		99269
HS1-J8-1	09/18/02		NA	No	104.00	NA		YES	incidental	99269
HS1-J8-1	09/18/02		NA	No	6.87	NA		No	Lab Duplicate	99269
<b>HS1-J8-3</b>	<b>09/18/02</b>		<b>NA</b>	<b>No</b>	<b>2210.00</b>	<b>NA</b>		<b>YES</b>	<b>hot spot</b>	<b>99269</b>
<b>HS1-J8-6</b>	<b>09/18/02</b>		<b>154</b>	<b>No</b>		<b>1950.0</b>		<b>YES</b>	<b>Bullet Cased in Copper</b>	
HS1-J8-7	09/18/02		NA	No	112.00	NA		No		99269
HS1-I8-1	09/18/02		NA	No	6.87	NA		YES	incidental	99269
<b>HS1-I8-3</b>	<b>09/18/02</b>		<b>NA</b>	<b>No</b>	<b>14200.00</b>	<b>NA</b>		<b>YES</b>	<b>hot spot</b>	<b>99269</b>
HS1-I8-7	09/18/02		NA	No	18.80	NA		YES	incidental	99269
HS1-J8-9	09/18/02		NA	No	17.50	NA		No		99269
HS1-J8-10	09/18/02		NA	No	5.78	NA		No		99269

TABLE 1  
 PRELIMINARY SAMPLE RESULTS  
 POINT VICENTE INTERPRETIVE CENTER  
 RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	XRF No.	Visible Lead	Total Lead EPA 6010B (mg/kg)	XRF Lead (ppm)	Relative % Difference	Soil Removed ?	Comments	Lab Request Number
HS1-L8-9	09/18/02		NA	No	2.50	NA		No		99269
HS1-L8-11	09/18/02		NA	No	2.89	NA		No		99269
HS1-K8-9	09/18/02		NA	No	4.29	NA		No		99269
HS1-K8-11	09/18/02		NA	No	4.53	NA		No		99269
HS1-J8-9	09/19/02		176	No	NA	3.8		No		
HS1-J8-11	09/19/02		NA	No		NA		No	Sample not Analyzed	
HS1-H8-1	09/19/02		182	No	NA	24.6		No		
HS1-H8-3	09/19/02		186	No	NA	16.1		No		
HS1-H8-7	09/19/02		177	No	NA	45.3		No		
HS1-H8-5	09/19/02		178	No	NA	34.5		No		
HS1-H8-9.5	09/19/02		183	No	NA	39.6		No		
HS1-H7-1.5	09/19/02		185	No	NA	12.0		No		
HS1-H7-3	09/19/02		187	No	NA	27.4		No		
HS1-H7-5	09/19/02		192	No	NA	121.0		No		
HS1-H7-7.5	09/19/02		190	No	NA	5.0		No		
HS1-H6-1	09/19/02		198	No	NA	53.0		YES	incidental	
<b>HS1-H6-4-224</b>	<b>09/19/02</b>		<b>193</b>	<b>No</b>	<b>443.00</b>	<b>347.0</b>	<b>-24%</b>	<b>YES</b>	<b>hot spot</b>	
HS1-H6-5	09/19/02		189	No	NA	43.0		No		
HS1-H6-5.5	09/19/02		205	No	NA	22.0		No		
HS1-H6-8	09/19/02		184	No	NA	64.3		No		
HS1-H6-7	09/19/02		202	No	NA	36.0		No		
HS1-I7-1	09/19/02		208	No	NA	41.9		No		
HS1-I7-2	09/19/02		30E	No	NA	39.9		No		
HS1-I7-5	09/19/02		204	No	NA	110.0		No		
HS1-I7-7-228	09/19/02		212	No	63.40	89.6	34%	No		
HS1-I7-11	09/19/02		213	No	NA	20.0		No		
HS1-J7-1-227	09/19/02		209	No	199.00	173.0	-14%	YES	incidental	
HS1-J7-3	09/19/02		196	No	NA	1360.0		YES	hot spot	
HS1-J7-3-225	09/19/02		197	No	1190.00	732.0	-48%	YES	hot spot	
HS1-J7-5-226	09/19/02		200	No	910.00	576.0	-45%	YES	hot spot	
HS1-J7-7	09/19/02		194	No	NA	17.3		No		
HS1-J7-10	09/19/02		188	No	NA	7.6		No		
HS1-K7-1	09/19/02		218	No	NA	16.7		No		
HS1-K7-3	09/19/02		217	No	NA	5.1		No		
HS1-K7-6	09/19/02		216	No	NA	89.8		No		
HS1-K7-7	09/19/02		214	No	NA	12.4		No		
HS1-K7-11	09/19/02		215	No	NA	1.1		No		
HS1-L7-1	09/19/02		199	No	NA	24.4		No		
HS1-L7-2	09/19/02		211	No	NA	68.2		No		
HS1-L7-4	09/19/02		203	No	NA	18.4		No		
HS1-L7-6	09/19/02		207	No	NA	30.2		No		
HS1-L7-8	09/19/02		NA	No	NA	NA		No	Sample Not Analyzed	
HS1-L7-9	09/19/02		195	No	NA	63.6		No		
HS1-L7-11	09/19/02		210	No	NA	10.0		No		
HS1-M7-2	09/19/02		NA	No	123.00	NA		No		99357
HS1-M7-4	09/19/02		NA	No	4.64	NA		No		99357
HS1-M7-6	09/19/02		NA	No	ND	NA		No		99357
HS1-M7-8	09/19/02		NA	No	8.52	NA		No		99357
HS1-M7-14	09/19/02		NA	No	2.19	NA		No		99357
HS1-M6-3	09/19/02		NA	No	12.20	NA		No		99357
HS1-M6-5	09/19/02		NA	No	36.00	NA		No		99357
HS1-M6-6	09/19/02		NA	No	2.08	NA		No		99357
HS1-M6-10	09/19/02		NA	No	3.64	NA		No		99357
HS1-M6-13	09/19/02		NA	No	65.90	NA		No		99357
HS1-L6-2	09/19/02		NA	No	7.19 U	NA		No	Qualified	99357

TABLE 1  
PRELIMINARY SAMPLE RESULTS  
POINT VICENTE INTERPRETIVE CENTER  
RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	XRF No.	Visible Lead	Total Lead EPA 6010B (mg/kg)	XRF Lead (ppm)	Relative % Difference	Soil Removed ?	Comments	Lab Request Number
HS1-L6-4	09/19/02		NA	No	3.03	NA		No		99357
HS1-L6-6	09/19/02		NA	No	3.27	NA		No		99357
HS1-L6-8	09/19/02		NA	No	1.26	NA		No		99357
HS1-L6-13	09/19/02		NA	No	3.31	NA		No		99357
HS1-K6-2	09/19/02		NA	No	3.34	NA		No		99357
HS1-K6-4	09/19/02		NA	No	4.79	NA		No		99357
HS1-K6-6	09/19/02		NA	No	2.94	NA		No		99357
HS1-K6-8	09/19/02		NA	No	2.79	NA		No		99357
HS1-K6-11	09/19/02		NA	No	ND	NA		No		99357
HS1-J6-2-229	09/19/02	X	220	No	161.00	173.0	7%	No		99357
HS1-J6-4	09/19/02		221	No	NA	54.9		No		
HS1-J6-6	09/19/02		219	No	NA	21.0		No		
HS1-J6-8	09/19/02		222	No	NA	25.9		No		
HS1-J6-10	09/19/02		223	No	NA	16.5		No		
<b>HS1-J6-2.5</b>	<b>09/19/02</b>		<b>NA</b>	<b>No</b>	<b>319.00</b>	<b>NA</b>		<b>YES</b>	<b>hot spot</b>	<b>99357</b>
HS1-J6-5	09/19/02		NA	No	67.90	NA		YES	incidental to I9-9	99357
HS1-J6-7	09/19/02		NA	No	5.09	NA		YES	incidental to I9-9	99357
HS1-J6-8	09/19/02		NA	No	4.81	NA		No		99357
HS1-J6-9	09/19/02		NA	No	19.90	NA		No		99357
HS1-I5-2	09/19/02		NA	No	156.00	NA		No		99357
HS1-I5-4	09/19/02		NA	No	28.00	NA		No		99357
HS1-I5-5.5	09/19/02		NA	No	8.72	NA		No		99357
HS1-I5-7.5	09/19/02		NA	No	8.13	NA		No		99357
HS1-I5-8.5	09/19/02		NA	No	10.50	NA		No		99357
HS1-J5-2	09/19/02		NA	No	162.00	NA		No		99357
HS1-J5-4	09/19/02		NA	No	68.70	NA		No		99357
HS1-J5-6	09/19/02		NA	No	10.50	NA		No		99357
HS1-J5-7.5	09/19/02		NA	No	4.18	NA		No		99357
HS1-J5-9.5	09/19/02		NA	No	4.82	NA		No		99357
HS1-J5-10	09/19/02		NA	No	ND	NA		No		99357
HS1-K5-2	09/19/02		NA	No	4.10	NA		No		99357
HS1-K5-4	09/19/02		NA	No	8.04	NA		No		99357
HS1-K5-6	09/19/02		NA	No	2.60	NA		No		99357
HS1-K5-8	09/19/02		NA	No	2.73	NA		No		99357
HS1-K5-10	09/19/02		NA	No	2.75	NA		No		99357
HS1-J4-2	09/20/02		237	No		NA		No	Sample Not Analyzed	
HS1-J4-4	09/20/02		236	No	NA	26.5		No		
HS1-J4-6	09/20/02		33E	No	NA	20.7		No		
HS1-J4-8	09/20/02		232	No	NA	26.2		No		
HS1-J4-9.5	09/20/02		231	No	NA	18.8		No		
HS1-L5-2	09/20/02		251	No	NA	17.5		No		
HS1-L5-4	09/20/02		246	No	NA	45.8		No		
HS1-L5-6	09/20/02		235	No	NA	24.5		No		
HS1-L5-7.5	09/20/02		234	No	NA	23.1		No		
HS1-L5-9	09/20/02		247	No	NA	23.7		No		
HS1-L5-11.5	09/20/02		233	No	NA	18.2		No		
HS1-J9-2	09/20/02		244	No	NA	236.0		YES	incidental	
<b>HS1-J9-4-230</b>	<b>09/20/02</b>		<b>242</b>	<b>Fragment</b>	<b>5270.00</b>	<b>2450.0</b>	<b>-73%</b>	<b>YES</b>	<b>hot spot</b>	<b>99431</b>
HS1-J9-6	09/20/02		266	No	NA	113.0		YES	incidental	
<b>HS1-J9-8.5-234</b>	<b>09/20/02</b>		<b>265</b>	<b>No</b>	<b>718.00</b>	<b>464.0</b>	<b>-43%</b>	<b>YES</b>	<b>hot spot</b>	<b>99431</b>
HS1-J9-10	09/20/02		257	No	NA	71.3		No		
HS1-I9-2	09/20/02		253	No	NA	206.0		YES	incidental	
<b>HS1-I9-4-232</b>	<b>09/20/02</b>		<b>250</b>	<b>Fragment</b>	<b>7070.00</b>	<b>3350.0</b>	<b>-71%</b>	<b>YES</b>	<b>hot spot</b>	<b>99431</b>
HS1-I9-6	09/20/02		255	No	NA	44.9		YES	incidental	
<b>HS1-I9-9-231</b>	<b>09/20/02</b>		<b>248</b>	<b>No</b>	<b>895.00</b>	<b>115.0</b>	<b>-154%</b>	<b>YES</b>	<b>hot spot</b>	<b>99431</b>

TABLE 1  
 PRELIMINARY SAMPLE RESULTS  
 POINT VICENTE INTERPRETIVE CENTER  
 RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	XRF No.	Visible Lead	Total Lead EPA 6010B (mg/kg)	XRF Lead (ppm)	Relative % Difference	Soil Removed ?	Comments	Lab Request Number
HS1-H9-10	09/20/02		252	No	NA	46.3		No		
HS1-H9-2	09/20/02		264	No	NA	20.8		No		
HS1-H9-4	09/20/02		263	No	NA	72.4		No		
HS1-H9-6	09/20/02		272	No	NA	92.7		No		
HS1-H9-8	09/20/02		275	No	NA	20.9		No		
HS1-H9-10	09/20/02		274	No	NA	11.3		No		
HS1-J10-2	09/20/02		256	No	NA	234.0		YES	incidental	
<b>HS1-J10-4-233</b>	<b>09/20/02</b>		<b>258</b>	<b>No</b>	<b>6280.00</b>	<b>3680.0</b>	<b>-52%</b>	<b>YES</b>	<b>hot spot</b>	<b>99431</b>
HS1-J10-6	09/20/02		262	No	NA	62.2		No		
HS1-J10-8	09/20/02		259	No	NA	22.3		No		
HS1-J10-10	09/20/02		254	No	NA	55.8		No		
HS1-K10-2	09/20/02		289	No	NA	35.5		No		
HS1-K10-4	09/20/02		288	No	NA	7.4		No		
HS1-K10-6	09/20/02		287	No	NA	22.3		No		
HS1-K10-8	09/20/02		284	No	NA	30.9		No		
HS1-K10-9	09/20/02		277	No	NA	9.4		No		
HS1-K9-2	09/20/02		271	No	NA	33.8		No		
HS1-K9-4	09/20/02		270	No	NA	21.0		No		
HS1-K9-6-235	09/20/02		269	No	5.16 U	1.5	-110%	No	Qualified	99431
HS1-K9-8	09/20/02		278	No	NA	39.5		No		
HS1-K9-9.5	09/20/02		276	No	NA	29.8		No		
HS1-L9-2	09/20/02		286	No	NA	13.8		No		
HS1-L9-4	09/20/02		31E	No	NA	4.7		No		
HS1-L9-6	09/20/02		294	No	NA	26.0		No		
HS1-L9-8	09/20/02		291	No	NA	14.4		No		
HS1-L9-9	09/20/02		292	No	NA	21.1		No		
HS1-M5-1	09/20/02		NA	No	4.63	NA		No		99431
HS1-M5-5	09/20/02		NA	No	34.10	NA		No		99431
HS1-M5-6	09/20/02		NA	No	4.01	NA		No		99431
HS1-M5-8	09/20/02		NA	No	3.64	NA		No		99431
HS1-M5-10	09/20/02		NA	No	1.57	NA		No		99431
HS1-M5-12	09/20/02		NA	No	2.71	NA		No		99431
HS1-H10-2	09/20/02		NA	No	57.40	NA		YES	incidental	99431
<b>HS1-H10-4</b>	<b>09/20/02</b>		<b>NA</b>	<b>No</b>	<b>285.00</b>	<b>NA</b>		<b>YES</b>	<b>hot spot</b>	<b>99431</b>
HS1-H10-6	09/20/02		NA	No	16.40	NA		No		99431
HS1-H10-9.5	09/20/02		NA	No	196.00	NA		No		99431
HS1-H10-10.5	09/20/02		NA	No	6.03	NA		No		99431
HS1-H10-2	09/20/02		NA	No	12.80	NA		No		99431
HS1-H10-4	09/20/02		NA	No	61.00	NA		No		99431
HS1-H10-6	09/20/02		NA	No	43.30	NA		No		99431
HS1-H10-8	09/20/02		NA	No	17.50	NA		No		99431
HS1-H10-9.5	09/20/02		NA	No	4.26	NA		No		99431
HS2-H12-2	09/20/02		NA	No	5.74	NA		No		99431
HS2-H12-4	09/20/02		NA	No	86.20	NA		No		99431
HS2-H12-6	09/20/02		NA	No	5.34	NA		No		99431
HS2-H12-8.5	09/20/02		NA	No	13.80	NA		No		99431
HS2-H12-10	09/20/02		NA	No	5.09	NA		No		99431
HS2-H13-2	09/20/02		NA	No	13.00	NA		No		99431
HS2-H13-4	09/20/02		NA	No	29.40	NA		No		99431
HS2-H13-6	09/20/02		NA	No	14.40	NA		No		99431
HS2-H13-8	09/20/02		NA	No	4.10	NA		No		99431
H2S-H13-9	09/20/02		NA	No	26.40	NA		No		99431
HS2-H14-2	09/20/02		290	No	NA	28.7		No		
HS2-H14-4	09/20/02		285	No	NA	131.0		No		
HS2-H14-6	09/20/02		293	No	NA	29.7		No		

TABLE 1  
PRELIMINARY SAMPLE RESULTS  
POINT VICENTE INTERPRETIVE CENTER  
RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	XRF No.	Visible Lead	Total Lead EPA 6010B (mg/kg)	XRF Lead (ppm)	Relative % Difference	Soil Removed ?	Comments	Lab Request Number
HS2-H14-8	09/20/02		NA	No	30.60	NA		No		99431
HS2-H14-10	09/20/02		NA	No	ND	NA		No		99431
HS2-H15-2	09/20/02		NA	No	78.10	NA		No		99431
HS2-H15-4	09/20/02		NA	No	48.20	NA		No		99431
HS2-H15-6	09/20/02		NA	No	5.17	NA		No		99431
HS2-H15-8	09/20/02		NA	No	5.55	NA		No		99431
HS1-IJ-9/10-2	09/20/02		NA	No	25.00	NA		No		99431
HS1-IJ-9/10-4	09/20/02		NA	No	9.86	NA		No		99431
HS1-IJ-9/10-6	09/20/02		NA	No	243.00	NA		No		99431
HS1-I9-9/10-8	09/20/02		NA	No	5.52	NA		No		99431
HS1-I9-9/10-10	09/20/02		NA	No	36.50	NA		No		99431
<b>HS2-I13-2</b>	<b>09/20/02</b>		<b>NA</b>	<b>No</b>	<b>290.00</b>	<b>NA</b>		<b>YES</b>	<b>hot spot</b>	99431
HS2-I13-4	09/20/02		NA	No	6.40	NA		YES	incidental	99431
HS2-I13-6	09/20/02		NA	No	12.40	NA		No		99431
HS2-I13-8	09/20/02		NA	No	ND	NA		No		99431
HS2-J13-2	09/20/02		NA	No	181.00	NA		No		99431
HS2-J13-4	09/20/02		NA	No	27.90	NA		No		99431
HS2-J13-6	09/20/02		NA	No	24.60	NA		No		99431
HS2-J13-8	09/20/02		NA	No	13.60	NA		No		99431
HS2-J13-9.5	09/20/02		NA	No	19.30	NA		No		99431
<b>HS2-J12-2</b>	<b>09/20/02</b>		<b>NA</b>	<b>No</b>	<b>9680.00</b>	<b>NA</b>		<b>YES</b>	<b>hot spot</b>	99431
HS2-J12-4	09/20/02		NA	No	16.00	NA		No		99431
HS2-J12-6	09/20/02		NA	No	19.50	NA		No		99431
HS2-J12-8	09/20/02		NA	No	4.48	NA		No		99431
HS2-J12-10	09/20/02		NA	No	26.30	NA		No		99431
<b>HS2-I12-2</b>	<b>09/23/02</b>		<b>11A</b>	<b>No</b>	<b>907.00</b>	<b>116.0</b>	<b>-155%</b>	<b>YES</b>	<b>hot spot</b>	99467
<b>HS2-I12-4</b>	<b>09/23/02</b>		<b>NA</b>	<b>No</b>	<b>1460.00</b>	<b>NA</b>		<b>YES</b>	<b>hot spot</b>	99467
<b>HS2-I12-4-238</b>	<b>09/23/02</b>		<b>9A</b>	<b>Fragment</b>	<b>927.00</b>	<b>262.0</b>	<b>-112%</b>	<b>YES</b>	<b>hot spot</b>	99467
HS2-I12-5	09/23/02		NA	No	193.00	NA		No		99467
<b>HS2-I12-5-236</b>	<b>09/23/02</b>		<b>5A</b>	<b>No</b>	<b>193.00</b>	<b>1570.0</b>	<b>156%</b>	<b>YES</b>	<b>hot spot</b>	99467
<b>HS2-I12-5.5-237</b>	<b>09/23/02</b>		<b>6A</b>	<b>No</b>	<b>15300.00</b>	<b>1340.0</b>	<b>-168%</b>	<b>YES</b>	<b>hot spot</b>	99467
HS2-I14-2	09/23/02		10A	No	NA	22.4		YES	incidental	
<b>HS2-I14-4-239</b>	<b>09/23/02</b>		<b>12A</b>	<b>No</b>	<b>299.00</b>	<b>386.0</b>	<b>25%</b>	<b>YES</b>	<b>hot spot</b>	99467
HS2-I14-6	09/23/02		7A	No	NA	24.2		No		
HS2-I14-8	09/23/02		8A	No	NA	-2.1		No		
HS5-E18-2	09/23/02		19A	No	NA	46.3		No		
HS5-E18-4	09/23/02		13A	No	NA	34.9		No		
HS5-E18-6	09/23/02		15A	No	NA	60.3		No		
HS5-E18-7.5	09/23/02		14A	No	NA	-13.0		No		
HS5-E19-2	09/23/02		20A	No	NA	40.8		No		
HS5-E19-4	09/23/02		23A	No	NA	23.9		No		
HS5-E19-6	09/23/02		16A	No	NA	24.8		No		
HS5-E19-8	09/23/02		17A	No	NA	12.2		No		
HS4-L23-2	09/23/02		22A	No	NA	94.3		No		
HS4-L23-4	09/23/02		24A	No	NA	87.4		No		
HS4-L23-6	09/23/02		29A	No	NA	16.1		No		
HS4-L23-7.5-240	09/23/02	X	21A	No	2.31	2.9	23%	No		99467
HS4-L24-2	09/23/02		33A	No	NA	61.9		No		
HS4-L24-5	09/23/02		25A	No	NA	28.9		No		
HS4-L24-6.5	09/23/02		26A	No	NA	35.8		No		
HS4-K25-2	09/23/02		18A	No	NA	23.6		No		
HS4-K25-4	09/23/02		30A	No	NA	17.2		No		
HS4-K25-7	09/23/02		31A	No	NA	4.4		No	No Frag Collected	
HS4-K23-2	09/23/02		27A	No	NA	69.1		No		
HS4-K23-4	09/23/02		28A	No	NA	81.7		No		

TABLE 1  
 PRELIMINARY SAMPLE RESULTS  
 POINT VICENTE INTERPRETIVE CENTER  
 RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	XRF No.	Visible Lead	Total Lead EPA 6010B (mg/kg)	XRF Lead (ppm)	Relative % Difference	Soil Removed ?	Comments	Lab Request Number
HS4-K23-6	09/23/02		35A	No	NA	30.4		No		
HS4-K23-7.5	09/23/02		37A	No	NA	8.9		No		
HS4-K24-2	09/23/02		34A	No	NA	69.0		No		
HS4-K24-4	09/23/02		43A	No	NA	4.2		No		
HS4-K24-6	09/23/02		40A	No	NA	20.8		No		
HS4-J23-2	09/23/02		48A	No	NA	94.5		No		
HS4-J23-4	09/23/02		42A	No	NA	35.9		No		
HS4-J23-6	09/23/02		41A	No	NA	36.9		No		
HS4-J24-2	09/23/02		39A	No	NA	33.9		No		
HS4-J24-4	09/23/02		59A	No	NA	14.3		No		
HS4-J24-6	09/23/02		36A	No	NA	31.1		No		
HS4-J24-7.5	09/23/02		38A	No	NA	7.6		No		
HS4-I24-2	09/23/02		54A	No	NA	32.0		No		
HS40I24-4	09/23/02		64A	No	NA	46.4		No		
HS4-I24-6	09/23/02		55A	No	NA	8.8		No		
HS4-I24-7.5	09/23/02		58A	No	NA	7.9		No		
HS4-J25-2	09/23/02		65A	No	NA	38.8		No		
HS4-J25-4	09/23/02		51A	No	NA	18.7		No		
HS4-J25-6	09/23/02		52A	No	NA	27.5		No		
HS4-J25-7.5	09/23/02		60A	No	NA	15.0		No		
HS4-I23-2-241	09/23/02		47A	No	34.70	34.6	0%	No		99467
HS4-I23-4	09/23/02		50A	No	NA	33.1		No		
HS4-I23-6	09/23/02		45A	No	NA	18.8		No		
HS4-I23-7.5	09/23/02		46A	No	NA	15.7		No		
HS4-I25-2	09/23/02		56A	No	NA	7.9		No		
HS4-I25-3.5	09/23/02		53A	No	NA	31.4		No		
HS4-I25-6.5	09/23/02		66A	No	NA	4.3		No		
HS4-I26-2	09/23/02		49A	No	NA	18.3		No		
HS4-I26-4	09/23/02		62A	No	NA	33.6		No		
HS4-I26-7.5	09/23/02		63A	No	NA	23.9		No		
HS4-H26-2	09/23/02		74A	No	NA	26.6		No		
HS4-H26-4	09/23/02		75A	No	10.10	9.2	-9%	No		99539
HS4-H26-6.5	09/23/02		77A	No	NA	17.2		No		
HS4-H26-7.5	09/23/02		76A	No	NA	12.3		No		
HS4-H25-2.5	09/23/02		NA	No	5.87	NA		No		99467
HS4-H25-4.5	09/23/02		NA	No	12.40	NA		No		99467
HS4-H25-7.5	09/23/02		NA	No	7.97	NA		No		99467
HS4-H24-2	09/23/02		NA	No	11.90	NA		No		99467
HS4-H24-4	09/23/02		NA	No	27.90	NA		No		99467
HS4-H24-6	09/23/02		NA	No	45.80	NA		No		99467
HS4-H24-7.5	09/23/02		NA	No	3.69	NA		No		99467
SDB-16+60-2	09/23/02		NA	No	3.93	NA		No		99467
SDB-16+60-4	09/23/02		NA	No	28.30	NA		No		99467
SDB-16+60-6	09/23/02		NA	No	9.56	NA		No		99467
SDB-16+40-2	09/23/02		NA	No	4.75	NA		No		99467
SDB-16+40-4	09/23/02		NA	No	37.00	NA		No		99467
SDB-16+40-6	09/23/02		NA	No	5.50	NA		No		99467
SDB-16+40-7	09/23/02		NA	No	5.47	NA		No		99467
SDB-16+20-2	09/23/02		82A	No	NA	34.8		No		
SDB-16+20-4	09/23/02		35E	No	NA	5.5		No		
SDB-16+20-6	09/23/02		80A	No	NA	16.9		No		
SDB-16+20-7.5	09/23/02		87A	No	NA	8.4		No		
SDB-16+00-2	09/23/02		90A	No	NA	-0.9		No		
SDB-16+00-4	09/23/02		94A	No	NA	11.1		No		
SDB-16+00-6	09/23/02		78A	No	NA	15.8		No		

TABLE 1  
 PRELIMINARY SAMPLE RESULTS  
 POINT VICENTE INTERPRETIVE CENTER  
 RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	XRF No.	Visible Lead	Total Lead EPA 6010B (mg/kg)	XRF Lead (ppm)	Relative % Difference	Soil Removed ?	Comments	Lab Request Number
SDB-15+80-2	09/24/02		81A	No	NA	19.5		No		
SDB-15+80-4	09/24/02		83A	No	NA	11.4		No		
SDB-15+60-2	09/24/02		92A	No	NA	22.2		No		
SDB-15+60-4	09/24/02		86A	No	NA	6.6		No		
SDB-15+60-6	09/24/02		34E	No	NA	9.8		No		
SDB-15+80-6	09/24/02		79A	No	NA	27.6		No		
SDB-15+40-2.5	09/24/02		100A	No	NA	26.1		No		
SDB-15+40-5.5	09/24/02		84A	No	NA	19.3		No		
SDB-15+20-2	09/24/02		93A	No	NA	16.8		No		
SDB-15+20-5	09/24/02		95A	No	NA	1.1		No		
SDB-15+00-2-243	09/24/02		89A	No	41.30	89.6	74%	No		99539
SDB-15+00-4	09/24/02		112A	Fragment	NA	8.1		No	XRF on Frag (not lead)	
SDB-15+00-4	09/24/02		113A	No	NA	41.5		No	XRF Dup on Frag	
SDB-15-00-7	09/24/02		103A	No	NA	32.0		No		
SDB-14+80-2	09/24/02		111A	No	NA	28.9		No		
SDB-14+80-6	09/24/02		109A	No	NA	32.4		No		
SDB-14+60-2	09/24/02		97A	No	NA	115.0		No		
SDB-14+60-6	09/24/02		110A	No	NA	30.6		No		
SDB-14+40-2	09/24/02		105A	No	NA	217.0		YES	incidental to P16	
SDB-14+40-6	09/24/02		118A	No	NA	48.5		No		
SDB-14+20-2-244	09/24/02		104A	No	177.00	215.0	19%	YES	incidental to P16	99539
SDB-14+20-4	09/24/02		107A	No	NA	73.7		No		
SDB-14+20-6	09/24/02		106A	No	NA	50.3		No		
SDB-14+20-8.5	09/24/02		85A	No	NA	58.6		No		
SDB-14+20-10.5	09/24/02		102A	No	NA	23.3		No		
SDB-14+00-2	09/24/02		120A	No	NA	26.5		No		
SDB-14+00-4	09/24/02		96	No	NA	58.1		No		
SDB-14+00-6	09/24/02		115A	No	NA	37.1		No		
SDB-13+80-2	09/24/02		117A	No	NA	56.5		No		
SDB-13+80-4	09/24/02		119A	No	NA	27.8		No		
SDB-13+80-8.5	09/24/02		91A	No	NA	78.2		No		
SDB-13+60-2	09/24/02		116A	No	NA	59.0		No		
SDB-13+60-4	09/24/02		114A	No	NA	-2.6		No		
SDB-13+60-7.5	09/24/02		101A	No	NA	12.1		No		
SDB-13+40-2	09/24/02		128A	No	NA	49.0		No		
SDB-13+40-4	09/24/02		125A	No	NA	176.0		No		
SDB-13+40-6	09/24/02		122A	No	NA	14.4		No		
SDB-13+40-8	09/24/02		123A	No	NA	18.6		No		
SDB-13+20-2	09/24/02		138A	No	NA	39.5		No		
SDB-13+20-5	09/24/02		137A	No	NA	69.5		No		
SDB-13+20-8	09/24/02		127A	No	NA	12.4		No		
SDB-13+00-2	09/24/02		129A	No	NA	16.2		No		
SDB-13+00-6	09/24/02		141A	No	NA	18.3		No		
SDB-13+00-7.5-245	09/24/02		124A	No	2.65	-11.2	324%	No		99539
SDB-13+00-7.5-245	09/24/02		132A	No	NA	-2.5		No		
SDB-12+80-2-246-246	09/24/02		133A	No	2.66	13.4	134%	No		99539
SDB-12+80-5	09/24/02		130A	No	NA	37.7		No		
SDB-12+8-6.5	09/24/02		134A	No	NA	75.3		No		
SDB-12+60-2	09/24/02		140A	No	NA	35.9		No		
SDB-12+60-4	09/24/02		139A	No	NA	12.4		No		
SDB-12+60-6.5	09/24/02		136A	No	NA	21.7		No		
SDB-12+60-8	09/24/02		121A	No	NA	40.1		No		
SDB-12+60-12	09/24/02		135A	No	NA	17.3		No		
HS3-M19-2	09/24/02		NA	No	21.00	NA		No		99539
HS3-M19-4	09/24/02		144A	No	NA	21.1		No		

TABLE 1  
PRELIMINARY SAMPLE RESULTS  
POINT VICENTE INTERPRETIVE CENTER  
RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	XRF No.	Visible Lead	Total Lead EPA 6010B (mg/kg)	XRF Lead (ppm)	Relative % Difference	Soil Removed ?	Comments	Lab Request Number
HS3-M19-6	09/24/02		143A	No	NA	24.9		No		
HS3-M19-7.5	09/24/02		142A	No	NA	9.5		No		
HS3-N19-2	09/24/02		NA	No	13.90	NA		No		99539
HS3-N19-4.5	09/24/02		145A	No	NA	32.1		No		
HS3-N19-6	09/24/02		NA	No	3.49	NA		No		99539
HS3-N19-7.5	09/24/02		NA	No	2.56	NA		No		99539
HS3-O19-2	09/24/02		NA	No	20.20	NA		YES	incidental	99539
<b>HS3-O19-4-247</b>	<b>09/24/02</b>		<b>146A</b>	<b>No</b>	<b>306.00</b>	<b>51.0</b>	<b>-143%</b>	<b>YES</b>	<b>hot spot</b>	<b>99539</b>
HS3-O19-4-248	09/24/02	X	NA	No						
HS3-O19-6	09/24/02		NA	No	6.97	NA		No		99539
HS3-O19-8	09/24/02		NA	No	3.36	NA		No		99539
HS3-O18-2	09/24/02		NA	No	59.10	NA		No		99539
HS3-O18-4.5	09/24/02		147A	No	NA	26.2		No		
HS3-O18-6	09/24/02		NA	No	2.90	NA		No		99539
HS3-O18-8	09/24/02		NA	No	33.70	NA		No		99539
HS3-O18-10.5	09/24/02		NA	No	5.90	NA		No		99539
HS3-L17-2	09/24/02		NA	No	17.80	NA		No		99539
HS3-L17-4	09/24/02		NA	No	9.29	NA		No		99539
HS3-L17-6	09/24/02		NA	No	ND	NA		No		
HS3-N18-2	09/24/02		NA	No	14.30	NA		No		99539
HS3-N18-4	09/24/02		148A	No	NA	38.3		No		
HS3-N18-6	09/24/02		NA	No	3.54	NA		No		99539
HS3-N18-8.5	09/24/02		149A	No	NA	53.2		No		
HS3-N18-9.5	09/24/02		150A	No	NA	13.0		No		
HS3-M18-2	09/24/02		NA	No	18.70	NA		No		99539
HS3-M18-4.5	09/24/02		NA	No	20.60	NA		No		99539
HS3-M18-6.5	09/24/02		NA	No	3.31	NA		No		99539
HS3-M18-7.5	09/24/02		NA	No	ND	NA		No		99539
<b>HS3-P18-2</b>	<b>09/24/02</b>		<b>NA</b>	<b>No</b>	<b>988.00</b>	<b>NA</b>		<b>YES</b>	<b>hot spot</b>	<b>99539</b>
HS3-P18-4.5	09/24/02		NA	No	33.40	NA		YES	incidental	99539
HS3-P18-6.5	09/24/02		NA	No	4.35	NA		YES	incidental	99539
HS3-P18-7.5	09/24/02		NA	No	3.03	NA		No		99539
HS3-K17-6	09/25/02		99B	No	NA	0.8		No		
HS1-G6-SO-2	09/25/02		171A	No	NA	64.4		No		
HS1-G6-SO-4	09/25/02		169A	No	NA	200.0		No		
HS1-G6-SO-6	09/25/02		175A	No	NA	51.2		No		
HS1-H5-SO-2	09/25/02		173A	No	NA	30.6		YES	incidental	
HS1-H5-SO-4	09/25/02		170A	No	NA	15.5		YES	incidental	
<b>HS1-H5-SO-6-250</b>	<b>09/25/02</b>		<b>174A</b>	<b>No</b>	<b>245.00</b>	<b>357.0</b>	<b>37%</b>	<b>YES</b>	<b>hot spot</b>	<b>99612</b>
HS3-L18-2	09/25/02		164A	No	NA	12.6		No		
HS3-L18-4	09/25/02		159A	No	NA	41.8		No		
HS3-L18-6	09/25/02		160A	No	NA	22.1		No		
HS3-L18-8	09/25/02		158A	No	NA	-1.8		No		
SDA-C6-SO-1	09/25/02		161A	No	NA	104.0		YES	incidental	
<b>SDA-C6-SO-3</b>	<b>09/25/02</b>		<b>165A</b>	<b>No</b>	<b>14.50</b>	<b>254.0</b>	<b>178%</b>	<b>YES</b>	<b>hot spot</b>	<b>99612</b>
SDA-C6-SO-5	09/25/02		168A	No	NA	44.0		No		
HS1-L4-SO-6.5	09/25/02		181A	No	NA	16.2		No		
HS1-L4-SO-5	09/25/02		178A	No	NA	18.5		No		
HS1-L4-SO-7.5	09/25/02		177A	No	NA	43.5		No		
SDA-B6-SO-1	09/25/02		176A	No	NA	28.9		No		
SDA-B6-SO-3	09/25/02		4B	No	NA	20.6		No		
SDA-B6-SO-5	09/25/02		163A	No	NA	0.9		No		
<b>HS1-J11-SO-2-249</b>	<b>09/25/02</b>		<b>166A</b>	<b>Fragment</b>	<b>18600.00</b>	<b>7600.0</b>	<b>-84%</b>	<b>YES</b>	<b>expanded hot spot</b>	<b>99612</b>
<b>HS1-J11-SO-2</b>	<b>09/25/02</b>		<b>167A</b>	<b>No</b>	<b>NA</b>	<b>3430.0</b>		<b>YES</b>	<b>expanded hot spot</b>	
<b>HS1-J11-SO-4-252</b>	<b>09/25/02</b>		<b>13B</b>	<b>No</b>	<b>1070.00</b>	<b>812.0</b>	<b>-27%</b>	<b>YES</b>	<b>expanded hot spot</b>	<b>99612</b>

TABLE 1  
PRELIMINARY SAMPLE RESULTS  
POINT VICENTE INTERPRETIVE CENTER  
RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	XRF No.	Visible Lead	Total Lead EPA 6010B (mg/kg)	XRF Lead (ppm)	Relative % Difference	Soil Removed ?	Comments	Lab Request Number
HS1-J11-SO-6	09/25/02		180A	No	NA	60.4		No		
HS3-M17-2	09/25/02		185A	No	NA	43.7		No		
HS3-M17-4.5	09/25/02		172A	No	NA	78.7		No		
HS3-M17-6.5	09/25/02		18B	No	NA	18.4		No		
HS3-M17-7.5	09/25/02		11B	No	NA	55.2		No		
HS3-N17-2	09/25/02		14A	No	NA	35.7		No		
HS3-N17-4	09/25/02		179A	No	NA	56.1		No		
HS3-N17-6.5	09/25/02		184A	No	NA	13.9		No		
HS3-N17-8	09/25/02		10B	No	NA	5.0		No		
HS3-O17-2	09/25/02		16B	No	NA	87.3		No		
HS3-O17-4	09/25/02		183A	No	NA	59.7		No		
HS3-O17-6	09/25/02		17B	No	NA	33.7		No		
HS3-O17-7	09/25/02		182A	No	NA	30.2		No		
<b>HS3-P17-2-253</b>	<b>09/25/02</b>	<b>X</b>	<b>20B</b>	<b>No</b>	<b>1370.00</b>	<b>172.0</b>	<b>-155%</b>	<b>REMOVE</b>		<b>99612</b>
HS3-P17-4.5	09/25/02		5B	No	NA	42.0		YES	incidental to GB-350-200	
HS3-P17-6	09/25/02		19B	No	NA	10.2		YES	incidental to GB-350-200	
HS3-P17-8	09/25/02		15B	No	NA	8.5		No		
HS3-P17-9.5	09/25/02		9B	No	NA	78.8		No		
<b>HS3-P16-2-251</b>	<b>09/25/02</b>		<b>12B</b>	<b>No</b>	<b>2290.00</b>	<b>116.0</b>	<b>-181%</b>	<b>YES</b>		<b>99612</b>
HS3-P16-4.5	09/25/02		7B	No	NA	42.2		YES	incidental to SDB 14+40	
HS3-P16-6	09/25/02		25B	No	NA	18.3		No		
HS3-P16-8	09/25/02		6B	No	NA	61.0		No		
HS3-P16-10.5	09/25/02		8B	No	NA	67.8		No		
HS3-O16-2	09/25/02		36B	No	NA	49.6		No		
HS3-O16-4	09/25/02		22B	No	NA	76.4		No		
HS3-O16-6	09/25/02		29B	No	NA	21.7		No		
HS3-O16-8	09/25/02		30B	No	NA	15.4		No		
HS3-O16-10	09/25/02		21B	No	NA	5.4		No		
HS3-N16-2	09/25/02		37B	No	NA	0.1		No		
HS3-N16-4.5	09/25/02		24B	No	NA	40.4		No		
HS3-N16-6	09/25/02		39B	No	NA	6.9		No		
HS3-N16-9	09/25/02		23B	No	NA	37.1		No		
HS3-M16-2	09/25/02		54B	No	NA	-1.7		No		
HS3-M16-4.5	09/25/02		28B	No	NA	63.4		No		
HS3-M16-6	09/25/02		43B	No	NA	49.0		No		
HS3-M16-8	09/25/02		38B	No	NA	54.5		No		
HS3-K17-2	09/25/02		48B	No	NA	37.4		No		
HS3-K17-4.5	09/25/02		26B	No	NA	62.9		No		
HS3-K17-8	09/25/02		27B	No	NA	-0.7		No		
HS3-L16-2	09/25/02		52B	No	NA	43.8		No		
HS3-L16-4	09/25/02		34B	No	NA	93.4		No		
HS3-L16-6	09/25/02		47B	No	NA	7.5		No		
HS3-L16-8	09/25/02		35B	No	NA	13.9		No		
HS3-J18-2	09/25/02		53B	No	NA	40.0		No		
HS3-J18-4	09/25/02		32B	No	NA	67.4		No		
HS3-J18-6	09/25/02		33B	No	NA	-6.3		No		
HS3-J18-8	09/25/02		31B	No	NA	3.9		No		
HS3-K18-2	09/25/02		55B	No	NA	26.8		No		
HS3-J18-4	09/25/02		42B	No	NA	85.3		No		
HS3-J18-6	09/25/02		40B	No	NA	39.9		No		
HS3-K18-8	09/25/02		41B	No	NA	-7.6		No		
HS3-P15-2	09/25/02		56B	No	NA	83.5		No		
HS3-P15-4	09/25/02		46B	No	NA	35.1		No		
HS3-P15-6	09/25/02		57B	No	NA	62.9		No		
HS3-P15-8	09/25/02		45B	No	NA	83.5		No		

TABLE 1  
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POINT VICENTE INTERPRETIVE CENTER  
RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	XRF No.	Visible Lead	Total Lead EPA 6010B (mg/kg)	XRF Lead (ppm)	Relative % Difference	Soil Removed ?	Comments	Lab Request Number
HS3-P15-10	09/25/02		44B	No	NA	38.1		No		
HS3-O15-2	09/25/02		58B	No	NA	12.3		No		
HS3-O15-4	09/25/02		51B	No	NA	50.2		No		
HS3-O15-6	09/25/02		59B	No	NA	2.6		No		
HS3-O15-8	09/25/02		50B	No	NA	46.6		No		
HS3-PO15-10	09/25/02		49B	No	NA	14.1		No		
HS1-H4-SO-4-255	09/26/02		75B	No	149.00	44.9	-107%	No		99735
HS1-H4-SO-6	09/26/02		90B	No	NA	26.3		No		
HS1-H4-SO-8	09/26/02		71B	No	NA	31.9		No		
HS3-N15-2	09/26/02		77B	No	NA	55.5		No		
HS3-N15-4	09/26/02		69B	No	NA	54.5		No		
HS3-N14-6	09/26/02		122B	No	NA	1.0		No		
HS3-N15-8	09/26/02		68B	No	NA	64.6		No		
HS3-N15-10.5	09/26/02		70B	No	NA	27.9		No		
HS1-G5-SO-4	09/26/02		88B	No	NA	96.1		No		
HS1-G5-SO-6	09/26/02		89B	No	NA	128.0		No		
HS1-G5-SO-8	09/26/02		87B	No	NA	16.1		No		
<b>SDA-C7-SO-1-254</b>	<b>09/26/02</b>		<b>72B</b>	<b>No</b>	<b>329.00</b>	<b>322.0</b>	<b>-2%</b>	<b>YES</b>	<b>hot spot</b>	<b>99735</b>
SDA-C7-SO-3	09/26/02		76B	No	NA	47.6		No		
SDA-C7-SO-5	09/26/02		85B	No	NA	16.6		No		
SDA-D6-SO-1	09/26/02		91B	No	NA	79.0		No		
SDA-D6-SO-3	09/26/02		82B	No	NA	27.3		No		
SDA-D6-SO-5	09/26/02		98B	No	NA	80.1		No		
HS3-L15-2	09/26/02		7C	No	NA	35.0		No		
HS3-L15-2	09/27/02		7D	No	NA	35.0		No	XRF Duplicate of 7C	
HS3-L15-4	09/26/02		79B	No	NA	97.3		No		
HS3-L15-6	09/26/02		100B	No	NA	28.7		No		
HS3-L15-8	09/26/02		84B	No	NA	7.8		No		
HS3-L15-8	09/27/02		5D	No	NA	-17.7		No	XRF Duplicate of 84B	
HS3-M15-2	09/26/02		103B	No	NA	-17.4		No		
HS3-M15-4	09/26/02		83B	No	NA	48.6		No		
HS3-M15-6	09/26/02		102B	No	NA	-10.5		No		
HS3-M15-8	09/26/02		80B	No	NA	34.9		No		
HS3-M15-8	09/27/02		6D	No	NA	13.5		No	XRF Duplicate of 80B	
HS3-M14-2	09/26/02		134B	No	NA	86.0		No		
HS3-M14-4	09/26/02		96B	No	NA	49.0		No		
HS3-M14-6	09/26/02		133B	No	NA	9.7		No		
HS3-M14-8	09/26/02		94B	No	NA	60.1		No		
HS3-M14-9.5	09/26/02		92B	No	NA	20.7		No		
HS3-N14-2	09/26/02		123B	No	NA	28.8		No		
HS3-N14-4-256	09/26/02		95B	No	26.30	50.3	63%	No		99735
HS3-N14-6	09/26/02		122B	No	NA	1.0		No		
HS3-N14-8	09/26/02		93B	No	NA	50.4		No		
HS3-N14-9.5	09/26/02		101B	No	NA	-3.5		No		
HS3-N20-2	09/26/02		112B	No	NA	-4.4		No		
HS3-N20-4	09/26/02		104B	No	NA	58.5		No		
HS3-N20-6	09/26/02		120B	No	NA	-1.8		No		
HS3-N20-8	09/26/02		106B	No	NA	-4.4		No		
HS3-O20-2	09/26/02		113B	No	NA	44.3		No		
HS3-O20-4	09/26/02		105B	No	NA	55.6		No		
HS3-O20-6-258	09/26/02		119B	No	2.57 U	33.6	172%	No	Qualified	99735
HS3-O20-8	09/26/02		107B	No	NA	8.3		No		
HS3-O14-2-259	09/26/02	X	131B	No	187.00	174.0	-7%	No		99735
HS3-O14-4	09/26/02		116B	No	NA	49.8		No		
HS3-O14-6	09/26/02		117B	No	NA	19.9		No		

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PRELIMINARY SAMPLE RESULTS  
POINT VICENTE INTERPRETIVE CENTER  
RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	XRF No.	Visible Lead	Total Lead EPA 6010B (mg/kg)	XRF Lead (ppm)	Relative % Difference	Soil Removed ?	Comments	Lab Request Number
HS3-O14-8	09/26/02		118B	No	NA	16.5		No		
HS3Q18-2	09/26/02		132B	No	NA	16.4		No		
HS2-Q18-4	09/26/02		137B	No	NA	136.0		No		
HS3-Q18-6	09/26/02		138B	No	NA	13.2		No		
HS30Q18-8	09/26/02		111B	No	NA	4.7		No		
HS3-Q17-2	09/26/02		135B	No	NA	21.2		No		
HS3-Q17-4.5	09/26/02		125B	No	NA	16.8		No		
HS3-Q17-6	09/26/02		114B	No	NA	10.3		No		
HS3-Q17-8	09/26/02		115B	No	NA	16.0		No		
HS3-Q16-2	09/26/02		126B	No	NA	35.9		No		
HS3-Q16-4	09/26/02		136B	No	NA	23.8		No		
HS3-Q16-6	09/26/02		124B	No	NA	15.4		No		
HS3-Q16-8-257	09/26/02		110B	No	0.00	2.9	200%	No		99735
SDA-C8-SO-1	09/26/02		153B	No	NA	93.5		No		
SDA-C8-SO-3	09/26/02		151B	No	NA	16.7		No		
SDA-C8-SO-5	09/26/02		121B	No	NA	29.0		No		
SDA-D7-SO-1	09/26/02		142B	No	NA	174.0		No		
SDA-D7-SO-3	09/26/02		156B	No	NA	23.5		No		
SDA-D7-SO-5	09/26/02		141B	No	NA	51.4		No		
NU-I19-2	09/26/02		162B	No	NA	25.9		No		
NU-I19-4	09/26/02		163B	No	NA	-7.2		No		
NU-I19-6	09/26/02		128B	No	NA	14.7		No		
NU-I18-2	09/26/02		157B	No	NA	13.4		No		
NU-I18-4	09/26/02		130B	No	NA	60.6		No		
NU-I18-6	09/26/02		127B	No	NA	14.9		No		
NU-I22-2	09/26/02		149B	No	NA	20.4		No		
NU-I22-4	09/26/02		158B	No	NA	17.9		No		
NU-I22-6	09/26/02		160B	No	NA	19.4		No		
NU-I20-2	09/26/02		143B	No	NA	-13.7		No		
NU-I20-4	09/26/02		148B	No	NA	21.8		No		
NU-I20-6	09/26/02		139B	No	NA	6.3		No		
NU-I21-2	09/26/02		152B	No	NA	10.9		No		
NU-I21-4	09/26/02		140B	No	NA	14.1		No		
NU-I21-6	09/26/02		161B	No	NA	15.2		No		
HS2-J14-SO-2	09/26/02		146B	No	NA	47.9		No		
HS2-J14-SO-4	09/26/02		159B	No	NA	39.2		No		
HS2-J14-SO-6	09/26/02		147B	No	NA	40.7		No		
HS2-I15-SO-2	09/26/02		164B	No	NA	40.3		No		
HS2-I15-SO-4	09/26/02		144B	No	NA	189.0		No		
HS2-I15-SO-6	09/26/02		145B	No	NA	-0.1		No		
HS1-H5-SO-8	09/26/02		165B	No	NA	-5.8		No		
HS1-H5-SO-10	09/26/02		155B	No	NA	0.2		No		
HS1-H5-SO-11	09/26/02		154B	No	NA	-5.8		No		
SP-BK-3	09/27/02		8D	No	NA	48.7		No	AOC stockpile	
SP-BK-1	09/27/02		9D	No	NA	43.7		No	AOC stockpile	
SP-BK-5	09/27/02		2E	No	NA	44.0		No	AOC stockpile	
SP-BK-4	09/27/02		3E	No	NA	35.7		No	AOC stockpile	
SP-BK-6-261	09/27/02		4E	No	46.10	41.7	-10%	No	AOC stockpile	99844
SP-BK-6-268	09/27/02	X	N	No	NA	NA		No	AOC stockpile	99844
SP-BK-7	09/27/02		5E	No	NA	78.4		No	AOC stockpile	
SP-BK-2	09/27/02		6E	No	NA	71.6		No	AOC stockpile	
SS-BF-J13-262	09/27/02		7E	Fragment	177.00	4180.0	184%	YES	not used as backfill	99844
SS-BF-J13	09/27/02		8E	No	NA	10600.0		YES	XRF Duplicate of 7E	
SS-BF-J13	09/27/02		32E	No	NA	116.0		No	used thicker bag	
SS-BF-M6	09/27/02		9E	No	NA	52.2		No		

TABLE 1  
PRELIMINARY SAMPLE RESULTS  
POINT VICENTE INTERPRETIVE CENTER  
RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	XRF No.	Visible Lead	Total Lead EPA 6010B (mg/kg)	XRF Lead (ppm)	Relative % Difference	Soil Removed ?	Comments	Lab Request Number
SS-BF-M6	09/27/02		10E	No	NA	74.2		No	used thicker bag	
SS-BF-K13	09/27/02		11E	No	NA	160.0		No		
SS-BF-K13	09/27/02		12E	No	NA	153.0		No	used thicker bag	
SS-BF-N9	09/27/02		13E	No	NA	45.2		No		
SS-BF-K6-263	09/27/02		14E	No	123.00	129.0	5%	No		99844
SS-BF-H11	09/27/02		15E	No	NA	63.7		No		
SS-BF-I16-264	09/27/02		16E	No	88.30	100.0	12%	No		99844
SS-BF-G19	09/27/02		17E	No	NA	65.6		No		
SS-BF-J19	09/27/02		19E	No	NA	55.5		No		
<b>SS-BF-K16-266</b>	<b>09/27/02</b>		<b>20E</b>	<b>No</b>	<b>252.00</b>	<b>180.0</b>	<b>-33%</b>	<b>YES</b>	<b>not used as backfill</b>	<b>99844</b>
SS-BF-O17	09/27/02		21E	No	NA	77.3		No		
SS-BF-M18	09/27/02		22E	No	NA	50.0		No		
SS-BF-K14	09/27/02		23E	No	NA	69.3		No		
SS-BFSO-J13-265	09/27/02		24E	No	92.50	148.0	46%	No		99844
SS-BF-L10	09/27/02		25E	No	NA	40.3		No		
SS-BF-SO-L13	09/27/02		26E	No	NA	12.1		No		
SS-BF-M15	09/27/02		27E	No	NA	39.4		No		
<b>SS-BF-G15-267</b>	<b>09/27/02</b>		<b>28E</b>	<b>No</b>	<b>1240.00</b>	<b>247.0</b>	<b>-134%</b>	<b>YES</b>	<b>not used as backfill</b>	<b>99844</b>

**SPREADSHEET NOTES:**

Sample ID number ending in two hundred series number is a QC sample sent to the ITSi lab, or a QA sample sent to the USACE Lab.

Lab results of 0.00 are "non-detect" to allow spreadsheet to calc Relative % Difference.

USACE QA Sample Results are not included in this report

XRF Numbering started over after each recalibration.

XRF Detection Limit Typically about 50 ppm.

**SAMPLE ACRONYMS:**

AC - Area of Concern  
BF - Backfill  
CS - Confirmation Sample  
HS1 - Hot Spot One

HS2 - Hot Spot Two  
HS3 - Hot Spot Three  
HS4 - Hot Spot Four  
IB - Import Backfill

NU - New Utility  
P15 - Grid ID  
PS - Post Remediation Sampling  
SDA - Storm Drain A

SDB - Storm Drain B  
SO - Step-out Sample  
SP - Stock Pile Waste Characterization  
SS - Surface Soil sample  
SW - Side Wall Sample



TABLE 2  
HOT SPOT EXCAVATION CONFIRMATION SAMPLE RESULTS  
POINT VICENTE INTERPRETIVE CENTER  
RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	Visible Lead	Lead Results EPA 6010B (mg/kg)	Soil Removed ?	Comments	Lab Request Number
HS1-CS-H5-8	10/1/02		No	4.2	No		99960
HS1-CS-H5-6	10/1/02		No	10.2	No		99960
HS1-CS-H5-5	10/1/02		No	43.6	No		99960
<b>HS1-CS-I6-4</b>	<b>10/1/02</b>		<b>No</b>	<b>556</b>	<b>YES</b>	area excavated and resampled	99960
HS1-CS-H6-5	10/1/02		No	56.5	No		99960
HS1-CS-H6-4	10/1/02		No	19.9	No		99960
HS1-CS-I6-5	10/1/02		No	24.7	No		99960
<b>HS1-CS-J7-7</b>	<b>10/1/02</b>		<b>No</b>	<b>20300</b>	<b>YES</b>	area excavated and resampled	99960
HS1-CS-J7-3	10/1/02		No	49.5	No		99960
HS1-CS-J7-5	10/1/02		No	11.3	No		99960
<b>HS1-CS-J8-7</b>	<b>10/1/02</b>		<b>No</b>	<b>2220</b>	<b>YES</b>	area excavated and resampled	99960
HS1-CS-J7-8	10/1/02		No	48.9	No		99960
HS1-CS-SDA-15+60-3	10/1/02		No	11.4	No		99952
HS1-CS-B6-B7-1	10/1/02		No	4.28	No		99952
HS1-CS-C7-3	10/1/02		No	25.1	No		99952
HS1-C7-D7-1	10/1/02		No	43.5	No		99952
HS1-CS-C6-C5-5	10/1/02		No	18.5	No		99952
HS1-CS-C6-5	10/1/02		No	44.4	No		99952
HS1-CS-I8-3	10/2/02		No	176	No		100068
HS1-CS-I8-7	10/2/02		No	56.2	No		100068
HS1-CS-I9-10	10/2/02		No	17.5	No		100068
HS1-CS-J9-10	10/2/02		No	14	No		100068
HS1-CS-J10-6	10/2/02		No	158	No		100068
<b>HS1-CS-J10-4</b>	<b>10/2/02</b>		<b>No</b>	<b>1390</b>	<b>YES</b>	area excavated and resampled	100068
HS1-CS-H6-3	10/2/02		No	45.7	No		100068
<b>HS2-CS-J12-2</b>	<b>10/3/02</b>		<b>No</b>	<b>1400</b>	<b>YES</b>	area excavated and resampled	100147
HS2-CS-I12-5	10/3/02		No	26.8 J	No	Qualified	100147
HS2-CS-I12-6	10/3/02		No	47.8	No		100147
HS2-CS-I13-4	10/3/02		No	15.8 J	No	Qualified	100147
HS2-CS-I13-3	10/3/02		No	6.54 J	No	Qualified	100147
HS2-CS-I14-6	10/3/02		No	ND	No	Qualified as 0.50 UJ	100147
HS2-CS-I14-4	10/3/02		No	2.33 U	No	Qualified number	100147
<b>HS2-CS-I13-2</b>	<b>10/3/02</b>	<b>X</b>	<b>No</b>	<b>2090 J</b>	<b>YES</b>	Army Dup, Qualified number	100147
HS2-CS-J12-2-269	10/3/02		No	91.5 J	No	Qualified	100147
HS1-CS-I10-4	10/4/02		No	3.82	No		100276
HS1-CS-I10-6	10/4/02		No	103	No		100276
<b>HS1-CS-I10-6-270</b>	<b>10/4/02</b>		<b>No</b>	<b>275</b>	<b>YES</b>	area excavated and resampled	100276
<b>HS2-CS-J12-4</b>	<b>10/4/02</b>		<b>No</b>	<b>298</b>	<b>YES</b>	area excavated and resampled	100276
HS2-CS-J11-6	10/4/02	<b>X</b>	No	79.9	No		100276
<b>HS2-J11-6-271</b>	<b>10/4/02</b>		<b>No</b>	<b>440</b>	<b>YES</b>	area excavated and resampled	100276
HS3-CS-O19-4	10/8/02		No	41.6	No		100369
HS3-CS-O19-6	10/8/02	<b>X</b>	No	2.64	No		100369
HS3-CS-O19-3	10/8/02		No	37.5	No		100369
HS3-CS-P16-3	10/8/02	<b>X</b>	No	159	No		100369
<b>HS3-CS-P16-3-273</b>	<b>10/8/02</b>		<b>No</b>	<b>269</b>	<b>YES</b>	area excavated and resampled	100370
HS3-CS-P16-2	10/8/02		No	42.6	No		100369
HS3-CS-P16-5	10/8/02		No	36	No		100369
HS3-CS-P16-5-275	10/8/02		No	33.5	No		100370
HS3-CS-P18-2	10/8/02	<b>X</b>	No	76.8	No		100369
HS3-CS-P18-5	10/8/02	<b>X</b>	No	5.83	No		100369
HS3-CS-P18-5-276	10/8/02		No	19.5	No		100370
HS3-CS-P17-2	10/8/02		No	57.2	No		100369
HS3-CS-P17-8	10/8/02		No	2.14	No		100369
HS3-CS-P17-8-272	10/8/02		No	3.52	No		100370
HS3-CS-P18-3	10/8/02		No	17.9	No		100369
HS3-CS-P18-3-274	10/8/02		No	41.1	No		100370
HS1-CS-J7-9	10/8/02		No	3.33	No		100368
HS1-CS-J7-9-277	10/8/02		No	3.6	No		100370

TABLE 2  
HOT SPOT EXCAVATION CONFIRMATION SAMPLE RESULTS  
POINT VICENTE INTERPRETIVE CENTER  
RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	Visible Lead	Lead Results EPA 6010B (mg/kg)	Soil Removed ?	Comments	Lab Request Number
HS1-CS-J6-4	10/8/02		No	21.2	No		100368
HS1-CS-J8-9	10/8/02		No	7.35	No		100368
<b>HS1-CS-K10-4</b>	<b>10/8/02</b>		<b>No</b>	<b>2804</b>	<b>YES</b>	area excavated and resampled	100368
<b>HS2-CS-J13-2</b>	<b>10/8/02</b>		<b>No</b>	<b>1167</b>	<b>YES</b>	area excavated and resampled	100368
HS1-CS-K-L10-4	10/11/02		No	7.77	No		100680
HS3-CS-P15-3	10/11/02		No	89.9	No		100680
HS2-CS-J12-9	10/11/02		No	ND	No		100680
HS1-CS-I10-9	10/11/02		No	21.6	No		100680
HS1-CS-J11-9	10/11/02		No	ND	No		100680
HS2-CS-J13-2-B	10/11/02		No	19.8	No		100680

**NOTES:**

USACE QA samples result's not included in this report.

Sample ID number ending in two-hundred series number is a QC sample sent to Associated Labs or a QA sample sent to the USACE lab.



TABLE 3  
 AREA OF CONCERN EXCAVATION CONFIRMATION SAMPLE RESULTS  
 POINT VICENTE INTERPRETIVE CENTER  
 RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	Visible Lead	Lead Results EPA 6010B (mg/kg)	Soil Removed ?	Comments	Lab Request Number
AC-CS-M22	10/1/02		No	46.5	No		99951
AC-CS-L22	10/1/02		No	54.7	No		99951
AC-CS-K19	10/1/02		No	44.1	No		99951
AC-CS-G21	10/1/02		No	39.8	No		99951
AC-CS-F21	10/1/02		No	27.6	No		99951
AC-CS-E20	10/1/02		No	38.9	No		99951
AC-CS-E17	10/1/02		No	201	No		99951
<b>AC-SW-01-0.5</b>	<b>10/3/02</b>	<b>X</b>	<b>No</b>	<b>259 J</b>	<b>YES</b>	<b>additional soil was removed *</b>	<b>100147</b>
AC-SW-01-0.5-268	10/3/02		No	58 J	No	Qualified	100147
AC-SW-02-0.5	10/3/02		No	110 J	No	Qualified	100147
<b>AC-SW-03-0.5</b>	<b>10/8/02</b>		<b>No</b>	<b>460</b>	<b>YES</b>	<b>additional soil was removed</b>	<b>100366</b>
AC-SW-04-0.5	10/8/02		No	4.08	No		100366
AC-SW-05-0.5	10/8/02		No	5.7	No		100366
AC-SW-06-0.5	10/8/02		No	56.6	No		100366
AC-SW-07-0.5	10/10/02		No	28.1	No		100574
AC-SW-08-0.5	10/10/02		No	6.12	No		100574
AC-SW-09-0.5	10/10/02		No	8.74	No		100574
AC-CS-J26	10/10/02		No	26.2	No		100574
AC-CS-G24	10/10/02		No	119	No		100574
AC-CS-J20	10/10/02		No	25.6	No		100574
<b>AC-CS-I22</b>	<b>10/10/02</b>		<b>No</b>	<b>4420</b>	<b>YES</b>	<b>additional soil was removed</b>	<b>100574</b>
AC-CS-G20	10/10/02		No	73.7	No		100574
AC-CS-H18	10/10/02		No	80.2	No		100574
AC-CS-Q13	10/10/02		No	92.2	No		100574
AC-CS-M9	10/10/02		No	19	No		100574
AC-CS-G24-278	10/10/02	<b>X</b>	No	61.8	No		100574
AC-CS-I22-B	10/15/02		No	6.02	No		100837
AC-CS-SW-SO-01-0.5	10/15/02		No	84.3	No		100837
AC-CS-SW-SO-03-0.5	10/15/02		No	204	No		100837
AC-BP-01	11/5/02		No	49.2	No		101769
AC-BP-02	11/5/02		No	26.8	No		101769
AC-BP-03	11/5/02		No	28.8	No		101769
AC-BP-04	11/5/02		No	56.3	No		101769
AC-BP-05	11/5/02		No	43.2	No		101769

NOTES:

USACE QA samples result's not included in this report.

Sample ID number ending in two-hundred series number is a QC sample sent to Associated Labs, or a QA sample sent to the USACE lab.

\*Qualified number



TABLE 4  
WASTE CHARACTERIZATION SAMPLE RESULTS  
POINT VICENTE INTERPRETIVE CENTER  
RANCHO PALOS VERDES, CA

Sample No.	Collection Date	USACE Sample (QA)	Visible Lead	Lab Results STLC (mg/L)	Lab Results TCLP (mg/L)	Lab Results Total Lead (mg/kg)	Disposal Facility	Lab Request Number
SPC-01-A,B,C,D	10/2/2002		No	2.25	na	96	Bradley	100069
SPC-02-A,B,C,D	10/2/2002		No	5.41	2.08	149	Kettleman	100069
SPC-03-A,B,C,D	10/2/2002		No	5.42	3.78	181	Kettleman	100069
SPC-04-A,B,C,D	10/8/2002		No	5.01	na	154	Kettleman	100367
SPC-05-A,B,C,D	10/8/2002		No	13	na	254	Bradley	100367
SPC-06-A,B,C,D	10/10/2002		No	0.484	na	86.3	Bradley	100575
SPC-07-A,B,C,D	10/10/2002		No	4.09	na	152	Bradley	100575
SPC-08-A,B,C,D	10/15/2002		No	0.225	na	103	Bradley	100838
SCP-09-A,B,C,D	10/23/2002		No	na	ND	2430	Kettleman	101257
SPC-10-A,B,C,D	10/28/2002		No	1.4	na	84.4	Bradley	101437
SPC-PS-A,B,C,D	12/6/2002		No	na	na	13.2	Bradley	103262

NOTES and ACRONYMS:

mg/kg - milligrams per kilogram

mg/L - milligrams per liter

QA - Quality Assurance

STLC - Solubility Threshold Limit Concentration

TCLP - Toxicity Characteristic Leaching Procedure



TABLE 5  
 POST REMEDIATION SAMPLE RESULTS  
 POINT VICENTE INTERPRETIVE CENTER  
 RANCHO PALOS VERDES, CA

Sample No.	Collection Date	Visible Lead	Lead Results EPA 6010B (mg/kg)	Soil Removed ?	Comments	Lab Request Number
SDA-PS-14+00	11/18/02	No	66.6	No	Three sample composit	102420
SDA-PS-14+20	11/18/02	No	1.6	No	Three sample composit	102420
SDA-PS-14+40	11/18/02	No	1.2	No	Three sample composit	102420
SDA-PS-14+60	11/18/02	No	9.2	No	Three sample composit	102420
SDA-PS-14+80	11/18/02	No	12.7	No	Three sample composit	102420
SDA-PS-14+90-A	11/19/02	No	11.9	No		102449
SDA-PS-14+90-B	11/19/02	No	18.2	No		102449
SDA-PS-14+90-C	11/19/02	No	8.6	No		102449
SDA-PS-15+10-A	11/19/02	No	39.0	No		102449
SDA-PS-15+10-B	11/19/02	No	27.4	No		102449
SDA-PS-15+10-C	11/19/02	No	199.0	No		102449
SDA-PS-15+10-279	11/19/02	No	na	No	USACE QA Sample	USACE
SDA-PS-15+30-A	11/19/02	No	19.7	No		102449
SDA-PS-15+30-B	11/19/02	No	23.0	No		102449
SDA-PS-15+30-C	11/19/02	No	20.1	No		102449
SDA-PS-15+50-A	11/19/02	No	71.9	No		102449
SDA-PS-15+50-B	11/19/02	No	4.0	No		102449
SDA-PS-15+50-C	11/19/02	No	ND	No		102449
SDA-PS-15+70-A	11/19/02	No	41.9	No		102449
SDA-PS-15+70-B	11/19/02	No	40.8	No		102449
<b>SDA-PS-15+70-C</b>	<b>11/19/02</b>	<b>No</b>	<b>1030.0</b>	<b>Yes</b>	<b>Soil Removed</b>	<b>102449</b>
SDA-PS-15+70-280	11/19/02	No	na	No	USACE QA Sample	USACE
SDA-PS-15+90-A	11/19/02	No	46.8	No		102449
SDA-PS-15+90-B	11/19/02	No	52.9	No		102449
SDA-PS-15+90-C	11/19/02	No	35.6	No		102449
SDA-PS-16+10-A	11/19/02	No	29.5	No		102449
SDA-PS-16+10-B	11/19/02	No	22.0	No		102449
<b>SDA-PS-16+10-C</b>	<b>11/19/02</b>	<b>No</b>	<b>473.0</b>	<b>Yes</b>	<b>Soil Removed</b>	<b>102449</b>
SDA-PS-16+30-A	11/19/02	No	46.0	No		102449
SDA-PS-16+30-B	11/19/02	No	49.0	No		102449
SDA-PS-16+30-C	11/19/02	No	223.0	No		102449
SDA-PS-16+30-281	11/19/02	No	na	No	USACE QA Sample	USACE
SDA-PS-16+50-A	11/19/02	No	25.2	No		102449
SDA-S-16+50-B	11/19/02	No	34.6	No		102449
SDA-PS-16+50-C	11/19/02	No	23.6	No		102449
SDA-PS-16+70-A	11/19/02	No	44.5	No		102449
SDA-PS-16+70-B	11/19/02	No	56.1	No		102449
<b>SDA-PS-16+70-C</b>	<b>11/19/02</b>	<b>No</b>	<b>583.0</b>	<b>Yes</b>	<b>Soil Removed</b>	<b>102449</b>
SDA-PS-16+90-A	11/19/02	No	35.6	No		102449
SDA-PS-16+90-B	11/19/02	No	40.4	No		102449
SDA-PS-16+90-C	11/19/02	No	62.2	No		102449
SDA-PS-16+90-282	11/19/02	No	na	No	USACE QA Sample	USACE
SDA-PS-17+10-A	11/20/02	No	19.3	No		102504
SDA-PS-17-10-B	11/20/02	No	31.4	No		102504
SDA-PS-17+10-C	11/20/02	No	20.7	No		102504
SDA-PS-17+30-A	11/20/02	No	4.0	No		102504
SDA-PS-17+30-B	11/20/02	No	71.3	No		102504
SDA-PS-17+30-C	11/20/02	No	11.4	No		102504
SDB-PS-11+30-A	11/23/02	No	5.9	No		102683
SDB-PS-11+30-B	11/22/02	No	0.6	No		102683
SDB-PS-11+30-C	11/22/02	No	2.5	No		102683
SDB-PS-11+50-A	11/22/02	No	4.7	No		102683

TABLE 5  
 POST REMEDIATION SAMPLE RESULTS  
 POINT VICENTE INTERPRETIVE CENTER  
 RANCHO PALOS VERDES, CA

Sample No.	Collection Date	Visible Lead	Lead Results EPA 6010B (mg/kg)	Soil Removed ?	Comments	Lab Request Number
SDB-PS-11+50-B	11/22/02	No	10.1	No		102683
SDB-PS-11+50-C	11/22/02	No	7.5	No		102683
SDB-PS-11+70-A	11/22/02	No	3.5	No		102683
SDB-PS-11+70-B	11/22/02	No	3.1	No		102683
SDB-PS-11+70-C	11/22/02	No	4.8	No		102683
SDB-PS-11+70-283	11/22/02	No	na	No	USACE QA Sample	USACE
SDB-PS-11+90-A	11/22/02	No	3.9	No		102683
SDB-PS-11+90-B	11/22/02	No	7.2	No		102683
SDB-PS-11+90-C	11/22/02	No	4.9	No		102683
SDB-PS-12+10-A	11/22/02	No	6.0	No		102683
SDB-PS-12+10-B	11/22/02	No	1.8	No		102683
SDB-PS-12+10-C	11/22/02	No	5.7	No		102683
SDB-PS-12+30-A	11/22/02	No	2.2	No		102683
SDB-PS-12+30-B	11/22/02	No	2.6	No		102683
SDB-PS-12+30-C	11/22/02	No	1.3	No		102683
SDB-PS-12+30-284	11/22/02	No	na	No	USACE QA Sample	USACE
SDB-PS-12+50-A	11/22/02	No	1.4	No		102683
SDB-PS-12+50-B	11/22/02	No	1.2	No		102683
SDB-PS-12+50-C	11/22/02	No	0.7	No		102683
SDB-PS-12+70-A	11/25/02	No	0.6	No		102733
SDB-PS-12+70-B	11/25/02	No	0.8	No		102733
SDB-PS-12+70-C	11/25/02	No	7.6	No		102733
SDB-PS-12+90-A	11/25/02	No	1.4	No		102733
SDB-PS-12+90-B	11/25/02	No	3.6	No		102733
SDB-PS-12+90-C	11/25/02	No	1.8	No		102733
SDB-PS-12+90-285	11/25/02	No	na	No	USACE QA Sample	USACE
SDB-PS-13+30-A	11/26/02	No	16.8	No		102793
SDB-PS-13+30-B	11/26/02	No	4.4	No		102793
SDB-PS-13+30-C	11/26/02	No	10.9	No		102793
SDB-PS-13+50-A	11/26/02	No	4.5	No		102793
SDB-PS-13+50-B	11/26/02	No	4.7	No		102793
SDB-PS-13+50-C	11/26/02	No	4.3	No		102793
SDB-PS-13+70-A	11/26/02	No	15.3	No		102793
SDB-PS-13+70-B	11/26/02	No	17.9	No		102793
SDB-PS-13+70-C	11/26/02	No	15.6	No		102793
SDB-PS-13+70-286	11/26/02	No	na	No	USACE QA Sample	USACE
SDB-PS-13+90-A	11/26/02	No	135.0	No		102793
SDB-PS-13+90-B	11/26/02	No	20.7	No		102793
<b>SDB-PS-13+90-C</b>	<b>11/26/02</b>	<b>No</b>	<b>300.0</b>	<b>Yes</b>	<b>Soil Removed</b>	102793
SDB-PS-14+10-A	11/26/02	No	33.3	No		102793
SDB-PS-14+10-B	11/26/02	No	42.2	No		102793
SDB-PS-14+10-C	11/26/02	No	27.1	No		102793
SDB-PS-15+10-A	11/26/02	No	36.2	No		102793
SDB-PS-15+10-B	11/26/02	No	4.0	No		102793
SDB-PS-15+10-C	11/26/02	No	13.0	No		102793
<b>SDB-PS-15+50-A</b>	<b>11/26/02</b>	<b>No</b>	<b>481.0</b>	<b>Yes</b>	<b>Soil Removed</b>	102793
SDB-PS-15+50-B	11/26/02	No	41.3	No		102793
SDB-PS-15+50-C	11/26/02	No	56.7	No		102793
SDB-PS-15+50-287	11/26/02	No	na	No	USACE QA Sample	USACE
SDB-PS-15+70-A	11/26/02	No	14.5	No		102793
SDB-PS-15+70-B	11/26/02	No	16.6	No		102793
SDB-PS-15+70-C	11/26/02	No	16.8	No		102793
SDB-PS-15+90-A	11/26/02	No	10.9	No		102793

TABLE 5  
 POST REMEDIATION SAMPLE RESULTS  
 POINT VICENTE INTERPRETIVE CENTER  
 RANCHO PALOS VERDES, CA

Sample No.	Collection Date	Visible Lead	Lead Results EPA 6010B (mg/kg)	Soil Removed ?	Comments	Lab Request Number
SDB-PS-15+90-B	11/26/02	No	8.6	No		102793
SDB-PS-15+90-C	11/26/02	No	30.9	No		102793
SDB-PS-16+10-A	11/26/02	No	34.1	No		102793
SDB-PS-16+10-B	11/26/02	No	34.4	No		102793
SDB-PS-16+10-C	11/26/02	No	37.1	No		102793
SDB-PS-16+10-288	11/26/02	No	na	No	USACE QA Sample	USACE
SDB-PS-16+30-A	11/26/02	No	4.5	No		102793
SDB-PS-16+30-B	11/26/02	No	3.7	No		102793
SDB-PS-16+30-C	11/26/02	No	4.2	No		102793
SDA-PS-17+50-A,B,C	12/5/02	No	ND	No		103192
SDA-PS-17+50-289	12/5/02	No	na	No	USACE QA Sample	USACE
SDA-PS-17+70-A,B,C	12/5/02	No	8.7	No		103192
SDA-PS-17+90-A,B,C	12/5/02	No	13.3	No		103192
SDA-PS-18+10-A,B,C	12/5/02	No	8.9	No		103192
SDA-PS-18+10-289	12/5/02	No	na	No	USACE QA Sample	USACE
SDA-PS-18+30-A,B,C	12/5/02	No	12.7	No		103192
SDA-PS-18+50-A,B,C	12/5/02	No	1.1	No		103192
SDA-PS-18+90-A,B,C	12/5/02	No	1.0	No		103192
SDA-PS-18+70-A	12/6/02	No	0.9	No		103263
SDA-PS-18+70-B	12/6/02	No	9.4	No		103263
SDA-PS-18+70-C	12/6/02	No	8.0	No		103263
SDA-PS-SW-16+70-1-1.5	11/21/02	No	107.0	No	confirmation	102632
SDA-PS-SW-16+70-2-1.5	11/21/02	No	98.5	No	confirmation	102632
SDA-PS-SW-16+70-3-1.5	11/21/02	No	88.7	No	confirmation	102632
SDA-PS-SW-16+70-4-1.5	11/21/02	No	127.0	No	confirmation	102632
SDA-PS-SW-16+10-1-1.5	11/21/02	No	30.5	No	confirmation	102632
SDA-PS-SW-16+10-2-1.5	11/21/02	No	25.8	No	confirmation	102632
SDA-PS-SW-16+10-3-1.5	11/21/02	No	40.3	No	confirmation	102632
SDA-PS-SW-16+10-4-1.5	11/21/01	No	35.3	No	confirmation	102632
SDB-PS-CS-15+50-A	12/5/02	No	8.3	No	confirmation	103191
SDB-PS-CS-15+50-B	12/5/02	No	115.0	No	confirmation	103191
SDB-PS-CS-15+50-C	12/5/02	No	12.3	No	confirmation	103191
SDB-PS-CS-15+50-D	12/5/02	No	83.9	No	confirmation	103191
SDB-PS-CS-13+90-A	12/5/02	No	30.2	No	confirmation	103191
SDB-PS-CS-13+90-B	12/5/02	No	16.1	No	confirmation	103191
SDB-PS-CS-13+90-C	12/5/02	No	21.3	No	confirmation	103191
SDB-PS-CS-13+90-D	12/5/02	No	15.5	No	confirmation	103191
SDA-PS-CS-15+70-1	12/5/02	No	36.1	No	confirmation	103193
SDA-PS-CS-15+70-2	12/5/02	No	115.0	No	confirmation	103193
SDA-PS-CS-15+70-3	12/5/02	No	25.4	No	confirmation	103193
SDA-PS-CS-15+70-4	12/5/02	No	25.2	No	confirmation	103193

NOTES:

USACE QA samples result's not included in this report.

Sample ID number ending in two-hundred series number is a QC sample sent to Associated Labs, or a QA sample sent to the USACE lab.



TABLE 6  
 AIR MONITORING RESULTS  
 POINT VICENTE INTERPRETIVE CENTER  
 RANCHO PALOS VERDES, CA

Date	Sample ID	Location	Pump ID	Start Time	Finish Time	Total Time (Min)	Instrument	Analyte Result	TWA Mg/m3	Monitored Personnel
9/16/02	91602-E	East	UC-3	1200	1400	120	pump	<20		
9/16/02	91602-S	South	UC-8	1200	1600	240	pump	>10		
9/16/02	91602-N	North	UP-5	1200	1600	240	pump	<10		
9/16/02	91602-W	West	UC-4	1200	1600	240	pump	<10		
9/16/02	916PAM-01	Per	E2	1145	1530	231	pump	<10		Tim Watchers (ITSI)
9/17/02	91702-S	South	UC-8	715	1530	489	pump	<5		
9/17/02	91702-N	North	UP-5	715	1553	502	pump	<5		
9/17/02	91702-E	East	UC-3	715	1538	493	pump	<5		
9/17/02	91702-W	West	UC-4	715	1545	498	pump	<5		
9/17/02	91702-P	Per	E2	715	1520	483	pump	<5		Tim Watchers (ITSI)
9/18/02	91802-N	North	UP-5	730	1545	489	pump	<5		
9/18/02	91802-W	West	UC-4	730	1540	486	pump	<5		
9/18/02	91802-S	South	UC-8	730	1545	489	pump	<5		
9/18/02	91802-P	Per	E2	730	1530	480	pump	<5		Joe Motton (TCD)
9/19/02	91902-E	East	UC-3	730	1559	497	pump	<5		
9/19/02	91902-S	South	UC-8	730	1550	492	pump	<5		
9/19/02	91902-N	North	UP-5	730	1555	495	pump	<5		
9/19/02	91902-W	West	UC-4	730	1557	496	pump	<5		
9/19/02	91902-P	Per	E2	725	1540	489	pump	<5		Joe Motton (TCD)
9/20/02	92002-N	North	UP-5	730	1535	483	pump	<5		
9/20/02	92002-S	South	UC-8	730	1540	486	pump	<5		
9/20/02	92002-E	East	UC-3	730	1545	489	pump	<5		
9/20/02	92002-W	West	UC-4	730	1550	492	pump	<5		
9/20/02	92002-P	Per	E2	730	1525	477	pump	<5		Joe Motton (TCD)
9/23/02		North	4168				Miniram		1.22	
9/23/02		West	2818				Miniram		1.23	
9/23/02		East	2633				Miniram		1.1	
9/23/02		South	2694				Miniram		1.35	
9/23/02		Wk Zone	4006				Miniram		1.76	
9/24/02		North	4168				Miniram		1.67	
9/24/02		West	2818				Miniram		1.45	
9/24/02		East	2633				Miniram		1.12	
9/24/02		South	2694				Miniram		1.32	
9/24/02		Wk Zone	4006				Miniram		1.58	
9/25/02		North	4168				Miniram		1.32	
9/25/02		West	2818				Miniram		1.27	
9/25/02		East	2633				Miniram		1.46	
9/25/02		South	2694				Miniram		1.32	
9/25/02		Wk Zone	4006				Miniram		1.78	
9/26/02		North	4168				Miniram		1.56	
9/26/02		West	2818				Miniram		1.34	
9/26/02		East	2633				Miniram		1.74	
9/26/02		South	2694				Miniram		1.57	
9/26/02		Wk Zone	4006				Miniram		1.89	
9/27/02		North	4168				Miniram		1.39	
9/27/02		West	2818				Miniram		1.43	
9/27/02		East	2633				Miniram		1.62	
9/27/02		South	2694				Miniram		1.48	
9/27/02		Wk Zone	4006				Miniram		1.73	
9/30/02	93002-PAM	Per	E2	730	1440	426	pump	<6		
9/30/02		North	4168				Miniram		1.42	
9/30/02		West	2818				Miniram		1.36	
9/30/02		East	2633				Miniram		1.49	
9/30/02		South	2694				Miniram		1.29	
9/30/02		Wk Zone	4006				Miniram		1.57	
10/1/02	100102-PAM	Per	E2	730	1530	480	pump	<5		Ted Gillenwaters (Onsite)
10/1/02		North	4168				Miniram		1.56	
10/1/02		West	2818				Miniram		1.34	
10/1/02		East	2633				Miniram		1.67	
10/1/02		South	2694				Miniram		1.42	
10/2/02	100202-PAM	Per	E2	730	1530	480	pump	<5		Ted Gillenwaters (Onsite)
10/2/02		North	4168				Miniram		1.55	
10/2/02		West	2818				Miniram		1.34	
10/2/02		East	2633				Miniram		1.47	
10/2/02		South	2694				Miniram		1.29	
10/2/02		Wk Zone	4006				Miniram		1.83	
10/3/02	100302-PAM	Per	E2	800	1630	498	pump	<5		Ted Gillenwaters (Onsite)
10/3/02		North	4168				Miniram		1.47	

TABLE 6  
AIR MONITORING RESULTS  
POINT VICENTE INTERPRETIVE CENTER  
RANCHO PALOS VERDES, CA

Date	Sample ID	Location	Pump ID	Start Time	Finish Time	Total Time (Min)	Instrument	Analyte Result	TWA Mg/m3	Monitored Personnel
10/3/02		West	2818				Miniram		1.56	
10/3/02		East	2633				Miniram		1.27	
10/3/02		South	2694				Miniram		1.34	
10/3/02		Wk Zone	4006				Miniram		1.75	
10/4/02		North	4168				Miniram		1.21	
10/4/02		West	2818				Miniram		1.32	
10/4/02		East	2633				Miniram		1.67	
10/4/02		South	2694				Miniram		1.54	
10/4/02		Wk Zone	4006				Miniram		1.76	
10/7/02		North	4168				Miniram		1.56	
10/7/02		West	2818				Miniram		1.63	
10/7/02		East	2633				Miniram		1.2	
10/7/02		South	2694				Miniram		1.34	
10/7/02		Wk Zone	4006				Miniram		1.89	
10/8/02		North	4168				Miniram		1.43	
10/8/02		West	2818				Miniram		1.36	
10/8/02		East	2633				Miniram		1.57	
10/8/02		South	2694				Miniram		1.49	
10/8/02		Wk Zone	4006				Miniram		1.72	
10/9/02		North	4168				Miniram		1.23	
10/9/02		West	2818				Miniram		1.43	
10/9/02		East	2633				Miniram		1.27	
10/9/02		South	2694				Miniram		1.28	
10/9/02		Wk Zone	4006				Miniram		1.54	
10/10/02		North	4168				Miniram		1.49	
10/10/02		West	2818				Miniram		1.25	
10/10/02		East	2633				Miniram		1.53	
10/10/02		South	2694				Miniram		1.61	
10/10/02		Wk Zone	4006				Miniram		1.89	
10/11/02		North	4168				Miniram		1.37	
10/11/02		West	2818				Miniram		1.49	
10/11/02		East	2633				Miniram		1.56	
10/11/02		South	2694				Miniram		1.43	
10/11/02		Wk Zone	4006				Miniram		1.78	
10/29/02		North	4168				Miniram		1.22	
10/29/02		West	2818				Miniram		1.23	
10/29/02		East	2633				Miniram		1.1	
10/29/02		South	2694				Miniram		1.35	
10/29/02	102902-P1	Per	UC-3	700	1530	480	pump	<8		Dan Gutierrez (Onsite)
10/29/02	102902-P2	Per	E2	700	1530	480	pump	<8		Bob Rivas, (Onsite)
10/30/02		North	4168				Miniram		1.07	
10/30/02		West	2818				Miniram		1.14	
10/30/02		East	2633				Miniram		1.12	
10/30/02		South	2694				Miniram		1.32	
10/30/02		Wk Zone	4006				Miniram		1.58	
10/31/02		North	4168				Miniram		1.12	
10/31/02		West	2818				Miniram		1.24	
10/31/02		East	2633				Miniram		1.08	
10/31/02		South	2694				Miniram		1.39	
10/31/02	103102-P2	Per	UC-4	700	1530	480	pump	<5		Bob Rivas, (Onsite)
10/31/02	103102-P1	Per	E2	700	1530	480	pump	<5		Ken Gutierrez, (ITSI)
11/1/02		North	4168				Miniram		1.11	
11/1/02		West	2818				Miniram		0.94	
11/1/02		East	2633				Miniram		1.24	
11/1/02		South	2694				Miniram		0.87	
11/1/02		Wk Zone	4006				Miniram		1.27	
11/4/02		North	4168				Miniram		1.07	
11/4/02		West	2818				Miniram		1.01	
11/4/02		East	2633				Miniram		1.24	
11/4/02		South	2694				Miniram		0.92	
11/4/02	110402-P1	Per	E2	640	1205	325	pump	<7		Danial Gutierrez, (Onsite)
11/4/02	110402-P2	Per	UC-4	650	1605	555	pump	<5		Bob Rivas, (Onsite)
11/5/02		North	4168				Miniram		1.12	
11/5/02		West	2818				Miniram		1.04	
11/5/02		East	2633				Miniram		1.13	
11/5/02		South	2694				Miniram		0.87	
11/5/02		Wk Zone	4006				Miniram		1.23	
11/6/02		North	4168				Miniram		1.17	

TABLE 6  
AIR MONITORING RESULTS  
POINT VICENTE INTERPRETIVE CENTER  
RANCHO PALOS VERDES, CA

Date	Sample ID	Location	Pump ID	Start Time	Finish Time	Total Time (Min)	Instrument	Analyte Result	TWA Mg/m3	Monitored Personnel
11/6/02		West	2818				Miniram		1.28	
11/6/02		East	2633				Miniram		1.07	
11/6/02		South	2694				Miniram		0.98	
11/6/02		Wk Zone	4006				Miniram		1.37	
11/7/02		North	4168				Miniram		1.09	
11/7/02		West	2818				Miniram		1.12	
11/7/02		East	2633				Miniram		0.93	
11/7/02		South	2694				Miniram		0.82	
11/7/02	110702-P1	Per	E2	645	1255		pump	<7		Daniel Gutierrez, (Onsite)
11/7/02	110702-P2	Per	UC-4	645	1700		pump	<4		Bob Rivas, (Onsite)
11/18/02		North	4168				Miniram		1.23	
11/18/02		West	2818				Miniram		1.12	
11/18/02		East	2633				Miniram		1.17	
11/18/02		South	2694				Miniram		0.83	
11/18/02	111802-PS-P1	Per	E2	800	1530	450	pump	<5		Anthony Cordero, SRD
11/18/02	111802-PS-P2	Per	UC-4	800	1530	450	pump	<5		George Bacza, SRD
11/19/02		North	4168				Miniram		1.37	
11/19/02		West	2818				Miniram		1.21	
11/19/02		East	2633				Miniram		1.03	
11/19/02		South	2694				Miniram		0.94	
11/19/02	111902-P1	Per	E2	800	1530	450	pump	<5		Juan Delgado, SRD
11/19/02	111902-P2	Per	UC-4	800	1540	460	pump	<5		George Bacza, SRD



TABLE 7  
ANALYTICAL LABORATORY DATA QUALIFIER MODIFICATIONS  
PVIC LEAD REMOVAL ACTION  
QUALIFIERS IDENTIFIED BY LABORATORY DATA CONSULTANTS  
All results in mg/kg

SDG	Collection Date	Sample Number	Existing Result	New Result	Reason (s)
99128	9/16/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. No MS/MSD or field duplicate analyzed in this analytical batch. Noted but no data qualified.
99128	9/16/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. No MS/MSD or field duplicate analyzed in this analytical batch. Noted but no data qualified.
99200	9/16/02	No data qualified	NA	NA	No problems noted.
99269	9/17/02	SDB-12+40-13	1.13	1.13 U	Interelement correction factor check standard not analyzed. Noted but no data qualified for interelement correction factor. Blank at 0.006 mg/L resulted in qualification of one result.
99357	9/19/02	HS1-L6-2	7.19	7.19 U	Interelement correction factor check standard not analyzed. Blank value of 0.018 mg/L.
99431	9/20/02	HS1-K9-6-235	5.16	5.16 U	Interelement correction factor check standard not analyzed. Blank value of 0.036 mg/L.
99467	9/23/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. Greater than 10 samples analyzed between check stds. Noted but no data qualified.
99467	9/23/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. Greater than 10 samples analyzed between check stds. Noted but no data qualified.
99539	9/24/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. Noted but no data qualified.
99539	9/24/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. Noted but no data qualified.
99612	9/25/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. Noted but no data qualified.
99735	9/26/02	HS3-020-6.0-258	2.57	2.57 U	Interelement correction factor check standard not analyzed. Blank value of 0.006 mg/L.
99844	9/27/02	No data qualified	NA	NA	No problems noted.
99951	10/1/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. No MS/MSD or field duplicate analyzed in this analytical batch. Noted but no data qualified.

TABLE 7  
ANALYTICAL LABORATORY DATA QUALIFIER MODIFICATIONS  
PVIC LEAD REMOVAL ACTION  
QUALIFIERS IDENTIFIED BY LABORATORY DATA CONSULTANTS  
All results in mg/kg

SDG	Collection Date	Sample Number	Existing Result	New Result	Reason (s)
99952	10/1/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. Noted but no data qualified
99960	10/1/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. Noted but no data qualified
99960	10/1/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. Noted but no data qualified
100068	10/2/02	No data qualified	NA	NA	Calibration check blank had minimal lead detected. Interelement correction factor check standard not analyzed. No MS/MSD or field duplicate analyzed in this analytical batch. Noted but no data was qualified.
100068	10/2/02	No data qualified	NA	NA	No problems noted.
100147	10/3/02	HS2-CS-I12-5	26.8	26.8 J	Interelement correction factor recovery 78% was below the lower limit of the acceptance range of 80-120%. J all detected results, and UJ all non-detected results.
100147	10/3/02	HS2-CSI13-4	15.8	15.8 J	Interelement correction factor recovery 78% was below the lower limit of the acceptance range of 80-120%. J all detected results, and UJ all non-detected results.
100147	10/3/02	HS2-CS-I13-3	6.54	6.54 J	Interelement correction factor recovery 78% was below the lower limit of the acceptance range of 80-120%. J all detected results, and UJ all non-detected results.
100147	10/3/02	HS2-CS-I14-6	0.50 U	0.50 UJ	Interelement correction factor recovery 78% was below the lower limit of the acceptance range of 80-120%. J all detected results, and UJ all non-detected results.
100147	10/3/02	HS2-CS-I14-4	2.33 mg/kg	2.33 U	Calibration check blank had minimal lead detected, but significant relative to the sample. Reporting limit is qualified as raised.
100147	10/3/02	HS2-CS-I13-2	2090	2090 J	Interelement correction factor recovery 78% was below the lower limit of the acceptance range of 80-120%. J all detected results, and UJ all non-detected results.
100147	10/3/02	AC-SW-01-0.5	259	259 J	Interelement correction factor recovery 78% was below the lower limit of the acceptance range of 80-120%. J all detected results, and UJ all non-detected results.
100147	10/3/02	AC-SW-02-0.5	110	110 J	Interelement correction factor recovery 78% was below the lower limit of the acceptance range of 80-120%. J all detected results, and UJ all non-detected results.
100147	10/3/02	AC-SW-01-268	58.0	58.0 J	Interelement correction factor recovery 78% was below the lower limit of the acceptance range of 80-120%. J all detected results, and UJ all non-detected results.

TABLE 7  
 ANALYTICAL LABORATORY DATA QUALIFIER MODIFICATIONS  
 PVIC LEAD REMOVAL ACTION  
 QUALIFIERS IDENTIFIED BY LABORATORY DATA CONSULTANTS  
 All results in mg/kg

SDG	Collection Date	Sample Number	Existing Result	New Result	Reason (s)
100147	10/3/02	HS2-CS-J12-269	91.5	91.5 J	Interelement correction factor recovery 78% was below the lower limit of the acceptance range of 80-120%. J all detected results, and UJ all non-detected results.
100276	10/4/02	No data qualified	NA	NA	Duplicate RPD of 139, 91. Control limit of <50. Interelement correction factor check standard not analyzed. Noted but no data qualified.
100366	10/8/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. Noted but no data qualified
100368	10/8/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. Noted but no data qualified
100369	10/8/02	No data qualified	NA	NA	Duplicate RPDs of 51, 7, 108, 49, 79. Control limit of <50. Interelement correction factor check standard not analyzed. Noted but no data qualified
100369	10/8/02	No data qualified	NA	NA	Duplicate RPDs of 51, 7, 108, 49, 79. Control limit of <50. Interelement correction factor check standard not analyzed. Noted but no data qualified
100370	10/8/02	No data qualified	NA	NA	Duplicate RPDs of 49, 51, 79, 7, 108, 8. Control limit of <50. Interelement correction factor check standard not analyzed. Noted but no data qualified
100574	10/10/02	No data qualified	NA	NA	Duplicate RPDs of 49, 51, 79, 7, 108, 8. Control limit of <50. Interelement correction factor check standard not analyzed. Blank at 0.006 mg/L. All noted but no data qualified.
100680	10/11/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. No MS/MSD or field duplicate analyzed in this analytical batch. Noted but no data qualified
100680	10/11/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. No MS/MSD or field duplicate analyzed in this analytical batch. Noted but no data qualified
100837	10/15/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. No MS/MSD or field duplicate analyzed in this analytical batch. Blank at 0.008 mg/L. All noted but no data qualified
101769	10/5/02	No data qualified	NA	NA	No MS/MSD or field duplicate analyzed in this analytical batch. Noted but no data qualified
102420	11/18/02	No data qualified	NA	NA	No problems noted.
102449	11/19/02	No data qualified	NA	NA	No problems noted.

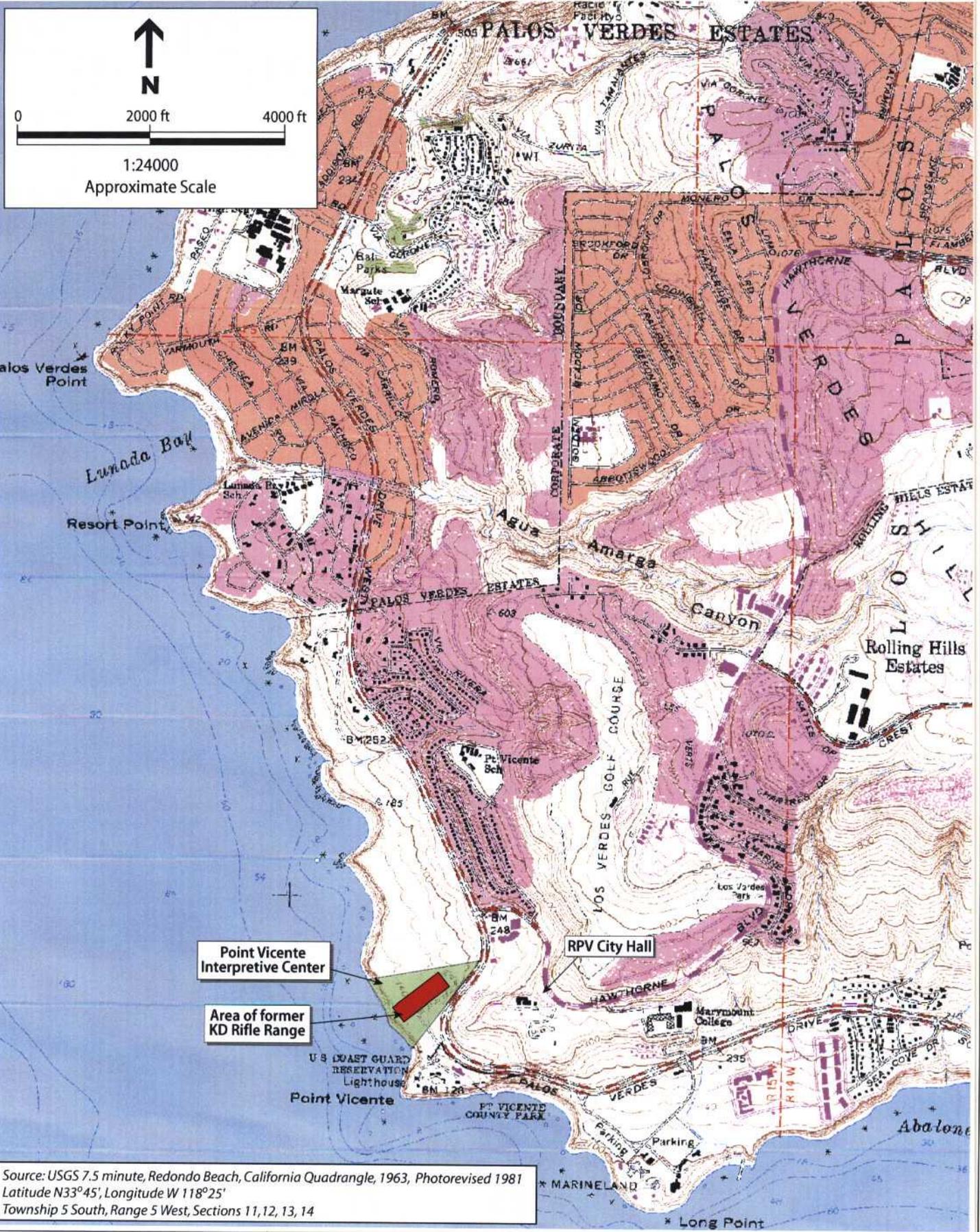
TABLE 7  
 ANALYTICAL LABORATORY DATA QUALIFIER MODIFICATIONS  
 PVIC LEAD REMOVAL ACTION  
 QUALIFIERS IDENTIFIED BY LABORATORY DATA CONSULTANTS  
 All results in mg/kg

SDG	Collection Date	Sample Number	Existing Result	New Result	Reason (s)
102504	11/20/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. Noted but no data qualified.
102632	11/21/02	No data qualified	NA	NA	No problems noted.
102683	11/22/02	No data qualified	NA	NA	No problems noted.
102733	11/25/02	No data qualified	NA	NA	No problems noted.
102793	11/26/02	No data qualified	NA	NA	Interelement correction factor check standard not analyzed. Noted but no data qualified.
103191	12/5/02	No data qualified	NA	NA	No problems noted.
103191	12/5/02	No data qualified	NA	NA	No problems noted.
103192	12/5/02	No data qualified	NA	NA	No problems noted.
103193	12/5/02	No data qualified	NA	NA	No problems noted.
103262	12/6/02	No data qualified	NA	NA	No MS/MSD or field duplicate analyzed in this analytical batch. Noted but no data qualified.
103263	12/6/02	No data qualified	NA	NA	No MS/MSD or field duplicate analyzed in this analytical batch. Noted but no data qualified.

**Notes:**  
 mg/kg milligrams per kilogram  
 mg/L milligrams per liter (for calibration blanks only)  
 MS/MSD matrix spike/matrix spike duplicate  
 RPD relative percent difference  
 J estimated  
 U not detected  
 UJ estimated and not detected  
 2.5 U mg/kg not detected at an elevated reporting limit of 2.5 mg/kg  
 NA not applicable

## Figures





Source: USGS 7.5 minute, Redondo Beach, California Quadrangle, 1963, Photorevised 1981  
 Latitude N33°45', Longitude W 118°25'  
 Township 5 South, Range 5 West, Sections 11, 12, 13, 14

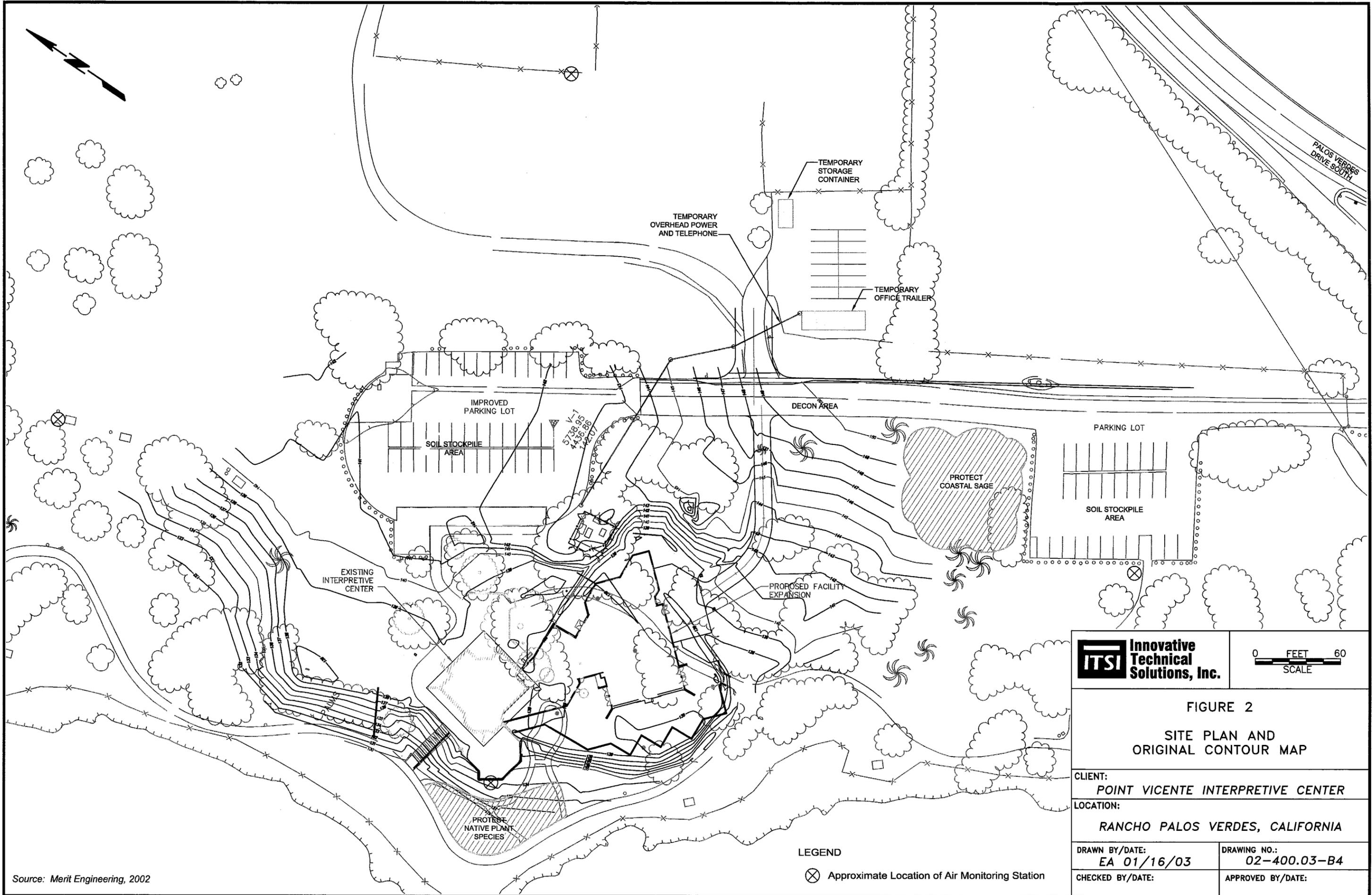
Public\Projects\2002\...-400 SPD PRAC\02-400.03 Point Vicente\Graphics\Site Location Map.ai



**Point Vicente Interpretive Center**  
 U.S. Army Corps of Engineers  
 Rancho Palos Verdes, California

**FIGURE 1**  
 Site Location Map



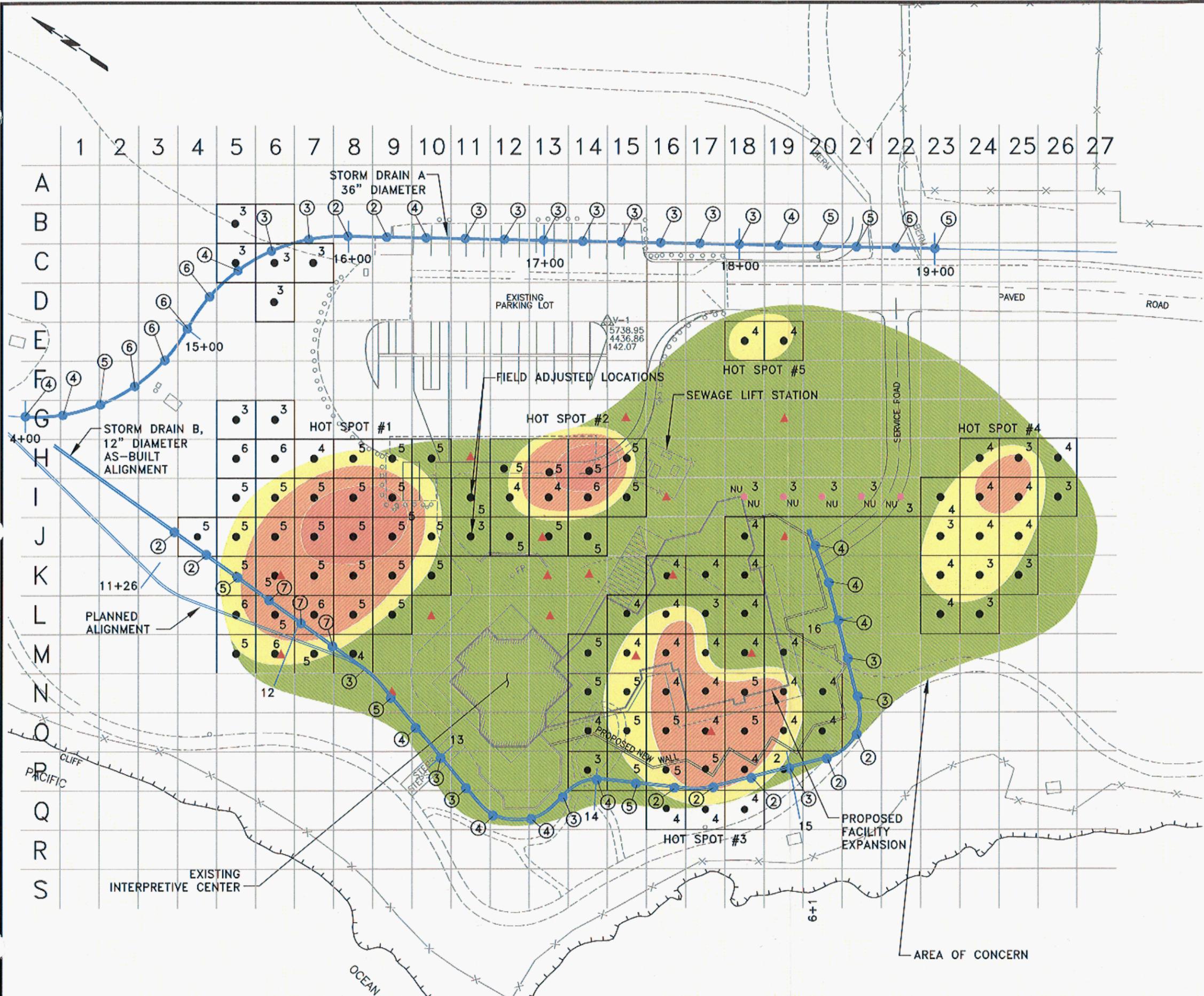


Source: Merit Engineering, 2002

	<b>FIGURE 2</b> <b>SITE PLAN AND ORIGINAL CONTOUR MAP</b>	
<b>CLIENT:</b> POINT VICENTE INTERPRETIVE CENTER		
<b>LOCATION:</b> RANCHO PALOS VERDES, CALIFORNIA		
<b>DRAWN BY/DATE:</b> EA 01/16/03	<b>DRAWING NO.:</b> 02-400.03-B4	
<b>CHECKED BY/DATE:</b>		<b>APPROVED BY/DATE:</b>

**LEGEND**  
 ⊗ Approximate Location of Air Monitoring Station





**LEGEND:**

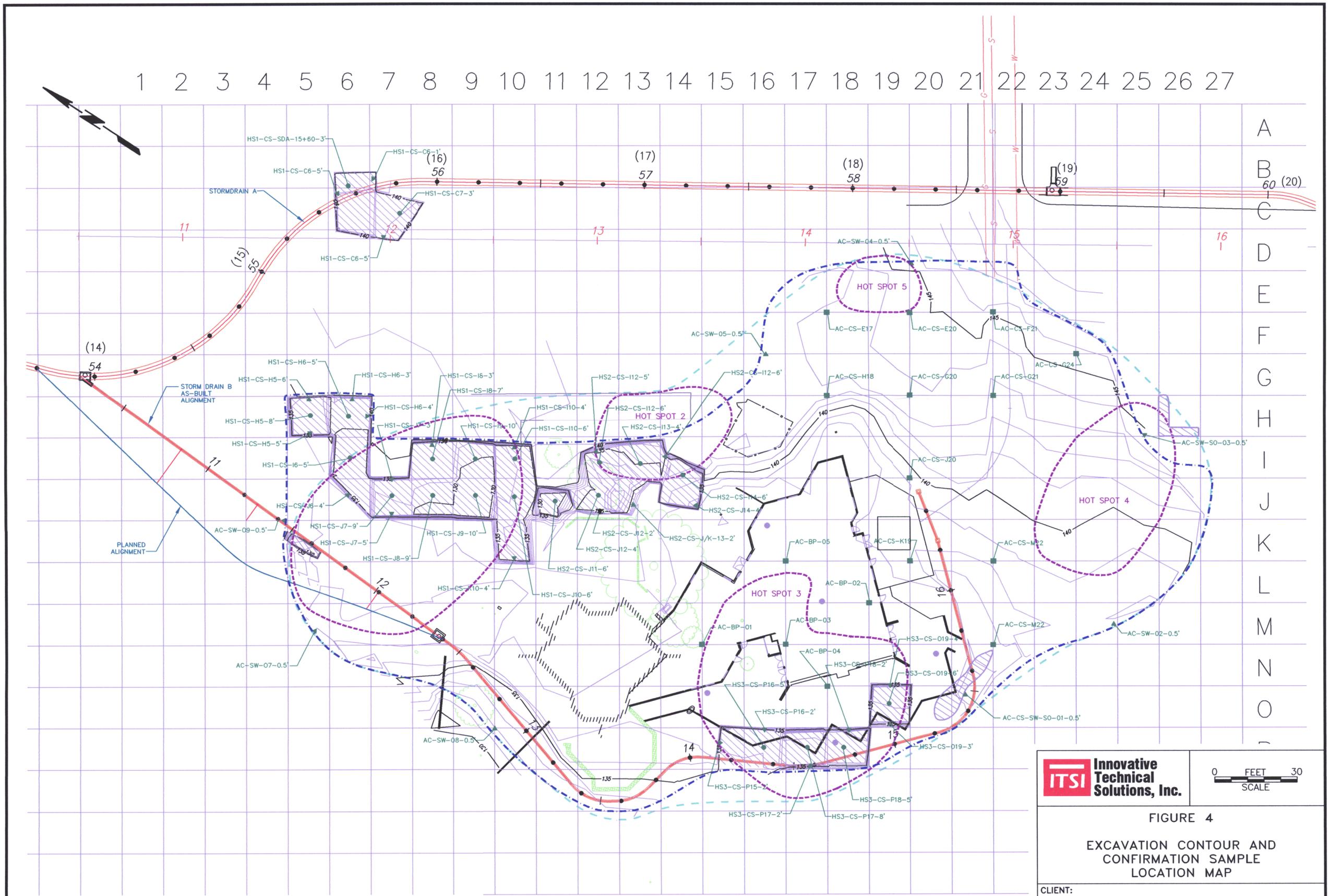
- LEAD CONCENTRATIONS IN SOIL >1,000mg/kg; AREA A, THE SOURCE GROUP, 2001
- LEAD CONCENTRATIONS IN SOIL >100mg/kg; AREA A, THE SOURCE GROUP, 2001
- LEAD CONCENTRATIONS IN SOIL >50mg/kg; AREA A, THE SOURCE GROUP, 2001
- LEAD CONCENTRATIONS IN SOIL <50mg/kg; AREA B, THE SOURCE GROUP, 2001 (AREA OF CONCERN)
- NUMBER OF SAMPLES COLLECTED
- STORM DRAIN AND SAMPLE LOCATIONS, AND NUMBER OF SAMPLES COLLECTED
- STATION NUMBER ID
- NUMBER OF SAMPLES COLLECTED
- PRELIMINARY SAMPLE LOCATION IN SOIL BORINGS
- NEW UTILITIES: FIELD ADJUSTED PER CITY RPV
- SURFACE SOIL SAMPLES FOR BACKFILL CHARACTERIZATION, ONE SAMPLE COLLECTED PER LOCATION

**NOTE:**  
LOCATIONS H-10 AND I-10 ADJUSTED IN FIELD.

<b>FIGURE 3</b>	
<b>AS-BUILT PRELIMINARY SAMPLE LOCATIONS MAP</b>	
CLIENT: POINT VICENTE INTERPRETIVE CENTER	
LOCATION: RANCHO PALOS VERDES, CALIFORNIA	
DRAWN BY/DATE: EA 2/6/03	DRAWING NO.: 02-400.03-B1
CHECKED BY/DATE:	APPROVED BY/DATE:

Source: Area of Concern and Hot Spots 1-5; Draft Additional Site Assessment Report, The Source Group, 2001





LEGEND			
	Project Limits		Surface Sample
	Original Area of Concern as Defined by SAIC		Sidewall Sample
	Hot Spots		Bottom Sample
	Boundary of Areas Excavated by ITSI		Areas Excavated by ITSI

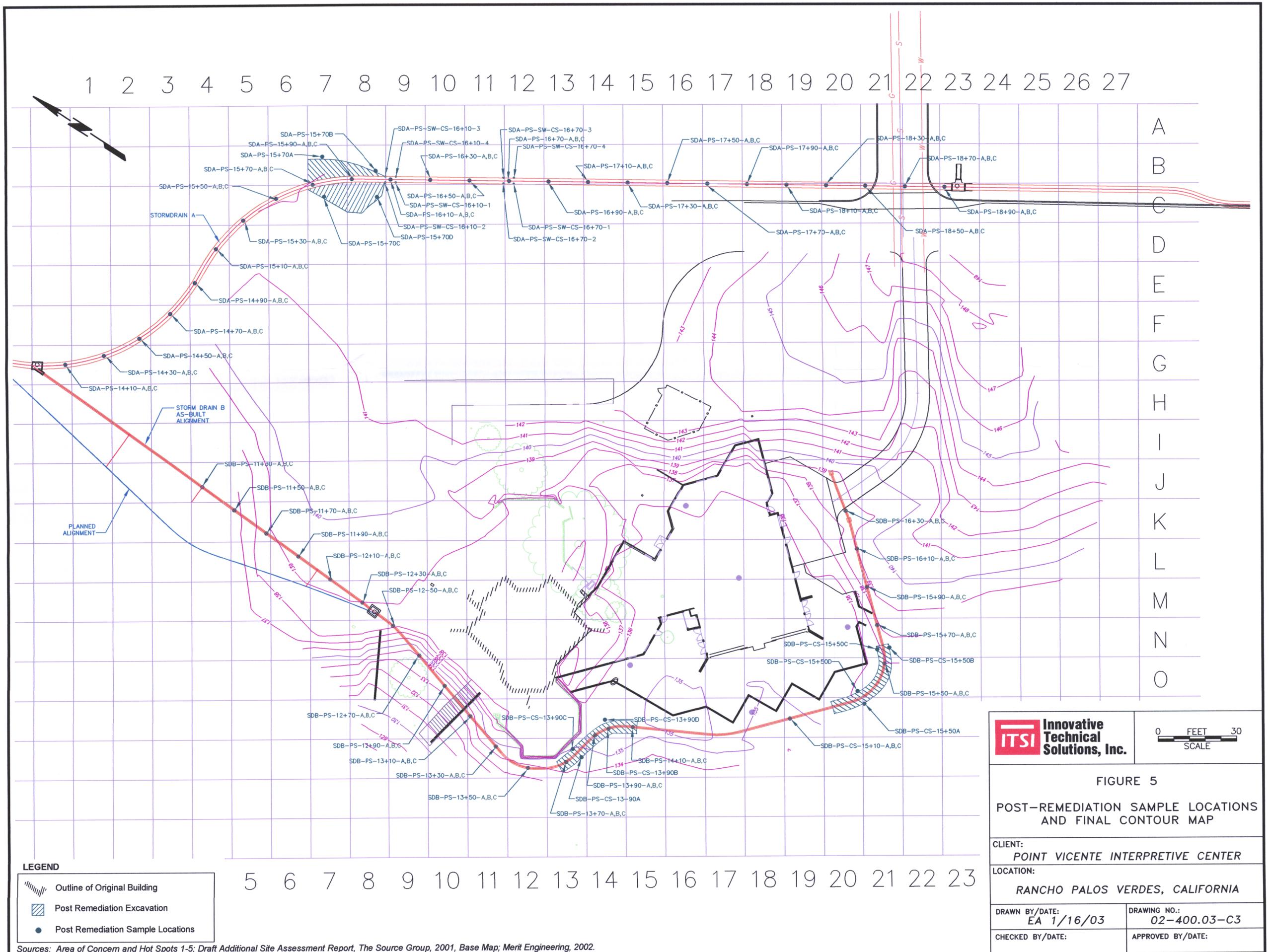
**ITSI** Innovative Technical Solutions, Inc.

0 FEET 30 SCALE

<b>FIGURE 4</b>	
<b>EXCAVATION CONTOUR AND CONFIRMATION SAMPLE LOCATION MAP</b>	
CLIENT: <b>POINT VICENTE INTERPRETIVE CENTER</b>	
LOCATION: <b>RANCHO PALOS VERDES, CALIFORNIA</b>	
DRAWN BY/DATE: <b>EA 1/16/03</b>	DRAWING NO.: <b>02-400.03-C2</b>
CHECKED BY/DATE:	APPROVED BY/DATE:

Sources: Area of Concern and Hot Spots 1-5; Draft Additional Site Assessment Report, The Source Group, 2001, Base Map; Merit Engineering, 2002.





**ITSI** Innovative Technical Solutions, Inc.

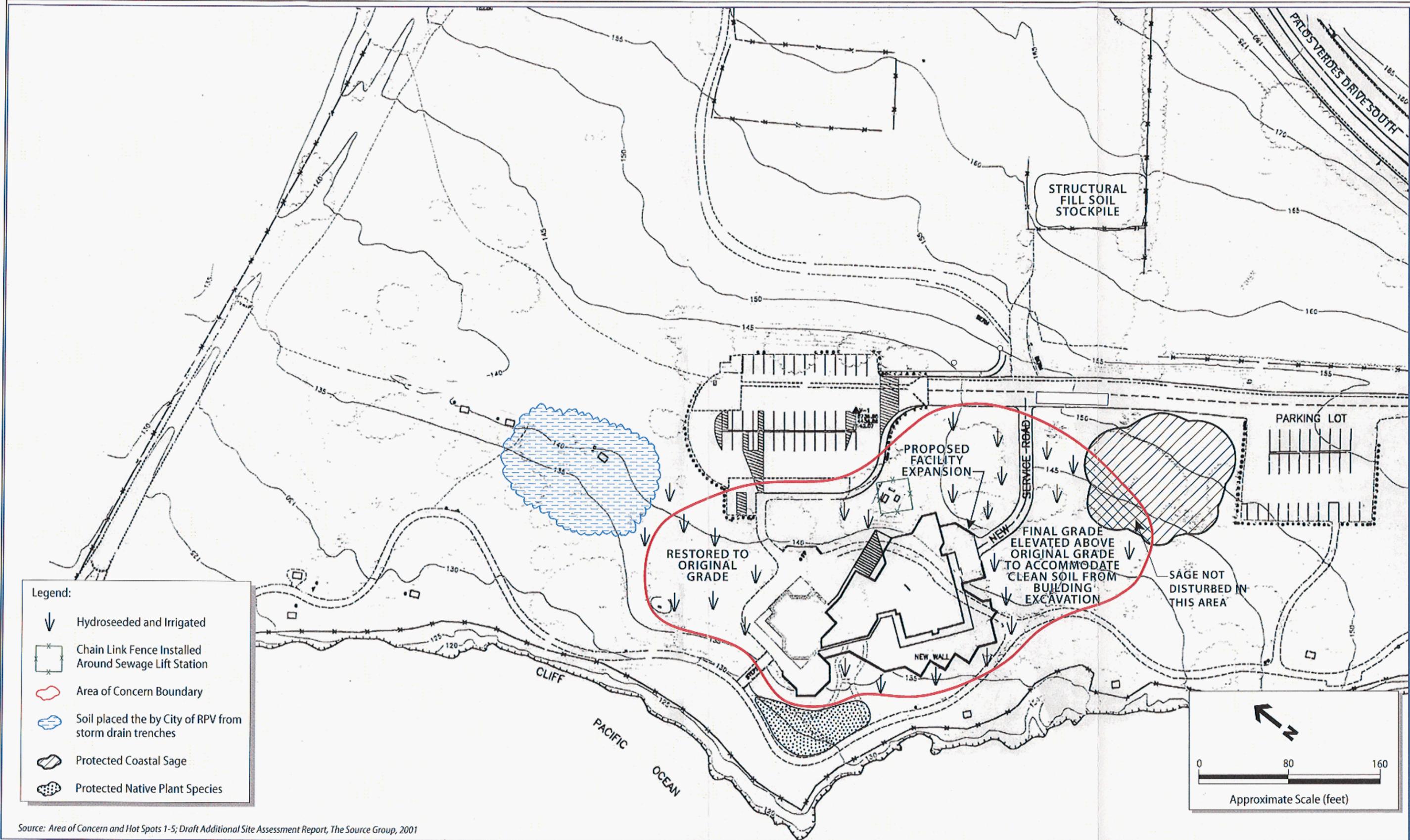
0 FEET 30 SCALE

**FIGURE 5**  
**POST-REMEDIATION SAMPLE LOCATIONS AND FINAL CONTOUR MAP**

CLIENT: POINT VICENTE INTERPRETIVE CENTER	
LOCATION: RANCHO PALOS VERDES, CALIFORNIA	
DRAWN BY/DATE: EA 1/16/03	DRAWING NO.: 02-400.03-C3
CHECKED BY/DATE:	APPROVED BY/DATE:

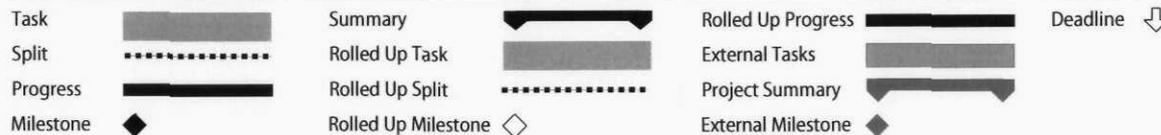
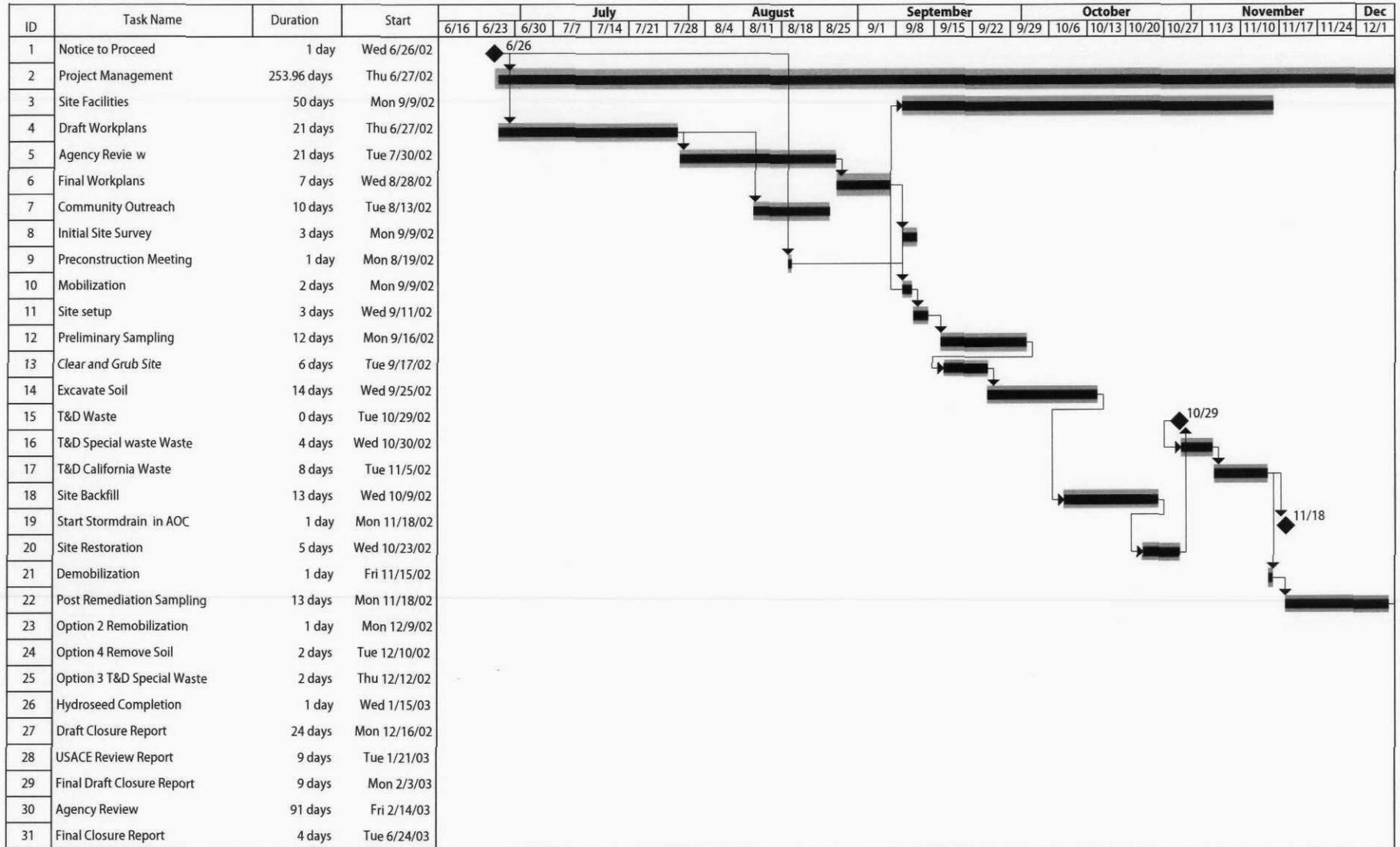
Sources: Area of Concern and Hot Spots 1-5; Draft Additional Site Assessment Report, The Source Group, 2001, Base Map; Merit Engineering, 2002.





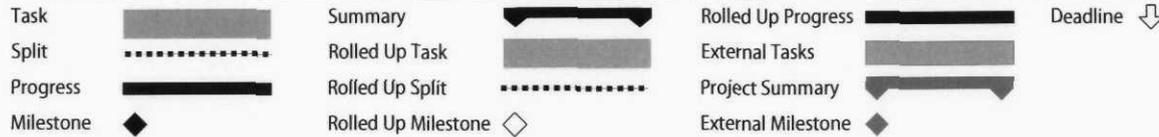
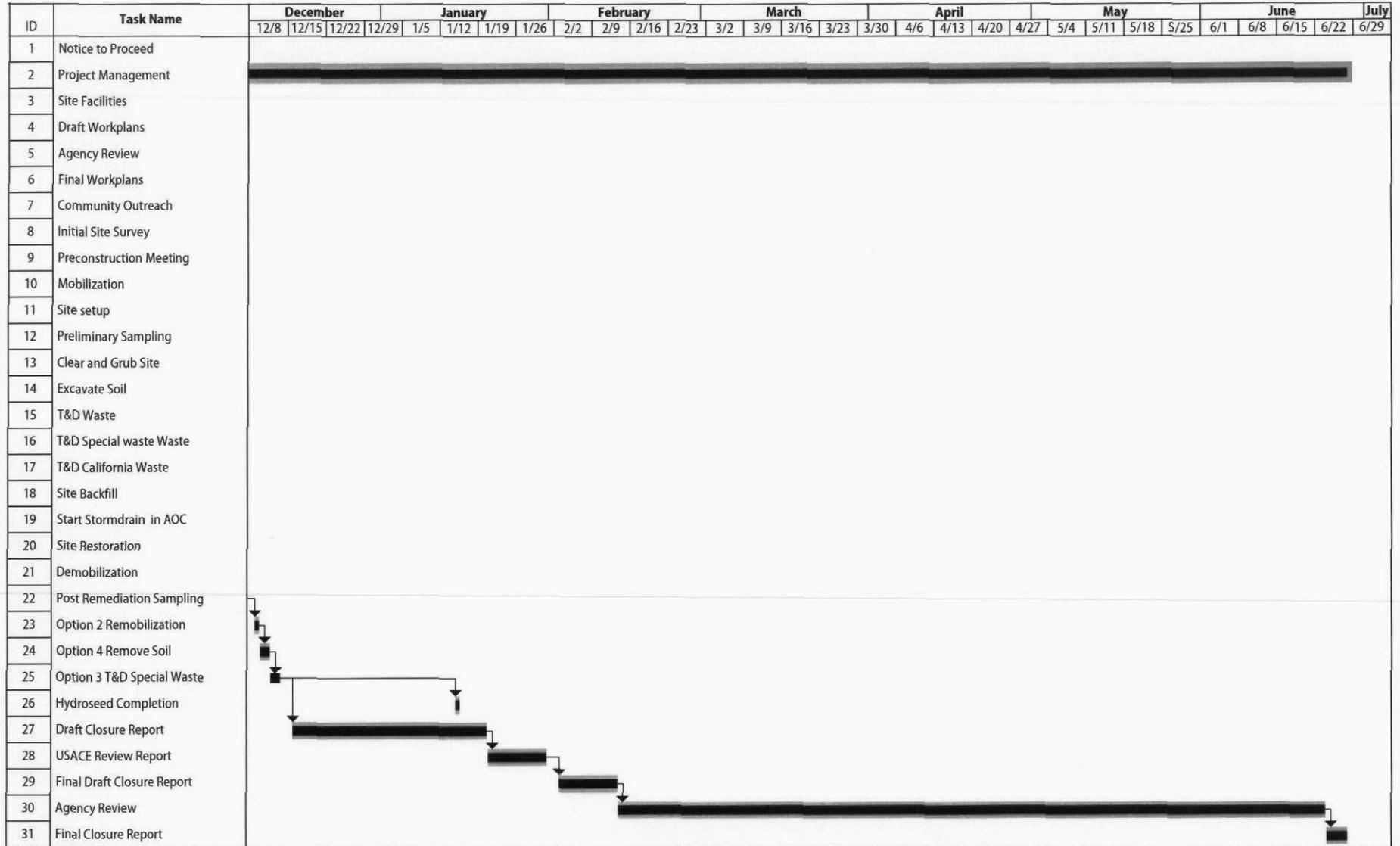
Source: Area of Concern and Hot Spots 1-5; Draft Additional Site Assessment Report, The Source Group, 2001





**Point Vicente Interpretive Center**  
 U.S. Army Corps of Engineers  
 Rancho Palos Verdes, California

**FIGURE 7a**  
 Project Schedule



**Point Vicente Interpretive Center**  
 U.S. Army Corps of Engineers  
 Rancho Palos Verdes, California

**FIGURE 7b**  
 Project Schedule

A

## **APPENDIX A**

### **Photographic Documentation**

## Photographic Documentation

### Photograph No. 1

**Date:** Jan. 17, 2002

**Description:**

Initial Site Walk

Overlooking of Area of  
Concern (building pad)  
grounds.



### Photograph No. 2

**Date:** Jan. 17, 2002

**Description:**

Initial Site Walk

Overlooking Area of Concern.



## Photographic Documentation

### Photograph No. 3

**Date:** Jan. 17, 2002

**Description:**

Initial Site Walk

Storm Drain B and Area of Concern on north side of Interpretive Center.



### Photograph No. 4

**Date:** Jan. 17, 2002

**Description:**

Initial Site Walk

Storm Drain A through Area of Concern area.



## Photographic Documentation

### Photograph No. 5

**Date:** Sept 17, 2002

**Description:**

Tri-County Drilling, sampling  
along Storm Drain A.



### Photograph No. 6

**Date:** Sept 17, 2002

**Description:**

Tri-County Drilling sampling  
with direct push drilling probe.



## Photographic Documentation

### Photograph No. 7

Date: Sept. 26, 2002

#### Description:

Joe Motten with Tri-County Drilling, measures sample collection tube for sample depth.



### Photograph No. 8

Date: Sept. 27, 2002

#### Description:

Gray Environmental preparing soil sample for XRF screening.



## Photographic Documentation

### Photograph No. 9

Date: Sept. 18, 2002

#### Description:

XRF unit screening soil sample.

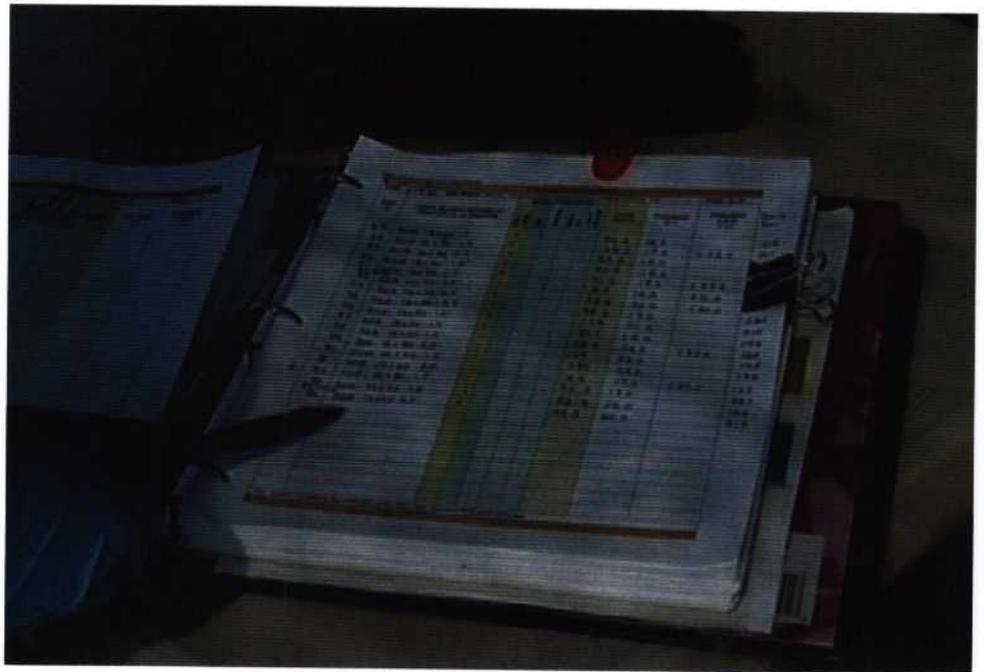


### Photograph No. 10

Date: Sept. 18, 2002

#### Description:

XRF Log Book.



## Photographic Documentation

### Photograph No. 11

Date: Sept 27, 2002

#### Description:

Laura Samrad (ITSI)  
preparing soil sample COC  
going to Associated  
Laboratory.



### Photograph No. 12

Date: Sept. 27, 2002

#### Description:

4oz. sample jars with soil  
samples going to Associated  
Laboratory.



## Photographic Documentation

### Photograph No. 13

Date: Sept 18, 2002

#### Description:

Clearing of trees from Area of Concern along Storm Drain B.



### Photograph No. 14

Date: Sept 25, 2002

#### Description:

Clearing along Storm Drain B.



## Photographic Documentation

### Photograph No. 15

**Date:** Sept. 26, 2002

**Description:**

Clearing material from building pad with loader.

Cleared material will be stockpiled in lower parking lot.



### Photograph No. 16

**Date:** Sept. 26, 2002

**Description:**

Removal of top one foot of material along Storm Drain B.



## Photographic Documentation

### Photograph No. 17

**Date:** Sept. 25, 2002

**Description:**

Clearing surface material in  
Area of Concern.



### Photograph No. 18

**Date:** Oct. 03, 2002

**Description:**

Removal of top one foot of soil  
in Area of Concern from  
building pad area.

Dust control being performed  
by ITSI ground labor.



## Photographic Documentation

### Photograph No. 19

**Date:** Oct. 01, 2002

**Description:**

Start of Hot Spot 1 excavation  
at grid location H5.



### Photograph No. 20

**Date:** Oct. 01, 2002

**Description:**

Excavation at Hot Spot 1.

H5 background  
I6 foreground.



## Photographic Documentation

### Photograph No. 21

**Date:** Oct. 07, 2002

**Description:**

Excavation in Hot Spot 1  
continues into grid J10.



### Photograph No. 22

**Date:** Oct. 04, 2002

**Description:**

Repaired 6" non-potable water  
line in Hot Spot 2, at grid J12



## Photographic Documentation

### Photograph No. 23

**Date:** Oct. 08, 2002

**Description:**

Backfill of Hot Spot 2 at grid I13.

Bobcat loader being used to backfill around repaired pipe in grid J12.



### Photograph No. 24

**Date:** Oct. 08, 2002

**Description:**

Excavation at Hot Spot 3.



## Photographic Documentation

### Photograph No. 25

Date: Nov. 13, 2002

#### Description:

Backfilling of Hot Spot 3 with structural fill. Loader being used for compaction.



### Photograph No. 26

Date: Nov. 13, 2002

#### Description:

Backfilling of Hot Spot 3 with structural fill. Material being watered down for compaction.



## Photographic Documentation

### Photograph No. 27

**Date:** Nov. 13, 2002

**Description:**

Backfilling & compaction of structural fill against building foundation.



### Photograph No. 28

**Date:** Nov. 12, 2002

**Description:**

Compaction of Hot spot 2 with structural fill material.

Sheepsfoot compactor being used for compaction of soil.



## Photographic Documentation

### Photograph No. 29

**Date:** Nov. 13, 2002

**Description:**

Compaction of Hot Spot 2 with  
Structural fill material.



### Photograph No. 30

**Date:** Nov. 13, 2002

**Description:**

Compaction testing along  
south wall of Interpretive  
Center.



## Photographic Documentation

### Photograph No. 31

**Date:** Oct. 25, 2002

**Description:**

Overlooking completed Hot Spot 1 and Area of Concern on north side of Interpretive Center.



### Photograph No. 32

**Date:** Oct. 25, 2002

**Description:**

Overlooking completed building pad and Area of Concern on south side of Interpretive Center.



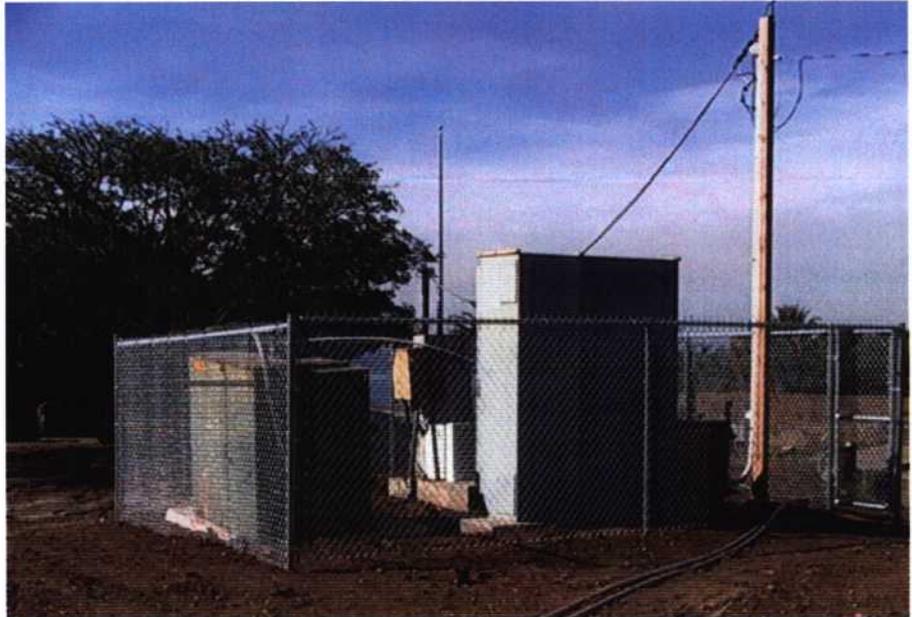
## Photographic Documentation

### Photograph No. 33

**Date:** Nov. 13, 2002

**Description:**

New chain link fence installed around lift station.



### Photograph No. 34

**Date:** Nov. 12, 2002

**Description:**

Hydroseeding Area of Concern on south side of site.



## Photographic Documentation

### Photograph No. 35

Date: Nov. 12, 2002

**Description:**

Completed hydroseeded Area  
of Concern.



### Photograph No. 36

Date: Oct. 31, 2002

**Description:**

Load-out of non-hazardous  
waste from upper parking lot.



## Photographic Documentation

### Photograph No. 37

**Date:** Nov. 1, 2002

**Description:**

Load-out of Non-RCRA hazardous soil from lower parking lot.

Dust suppression being conducted during entire load-out phase.



### Photograph No. 38

**Date:** Nov. 01, 2002

**Description:**

Load-out of Non-RCRA hazardous soil from lower parking lot.



## Photographic Documentation

### Photograph No. 39

**Date:** Nov. 07, 2002

**Description:**

Upper parking lot after load-out and cleanup.



### Photograph No. 40

**Date:** Nov. 07, 2002

**Description:**

Upper parking lot after load-out and cleanup.



## Photographic Documentation

### Photograph No. 41

**Date:** Nov. 08, 2002

**Description:**

Colonel Richard Thompson, USACE, addressing invited guests at completion ceremony.



### Photograph No. 42

**Date:** Nov. 08, 2002

**Description:**

City of Rancho Palos Verdes Mayor John McTaggart, addressing invited guests at completion ceremony.



## Photographic Documentation

### Photograph No. 43

**Date:** Dec. 12, 2002

**Description:**

Post-excavation at Storm  
Drain B, 15+50.

Excavation from 15+60 to 15+20



### Photograph No. 44

**Date:** Dec. 12, 2002

**Description:**

Post-excavation backfill of  
Storm Drain B, 13+90.

Excavation from 13+70 to 14+00



## Photographic Documentation

### Photograph No. 45

**Date:** Nov. 12, 2002

**Description:**

Post-excavation of Storm  
Drain A, 15+70.



### Photograph No. 46

**Date:** Dec. 12, 2002

**Description:**

Stockpile of Storm Drain B,  
15+50 post-excavated  
material.



## Photographic Documentation

### Photograph No. 47

**Date:** Dec. 12, 2002

**Description:**

Stockpile of post-excavation soil from Storm Drain B, 13+90, and Storm Drain A, 15+70.



### Photograph No. 48

**Date:** Dec. 12, 2002

**Description:**

Hydroseeded Area of Concern after one month.





**CD #1**  
**Final Closure Report on Compact Disc**





Point Vicente Interpretive Center Lead Removal Action  
Closure Report Data

**CD #2**  
**Project Video Documentation on Compact Disc**



# Video Documentation

Lead Contaminated Soil Removal

Point Vicente Interpretive Center

CD-ROM #2

**Video Documentation to be  
Submitted Under  
Separate Cover**

Prepared for:

U.S. Army Corps of Engineers  
Los Angeles District  
Environmental Construction Branch  
645 North Durfee Ave., Bldg. 1  
South El Monte, CA 91733

Prepared by:

Innovative Technical Solutions, Inc.  
2730 Shadelands Drive, Suite 100  
Walnut Creek, California 94598



ITSI