Targeted Brownfields Assessment Report for Hoopa High School Football Field 5 Loop Road Hoopa, California

TDD No.: TO-06 09-11-10-0005 Project No.: EE-002693-6020

June 2013

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY REGION 9

HOOPA VALLEY TRIBAL ENVIRONMENTAL PROTECTION AGENCY KLAMATH TRINITY JOINT UNIFIED SCHOOL DISTRICT

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APN Assessor's Parcel Number

bgs below ground surface

CHHSL California human health screening level

COPC constituent of potential concern

E & E Ecology and Environment, Inc.

ESL environmental screening level

FSP field sampling plan

mg/kg milligram per kilogram

MS/MSD matrix spike/matrix spike duplicate

NOA naturally occurring asbestos

OCP organochlorine pesticides

OPP organophosphorous pesticides

PCB polychlorinated biphenyl

Phase I ESA Phase I Environmental Site Assessment

QC quality control

RCRA Resource Conservation and Recovery Act

REC recognized environmental condition

RPD relative percent difference

RSL regional screening level

START Superfund Technical Assessment and Response Team

SVOC semi-volatile organic compounds

TBA targeted brownfields assessment

TEPA Hoopa Valley Tribal Environmental Protection Agency

TPH-d total petroleum hydrocarbons as diesel

TPH-mo total petroleum hydrocarbons as motor oil

U.S. EPA United States Environmental Protection Agency

USGS United States Geological Survey

1 Introduction

At the request of the Hoopa Valley Tribal Environmental Protection Agency (TEPA), the United States Environmental Protection Agency (U.S. EPA) Region 9 directed Ecology & Environment, Inc.'s (E & E) Superfund Technical Assessment and Response Team (START) to conduct a Targeted Brownfields Assessment (TBA) at the Hoopa High School Football Field in Hoopa, California. This sampling effort was implemented following a TBA technical assistance award to the TEPA for assessment of the football field. The site vicinity and specific features of the site are shown on Figures 1 and 2 (Appendix A).

As part of this TBA for the site, START prepared a *Field Sampling Plan for Targeted Brownfields Assessment of Hoopa High School Football Field, Hoopa, California* (FSP), dated November 2012 (E & E 2012b), for collection and laboratory analysis of soil samples. The FSP (E & E 2012b) is a site-specific addendum to the draft *Generic Sampling and Analysis Plan for Targeted Brownfields Assessments*, dated March 2010 (E & E 2010). The U.S. EPA Quality Assurance Office approved the FSP (E & E 2012b) in a letter dated November 19, 2012.

This assessment characterizes contaminant concentrations in shallow fill to provide the appropriate environmental data required to make decisions regarding the potential presence of contamination in soil below the football field. The specific sampling objective for the assessment was to assess potential contamination of surface soil and shallow subsurface soil in the vicinity of the football field. Laboratory analytical results for samples collected during the April 2013 assessment are summarized in Table 1 (Appendix B).

This report was prepared based on information collected from historical file review and April 2013 START field assessment activities. This report contains a summary of historical documents related to the site and discussions of the E & E START April 2013 site activities, laboratory analytical data from this assessment, findings, conclusions, and recommendations.

2 Site Background

2.1 Location

The site is located at 5 Loop Road, Hoopa, California. The geographic coordinates for the approximate center of the site are 41° 02' 47.96" North Latitude, 123° 40' 27.47" West Longitude. The site occupies approximately 4 acres of land within assessor's parcel number (APN) 525-171-007 (subject property). As requested by the TEPA, the site in this assessment is defined as the portion of APN 525-171-007 that is occupied by the football field and associated structure. Figure 1 is a site vicinity map showing features and topography of the site and surrounding area. Figure 2 is a site detail map showing major features of the site. Figures are contained in Appendix A.

2.2 Site Description

The site is located in a mixed commercial and residential area of Hoopa, California. The surrounding and nearby properties consist of residences, classrooms and baseball field for the Hoopa Valley High School, tribal offices, a fisheries facility, and the local fire department. Figure 1 (Appendix A) shows the site and vicinity.

The subject site is currently occupied by a football field and three buildings: a single-story restroom building with wood siding at the northwest end of the football field, a two-story announcer's booth with wood siding along the southwestern edge of the football field, and a storage shed with sheet metal siding along the northeast edge of the football field. Figure 2 shows details of the subject property including the locations of structures.

2.3 Topographic and Geologic Information

According to the U.S. Geological Survey (USGS) *Hoopa 7.5-minute Quadrangle*, 1997 (USGS 1997), the elevation of the ground surface at the site is approximately 335 feet above sea level. Topography of the site is relatively flat with a gentle slope in an easterly direction. Regional topography slopes in a general easterly direction toward the Trinity River.

According to the *California Geomorphic Provinces*, *Note 36*, California Geological Survey, prepared by D.L. Wagner, December 2002 (Wagner 2002), the site is located near the western edge of the Klamath Mountains physiographic province of California. The Klamath Mountains are northwest-trending mountain ranges (6,000 to 8,000 feet elevation above sea level) with northwest-trending valleys. According to the *Geologic Map of California Weed Sheet*, State of California Division of Mines and Geology, Compiled by Rudolph G. Strand, 1963 (Strand 1963), rocks in the vicinity of the site consist of late Jurassic sedimentary rocks. Rock types in the vicinity of the site include slaty and phyllitic sandstone, shale, and minor conglomerate with ultramafic rocks exposed within a few hundred feet west of the site along an inferred fault. Ultramafic rocks are also mapped in the Trinity River drainage basin up-stream from the site. According to the *Geologic Map of California Weed Sheet* (Strand 1963), the site is underlain by quaternary sediments of the Trinity River flood plain.



According to a September 2012 *Phase I Environmental Site Assessment* (Phase I ESA) prepared by E & E (E & E 2012a), soils in the site area were determined to be a xerofluvent sandy soil. Xerofluvent soil is well drained to excessively drained and deep sandy to gravelly soil with excessive drainage rates. The xerofluvent soil is at least 60 inches in thickness with bedrock underlying it. The xerofluvent soil component does not meet the requirements for a hydric soil. According to *Report Evaluation of Soil and Ground Water at Former Unocal Bulk Plant No. 0289*, prepared by Applied GeoSystems, May 25, 1991 (Former Unocal Bulk Plant Assessment Report) - (Applied GeoSystems 1991), soil at the Former Unocal Bulk Plant, which is located approximately 1.5 miles north of the subject site, consists mostly of sand and gravel to the total explored depth of approximately 50 feet below ground surface (bgs). Soil conditions at the subject site are anticipated to be similar to those encountered at the Former Unocal Bulk Plant because both sites are located in similar geologic settings. Depth to bedrock at the site is anticipated to be less than at the Former Unocal Bulk Plant because the site is located more distal to the Trinity River near the margin of the flood plain.

The site is located near the margin of a river terrace within the flood plain of the Trinity River. According to the Former Unocal Bulk Plant Assessment Report (Applied GeoSystems 1991), areas in the vicinity of that site (approximately 1.5 miles north of the subject site) are underlain by recent fluvial deposits of the Trinity River extending to a depth of approximately 50 feet bgs, where bedrock was encountered. Groundwater at the Former Unocal Bulk Plant site was encountered at depths ranging from 36 to 45 feet bgs and was calculated to flow in a northerly direction.

No specific groundwater depth or flow direction information is available for the site. Because the site is located near the margin of a river terrace of the Trinity River, bedrock and groundwater are likely to be encountered at much shallower depths than at the Former Unocal Bulk Plant site. Groundwater flow direction is anticipated to be in an easterly direction toward the Trinity River.

Soil encountered at the site during the April 2013 sampling event consists of either sandy silt or sand and gravel with silt and clay. Soil encountered within the perimeter of the running track consists of a surface fill layer of sandy silt ranging from 0.5 to 2.75 feet in thickness. The sandy silt fill is reported by the TEPA to have been imported from near the Celtor Chemical Works National Priorities List site. Soil encountered below the sandy silt and at the other boring locations generally consists of sand and gravel (both native and imported fill) containing varying amounts of silt and clay. Groundwater was not encountered during the April 2013 sampling event at the total explored depth of 8 feet bgs.

2.4 Site History

The TEPA indicated that the site has been used as the High School football field since the property was donated to the Klamath Trinity Joint Unified School District in 1933 by the Hoopa Valley Tribe. According to the TEPA, the site may have historically been the location of residential home sites.

2.4.1 Current Uses

The site is currently used as the football field for the portion of the Klamath Trinity Joint Unified School District property that is occupied by the Hoopa Valley High School.



2.4.2 Previous Investigations on the Subject Property

No previous samples have been collected from the site for laboratory analysis prior to this TBA.

In September of 2012, a Phase I ESA (E & E 2012) was prepared by E & E as part of this TBA. As part of the Phase I ESA, E & E identified two recognized environmental conditions (RECs) in connection with the subject property. The known presence of a thin layer of soil in fill below the site that potentially contains arsenic, cadmium, copper, mercury, selenium, zinc, cyanide, and naturally occurring asbestos (NOA) is one of the RECs identified in relation to the site. The known presence of fill at the site that was imported from an unknown number of multiple unknown locations and that potentially contains NOA is the second REC identified in relation to the site. The assessment proposed in the FSP (E & E 2012b) was designed to address the RECs identified in the Phase I ESA following the numerous assessment guidance documents established by the California Department of Toxic Substances Control that are specific to environmental assessments at school properties.

2.4.3 Previous Investigations at the Celtor Chemical Works Property

The Celtor Chemical Works site is located roughly 6 miles north of the subject site. The Celtor Chemical Works site is not of concern in this assessment as a potential source for contamination at the subject site except for the potential contamination resulting when fill was imported to the subject site from near the Celtor Chemical Works. Discussion of the Celtor Chemical Works site is provided here because fill is known to have been brought from near there to the subject site before any cleanup was performed. According to an *EPA Superfund Record of Decision: Celtor Chemical Works*, U.S. EPA, September 30, 1985 (U.S. EPA 1985), results of a remedial investigation performed by U.S. EPA revealed that the Celtor Chemical Works site posed a threat to human health and the environment from high levels of arsenic, cadmium, copper, lead, and zinc in soil and surface water, but not in groundwater. Before remediation, the maximum concentrations of metals detected at the site were: arsenic at 600 milligrams per kilogram (mg/kg), cadmium at 310 mg/kg, copper at 25,500 mg/kg, lead at 1,680 mg/kg, and zinc at 62,100 mg/kg (U.S. EPA 1985).

According to a Second Five-Year Review Report for Celtor Chemical Works Superfund Site, U.S. EPA, August 29, 2001 (U.S. EPA 2001), soil removal and additional soil assessment activities were performed pursuant to the 1985 Record of Decision (U.S. EPA 1985). According to the Second Five-Year Review Report (U.S. EPA 2001), the 1985 Record of Decision was modified to add cleanup levels for mercury, selenium, and cyanide in soil, though subsequent additional soil sampling confirmed that none of the additional three constituents were present above the project action levels. The only sampling for mercury, selenium, and cyanide was performed after the cleanup was complete. The Second Five-Year Review Report (U.S. EPA 2001) concluded that no further five-year reviews were planned and that the site would be considered for delisting from the National Priorities List pending resolution of items of concern identified in the report.

3 E & E START Activities

From April 2 to 3, 2013, the START collected soil samples from 17 boring locations at the site. Sampling locations are shown on Figure 2 (Appendix A). Laboratory analytical results are presented in Table 1 (Appendix B). Photographs documenting field sampling activities are contained in Appendix C. Boring logs documenting soils encountered during the April 2013 sampling event are contained in Appendix D. Laboratory analytical and data validation reports are provided on a data disc inside the back cover of this report.

3.1 Deviations from the Field Sampling Plan

E & E START performed field assessment activities in accordance with the FSP (E & E 2012b), as approved by the U.S. EPA Quality Assurance Office, except as discussed below.

Community members had indicated to the TEPA that soil was historically imported to the football field from near the Celtor Chemical Works site, but that it was only used as a thin surface layer on the field to promote the growth of lawn. During field sampling activities, the START observed surface sandy silt soil only within the footprint of the football field, but at thicknesses ranging up to 2.5 feet bgs instead of a thin surface layer, as previously reported. Instead of collecting the proposed surface samples from a depth range of 0 to 0.5 feet bgs as described in the FSP, the entire surface layer of soil was collected as a composite of the full thickness of the surface fill. This change was made in the field to ensure that sampling methods would still characterize the fill considering the unexpected thickness.

Soil observed below the sandy silt surface fill appeared to be at the same elevation of the original ground surface as observed at the off-site residence to the south and appeared to have a similar texture to soil collected in other locations at the approximate elevation of the original (pre-fill) ground surface as observed at the off-site residence adjacent to the south. Deeper fill samples were not collected from borings within the footprint of the football field because there did not appear to be additional fill below the sandy silt fill.

Soil sample HFF-Field-017-S was inadvertently not collected in sufficient volume for analysis of NOA. Analysis of a lower volume of soil was not performed because the large sample volume is required by the analytical method to generate reproducible results from a naturally occurring material that is known to occur heterogeneously.

3.2 Soil Sampling

E & E START collected soil samples at 17 locations using a direct push drilling rig and at nine surface sample locations with a hand trowel. Boring locations were plotted on a grid and located in the field using a global positioning system device. Soil samples were collected from the football field to evaluate the potential threat to human health or the environment related to potential contamination from heavy metals, NOA, and cyanide in surface fill that was brought to the site from near the Celtor Chemical Works National Priorities List site. Because the sources of





additional fill are unknown, soil samples were collected at boring locations within the area of fill for analysis of constituents specific to a variety of possible land uses that could have occurred at the source properties, including metals; NOA; organochlorine pesticides (OCPs); organophosphorous pesticides (OPPs); chlorinated herbicides; semi-volatile organic compounds (SVOCs); polychlorinated biphenyls (PCBs); and total petroleum hydrocarbons as diesel (TPH-d) and TPH as motor oil (TPH-mo).

Nine surface soil samples were collected on a 10-foot grid spacing in the background study area to provide data to evaluate local background concentrations of arsenic, cadmium, copper, lead, selenium, and zinc for comparison to the project screening levels and to the sample results. Sample locations are shown on Figure 2 (Appendix A).

Duplicate soil samples were collected from approximately 10 percent of the sample locations. Additional volumes of soil were collected for matrix spike/matrix spike duplicate (MS/MSD) analysis. One equipment rinse blank was collected at the end of each day's activity and submitted for laboratory analysis.

Soil types and characteristics were logged by a START geologist and recorded on field boring logs. Soil types observed within the football field (bounded by the running track) consisted primarily of sandy silt fill from the ground surface to total depths ranging from 0.5 to 2.75 feet. Outside the football field, native soil and imported fill were observed to consist of sand and gravel with varying amounts of silt and clay. In general, areas of obvious imported fill (along the eastern portion of the site) were observed to contain lesser amounts of silt and clay than native sand and gravel. The total thickness of imported fill in the eastern portions of the site range from approximately 2.75 to 5 feet bgs. Soil at the site in areas without obvious imported fill and below imported fill was observed to consist of sand and gravel with silt and clay to the total explored depth of 8 feet bgs. Drafted copies of the boring logs are contained in Appendix D.

4 Analytical Data

Soil samples of shallow fill imported from near the Celtor Chemical Works were analyzed for arsenic, barium, cadmium, chromium, copper, lead, selenium, silver, and zinc by U.S. EPA Method 6010B; mercury by U.S. EPA Method 7471A; NOA by California Air Resources Board Method 435; and cyanide by U.S. EPA Method 9010C. Soil samples of fill imported from unknown locations were analyzed for Resource Conservation and Recovery Act (RCRA) metals with copper and zinc by U.S. EPA Method 6010B; mercury by U.S. EPA Method 7471A; NOA by California Air Resources Board Method 435; cyanide by U.S. EPA Method 9010C; OCPs by U.S. EPA Method 8081A; OPPs by U.S. EPA Method 8141A; chlorinated herbicides by U.S. EPA Method 8151A; SVOCs by U.S. EPA Method 8270C; PCBs by U.S. EPA Method 8082; and TPH-d with TPH-mo by U.S. EPA Method 8015. Equipment rinse blanks were analyzed for the same compounds as soil samples.

Soil samples analyzed for NOA were submitted to EMS Laboratories, located in Pasadena, California. Soil samples analyzed for chlorinated herbicides and OPPs were submitted to EMAX Laboratories, located in Torrance, California. Soil samples analyzed for cyanide were submitted to GEL Laboratories, located in Charleston, South Carolina. Soil samples analyzed for metals, OCPs, SVOCs, PCBs, TPH-d, and TPH-mo were submitted to the U.S. EPA regional laboratory, located in Richmond, California.

Laboratory analytical results from the U.S. EPA regional laboratory were provided with Tier 1B data validation. Laboratory analytical results provided by all other laboratories were validated by an E & E START data validator using Tier 1A validation criteria. Data were found to be of acceptable quality and were deemed by the laboratory or the START data validator to be usable for the purposes of this investigation with qualifications where appropriate. Data qualifications are indicated in Table 1 (Appendix B) and in the laboratory analytical and data validation reports on the data disc contained in the back cover of this report.

4.1 Summary of Soil Sample Results

Laboratory analytical results for the constituents of potential concern (COPCs) identified in the FSP (E & E 2012b) were compared to the site-specific screening levels for those constituents identified in the FSP. The project screening levels for the additional metals analyzed as part of the standard RCRA metals test (barium, chromium, nickel, and silver) were compared to a screening level determined by selecting the lowest available established regulatory threshold, the same process used to develop the FSP. Because they are not considered COPCs, but were analyzed as a precaution, screening levels were not established in the FSP for OCPs, OPPs, chlorinated herbicides, SVOCs, PCBs, TPH-d, and TPH-mo. None of the constituents analyzed from the list of precautionary analyses were detected by the laboratories at concentrations exceeded laboratory reporting limits; therefore, it was not necessary to review screening levels for them in this report.



The calculated local background concentrations of arsenic and nickel were used as the project screening level because they indicate that naturally occurring concentrations of these elements exceed the lowest published screening levels considered. Local background concentrations were calculated for arsenic and nickel by determining the non-parametric upper tolerance limit for the range of concentrations detected in background samples. E & E START compared arsenic and nickel concentrations in soil samples to the calculated local background concentrations of 7.2 and 210 mg/kg, respectively. Calculation of the local background concentrations is discussed in Section 4.1.2.

E & E START compared cyanide concentrations in soil samples to the laboratory reporting limit of 2.5 mg/kg because the lowest published screening level is lower than any practically achievable quantitation limit. E & E START compared NOA concentrations in soil samples to the laboratory reporting limit of 0.25 percent, which is also the regulatory threshold above which the sale or use of fill is restricted in California. E & E START compared lead concentrations in soil samples to the California EPA's September 2010 California human health screening level (CHHSL) of 80 mg/kg. E & E START compared barium, cadmium, copper, mercury, selenium, silver, and zinc concentrations in soil samples to their respective February 2013 California Regional Water Quality Control Board environmental screening levels (ESL) for shallow soil. For comparison, available screening levels not selected for this project are listed for the COPCs and the RCRA metals not included as COPCs in Table 1 (Appendix B). Possible screening levels considered for this project include the CHHSLs, ESLs, U.S. EPA Regional Screening Levels, and the laboratory reporting limits. The site-specific screening level was selected as the lowest established regulatory threshold, unless the threshold was below the laboratory reporting limit or the calculated local background concentration, in which case the laboratory reporting limit or the calculated local background concentration was used. Soil analytical results, the screening levels considered, and the screening levels selected are presented in Table 1 (Appendix B).

4.1.1 Field Study Area

Concentrations of selenium, silver, cyanide, NOA, OCPs, OPPs, chlorinated herbicides, SVOCs, PCBs, TPH-d, and TPH-mo were below laboratory reporting limits and project screening levels in all samples analyzed. Barium, cadmium, copper, lead, mercury, and zinc were detected in most of the samples, but at concentrations below the project screening levels (all ESLs except lead, which is based on the CHHSL) of 750, 1.7, 230, 80, 1.3, and 600 mg/kg, respectively.

In the Field study area, arsenic was detected in most of the soil samples at concentrations ranging up to 8.1 mg/kg. Reported concentrations of arsenic in soil slightly exceeded the calculated local background concentration of 7.2 mg/kg only at sample location HFF-Field-005-S. Nickel was detected in all of the soil samples at concentrations ranging from 150 to 220 mg/kg. Reported concentrations of nickel slightly exceeded the calculated local background concentration of 210 mg/kg only at sample locations HFF-Field-002-S and HFF-Field-003-S. Chromium was detected in all of the soil samples at concentrations ranging from 110 to 300 mg/kg. Reported concentrations of chromium exceeded the calculated local background concentration of 250 mg/kg and the project screening level of 280 mg/kg only at sample location HFF-Field-002-S.

The only samples with chromium and nickel concentrations above project screening levels or calculated local background concentrations were collected from borings in soil that appears to be native. Concentrations of arsenic and nickel are present at concentrations similar to or below



calculated local background concentrations. Chromium is present at a concentration above the project screening level and the calculated local background concentration only at one location where imported fill was not observed. The most likely source for arsenic, nickel, and chromium in soil is natural occurrence. Soil analytical results for constituents that were detected in at least one sample at or above the laboratory reporting limit are presented in Table 1 (Appendix B). Laboratory analytical and data validation reports are provided on the data disc included inside the back cover of this report.

Soil sample HFF-Field-017-S was inadvertently not collected in sufficient volume for analysis of NOA. Analysis of a lower volume of soil was not performed because the large sample volume is required by the analytical method to generate reproducible results from a naturally occurring material that is known to occur heterogeneously. Considering the observed consistent soil type between other samples of surface sand and gravel fill observed at site, sample HFF- Field-017-S is not likely to have produced different results than the analysis of the other samples collected from the same layer of fill or the result of analysis of sample HFF- Field-017-F, which was collected from the same boring and from the same fill layer. Even without data from sample HFF-Field-017-S, the NOA data set meets the 90% completion goal specified in the FSP (E & E 2012b). The one missing data point is not considered significant when considering the consistent absence of NOA in samples of similar soil and the compliance with project completion goals established in the FSP.

4.1.2 Background Study Area

The background sample results were used to calculate background soil screening levels for arsenic, chromium, and nickel. Background soil screening levels were calculated for arsenic, chromium, and nickel because those are the only naturally occurring elements that were detected in at least one field study area sample at concentrations above the lowest available regulatory screening levels or in the case of arsenic, above the laboratory reporting limit selected as the project screening level. The background study area and background sample locations are shown on Figure 2 (Appendix A). The 95 percent upper tolerance limit was calculated using *ProUCL Version 4.1.01*, *Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations, EPA/600/R-07/041*, May 2010 (U.S. EPA 2010) and according to U.S. EPA *Guidance for Comparing Background and Chemical Concentrations in Soil for CERCLA Sites, EPA 540-R-01-003 OSWER 9285.7-41*, September 2002 (U.S. EPA 2002). Nonparametric tests were performed based on the number of background samples. The highest concentration was used for duplicate samples. E & E START calculated local background concentrations for arsenic, chromium, and nickel to be 7.2, 250, and 210 mg/kg. Laboratory analytical results for background samples are presented in Table 1 (Appendix B).

4.2 Summary of Quality Assurance/Quality Control Sample Results

The START reviewed the Tier 1B validated analytical data provided by the U.S. EPA Region 9 Laboratory and performed Tier 1A validation of data provided by the E & E subcontract laboratories EMS Laboratories, GEL Laboratories, and EMAX Laboratories. The E & E START review of the Tier 1B data validation results compared data to specific project quality objectives, which included target analytes, sensitivity, analytical accuracy, analytical and sampling precision, and analytical completeness. The START quality control (QC) review also evaluated



equipment rinse blank contamination and comparison of primary sample to field duplicate results. Results of the START QC review are described below.

4.2.1 Analytical Completeness

All samples submitted to the laboratories were analyzed as requested.

4.2.2 Holding Times

All samples were analyzed by the laboratories within the holding times prescribed by the analytical methods used for analysis.

4.2.3 Blank Contamination

Equipment rinse blank samples were collected after each day of sampling and analyzed for the COPCs to evaluate the decontamination procedures used on non-dedicated sampling equipment, as described in the FSP (E & E 2011a). None of the COPCs were detected in any of the rinse blanks above laboratory reporting limits. Analytical results for rinse blank samples are presented in Table 1 (Appendix B). Analytical results for laboratory method blanks are contained in the laboratory analytical reports on the compact disc included in the back of this report.

4.2.4 Matrix Related Recoveries

Results of the analysis of MS/MSD samples were within the control limits generated by the laboratories with some exceptions. Relative percent difference (RPD) between MS and MSD analyses were outside control limits for chromium in samples HFF-Field -006-S and HFF-Field-012-S, for all chlorinated pesticides in sample HFF-Field-017-F, and all SVOCs in sample HFF-Field-017-F. The laboratory control standard associated with samples HFF-Field-014-F, HFF-Field-015-F, HFF-Field-016-S, HFF-Field-116-F, and HFF-Field-017-F did not meet recovery criteria for the SVOC 4-chloroaniline. The laboratory control standard associated with both rinse blank samples (HFF-040213-RB and HFF-040313-RB) did not meet recovery criteria for the SVOCs 4-nitroaniline and 3,3-dichlorobenzidine. The quantitation limit standard associated with samples HFF-Field-014-F, HFF-Field-015-F, HFF-Field-016-S, HFF-Field-116-F, and HFF-Field-017-F did not meet recovery criteria for the SVOC 2,4-dinitrophenol. The quantitation limit standard associated with both rinse blank samples (HFF-040213-RB and HFF-040313-RB) did not meet recovery criteria for the SVOCs 2,4-dinitrophenol, 4-nitrophenol, butyl benzyl phthalate, bis(2-ethylhexyl) phthalate, and di-n-octyl phthalate. Results of the analysis of MS/MSD and laboratory standards are presented in the laboratory analytical reports on the data disc inside the back cover of this report.

4.2.5 Field Duplicates

As part of the START QC data review, the analytical results for primary samples and their field duplicates were compared to determine if RPDs were within acceptable ranges as defined in the FSP (E & E 2011a). Concentrations of barium, cadmium, copper, lead, and mercury were outside the acceptable RPD range of 25 percent between soil samples HFF-BG-024 and its field duplicate sample HFF-BG-124. Except as described above, all results for field duplicates that were not reported as estimated were within the acceptable ranges as defined in the FSP (E & E 2012b). For primary and duplicate samples with COPC concentrations resulting in RPDs outside acceptable QC limits, the associated reported concentrations were qualified as estimated (flagged with the letter "J").

4. Analytical Data

Based on review of results of the Tier 1B validated data from the laboratories and QC review of the data, the data for the Hoopa High School Football Field TBA are classified as acceptable for use with qualifications as identified in the laboratory analytical data Table 1 (Appendix B).

5 Conclusions

Based on review of current laboratory analytical results presented in this report and information presented in the Phase I ESA (E & E 2012a) for the Hoopa High School Football Field TBA, E & E START provides the following conclusions:

- This assessment was performed to assess concentrations of various contaminants in fill, which was historically imported from various and mostly unknown locations. Results of this assessment indicate the absence of all of the tested constituents at concentrations above the site-specific screening levels except for certain RCRA metals, which are naturally occurring. Of the elements analyzed as part of the RCRA metals suite, concentrations of all except arsenic, chromium, and nickel are below the site-specific screening levels.
- Reported concentrations of nickel and chromium in site soil are similar to or slightly above calculated background concentrations and site-specific screening levels and occur at highest concentrations in soil that does not appear to have been imported. Reported concentrations of arsenic in fill imported from near the Celtor Chemical Works site are very slightly higher than in other soil sampled at the site, yet similar to the calculated local background concentration. Site soil containing arsenic, nickel, and chromium is not likely to pose a significantly higher risk to the public or the environment than natural soil in the vicinity of the site.

6 Recommendations

Based on review of current laboratory analytical results presented in this report and information presented in the Phase I ESA (E & E 2012a) for the Hoopa High School Football Field TBA, E & E START provides the following recommendations:

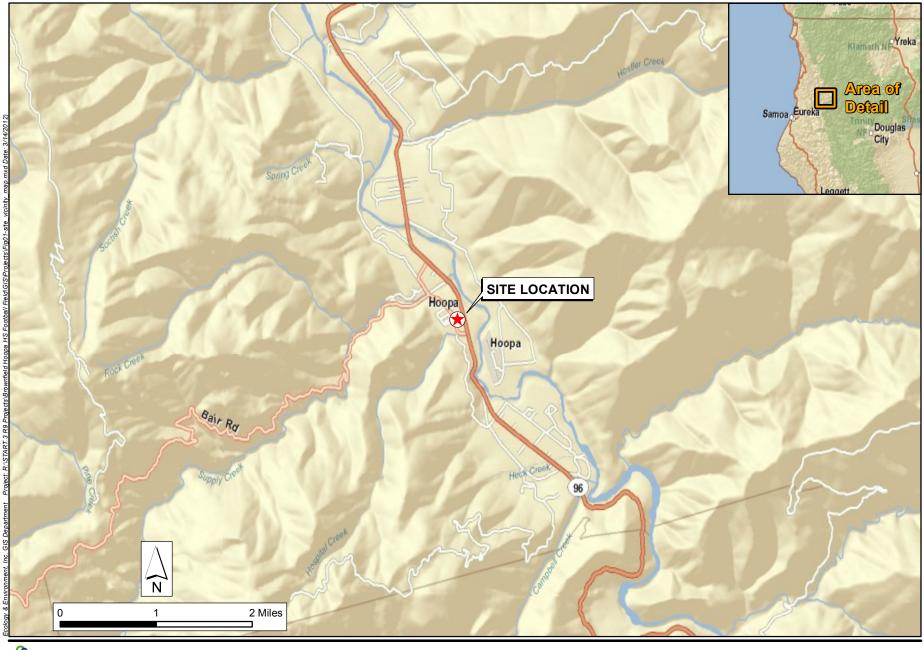
• This assessment did not identify the presence of significant contamination; therefore, no further assessment and no cleanup should be necessary.

7 References

- Applied GeoSystems. 1991. "Report Evaluation of Soil and Ground Water at Former Unocal Bulk Plant No. 0289". Applied GeoSystems, Inc., May 25, 1991.
- E & E. 2010. "Generic Sampling and Analysis Plan for Targeted Brownfield's Assessments". December 2010.
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A Figures

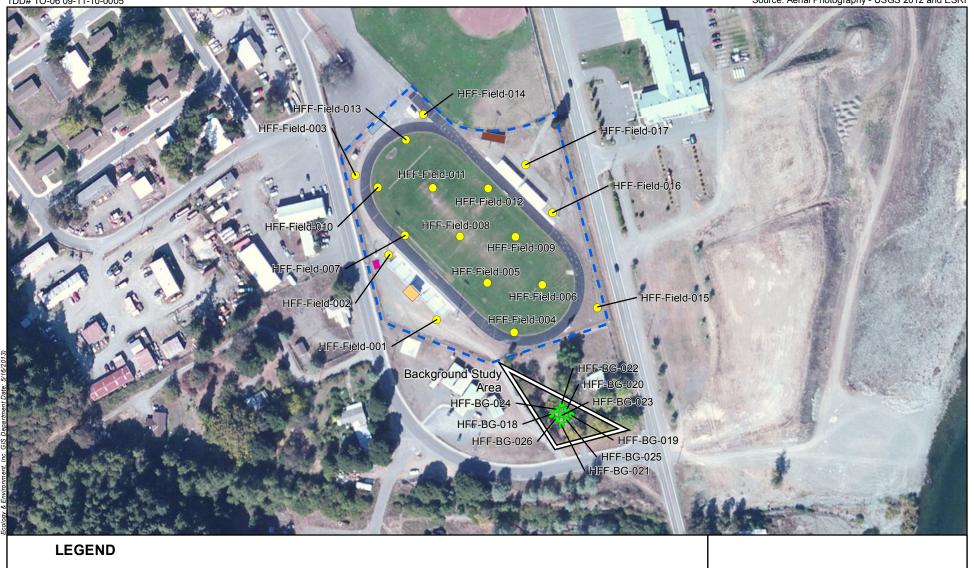
Project # EE-002693-6020 TDD# TO-06 09-10-11-0005



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Figure 1
Vicinity Map
Hoopa High School Football Field
5 Loop Road, Hoopa, California

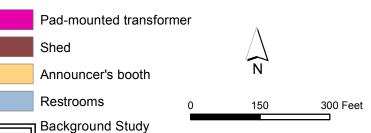


Area

Background Study Area Points

Sample Locations

Site boundary



Area

Figure 2
Sample Locations
Hoopa High School
Football Field

5 Loop Road, Hoopa, California



B Tables

Table 1 Soil and Rinse Blank Analytical Results for Metals, Cyanide, and TPH Hoopa High School Football Field Targeted Brownfields Assessment Hoopa, California (All Concentrations in mg/kg except where noted)

TDD: TO06 09-10-11-0005	-11-0005	,		,				(2000)					EE-00.	EE-002693-6020
			Arsenic	Barium*	Cadmium	Chromium*	Copper	Lead	Mercury	Nickel*	Selenium	Silver	Zinc	Cyanide
CHHSL			20.0	5,200	1.7	None	3,000	80	18	1,600	380	088	23,000	None
RSL			0.39	15,000	70	280**	3,100	400	10	3,800	390	390	23,000	47
ESL Shallow Soil			0.39	750	1.7	None	230	200	1.3	150	10	20	909	0.0036
Calculated Local Background	3ackgroun o		7.2			250				210				
Laboratory Reporting Limit	ting Limit		2	2	0.5	1	4	3	0.10	2	3.5	1.0	8.0	2.5
	Sample	Sample Depth in												
Sample ID	Date	feet												
			2.8	32	0.33	220	85	2.4	0.033	160	<2.2	<1.1	79	<0.0644
HFF-Field-001-S	4/2/2013	0 - 0.5			C1. J			ر ک			n	n		n
i			2.7	32	0.55	190	88	8	0.038	150	42.2	۲.	79	<0.0903
HFF-Field-101-S	4/2/2013	0 - 0.5						ડા, ગ			D	5		
			4.1	49	0.62	300	99	99	0.046	220	<2.2	۲1	79	<0.0638
HFF-Field-002-S	4/2/2013	0-0.5									٦	∍		-
			2.0	40	0.3	240	09	18	0.072	220	2.1	۲. ۲.	75	0.326
HFF-Field-003-S	4/2/2013	0-0.5			C1, J						U	D		
			1.3	51	0.67	230	52	67	0.043	170	<2.4	<1.2	140	<0.126
HFF-Field-004-S	4/2/2013	0-0.75	C1, J								U	Ω		n
			8.1	110	9.0>	130	22	7.6	0.084	170	<2.4	<1.2	93	0.175
HFF-Field-005-S	4/3/2013	0-2.5			n						O.	ח		Ð
			5.2	100	<0.59	160	52	6.6	0.079	190	<2.4	<1.2	06	<0.0886
HFF-Field-006-S	4/3/2013	0 - 2.5			n	Q4, J					U _	n		D
			6.4	100	<0.65	140	23	9.3	0.084	160	<2.6	<1.3	98	0.248
HFF-Field-007-S	4/3/2013	0 - 0.5			Ü			i i			U	n		ſ
			6'9	92	0.34	130	48	7.1	0.078	160	<2.3	<1.2	79	0.104
HFF-Field-008-S	4/3/2013	0 - 2.75		-	C1, J						U	_ _		٦
			6.0	6	09'0>	140	53	8.0	0.076	180	<2.4	<1.2	85	<0.0956
HFF-Field-009-S	4/3/2013	0 - 2.25			U						n	5		٦
			6.9	94	0.41	130	42	9	0.079	150	<2.6	4.3	98	0.378
HFF-Field-010-S	4/3/2013	0 - 0.5			C1, J						Ŋ	∍		
		_	6.5	88	0.37	110	45	7.5	0.078	150	<2.4	<1.2	79	<0.087
HFF-Field-011-S	4/3/2013	0 - 2.25			C1, J						ח	D)
			6.1	66	<0.57	150	\$	7.9	60.0	190	<2.3	<1,1	79	<0.0782
HFF-Field-012-S	4/3/2013	0-2.0			n	Q4, J					U	D		n
			8.8	96	0.37	210	9	12	0.066	210	<2.5	<1.3	96	<0.102
HFF-Field-013-S	4/3/2013	0-2.0			C1.7						ס	>		⊃
			2.7	\$	<0.53	180	55	39	0.088	160	<2.1	<u>۲</u>	97	<0.0605
HFF-Field-014-S	4/3/2013	0 - 0.5			⊃						Э	5		D

Table 1 Soil and Rinse Blank Analytical Results for Metals, Cyanide, and TPH Hoopa High School Football Field Targeted Brownfields Assessment Hoopa, California (All Concentrations in mg/kg except where noted)

TDD: TO06 09-10-11-0005	-11-0005					,							EE-00	EE-002693-6020
			Arsenic	Barium*	Cadmium	Chromium*	Copper	Lead	Mercury	Nickel*	Selenium	Silver*	Zinc	Cyanide
CHHSL			20.0	5,200	1.7	None	3,000	80	18	1,600	086	380	23,000	None
RSI.			0.39	15,000	70	280**	3,100	400	10	3,800	068	330	23,000	47
ESL Shallow Soil			0.39	750	1.7	None	230	200	1.3	150	10	50	900	0.0036
Calculated Local Background	Background		7.2			250	_			210				
Laboratory Reporting Limit	ting Limit		7	5	0.5	1	4	3	0.10	5 .	3.5	1.0	8.0	2.5
	Sample	Sample Depth in												,
Sample ID	Date	feet												
			1.8	54	0.037	190	56	6.0	0.077	190	<2.1	<1.1	29	<0.0691
HFF-Field-014-F	4/3/2013	0.5 - 2.75	C1, J		C1, J					,	n	n)
			2.5	40	0.43	230	55	4.5	0.038	210	<2.2	<1.1	99	<0.104
HFF-Field-015-S	4/2/2013	0 - 0.5			C1, J						Ù	n		n
			<2.2	ģ	0.34	150	25	2.9	0.038	160	<2.2	11	62	<0.0957
HFF-Field-015-F	4/2/2013	0.5 - 2.75	ח		C1. J			C1, J			Ú	n		D
			2.8	49	0.38	210	28	8.6	0.039	180	<2.2	<1.1	72	<0.0871
HFF-Field-016-S	4/2/2013	0 - 0.5		-	C1, J			,			ņ	D)
			2.2	39	0.34	180	56	8.1	0.041	170	<2.1	<1.1	70	<0.0798
HFF-Field-116-S	4/2/2013	0 - 0.5			C1, J						U)		J
			2.4	37	0.46	210	62	4.3	0.058	210	<2.1	41,1	73	<0.0757
HFF-Field-016-F	4/2/2013	0.5 - 5.0			C1, J						U	כ		D
			1.8	38	0.36	200	7.1	4.4	0.069	180	<2.1	<1.1	73	<0.0724
HFF-Field-0116-F	4/2/2013	0.5 - 5.0	C1, J		C1, J						D	⊃		⊃
			2.6	22	<0.53	170	61	11	0.053	170	<2.1	<11	82	<0.100
HFF-Field-017-S	4/2/2013	0 - 0.5			U						U	Э		J
	 		1.7	48	0.31	190	57	10	0.067	180	<2.1	<1.1	79	<0.086
HFF-Field-017-F	4/2/2013	0.5 - 4.0	C1, J		C1, J						Ω	D		J
			3.0	29	0.49	190	76	140	0.075	170	<2.5	<u>م</u> 5	150	Ϋ́
HFF-BG-018	4/2/2013	0 - 0.5			C1, J		•				Ú	ń		
			<2.5	72	0.72	190	59	250	0.22	160	<2.5	<1.3	270	Ϋ́
HFF-BG-019	4/2/2013	0 - 0.5	⊃								ס	D		
			1.4	55	0.31	150	8	70	0.079	120	<2.3	4.1	110	Δ V
HFF-BG-020	4/2/2013	0 - 0.5	C, J		C1, J						⊃	ח		
			2.3	88	0.5 7	250	8	160	0.040	210	<2.3	7.1	140	ΑN
HFF-BG-021	4/2/2013	0-0.5			С, J						D	D		
			1.6	61	0.64	230	28	110	0.075	170	<2.3	<1.2	100	Ą
HFF-BG-022	4/2/2013	0-0.5	ر ان								n	⊃		
i L	-		1.4	29	0.61	500	2	98	0.048	160	2.5	41.2	160	¥
HFF-8G-023	4/2/2013	0.0.5	5,7								٥			

Soil and Rinse Blank Analytical Results for Metals, Cyanide, and TPH Targeted Brownfields Assessment Hoopa High School Football Field Table 1

(All Concentrations in mg/kg except where noted) Hoopa, California

TDD: TO06 09-10-11-0005	-11-0005			,									EE-00	EE-002693-6020
			Arsenic	Arsenic Barium*	Cadmium	Cadmium Chromium* Copper	Copper	Lead	Mercury	Nickel*	Selenium	Silver*	Zinc	Cyanide
CHHSL			0.07	5,200	1.7	None	3,000	80	18	1,600	380	380	23,000	None
RSL			0.39	15,000	70	280**	3,100	400	10	3,800	390	390	23,000	47
ESL Shallow Soil			0.39	750	1.7	None	230	200	1.3	150	10	20	600	0.0036
Calculated Local Background	Background		7.2			250				210				
Laboratory Reporting Limit	ting Limit	i	2	2	0.5	1	4	3	0.10	5	3.5	1.0	8.0	2.5
	Sample	Sample Depth in												
Sample ID	Date	feet												
			<2.4	49	1.3	140	28	91	0.31	120	<2.4	<1.2	180	NA
HFF-BG-024	4/2/2013	0-0.5	, ,								n	n		
			2.1	89	0.78	180	80	140	0.20	130	<2.3	<1.2	230	Ą
HFF-BG-124	4/2/2013	0-0.5	C1, J								n	n		
			7.2	88	<0.7	120	67	11	0.09	150	<2.8	<1.4	87	NA.
HFF-BG-025	4/2/2013	0 - 0.5			n						n	U_		
			4.2	71	0.33	230	02	18	90'0	210	<2.4	<1.2	62	ΑN
HFF-BG-026	4/2/2013	0 - 0.5			C1, J						ס	U		
			<20 µg/L	<20 µg/L <10 µg/L	<5 µg/L	1/6rt 01>	<10 µg/L <20 µg/L	<20 µg/L	<0.03 µg/L	<10 µg/L	<20 µg/L	-5 µg/L	<5 µg/L <10 µg/L	2.06 µg/L
HFF-040213-RB	4/2/2013	None	n	Π	D	n	n	ח	J	n	n	n	n	ŗ
			<20 µg/L	<20 µg/L <10 µg/L	<5 µg/L	<10 µg/L	<10 µg/L <20 µg/l	<20 µg/L	<0.03 µg/L	<10 µg/L	<20 µg/L	<5 µg/L	<5 µg/L <10 µg/L	1.73 µg/L
HFF-040313-RB	4/3/2013	None	n	_ 	n	n	n	n	ə	ח	⊃	n	D	ſ

Notes:

The selected project screening level is indicated in bold.

Results above the site screening levels are indicated in bold

mg/kg - milligrams per kilogram

ug/L - micrograms per liter

CHHSL - California Human Health Screening Level, California Environmental Protection Agency, September 2010 RSL - Regional Screening Levels, U.S. EPA Region 9, November 2012 ESL - Environmental Screening Level, CA Regional Water Quality Control Board, February 2013

NA - Not analyzed

<X - Not detected above the practical quantitation limit of X

- * The analyte is not one of the project constituents of potential concern, however results were provided by the laboratory as part of the analysis and are presented here.
 - ** The only available established screening level for chromium is the May 2010 RSL.

Laboratory Data Qualifiers:

- J The reported result for this analyte should be considered an estimated value.

- U The contaminant was not detected at the indicated laboratory reporting limit.
 - F13 Fuel or product type mixed or unknown

 Q4 The matrix spike and/or matrix spike duplicate associated with this sample did not meet recovery criteria for this analyte.

C Photographs

ECOLOGY AND ENVIRONMENT, INC.

Superfund Technical Assessment and Response Team

Hoopa High School Football Field 5 Loop Road, Hoopa, California

E & E Project. No.: EE-002693-6020



<u>PHOTO 1</u>

Date: 04/02/13

Direction: Southeast

Photographer: M. Diener

TDD No: TO6-09-11-10-0005

Description: Sample locations flagged for sampling in the background study area.



PHOTO 2

Date: 04/02/13

Direction: Down

Photographer: M. Diener

Description: Background sample HFF-BG-026 collected and ready for processing.



PHOTO 3

Date: 04/03/13

Direction: Northwest

Photographer: M. Diener

Description: Collecting soil cores at sample

location HFF-Field-014.

ECOLOGY AND ENVIRONMENT, INC.

Superfund Technical Assessment and Response Team

Hoopa High School Football Field 5 Loop Road, Hoopa, California

E & E Project. No.: EE-002693-6020



PHOTO 4

Date: 04/03/13

Direction: Down

Photographer: M. Diener

Description: Soil cores ready for processing.

TDD No: TO6-09-11-10-0005



PHOTO 5

Date: 04/03/13

Direction: Southwest

Photographer: P. Jones

Description: Decontaminating non-dedicated

sampling equipment.



PHOTO 6

Date: 04/03/13

Direction: East

Photographer: M. Diener

Description: Collecting soil cores at sample

location HFF-Field-005.

ECOLOGY AND ENVIRONMENT, INC.

Superfund Technical Assessment and Response Team

Hoopa High School Football Field 5 Loop Road, Hoopa, California

E & E Project. No.: EE-002693-6020



PHOTO 7

Date: 04/03/13

Direction: Northeast

Photographer: M. Diener

Description: Sample location HFF-Field-015

with utility clearance markings.

TDD No: TO6-09-11-10-0005



PHOTO 8

Date: 04/03/13

Direction: Down

Photographer: M. Diener

Description: Typical surface soil at sample

location HFF-Field-016 with grouted

boreholes.



PHOTO 9

Date: 04/03/13

Direction: Down

Photographer: M. Diener

Description: Typical surface soil at sample location HFF-Field-003 with grouted borehole.

D Boring Logs

E&E Ov	erburden B	orehole Loggin	g Form		Locatio	n: HFF-F	ield-(<u> </u>
Client:	U.S. EPA		_	Date:			Р	age: <u>1 of 1</u>
Project:		ool Football Field	Drilling C					
Site/Area:	5 Loop Road, Ho			erator(s):	Geoprobe 54	IND		
Project No.	EE-002693-6020	<u> </u>			Macrocore 4			
Geologist: Signature:	Paul Jones	 "			Direct Push	Λ 4,143		
Start Time:	1020	Analyses	Recovery (ft)		nple ID	Interval	Туре	
Top Depth: (
Bottom Dept								ll .
Finish Time:			1					GRAPHIC
								LOG
0 FT 00	<u> </u>		<u> </u>			<u> </u>	<u> </u>	
0 FT BG	Natural) Fill Un	certain	Intrument #1: Tv	/pe:	Re	ading	_	
Color:	(MUN) GSA; Ligh		Intrument #2: Ty			ading		
Coloration:	(UNI) MTD VAR				OD (POR) N		_	H l
Texture: GV		ANG SUB RND NA		NON LC	W MED H	GH NA		
SN		ANG SUB RND NA	Moisture:	DRY (MS	WET SA	AT NA	;	
SL	.T: 20 %		Cementation:		T MOD W	EL NA		
	.1. <u>10</u> %	S SYM:	Strength:	NOC (CC			_	}
OR	·· ~	<u>M</u>	Upper Contact:				~ •	
Observed:	STN SHN OD	R PRD NA Other:	Clayey, silty SA	ND and G	KAVEL. Botto	om of Boring 3 fe	<u>e</u> (.]] [
							<u>-</u>	
3 FT BG			Intrument #1: Ty	NOO.	Da	eading		
Material: Color:	Natural Fill Un	certain	Intrument #1: 19 Intrument #2: Ty			ading		
Coloration:	UNI MTD VAF	R STN	Sorting:		OD POR N			
Texture: GV	L:%	ANG SUB RND NA	Plasticity:	NON LO	W MED H	GH NA		11
SN		ANG SUB RND NA	Moisture:		ST WET SA T MOD W			
SI SI		S ŞYM:	Cementation: Strength:	NOC / CO		LL IYA		
OR	.G: —— %		Upper Contact:			E NA	_	
Observed:	STN SHN OD	R PRD NA Other:					_	
	<u></u>						-	
FT BG			Interior and Hel. T			adina	:	∦
Material:	Natural Fill Ur	certain	Intrument #1: 11 Intrument #2: T			eadingeading		
Color: Coloration:	MUD GSA UNI MTD VAF		Intrument #2: 1' Sorting:		OD POR N		_	
Texture: GV		ANG SUB RND NA	Plasticity:		OW MED H			
	ID: —— % —	ANG SUB RND NA	Moisture:		ST WET S]] [
	LT: %	-	Cementation:		T MOD W	EL NA][
	··· · · ·	S SYM:	Strength:	NOC / C		E NA	_	
Observed:		R PRD NA Other:	Upper Contact:	SHP GI	KU DIF SM	E IVA		
Observed.								
FT BG	38]
Material:	Natural Fill Ur		Intrument #1: T	ype:	Re	eading]
Color:	MUN GSA	<u></u> _	Intrument #2: T	уре:	Re	eading		
Coloration:	UNI MTD VA		Sorting:		OD POR N			
Texture: GV		ANG SUB RND NA	Plasticity:		H DEM WC			
	ND:%	ANG SUB RND NA	Moisture: Cementation:		ST WET S			
1	LT:% LY:%	S SYM:	Cementation: Strength:	NOC/C		FF 14W		
	RG: %		Upper Contact:			IE NA	_	
Observed:		PR PRD NA Other:					_	[
1					:		_	
FT BC	as						-	<u> _ _ _ _ </u>
. , , _,								

Project: Hoopa High School Football Field Site/Area: 5 Loop Road, Hoopa, CA EE-002693-6020 Site Dozens EE-002693-6020 Site Dozens Site Doz	E&E Ove	erburden B	orehole Loggin	g Form		Locatio	n: HFF-F	-ield-(J02
Control Cont	Client: Project:	U.S. EPA		_				Pa	age: <u>1 o</u>
Project No.	Site/Area:								
Drill Bit - Type/Size: Macrocord 4 2, 125"	Project No.						100		
Slant Time: 1040 Top Depth: 0FL Bottom Depth: 5FL Finish Time: 1115 OFT BGS Material: (Notural) Fill Uncertain Colora: (NI) MITD VAR STN SILT: 10 % Coloration: (NI) MITD VAR STN SILT: 10 % Coloration			·						
Description	Signature:								
O FT BGS O FT BGS			Analyses	Recovery (ft)	Sar	nple ID	Interval	Туре	
O FT BGS				<u> </u>			ļ. —	+	
D FT BGS				<u> </u>	-			+-+	
O FT BGS	Finish Time:	1115						 	1
Material:		•		<u> </u>				├	100
Material:			· · · · · · · · ·	<u> </u>			-	+ -	
Coloration:	0 FT BGS	3							
Coloration:	Material:			-					
Texture: GVI: 55 %								— ļ	1 1
SAID 30 % ANG SUB (RND) NA Moisture: DRY (MSD) WET SAT NA				•					
SLT: 10 % CLY: 5 % ORG: % GM GM Observed: STN SHN ODR PRD NA Other: Boltom of Boring 5 feet. 5 FT BGS Material: Natural Fill Uncertain Clor: (MU) GSA CLY: % ANG SUB RND NA CLY: % ANG SUB RND NA CLY: % ANG SUB RND NA CLY: CLY: % ANG SUB RND NA CLY: CLY: MARCHARD CLY: CLY: MARCHARD CLY: CLY: MARCHARD CLY: MARCHARD CLY: CLY: MARCHARD CLY: MARCHA		·		~					
CLY: 5 % GM GM CM CM CM CM CM CM			ANG GORNKUD NY						
Chestrophysical Color: Strict Ship Grading Upper Contact: Ship Grading Upper Conta			S SYM:]		=		- IIA		
STN SHN ODR PRD NA Other: Silly SAND and GRAVEL with some clay.		· <u> </u>					ECNA)	_	
Bottom of Borling 5 feet.		,,,, ₀						Ì	
S FT BGS	Observed:			OILY ONNO BIID	SIMMER	THE SOLIE OF	·y·	_	
Material: Natural Fill Uncertain Intrument #1: Type: Reading Reding Reading Readin								_	
Color:				Intrument #1: Tv	ype:	Re	eading		
Coloration:	Color:				ype:	Re		_	
SND:	Coloration:	UNI MTD VAF	R STN	Sorting:					l i
St.T:	Texture: GVL	:%	ANG SUB RND NA	~					1
CLY:			ANG SUB RND NA						
ORG:			- 				EL NA		1
STN SHN ODR PRD NA Other:		·· ··	2 2 M.				F NA	– j	
Material:			R PRD NA Other:	Opper Contact.	0111 01			_	
Material:	·							_	
Color: MUD GSA	1		agadain	Intrument #1: T	vne:	Re	eading		
Coloration: UNI MTD VAR STN	4								
Texture: GVL: % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: % ANG SUB RND NA Moisture: DRY MST WET SAT NA Cementation: NON SLT MOD WEL NA Strength: NOC / COH Upper Contact: SHP GRD DIF SME NA STN SHN ODR PRD NA Other:	1								
SND:									
CLY: % USCS SYM: Strength: NOC / COH Upper Contact: SHP GRD DIF SME NA Observed: STN SHN ODR PRD NA Other: FT BGS Material: Natural Fill Uncertain		· —— · · ——			DRY M	ST WET S	AT NA		
ORG:	St.		<u> </u>	•			EL NA		
Observed: STN SHN ODR PRD NA Other: FT BGS		···	S SYM:					_	
Material: Natural Fill Uncertain Intrument #1: Type: Reading Color: MUD GSA Intrument #2: Type: Reading Coloration: UNI MTD VAR STN Sorting: WEL MOD POR NA Texture: GVL: % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: % ANG SUB RND NA Moisture: DRY MST WET SAT NA SLT: % Cementation: NON SLT MOD WEL NA Strength: NOC / COH Upper Contact: SHP GRD DIF SME NA Observed: STN SHN ODR PRD NA Other: STN SHN ODR PRD NA OTHER STN OTHER S	1				SHP GI	RD DIF SM	IE NA		
Material: Natural Fill Uncertain Intrument #1: Type: Reading Reading Reading: Natural Fill Uncertain Intrument #1: Type: Reading Reading Reading: Note of the state of the sta	Observed:	STN SHN OD	R PRD NA Other:					_	
Material: Natural Fill Uncertain Intrument #1: Type: Reading Reading Reading: Natural Fill Uncertain Intrument #1: Type: Reading Reading Reading: Note of the state of the sta	FT 50	<u></u>						_	
Color: MUD GSA Intrument #2: Type: Reading Coloration: UNI MTD VAR STN	1		ncertain	Intrument #1: T	ype:	R	eading		1
Coloration: UNI MTD VAR STN Sorting: WEL MOD POR NA Texture: GVL: % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: % ANG SUB RND NA Moisture: DRY MST WET SAT NA SLT: % Cementation: NON SLT MOD WEL NA Strength: NOC / COH Upper Contact: SHP GRD DIF SME NA Observed: STN SHN ODR PRD NA Other:	1								
Texture: GVL:				Sorting:	WEL M	OD POR N			
SND:		.:%	ANG SUB RND NA						
SLT: %	L		ANG SUB RND NA	Moisture:					
ORG: % Upper Contact: SHP GRD DIF SME NA Observed: STN SHN ODR PRD NA Other:	SL	T:%	<u>-</u>				EL NA		
Observed: STN SHN ODR PRD NA Other:	Cr.		S SYM:					_	
	ORG			Upper Contact:	SHP G	RD DIF SM	IE NA		
FT BGS	Observed:	STN SHN OF	OR PRD NA Other:	-				→	
FT BGS L									$\ \ \ $
	FT BG	s						<u>-</u> .	

E&E Overburden B	Borehole Logging	g Form		Locatio	n: HFF <u>-</u> F	ield-	003
Client: U.S. EPA		- Dwillia - 0	Date:			Р	age: <u>1 of 1</u>
	nool Football Field	_ Drilling C					
Site/Area: 5 Loop Road, H Project No. EE-002693-602			erator(s):	Geoprobe 54			
Geologist: Paul Jones				Macrocore 4			
Signature:				Direct Push	71 2.1140		
Start Time: 1120	Analyses	Recovery (ft)	San	nple ID	Interval	Туре	,
Top Depth: 0 Ft.		 		 .			
Bottom Depth: 4 Ft. Finish Time: 1150		 -				-	GRAPHIC
Finish time. 1150		<u> </u>				 	LOG
		 		 -		 	
0 FT BGS							
Material: Natural Fill Or		Intrument #1: Ty					
Color: MUN GSA: Light		Intrument #2: Ty		DD (POR) N	ading	_	
Coloration: UNI MTD VAF	ANG (SUB) (RND) NA			W MED H			1
SND: 25 %	ANG SUB RND NA	Moisture:		WET SA			
SLT: 10 %				W DOM T			
CL1. <u><3</u> 76 -	S SYM:		(NOC) CC		·	_	
9,19,,7	SM J	Upper Contact:				ina	
Observed: STN SHN OD 4 feet, Possible	OR PRD NA Other:	Silty SAND and	GRAVEL	with some cia	ly. Bottom of Boi	<u>ing</u>	
4100.1003.00					·	-	
4 FT BGS				-			
Material: Natural Fill Ur	ncertain	Intrument #1: Ty			ading		
Color: MUN GSA		Intrument #2: Ty		Re DD POR N	ading	_	
Coloration: UNI MTD VAI Texture: GVL: %	R SIN ANG SUB RND NA	Sorting: Plasticity:		W MED H			
SND: %	ANG SUB RND NA	Moisture:		ST WET SA			
SLT: %	-	Cementation:		T MOD W	EL NA		
	SSYM;	Strength:	NOC / CO		- NA	-	
ORG:% Observed: STN SHN OD	 DR PRD NA Other:	Upper Contact:	SHP GR	ט טור אווי	E NA		
						_	
						-	
FT BGS		Interpreted His To			odina		
Material: Natural Fill Ur Color: MUD GSA	ncertain	Intrument #1: 19			ading ading		1
Coloration: UNI MTD VAI	R STN	Sorting:		DD POR N	· —-	_	
Texture: GVL:%	_ANG SUB RND NA	Plasticity:	NON LC	W MED H	GH NA		
SND:%	ANG SUB RND NA	Moisture:		ST WET SA			
SLT: % USC	S SYM:	Cementation: Strength:	NON SE	T MOD W	EL NA		
ORG: %		Upper Contact:			E NA	_	
	DR PRD NA Other:					-	
				<u> </u>		_	
FT BGS]]
Material: Natural Fill U	ncertaîn	Intrument #1: T	<u></u> урө:	Re	ading	_	
Color: MUD GSA		Intrument #2: T	уре:	Re	ading		
Coloration: UNI MTD VAI	R STN	Sorting:		OD POR N			
Texture: GVL:%	_ANG SUB RND NA	Plasticity: Moisture:		OW MED H ST WET SA			'
SND: % SLT:	_ANG SUB RND NA	Cementation:					
	CS SYM:	Strength:	NOC / CO	ЭH		_	
ORG: %		Upper Contact:	SHP GF	RD DIF SM	E NA	-	
Observed: STN SHN OE	OR PRD NA Other:				 	_	
·						-	
FT BGS						-	

E&E Ov	rerburden B	orehole Logging	g Form		<u>ocatior</u>	า: HFF-F	ield-(JU4
Client: Project:	U.S. EPA	ool Football Field	_ Drilling C	Date:ompany: E &			P	age: <u>1 of 1</u>
Site/Area:	5 Loop Road, Ho	oopa, CA	_ Ope	erator(s): P.	Jones			
Project No.	EE-002693-6020			Rig/Type: Ge				
Geologist:	Paul Jones			/pe/Size: Ma		X 2.125"		
Signature:		·	- Sample	Method: Di	rect Push	 		-
Start Time:		Analyses	Recovery (ft)	Sampl	e ID	Interval	Туре	
Top Depth:		<u> </u>						
Bottom Dep Finish Time			<u> </u>			<u> </u>	1	GRAPHIC
i iiiisii Tiiiie	. 1710		 				+	LOG
			 					
				-				
0 FT BG	ss	· · · · · · · · · · · · · · · · · · ·						
Material:	Natural (Fill) Un	certain	Intrument #1: Ty	/pe:	Rea	iding		
Color:	(MUN GSA: Gray		Intrument #2: Ty		Rea	ding		1
Coloration:	UNI MTD VAR			WEL MOD] [
Texture: GV		ANG SUB RND NA	Plasticity: Moisture:	(NON) LOW DRY (MST)				
SN	ID: <u>10</u> % .T: 80 %	ANG SUB RND NA		NON SLT				
		S SYM:	Strength:	NOC COP	, . <u> </u>			
OR		1L	Upper Contact:		DIF SME	(NA)	_	
Observed:		R PRD NA Other:	Sandy gravelly				_	
İ					_	<u>. </u>	→	
0.75 FT BG	as						<u> </u>	
Material:	Natural Fill Un	certain	Intrument #1: T	ype:	Rea	iding		
Color:	MUN GSA: Ligh		Intrument #2: T			iding	_	
Coloration:	UNI MTD VAF		Sorting:	WEL MOD				
Texture: GV		ANG SUB RND NA ANG SUB RND NA	Plasticity: Moisture:	MON LOW DRY (MST)				
	ID: <u>15</u> % LT: 15 %	ANG GOD WIND IN		(NON) SLT				
1		S SYM:	Strength:	MOON COH				
OF		<u> </u>	Upper Contact:	SHP GRD	DIF SME	: NA		
Observed:	STN SHN OD	R PRD NA Other:	Clayey, silty SA	ND and GRA	VEL. BOILO	m of Boring 3 te	et.	1 1
							_	
3 FT BC			<u></u>					
Material:	Natural Fill Ur	certain	Intrument #1: T			ading		
Color:	MUN GSA		Intrument #2: T Sorting:	ype: WEL MOD		ading	_	<u> </u>
Coloration: Texture: GV	UNI MTD VAF /L: %	ANG SUB RND NA	Plasticity:	NON LOW	-			
1	ND: —— % —	ANG SUB RND NA	Moisture:	DRY MST	WET SA	T NA		<u> </u>
s	LT:%	<u>-</u>	Cementation:	NON SLT		L NA		
l l	- · · · · · · · · · · · · · · · · · · ·	S SYM:	Strength: Upper Contact:	NOC / COH		. <u> </u>	_	
OF Observed:	RG: % BHN OD	 R PRD NA Other:	Opper Contact:	טחר טאט	חווי פואן	- 110		
Onserved.	OTH OTH OD	IN THE HA OTHER.					<u> </u>]
							_	<u> </u>
FTBC			Interpretate Md. T		Do:	adina		╣
Material:	Natural Fill Ur		Intrument #1: T Intrument #2: T			aoing ading		
Color: Coloration:	MUD GSA UNI MTD VAF		Sorting:	WEL MOD		·		
Texture: G\		ANG SUB RND NA	Plasticity:	NON LOW	MED HO	GH NA		
	ND:%	ANG SUB RND NA	Moisture:	DRY MST				[[
	LT:%		Cementation:			EL NA		
		S SYM:	Strength: Upper Contact:	NOC / COH			_	
Observed:		 DR PRD NA Other:	Opper Comact.	OIN OIND	DII OMIL			
55551153							_	
							_	
FT BC	3S							

E&E Ov	erburden B	orehole Loggin	g Form		<u>Lo</u> catio	<u>n: HFF-I</u>	Field-0	005
Client:	U.S. EPA		-	Date:	4/3/2013		P	age: <u>1 of 1</u>
Project:		ool Football Field	– Drillina C	ompany:		·	<u> </u>	- g <u></u>
Site/Area:	5 Loop Road, Ho			erator(s):				
Project No.	EE-002693-6020				Geoprobe 54	100		
Geologist:	Paul Jones	<u>,</u>	_ Drill Bit - Ty					
Signature:	1 401103				Direct Push			
•	1455	Analusas	_			Intorval	Tuna	
Start Time: 1 Top Depth: 0		Analyses	Recovery (ft)	Sam	ple ID	Interval	Туре	
•			+	-		 	+	
Bottom Depti Finish Time:		-	+	 		 	+	GRAPHIC
កពានា អាវាម:	1020		 			 	+	LOG
			 	 				
			 		<u> </u>	 		
0 FT BG	ลิ		1			1		
Material:	Natural (Fill) Un	certain	Intrument #1: Ty	<u></u> ype:	Re	ading		
Color:	(MUN) GSA: Gray		Intrument #2: Ty			ading		
Coloration:	UNI MTD VAR		Sorting:		D POR N		_	
Texture: GVL		ANG SUB RND NA			N MED H			
SNI		ANG SUB RND NA	Moisture:		D WET SA			
SL ⁻		-			MOD W	EL NA		
CL	'·	S SYM:	Strength:	NOC CO			_	
ORC		1L	Upper Contact:	SHP GR	D DIF SM	E(NA)		
Observed:	STN SHN ODI	R PRD NA Other:	Sandy SILT.				_	
							_	
2.5 FT BG	s				·		<u> </u>	
Material:	Natural Fill Un		Intrument #1: T			eading		
Color:	MUN GSA: Ligh		Intrument #2: Ty			eading		
Coloration:	UNI MTD VAR .: 60 %	STN ANG (SUB) (RND) NA	Sorting: Plasticity:		D (POP) N W MED H			
Texture: GVL SNI		ANG SUB RND NA	Plasticity: Moisture:		WET S			
SL		יייי פטיייייייייייייייייייייייייייייייי			F MOD W			
CL		S SYM.	Strength:	4000 1 co	Н		_	
ORG	3:% <u>G</u>	iM_	Upper Contact:					
Observed:	STN SHN OD	R PRD NA Other:	Clayey, silty SA	ND and GF	AVEL. Botto	om of Boring 3 f	eet.	
							_	
3 FT BG	s						_	
Material:	Natural Fill Un	certain	Intrument #1: T	уре:				
Color:	MUN GSA		Intrument #2: T			ading		
Coloration:	UNI MTD VAF		Sorting:		D POR N			
Texture: GVI		ANG SUB RND NA	Plasticity: Moisture:		W MED H			
SNI		ANG SUB RND NA	Moisture: Cementation:		T WET SA T MOD W			
SL		S SYM:	Strength:	NOC/CO		EE 14/13		
. OR		<u> </u>	Upper Contact:			E NA		
Observed:		R PRD NA Other:						
						<u> </u>	_	
FT BG	s				· ·			
Material:	Natural Fill Un	certain	intrument #1: T					
Color:	MUN GSA		Intrument #2: T			eading		
Coloration:	UNI MTD VAF		Sorting:		D POR N			
Texture: GVI		ANG SUB RND NA	Plasticity:		W MED H			
SNI		ANG SUB RND NA	Moisture:		T WET S			
SL		S SYM;	Cementation:	NOC / CC	T MOD W	CL NA		
CL' ORG	··	3.4.1II.	Strength: Upper Contact:			E NA	_	
Observed:		I R PRD NA Other:	Oppor Comact.	on on	_ 5 614]
							_	
FT.5.			-					
FT BG	ა							J <u></u>

E&E Ov	erburden B	orehole Loggin	g Form		Locatio	n: HFF-F	ield-	006
Client:	U.S. EPA			Date:	4/3/2013		Р	age: 1 of 1
Project:	Hoopa High Sch	ool Football Field	Drilling C	ompany:	E&E			
Site/Area:	5 Loop Road, Ho	opa, CA		erator(s):				
Project No.	EE-002693-6020)			Geoprobe 54			
Geologist:	Paul Jones				Macrocore 4	' X 2.125"		
Signature:		 · -	_ Sample	Method:	Direct Push			
Start Time: (0850	Analyses	Recovery (ft)	San	nple ID	Interval	Туре	
Top Depth: 0								
Bottom Dept	h: 4 Ft.							
Finish Time:	0940		<u></u>					GRAPHIC
								LOG
	-					·		
0 FT BG								<u> </u>
Material:	Natural (Fill) Und		Intrument #1: Ty			ading		
Color:	MUN GSA: Gray		Intrument #2: Ty			ading	_	
Coloration:	UND MTD VAR		-		DD POR(N.			
Texture: GVL SNI		ANG SUB RND NA ANG (SUB)(RND) NA			WET SA			
	л. <u>— 30</u> % Г.: <u>— 70</u> %				T MOD WI			
CL	r: % USCS	SSYM:	Strength:	NOC (CC				
ORG		1L	Upper Contact:			E NA)	_	
Observed:	STN SHN ODE	R PRD NA Other:	Sandy SILT.				_	
							_	
2.5 FT BG	<u></u>	.					_	
Material:	Natural Fill Un	certain	Intrument #1: Ty	voe:	Re	ading		
Color:		dish & Grayish Brown	Intrument #2: Ty			ading		
Coloration:	UNI MTD (VAR	STN	Sorting:	WEL MO	DD (POP) N	A		
Texture: GVL		ANG SUB RND NA	_		W MED H			
SNI		ANG SUB RND NA	Moisture:		WET SA			
SL' CL'		S SYM:		MOD ST	T MOD W	EL IVA		
ORG		M	Upper Contact:			E NA	-	
Observed:		R PRD NA Other:				m of Boring 4 fe	et.	
							_	
4 FT DC	<u></u>	<u> </u>					-	
4 FT BG			Intrument #1: Ty	uno:	De	ading		
Material: Color:	Natural Fill Un	Certain	Intrument #2: Tr			ading	_	1
Coloration:	UNI MTD VAR	R STN	Sorting:	. —	OD POR N	·		
Texture: GVI		ANG SUB RND NA	Plasticity:		W MED H			
SNI		ANG SUB RND NA	Moisture:		ST WET SA			
SL		e craii. I	Cementation:		T MOD W	EL NA		
CL.	··· ··	S SYM;	Strength: Upper Contact:	NOC / CO		F NA	-	
Observed:		 R PRD NA Other:	opper Contact.	orn Gr	יום כי	- 1771		•
2550,704.	5 5 50		·				_	
							_	
FT BG	s			<u>_</u>	<u>.</u>			
Material:	Natural Fill Un	certain	Intrument #1: T			eading		<u> </u>
Color:	MUN GSA		Intrument #2: T			ading	_	<u> </u>
Coloration:	UNI MTD VAR		Sorting:		OD POR N OW MED H			
Texture: GVI SNI		_ANG SUB RND NA ANG SUB RND NA	Plasticity: Moisture:		OW MED H			
SNI		אוו טווא פטט אוא	Cementation:		T MOD W			
CL		S SYM:	Strength:	NOC / CO			_	
OR	G:		Upper Contact:	SHP GF	RD DIF SM	E NA	_	
Observed:	STN SHN OD	R PRD NA Other:			-		_	
							_	
	<u> </u>		<u> </u>	-	 .	-	_][_
FT BG	اد	_ 						

Εč	&E Ove	rburden Be	orehole Logging	g Form		Locatio	n: HFF-F	ield-	007
		U.S. EPA		٠	Date:	4/3/2013		P	age: <u>1 of 1</u>
			ool Football Field	Drilling C	ompany:			<u> </u>	
	e/Area:	5 Loop Road, Ho	opa, CA		erator(s):				
	•	EE-002693-6020				Geoprobe 54			
	-	Paul Jones				Macrocore 4	' X 2,125"		<u> </u>
Sig	ınature:			- Sample	: Method:	Direct Push			
Sta	art Time: 15	530	Analyses	Recovery (ft)	Sar	nple ID	Interval	Туре	
_	p Depth: 0 F								
	ttom Depth:			ļ					00401110
Fin	ish Time: 1	1555		 				 	GRAPHIC LOG
		•		-					
	0 FT BGS	Ì	<u> </u>	<u> </u>		· · · · ·	I		
	terial:	Natural (Fill) Und	nodajn	Intrument #1: Ty	vne:	Re	ading		
Col		(MUN) GSA: Gray		Intrument #2: T			ading		
1		UNI MTD VAR		Sorting:	WEL MO	DD POR N	A)		
Тех	dure: GVL:	%	ANG SUB RND NA	•		W MED H			
	SND:		ANG SUB RND NA	Moisture:		ST) WET SA T MOD W			
	SLT: CLY:		SYM:	Cementation: Strength:	NOC (CO	_	LL MA		
	ORG:		īL	Upper Contact:			E NA)	-	
Obs	served:	~~ L	R PRD NA Other:	Sandy SILT.				_	
1		·						_ _	
	5 FT BGS	<u> </u>							
Ma	terial:	Natural Fill Und		Intrument #1: T			ading		
Col			eddish & Grayish Brown	Intrument #2: T			ading	_	
	loration: xture: GVL:	UNI MTD VAR) stn ang (sub) (rnd) na	Sorting: Plasticity:		OD (POP) N. OW MED H		,	
l lex	xture: GVL: SND:		ANG (SUB) (RND) NA	Moisture:		WET SA			
	SLT:	10 %		Cementation:	(NON) SI	T MOD W		ļ	
	CLY:		SSYM:		(MOO) CC			_	
امد	ORG:		i <mark>M</mark>	Upper Contact: Silty SAND and					
UB	served:	Bottom of Boring		OIII ONITO AIIO	. OI VIVEL	301116 016	·,·	_	
								_	
	2 FT BGS		 				- 45		
,	iterial:	Natural Fill Un	certain	Intrument #1: T Intrument #2: T			eading eading		
	lor: loration:	MUN GSA UNI MTD VAR	STN	Sorting:		DD POR N	· —	_	
	xture: GVL:		ANG SUB RND NA	Plasticity:		W MED H			
	SND:	%	ANG SUB RND NA	Moisture:		ST WET SA			
	SLT:			Cementation:		T MOD W	EL NA		
	CLY: ORG:	·	S SYM:	Strength: Upper Contact:	NOC / CO			_	
Oh	oko: served:		I R PRD NA Other:	opper contact.	J.11 JI	.5 51, 0141	,		
ا ا								_	
	FT 000							_	
ا ا	FT BGS aterial:	Natural Fill Un	redain	Intrument #1· T	voe:	Re	eading		
		MUN GSA		Intrument #2: T			ading		11 1
I .	foration:	UNI MTD VAR	STN	Sorting:	WEL M	OD POR N			
Te	xture: GVL:		ANG SUB RND NA	Plasticity:		OW MED H			.
	SND:		ANG SUB RND NA	Moisture: Cementation:		ST WET SA LT MOD W			
. [SLT: CLY:		S SYM:	Cementation: Strength:	NOC / CO		EL MA		
1	ORG:			Upper Contact:			E NA	_	
Оь	served:		R PRD NA Other:					_	
			· · ·					_	
	ET 5.00	.				· -		_	<u> </u>
	FT BGS	·							

E&E Ove	erburden E	Borehole Logging	g Form	լլ	_ocatio	n: <u>HFF-</u> F	ield-(800
Client:	U.S. EPA		_	Date:	4/3/2013		P	age: <u>1</u>
Project:		hool Football Field		ompany: E				
Site/Area:	5 Loop Road, H			erator(s): <u>P</u>				
Project No.	EE-002693-602	.0		Rig/Type: C			-	
Geologist:	Paul Jones		Drill Bit - Ty			X 2.125"		
Signature:	-		- Sample	Method: I	nrect Push			
Start Time: 1		Analyses	Recovery (ft)	Sam	ole ID	Interval	Туре] .
Top Depth: 0	Ft.							
Bottom Deptl	n: 3 Ft.		ļ				 	
Finish Time:	1455		<u> </u>	<u></u>				GRAF
		-	T					LO
								1
0 FT BG	3							-
Material:	Natural (Fill) U		Intrument #1: Ty			ading		
Color:	(MUN) GSA: Gra		Intrument #2: Ty			ading		l I
Coloration:	UN MTD VA		Sorting:		POR(N			
Texture: GVL		_ang (SUB) (RND) na	•	MOD FOA				
SNE): <u>30</u> %	ANG SUB RND NA	Moisture:		WET SA			
SLT	T: 70 %		Cementation:	NON) SLT		EL NA		
CLY	′: % <u>Us</u> c	CS SYM:	Strength:	NOC (CO)	• · ·		_	
ORC	s: % I	ML	Upper Contact:			NA)		
Observed:		OR PRD NA Other:	Sandy SILT with	h somé grav	el		_	
							_	
2.75 FT BG	<u> </u>						<u> </u>	
Material:	Natural Fill U	ncertain	Intrument #1: T	ype:	Re	ading		
Color:	(MUN GSA: Lt.		Intrument #2: T	уре:	Re	ading		
Coloration:	UNI MTD (VA		Sorting:	WEL MO	D (POP) N			
Texture: GVL		ANG SUB RND NA	Plasticity:	MON FOA				
SNI		ANG SUB RND NA	Moisture:		WET SA			
SL	г: 10 %		Cementation:		MOD W	EL NA		
CL	., 0,0	CS SYM:	Strength:	MOO! COI			_	{
ORG		<u>GM</u>	Upper Contact:					11
Observed:		DR PRD NA Other:	Silty SAND and	GRAVEL W	ith some cla	ау		
	Bottom of Borin	ig 3 feet					_	
3 FT BG	sl]
Material:	Natural Fill U	Incertain	Intrument #1: T	уре:	Re	ading]
Cofor:	(MUN) GSA		Intrument #2: T			ading		
Coloration:	UNI MTD VA	AR STN	Sorting:		D POR N	A		
Texture: GVI		ANG SUB RND NA	~	NON LOV	V MED H	GH NA		
SNI	·	ANG SUB RND NA	Moisture:		r WET SA			
SL		-	Cementation:	NON SLT	MOD W	EL NA		
CL		CS.SYM.	Strength:	NOC / CO			_	
OR			Upper Contact:	SHP GRI	DIF SM	E NA		11
Observed:	STN SHN O	DR PRD NA Other:			_		_	
			·-				_	
FT BG	s			= =====================================				
Material:	Natural Fill U	Jncertain				eading		
Color:	MUN GSA		Intrument #2: T			eading		
Coloration:	UNI MTD VA		Sorting:		D POR N			
Texture: GV		ANG SUB RND NA	Plasticity:		WED H			
SN		ANG SUB RND NA	Moisture:		WET S			
SL			Cementation:			EL NA		
CL		CS SYM:	Strength:	NOC/CO				1
1	G: %	DD NA Other	Upper Contact:	SHP GR	אוט ע אוט ע	IE IVA		
Observed:	SIN SHN O	DR PRD NA Other:			<u> </u>			
1_							_	
FT BG	s							-

E&E Over	burden Bo	rehole Logging	g Form	L	ocatio	า: HFF-F	Field-(009
	J.S. EPA			Date:	4/3/2013	<u> </u>	P	age: <u>1 of 1</u>
	Ioopa High Schoo	l Football Field	- Drilling C	company: E		- 1	- '	
	Loop Road, Hoo			erator(s): P.				
	EE-002693-6020			Rig/Type: Go		00		-
	aul Jones	<u> </u>		ype/Size: M				
Signature:		<u> </u>		Method: Di				
Start Time: 095	<u>.</u> Г	Analyses	Recovery (ft)	Samp		Interval	Туре	
Top Depth: 0 Ft.		Allalyses	Necovery (ii)	Gamp		- III(O) Vai	1.750	
Bottom Depth: 8			· -		- ''			
Finish Time: 10)							GRAPHIC
, whose rinter to	- F						1	LOG
	ļ-							
0 FT BGS				-				
Material: N	latural (Fill) Unce	rtain	Intrument #1: T	уре:		ading	_	1
	MUN GSA: Grayis		Intrument #2; T			iding	_	1
	NI MTD VAR		Sorting:	WEL MOD				
Texture: GVL: _		NG SUB RND NA	•	(NOW) FOM				
SND:		ING SUB RND NA	Moisture: Cementation:	DRY (MST) (NON) SLT				
_	70 % % USCS S	YM:	Strength:	NOC (COP	MOD YYL	11/1		
CLY: ORG:	— _% Mi		Upper Contact:		DIF SME	(NA)	_	
	''	PRD NA Other:	Sandy SILT with			<u> </u>	_	
] _		·					_	
0.05.57.000			· ·				- '	
2.25 FT BGS Material:	Natural Fill Unce		Intrument #1: T	vne.	Rea	ading		
		ddish & Grayish Brown	Intrument #2: T	-		ading	_	
	JNI MTD (VAR)		Sorting:	WEL MOD	POR NA	\		
Texture: GVL: _		ANG (SUB) (RND) NA	Plasticity:	MOD FOM				
SND:_		ANG SUBRND NA	Moisture: Cementation:	DRY (MST)				
SLT:_ CLY:	10 % 5 % USCS S	SYM:	Strength:	WOC) COH		-E , IVA		
ORG:		1	Upper Contact:	SHP GRD	DIF SME		_	
1		PRD NA Other:	Silty SAND and	GRAVEL wit	h some cla	y	_	
<u> </u>	Bottom of Boring 8	feet.						
8 FT BGS							_]]
	Natural Fill Unce	adoin —	Intrument #1: T		Re	ading		11
	MUN GSA		Intrument #2: T	•		ading		
	JNI MTD VAR		Sorting:	WEL MOD				
Texture: GVL:	%/	ANG SUB RND NA	Plasticity:	NON LOW				11 i
SND:		ANG SUB RND NA	Moisture:	DRY MST				
SLT:	% 	- Lave	Cementation: Strength:	NON SLT	-	EL NA		11 1
CLY: ORG:			Upper Contact:			NA	_	
<u> </u>		PRD NA Other:	оррог отпост					
1 -							_	
[FT 800 [[]			 _				_	<u> </u>
FT BGS	Matural CO D		Intrument #1: T	[vne:	Pa	ading		1
	Natural Fill Unc		Intrument #2: 7			ading		
	UNI MTD VAR		Sorting:	WEL MOD		-	_	
Texture: GVL:	%	ANG SUB RND NA	Plasticity:	NON LOW				
SND:		ANG SUB RND NA	Moisture:	DRY MST				
SLT:	% %	E save	Cementation:	NON SLT		EL NA		
CLY:_ ORG:	% <u>uscs:</u>	A111.	Strength: Upper Contact:				_	
		I PRD NA Other:	Oppor Contact.					
							_	
					_			
FT BGS								1'——

	E&E Ove	erburden B	orehole Logging	g Form		Locatio	n: <u>HFF-</u> F	<u> Field-</u> (010
	Client:	U.S. EPA			Dale:	4/3/2013		P	age: <u>1 of 1</u>
	Project:		ool Football Field	Drilling C					
	Site/Area:	5 Loop Road, Ho	opa, CA		erator(s):				
	Project No.	EE-002693-6020				Geoprobe 54			
	Geologist:	Paul Jones				Macrocore 4	' X 2,125"		
	Signature:			- Sample	Method:	Direct Push		<u>-</u>	
	Start Time: 1	600	Analyses	Recovery (ft)	San	nple ID	Interval	Туре	
	Top Depth: 0	Ft.							<u> </u>
	Bottom Depth							1	1
	Finish Time:	1640		ļ. .					GRAPHIC LOG
								+	[00
									1
	0 FT BGS	3							
<u> </u>	Material:	Natural (Fill) Und	cortain	Intrument #1: Ty	we.	Re	ading		
	Color:	(MUN) GSA: Gray		Intrument #2: Ty			ading	_]
	Coloration:	UNI MTD VAR		Sorting:	WEL MO	DD POR N			
	Texture: GVL:		ANG SUB RND NA	•		W MED H			
	SND		ANG SUB RND NA			T MOD WI			
	SL1 CLY	: 70 % : % Uscs	S SYM:	Strength:	NOC (CC		IIA		
	ORG	·	1L	Upper Contact:			(NA)	_	}
	Observed:	·	R PRD NA Other:	Sandy SILT.				_	
								_	
$\overline{}$	0.5 FT BGS	<u> </u>							
L	Material:	Natura) Fill Un	certain	Intrument #1: Ty	/pe:		ading		
	Color:	MUN GSA: Redo	dish & Grayish Brown	Intrument #2: Ty			ading	_	
	Coloration:	UNI MTD VAR		Sorting:		DD (POP) N. W MED H			
	Texture: GVL:		ANG SUB RND NA ANG SUB RND NA	Plasticity: Moisture:		WET SA			
	SLT		THIS GOD WIND WA			T MOD W			
	CLY	: 5 % USCS	S SYM:		₩ <u>o</u> ol co				
	ORG		<u>M</u>	Upper Contact:					
	Observed:	Bottom of Boring	R PRD NA Other:	Silty SAND and	GRAVEL	With some cia	iy		
	1	Dottom or Domig						_	
	2 FT BGS	3							
	Material:	Natural Fill Un	certain	Intrument #1: Ty					
	Color:	MUD GSA	O CTN	Intrument #2: Ty	· —	Re DD POR N	ading A	_	
	Coloration: Texture: GVL	UNI MTD VAR	R STN ANG SUB RND NA	Sorting: Plasticity:		DU POR N			
	SNE		ANG SUB RND NA	Moisture:		ST WET SA			
	SLT	:%	<u> </u>	Cementation:		T MOD W	EL NA		
	CLY	·	S SYM:	Strength: Upper Contact:	NOC / CO		E NA	_	
	ORG Observed:		 R PRD NA Other:	Opper Contact:	OHP Gr	אט אור אוי	F 144/		
	Observed.	SIN SIN OD							
	<u> </u>							_	
	FT BGS			Interrese Hd. T.		n.	ading		
	Material: Color:	Natural Fill Un		Intrument #1: T Intrument #2: T			ading		
	Coloration:	UNI MTD VAF		Sorting:		OD POR N			
	Texture: GVL		ANG SUB RND NA	Plasticity:		W MED H			
	SNE):%	ANG SUB RND NA	Moisture:		ST WET SA			
	SLT		e eva. 1	Cementation:		T MOD W	EL NA		<u> </u>
	ORG		S SYM;	Strength: Upper Contact:	NOC / CO	and the second s	E NA	_	11
	Observed:		 R PRD NA Other:	Oppor Comact.	J.,, JI]
								_]
 	<u></u>	- 1						_	
	FT BG	S							

	E&E Ove	rburden B	orehole Logging	g Form		Locatio	n: HFF <u>-</u> F	Field-	211
	Client: Project: Site/Area:	U.S. EPA	ool Football Field	Drilling C	Date: ompany: erator(s):			_ P	age: 1 of 1
	Project No.	EE-002693-6020		F	Rig/Type:	Geoprobe 54			
	Geologist:	Paul Jones		Drill Bit - Ty	/pe/Size:	Macrocore 4	' X 2.125"		
	Signature:			- Sample	Method:	Direct Push			
	Start Time: 13 Top Depth: 0 Bottom Depth	Ft. : 3 Ft.	Analyses	Recovery (ft)	San	nple ID	Interval	Туре	
, -	Finish Time:	•							GRAPHIC LOG
Ц_	0 FT BGS	· · · · · · · · · · · · · · · · · · ·		1-1			odina		
	Material: Color: Coloration: Texture: GVL: SND: SLT: CLY: ORG: Observed:	30 % 70 % % USCS	rish Brown	Plasticity: Moisture:	VPE: WEL MO NOW LO DRY (MS NOW SL NOC (CO	ReDD POR NOW MED HOD WET SATINGTON WET SATINGTON WITH MOD	GH NA NT NA EL NA	- -	
	2.25 FT BGS	:[<u> </u>	
	Material: Color: Coloration: Texture: GVL: SND SLT CLY ORG Observed:	Natural Fill Un MUD GSA: Red UNI MTD VAR 50 % 25 % 15 % 10 % USC C	dish & Grayish Brown STN ANG SUB RND NA	Moisture:	WEL MON LODRY (MS) NOC (COSHP) GF	Red DD POP N. DW MED H. SA.T MOD WITH SM.T SM.T SM.T MOD WITH SM.T SM.T SM.T SM.T SM.T SM.T SM.T SM.T	GH NA AT NA EL NA		
	3 FT BGS	3				-			
	Material: Color: Coloration: Texture: GVL: SND SLT CLY ORG	% USC		Intrument #1: T Intrument #2: T Sorting: Plasticity: Moisture: Cementation: Strength: Upper Contact:	ype: WEL MON LO NON LO DRY MS NON SL NOC/CO	POD POR NOW MED HOST WET SA	GH NA AT NA EL NA		
	<u> </u>								<u> </u>
	FT BGS								
	Material: Color: Coloration: Texture: GVL: SND SLT CLY ORG	:% :% :% <u>USC</u>		Intrument #1: T Intrument #2: T Sorting: Plasticity: Moisture: Cementation: Strength: Upper Contact:	WEL MON LOUDRY MS NON SINOC/CO	DD POR NOW MED H ST WET SA T MOD W	GH NA AT NA EL NA		
_	Observed:		TO IN ONICH.					- 	
- 1	FT BGS	·							

Project: Hoopa High School Football Field Site/Area: S Loop Road, Hoopa, CA Cheer Fig.	RAPHIC LOG
Project No. Geologist: Paul Jones Drill Bit - Type/Size: Macrocore 4/ X 2, 125"	
Drill Bit - Type/Size: Macrocore 4' X 2.125"	
Start Time: 1100	
Top Depth: 0 Ft. Bottom Depth: 4 Ft. Finish Time: 1155	
Material: Natural Fill Uncertain Intrument #1: Type: Reading Color: MUD GSA: Grayish Brown Intrument #2: Type: Reading Coloration: UNI) MTD VAR STN Sorting: WEL MOD POR NA Fasticity: NOD LOW MED HGH NA Moisture: DRY (MSD) WET SAT NA Cementation: NOD SLT MOD WEL NA SLT: 70 % CLY: % ML Upper Contact: SHP GRD DIF SME NA Other: Sandy SILT. Sandy SILT. Reading Color: Natural Fill Uncertain Intrument #1: Type: Reading Reading Color: Natural Fill Uncertain Intrument #1: Type: Reading Color: Natural Fill Uncertain Intrument #2: Type: Reading Color: Natural Fill Uncertain Intrument #2: Type: Reading Color: Natural Fill Uncertain Intrument #2: Type: Reading Coloration: UNI MTD (AR) STN Sorting: WEL MOD (POP) NA Texture: GVL: 55 % ANG (SUB (RND) NA Plasticity: NOD LOW MED HGH NA SND: 30 % ANG (SUB (RND) NA Andisture: DRY (MSD) WET SAT NA Cementation: (NOD) LOW MED HGH NA SLT: 10 % Cementation: (NOD) LOW MED HGH NA	
Material: Natural (Fill) Uncertain Intrument #1: Type: Reading Rea	
Material: Natural Fill Uncertain Intrument #1: Type: Reading Color: MUD GSA: Grayish Brown Intrument #2: Type: Reading Coloration: UNI MTD VAR STN Sorting: WEL MOD POR NA Texture: GVL: % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: 30 % ANG SUB RND NA Moisture: DRY MSD WET SAT NA SLT: 70 % Cementation: NON SLT MOD WEL NA CLY: % ML Upper Contact: SHP GRD DIF SME NA Observed: STN SHN ODR PRD NA Other: Sandy SILT. 2 FT BGS Material: Natural Fill Uncertain Intrument #1: Type: Reading Reading Intrument #2: Type: Reading Reading Intrument #2: Type: Reading Sorting: WEL MOD POP NA Texture: GVL: 55 % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: 30 % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: 30 % ANG SUB RND NA Moisture: DRY MSD WET SAT NA Cementation: NON SLT MOD WEL NA SLT: 10 % Cementation: NON SLT MOD WEL NA CLY: 5 % USCS SYM: Strength: NOO/COH ORG: % GM Upper Contact: SHP GRD DIF SME NA	
Material: Natural Fill Uncertain Intrument #1: Type: Reading Color: MUD GSA: Grayish Brown Intrument #2: Type: Reading Coloration: UNI MTD VAR STN Sorting: WEL MOD POR NA SND: 30 % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: 70 % Cementation: NON SLT MOD WEL NA SLT: 70 % Cementation: NON SLT MOD WEL NA SLT: 70 % Strength: NOC COD Upper Contact: SHP GRD DIF SME NA Other: Sandy SILT. 2 FT BGS Material: Natural Fill Uncertain Intrument #1: Type: Reading Reading Intrument #2: Type: Reading Reading NATURE READING NA Plasticity: NON DOR PRD NA Plasticity: NON DOR PRD NA Other: Reading NATURE READING NA Plasticity: NON DOR PRD NA Plasticity: NON DOR PRD NA Moisture: DRY MSD WET SAT NA CEMENTAL READING NA Moisture: DRY MSD WET SAT NA CEMENTAL READING NA Moisture: DRY MSD WET SAT NA CEMENTAL READING NA Moisture: DRY MSD WET SAT NA CEMENTAL READING NA Moisture: DRY MSD WET SAT NA CEMENTAL READING NA Moisture: DRY MSD WET SAT NA CEMENTAL READING NA Moisture: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE: DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE DRY MSD WET SAT NA CEMENTAL READING NA MOISTURE READING NA MO	
Material: Natural Fill Uncertain Intrument #1: Type: Reading Color: MUD GSA: Grayish Brown Intrument #2: Type: Reading Coloration: UNI MTD VAR STN Sorting: WEL MOD POR NA SND: 30 % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SLT: 70 % Cementation: NON SLT MOD WEL NA CLY: % ML War SYME STN SIrength: NOC COD Upper Contact: SHP GRD DIF SME NA Other: Sandy SILT. 2 FT BGS Material: Natural Fill Uncertain Intrument #1: Type: Reading Reading Intrument #2: Type: Reading Sorting: WEL MOD POP NA Plasticity: NO LOW MED HGH NA Moisture: DRY MSD WET SAT NA CEMENTAL STREAM OF STREA	
Coloration: UNI MTD VAR STN Sorting: WEL MOD POR NA Texture: GVL: % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: 30 % ANG SUB RND NA Moisture: DRY MSD WET SAT NA CLY: % ML USCS SYM Upper Contact: SHP GRD DIF SME NA Observed: STN SHN ODR PRD NA Other: Sandy SILT. 2 FT BGS Material: Natural Fill Uncertain Intrument #1: Type: Reading Intrument #2: Type: Reading Intrument #2: Type: Reading Reading Intrument #2: Type: Reading Intrument #2:	
Texture: GVL: % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: 30 % ANG SUB RND NA Moisture: DRY MST) WET SAT NA Cementation: NON SLT MOD WEL NA Strength: NOC COP Upper Contact: SHP GRD DIF SME NA Other: Sandy SILT. 2 FT BGS Intrument #1: Type: Reading Reading Intrument #2: Type: Reading Reading Intrument #2: Type: Reading Reading Sorting: WEL MOD POP NA STN Sorting: WEL MOD POP NA Texture: GVL: 55 % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: 30 % ANG SUB RND NA Moisture: DRY MST) WET SAT NA Cementation: NON SLT MOD WEL NA Strength: NOO / COH Upper Contact: SHP GRD DIF SME NA	
SND: 30 % ANG SUB RND NA Moisture: DRY MST WET SAT NA Cementation: NON SLT MOD WEL NA CLY:	
SLT: 70 %	
CLY:	
ORG:	
Observed: STN SHN ODR PRD NA Other: Sandy SILT. 2 FT BGS Material: Natural Fill Uncertain Intrument #1: Type: Reading Intrument #2: Type: Reading Sorting: WEL MOD POR NA Coloration: UNI MTD VAR STN Sorting: WEL MOD POR NA Texture: GVL: 55 % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: 30 % ANG SUB RND NA Moisture: DRY MSD WET SAT NA SLT: 10 % Cementation: NON SLT MOD WEL NA SLT: 10 % Cementation: NON SLT MOD WEL NA Strength: NOC/COH ORG: % GM Upper Contact: SHP GRD DIF SME NA	
Material: Natural Fill Uncertain Intrument #1: Type: Reading Intrument #2: Type: Reading Intrument #2: Type: Reading Intrument #2: Type: Reading Intrument #2: Type: Reading Reading Intrument #2: Type: Reading Intrument #2: Type: Reading Reading Reading Reading Intrument #2: Type: Reading Readi	
Material: Natural Fill Uncertain Intrument #1: Type: Reading Intrument #2: Type: Reading Nature: GVL: 55 % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: 30 % ANG SUB RND NA Moisture: DRY MSD WET SAT NA SLT: 10 % Cementation: NON SLT MOD WEL NA Strength: NOO! COH Upper Contact: SHP GRD DIF SME NA	
Material: Natural Fill Uncertain Intrument #1: Type: Reading Intrument #2: Type: Reading Nature: GVL: 55 % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: 30 % ANG SUB RND NA Moisture: DRY MSD WET SAT NA SLT: 10 % Cementation: NON SLT MOD WEL NA Strength: NOO! COH Upper Contact: SHP GRD DIF SME NA	1
Coloration: UNI MTD VAR STN Sorting: WEL MOD POR NA Texture: GVL: 55 % ANG SUB RND NA Plasticity: (NON LOW MED HGH NA SND: 30 % ANG SUB RND NA Moisture: DRY MSD WET SAT NA SLT: 10 % Cementation: (NON SLT MOD WEL NA CLY: 5 % USCS SYM: Strength: (NOC) COH ORG: % GM Upper Contact: SHP GRD DIF SME NA	1
Texture: GVL: 55 % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: 30 % ANG SUB RND NA Moisture: DRY MSD WET SAT NA SLT: 10 % Cementation: NON SLT MOD WEL NA CLY: 5 % USCS SYM: Strength: NOC/COH ORG: % GM Upper Contact: SHP GRD DIF SME NA	
SND: 30 % ANG GUB (RND) NA Moisture: DRY (MST) WET SAT NA SLT: 10 % Cementation: (NON) SLT MOD WEL NA CLY: 5 % USCS SYM: Strength: (NOC)/ COH ORG: % GM Upper Contact: (SHP) GRD DIF SME NA	
SLT: 10 % Cementation: NON SLT MOD WEL NA CLY: 5 % USCS SYM: Strength: NOC / COH ORG: % GM Upper Contact: SHP GRD DIF SME NA	
CLY: 5 % USCS SYM: Strength: NOC/ COH ORG: % GM Upper Contact: SHP GRD DIF SME NA	
OTAL CUIN ODD DDD NA Other CAND and CDAVEL with some clay	
Observed: STN SHN ODR PRD NA Other: Silty SAND and GRAVEL with some clay. Bottom of Boring 4 feet.	
4 FT BGS	
Color: MUD GSA Intrument #2: Type: Reading	
Coloration: UNI MTD VAR STN Sorting: WEL MOD POR NA	
Texture: GVI: % ANG SUB RND NA Plasticity: NON LOW MED HGH NA	
SND: % ANG SUB RND NA Moisture: DRY MST WET SAT NA	
SLT:% Cementation: NON SLT MOD WEL NA CLY:% USCS SYM Strength: NOC / COH	ļ
CLY:% USCS SYM: Strength: NOC / COH ORG: % Upper Contact: SHP GRD DIF SME NA	
Observed: STN SHN ODR PRD NA Other:	
FT BGS	
Material: Natural Fill Uncertain Intrument #1: Type: Reading	
Color: MUD GSA Intrument #2: Type: Reading	
Coloration: UN MTD VAR STN Sorting: WEL MOD POR NA Texture: GVI: % ANG SUB RND NA Plasticity: NON LOW MED HGH NA	
Texture: GVL: % ANG SUB RND NA Plasticity: NON LOW MED HGH NA SND: ANG SUB RND NA Moisture: DRY MST WET SAT NA	1
SIT: % — ANG SOB KND NA WOISIUM. DRY WET GAT NA Cementation: NON SLT MOD WEL NA	
CLY: % USCS SYM: Strength: NOC / COH	
ORG: % Upper Contact: SHP GRD DIF SME NA	
Observed: STN SHN ODR PRD NA Other:	
, · · · · · · · · · · · · · · · · · · ·	

E&E Ove	erburden B	orehole Logging	g Form		Locatio	n: HFF-F	Field-(0 <u>13</u>
Client:	U.S. EPA		-	Date:	4/3/2013		P	age: <u>1 of 1</u>
Project:		ool Football Field	- Drilling C				- `	-g-: <u></u>
Site/Area:	5 Loop Road, Ho			erator(s):				
Project No.	EE-002693-6020				Geoprobe 54	00		
Geologist:	Paul Jones	<u> </u>			Macrocore 4			-
Signature:					Direct Push			
Start Times 4	200	Analyses	Recovery (ft)	Son	nple ID	Interval	Туре	
Start Time: 1: Top Depth: 0		Analyses	ixecovery (ii)	Jai	tible in	HICIVEI	1,700	
Bottom Depth			 				1	
Finish Time:			 					GRAPHIC
i illigit tillic.	1200		 				+	LOG
		, , , , , , , , , , , , , , , , , , , ,	 -		·· ·		1	
							1	ļ
0 FT BGS	3							
Material:	Natural (Fill) Un	certain	Intrument #1: Ty	/pe:	Re	ading		
Color:	(MUN GSA: Gray	rish Brown	Intrument #2: Ty			ading	_ i	
Coloration:	UNI MTD VAR				DD POR N		,	
Texture: GVL:		ANG SUB RND NA			W MED H			
SND		ANG SUB RND NA			WET SA			,
SLT		S SYM:			T MOD WI	L NA		
CLY	· /º	1L		NOC /CC			_	1 1
ORG	'		Upper Contact:	SHP GR	O DIF SMI	E NA)		
Observed:	SIN SHN ODI	R PRD NA Other:	Sandy SILT.				-	
							_	
2 FT BGS	<u> </u>							
Material:	Natural Fill Un		Intrument #1: Ty			ading	<u></u> - i	
Color:		dish & Grayish Brown	Intrument #2: Ty			ading	_	<u> </u>
Coloration: Texture: GVL:	UNI MTD (VAR 60 %	ANG (SUB) (RND) NA	Sorting: Plasticity:		DD (POP) N. DW MED H			
SND		ANG (SUB) (RND) NA	Moisture:		WET SA			
SLT					T MOD W			
CLY	. 0,0	SSYM:		₩ <u>o</u> o\cc			_]
ORG		<u>M</u>	Upper Contact:					
Observed:	STN SHN ODS Bottom of Boring	R PRD NA Other:	Silty SAND and	GRAVEL	with some cia	<u> </u>	–	
	Bottom of Boning	<u> </u>					_	
3 FT BGS	sl							
Material:	Natural Fill Un	certain	Intrument #1: Ty	/pe:	Re	ading	<u> </u>	
Color:	MUN GSA		Intrument #2: Ty			ading	_	
Coloration:	UNI MTD VAR		Sorting:		OD POR N			
Texture: GVL:		ANG SUB RND NA	Plasticity:		W MED H			
SND		ANG SUB RND NA	Moisture: Cementation:		ST WET SA T MOD W			!
SLT CLY		S SYM:	Strength:	NOC / CO				11
ORG	·		Upper Contact:			E NA	_	
Observed:		R PRD NA Other:					_	
							_	
FT BGS	<u></u>					<u>.</u>	_	
Material:	Natural Fill Un	cedain	Intrument #1: Ty	 vpe:	Re	ading]
Color:	MUN GSA		Intrument #2: T	-		ading		
Coloration:	UNI MTD VAF		Sorling:	WEL M	OD POR N	A		
Texture: GVL:		ANG SUB RND NA	Plasticity:		W MED H			
SND		ANG SUB RND NA	Moisture:		ST WET SA			
SLT		- MAYS S		NON SI	.T MOD W HC	EL NA.		
CLY ORG	·^~	 	Strength: Upper Contact:			E NA	_	1
Observed:		R PRD NA Other:	-FF2: 2211440ft				_	
							_	{
							_	
FT BGS	ŏ ├──							1'

E&	E Ove	rburden B	orehole Logging	g Form		Locatio	<u>n: HFF-F</u>	ield-(014
Clier Proje	nt:	U.S. EPA	ool Football Field	Drilling C	Date:	4/3/2013		-	age: <u>1 of 1</u>
•	Area:	5 Loop Road, Ho		_ Op:	erator(s):	P. Jones			
	ect No.	EE-002693-6020)			Geoprobe 54			
	logist:	Paul Jones				Macrocore 4	' X 2.125"		
Sign	ature:		· · · · · · · · · · · · · · · · · · ·	_ Sample	Method:	Direct Push			
	t Time: 12 Depth: 0 I		Analyses	Recovery (ft)	San	nple ID	Interval	Туре	
-	om Depth:								
Finis	sh Time: 1	1325							GRAPHIC
					_				LOG
0	FT BGS								
Mate	rial:	Natural Fill Qn	certain	Intrument #1: Ty	ype:	Re	ading	_	1
Colo		MUN GSA: Gray		Intrument #2: Ty		Re	ading	_	
		UNI MTD VAR				DD (POB) N			
Texte	ure: GVL:		ANG SUB RND NA	•		W MED H			
	SND:		ANG SUB RND NA	Moisture:		WET SA			<u> </u>
İ	SLT:		S SYM:		(NOC) CC		-r IV		
1	CLY: ORG:	''^" <u>_</u>	6M	Strength: Upper Contact:			-(NA)	-	
Ohee	erved:	, ,,	R PRD NA Other:	Silty SAND and	GRAVEL	with some cla	v (possible fill).		
10030	Jivou.	OTH CHIL OD	1 110 111 011011	<u> </u>			, i	_	
								_ '	
2.75	FT BGS	i	· ·			- <u></u>			
Mate	rial:	Natura) Fill Un	certain	Intrument #1: Ty	ype:	Re	ading		
Coto	r:	MUN GSA: Light	t Reddish Brown	Intrument #2: Tr			ading	_	-
		UNI MTD VAR		Sorting:		DD POR(N			
Text	ure: GVL:		ANG SUB RND NA	Plasticity:		MED H			
	SND		ANG SUB RND NA	Moisture: Cementation:		T MOD W			
	SLT: CLY:		S SYM:	Strength:	NOC CC		LL IV		
İ	ORG		AL.	Upper Contact:	(SHP) GF	D DIF SM	E NA		
Obse	erved:		R PRD NA Other:	Gravelly, sandy				_	
								_	
		<u> </u>			_			_	
5	FT BGS	S	 						!
Mate	erial:	Natural Fill Un	certain	Intrument #1: T			ading		
Colo		MUN GSA		Intrument #2: T			ading	_	
	ration:	UNI MTD VAF		Sorting:		DD POR N			
Text	ure: GVL:		_ANG SUB RND NA _ANG SUB RND NA	Plasticity: Moisture:		OW MED H ST WET SA			
	SND SLT		- און טען פטט טאוא	Cementation:		T MOD W			
	CLY		S SYM:	Strength:	NOC / CO)H			
	ORG			Upper Contact:	SHP GF	RD DIF SM	E NA	_] }
Obs	erved:	STN SHN OD	R PRD NA Other:				<u> </u>	_	
			<u> </u>					_	<u> </u>
		 -						_	
L	FT BGS								
Mate		Natural Fill Un	certain	Intrument #1: T			ading		
Colo		MUD GSA		Intrument #2: T			ading	_	
1	ration:	UNI MTD VAF		Sorting: Plasticity:		OD POR N OW MED H			
l ext	ure: GVL: SND		_ANG SUB RND NA ANG SUB RND NA	Moisture:		ST WET S			11
	SIT		- NIG GOD KND NA	Cementation:		T MOD W			
	CLY		S SYM:	Strength:	NOC / CO				
	ORG			Upper Contact:	-		E NA	-	
Obs	erved:		R PRD NA Other:					_ ·	
								_	
								_	
- [FT BGS	3							ــــــــــــــــــــــــــــــــــــــ

E&E Overburder	n Borehole Loggin	g Form	<u>[L</u>	ocatio	n: HFF-F	reld-(U15
Client: U.S. EPA			Date:	4/2/2013		_ P	age: <u>1 c</u>
	School Football Field	_	ompany: E				
	d, Hoopa, CA		erator(s): <u>P.</u>		-		
Project No. <u>EE-002693-</u>	6020		Rig/Type: Go				
Geologist: Paul Jones	<u>.</u>	Drill Bit - Ty			X 2.125"		
Signature:		_ Sample	Method: Di	rect Push	<u> </u>		
Start Time: 1310	Analyses	Recovery (ft)	Samp	e ID	Interval	Туре	
Top Depth: 0 Ft.						1	l
Bottom Depth: 4 Ft.							
Finish Time: 1415							GRAP
							LOC
0 FT BGS						`	<u> </u>
Material: Natural (Fill		Intrument #1: Ty			ading	_	
Color: MUN GSA:		intrument #2: Ty			ıding	_	
Coforation: UNI MTD		•	WEL MOD				
Texture: GVL:50 % _	ANG (SUB) (RND) NA		(NOV) FOM				
SND: 40 %	ANG SUB RND NA		DRY (MST)				
SLT: 8 %	-		(NON) SLT	MOD WE	L NA		
CLY: 2 %	USCS SYM:		(100) СОН	-		_	
ORG:%	GM	Upper Contact:					
Observed: STN SHN	ODR PRD NA Other:	SAND and GRA	VEL with sor	ne silt and o	clay.	_ i	
						-	
2.75 FT BGS							
Material: (Natural) Fill	Uncertain	Intrument #1: Ty	/pe:	Rea	ading	_	
	Reddish & Grayish Brown	Intrument #2: Ty			ading	_	
Coloration: UNI MTD		Sorting:	WEL MOD				
Texture: GVL: 60 %	ANG (SUB) (RND) NA	Plasticity:	NON (OW)				11 1
SND: 25 %	ANG (SUB) (RND) NA	Moisture:	DRY (MST)				ll I
SLT: 10 %		Cementation:	NON) SLT	MOD WE	L NA		
CLY: 15 %	USCS SYM:	Strength:	NOC COD			-	
ORG: %	GC	Upper Contact:					!
Observed: STN SHN	ODR PRD NA Other:	Clayey, silty SA	ND and GRA	VEL. Botto	m of boring 4 fe	<u>et</u> .	
						-	
5 FT BGS		11 111 =					
Material: Natural Fill		Intrument #1: Ty			ading		
Color: MUN GSA_		Intrument #2: Ty			ading	_	
Coloration: UNI MTD		Sorting:	WEL MOD				
Texture: GVL:%	ANG SUB RND NA	Plasticity:	NON LOW				
SND:%	ANG SUB RND NA	Moisture:	DRY MST NON SLT				
SLT:%	Hece evil	Cementation:			L IVA		
CLY:%	USCS SYM:	Strength:	NOC / COH		NA NA	-]]
ORG: % [ODB DBD NA Othor:	Upper Contact:	OHP GKD	חור און	- 14W		
Observed: STN SHN	ODR PRD NA Other:					_	
FT 5001						-	
FT BGS	Unantain	Intrument #1: Ty	noe.	Re	ading	<u> </u>	1
Material: Natural Fill Color: MUD GSA		Intrument #1: Ty	- —		ading		
Coloration: UNI MTD		Sorting:	WEL MOD			_	
Texture: GVL: %	ANG SUB RND NA	Plasticity:	NON LOW				
· — ·	ANG SUB RND NA	Moisture:	DRY MST				
SND: % SLT: %	אוו טווא מטס אווא אא		NON SLT				
SLT:% CLY:% [USCS SYM:	Strength:	NOC / COH		-E 17/1		
ORG: %	223001111	Upper Contact:				-	
· '	ODR PRD NA Other:	Opper Contact.	JIII JIND	D., OHIL			
					_	_	
1						_	

E&E Overburden Borehole L	ogging Form	Locatio	<u>n: HFF-Field-</u>	·016	
Client: U.S. EPA		Date: <u>4/2/2013</u>	F	Page: <u>1 of 1</u>	
Project: Hoopa High School Football Fie	eld Drilling C	Drilling Company: E & E			
Site/Area: 5 Loop Road, Hoopa, CA	Ope	erator(s): P. Jones	· .		
Project No. EE-002693-6020	F	Rig/Type: Geoprobe 54	00		
Geologist: Paul Jones	Drill Bit - Ty	pe/Size: Macrocore 4	' X 2.125"		
Signature:	Sample	Method: Direct Push			
Start Time: 1420 Analys	ses Recovery (ft)	Sample ID	Interval Type	1	
Top Depth: 0 Ft.	1.000.0.7 (,			1!	
Bottom Depth: 8 Ft.				7)	
Finish Time: 1520				GRAPHIC	
1 mist time. 1320				T LOG	
·			-		
	<u> </u>	• • •	· · · ·	-{	
				-{	
0 FT BGS			- P	╬┰╌═	
Material: Natural (Fill) Uncertain			ading		
Color: MUN GSA: Grayish Brown	Intrument #2: Ty		ading		
Coloration: UNI MTD VAR STN	Sorting:	WEL MOD (POR) NA		II 1	
Texture: GVL: 50 %ANG SUB (NON LOW MED HODRY (MST) WET SA			
SND: 40 % ANG SUB (F		NON SLT MOD WE			
SLT: 8 %		=	-F 14V		
OL1. 2 70		(NOC)/COH SHP GRD DIF SMI	-CNA	i	
)		VEL with some silt and			
Observed: STN SHN ODR PRD NA C	Other: SAND and GRA	VEL With some siit and	ciay.		
·	·				
5 FT BGS	<u> </u>				
Material: (Natura) Fill Uncertain	Intrument #1: To	/pe:Re	ading	₹	
Color: MUN GSA: Light Reddish Brown			ading		
Coloration: (UNI) MTD VAR STN	Sorting:	WEL MOD POR N		11	
Texture: GVL: 50 % ANG SUB		NON (LOW) MED H		11 1	
SND: 25 % ANG SUB		DRY (MST) WET SA		1	
SLT: 15 %		(NON) SLT MOD WI		li l	
CLY: 10 % USCS SYM:	Strength:	NOC (COD			
ORG: % GM	Upper Contact:	SHP GRD DIF SMI	E NA	II I	
Observed: STN SHN ODR PRD NA	Other: Clayey, silty SA	ND and GRAVEL. Botto	m of boring 8 feet.		
0.FT.DCC		<u> </u>			
8 FT BGS	Introment #1: T	/pe:Re	ading	╣	
Material: Natural Fill Uncertain			ading		
Color: MUD GSA Coloration: UNI MTD VAR STN	Sorting:	ype:Re WEL MOD POR N	· · · · · · · · · · · · · · · · · · ·	$\parallel \parallel$	
Texture: GVL: % ANG SUB F	•	NON LOW MED H			
SND: % ANG SUB F	•	DRY MST WET SA			
SIT: % — ANG 308 F	Cementation:	NON SLT MOD WI			
CLY: % USCS SYM:	Strength:	NOC / COH			
ORG: %		SHP GRD DIF SMI	E NA		
Observed: STN SHN ODR PRD NA				$\parallel \parallel$	
				11	
FT BGS		 		#	
Material: Natural Fill Uncertain		^ 	eading		
Color: MUN GSA			ading		
Coloration: UNI MTD VAR STN	Sorting:	WEL MOD POR N			
Texture: GVL: % ANG SUB F	•	NON LOW MED H			
SND: %ANG SUB F		DRY MST WET SA			
SLT: % CI Y: % USCS SYM:	Cementation:	NOC/COH	EL IVA		
<u> </u>	Strength:	SHP GRD DIF SM	 F ΝΔ		
ORG: % Observed: STN SHN ODR PRD NA		OUT OUT ON OW	F 1364		
ODSERVEG. STIN STIN OUR PRO IVA		· · · · · · · · · · · · · · · · · · ·			
FT BGS					

E&E Ov	erburden B	orehole Loggin	g Form		<u>Locati</u> o	n: HFF-F	ield-(017
Client:	U.S. EPA	- +		Date:	4/2/2013		Р	age: <u>1 of 1</u>
Project:	Hoopa High Sch	ool Football Field	Drilling C	ompany:				
Site/Area:	5 Loop Road, Ho			erator(s):				
Project No.	EE-002693-6020) <u> </u>	Rig/Type: Geoprobe 5400 Drill Bit - Type/Size: Macrocore 4' X 2.125"					_
Geologist:	Paul Jones				Macrocore 4 Direct Push	' X 2.125"		
Signature:			- Sample	welliou.	Dileçi Fusii			
Start Time: 1		Analyses	Recovery (ft)	Sam	ple ID	Interval	Туре	
Top Depth: 0			<u> </u>					1
Bottom Depti			-			· · · · · · · · · · · · · · · · · · ·	+	OD A DUUG
Finish Time:	1630		 		.	. :	+	GRAPHIC LOG
			 				+	
							1	
0 FT BGS	ล		•	<u> </u>				
Material:	Natural (Fill) Und	redain	Intrument #1: Ty	/ne:	Re	ading		
Color:	(MUN) GSA: Gray		Intrument #2: Ty			ading		
Coloration:	UNI) MTD VAR	STN _	•		D (POP) N	A	_	
Texture: GVL		ANG SUB RND NA	_		N MED H			
SNE SLT		ANG SUB RND NA	Moisture: Cementation:		D WET SA			
CLY		SYM:		(NOC) CO		L IV		
ORG	'' <u></u> " ^	M	Upper Contact:			(NA)	-	
Observed:		R PRD NA Other:	Silty SAND and				_	
							_	
A ET DO	<u> </u>	 -					→	
4 FT BGS			Intrument #1: Ty	(DO:	Po	ading		
Material: Color:	(Natural) Fill Un (MUN) GSA: Brow		Intrument #2: Ty	-		ading ading	_	1
Coloration:	UNI MTD VAR		Sorting:		D (POP) N		_	
Texture: GVL		ANG SUB RND NA			N MED H			
SNE		ANG SUB RND NA			D WET SA			
SLT CLY		SYM:	Cementation: Strength:	NOC (CO		EL IVA		
ORG		М	Upper Contact:			NA NA	-	
Observed:	STN SHN ODE	R PRD NA Other:	Clayey, silty SA	ND and GF	AVEL. Botto	m of boring 6 fee	<u>ə</u> t.	
						•	-	1
6 FT DO	<u></u>	_					-	
6 FT BG	Natural Fill Un		Intrument #1: Ty		Po	ading	==	
Material: Color:	MUN GSA	Certain	Intrument #2: Ty			ading		
Coloration:	UNI MTD VAR	STN			D POR N	· —	- ,	
Texture: GVL		ANG SUB RND NA			W MED H			
SNE		ANG SUB RND NA			T WET SA T MOD WI			
SLI		S SYM:	Strength:	NOC / CO		EL INA		
ORG	`` <u> </u>		Upper Contact:			= NA	- ,	
Observed:	STN SHN OD	R PRD NA Other:		<u></u> .			_ 1	
						 	_	
FTDO	<u></u>						-	
FT BG	•		Interment #1: To	(DO:	Pa	ading		
Material: Color:	Natural Fill Un		intrument #1: 15			ading ading		
Coloration:	UNI MTD VAR				D POR N		_	
Texture: GVL	.:%	ANG SUB RND NA	Plasticity:	NON LO	W MED H	GH NA		
SNI		ANG SUB RND NA			T WET SA			
SL ¹		S SYM:		NON SLI	ΓMODW1	EL NA		
CLY ORG	·· ··	- × 1111.	Strength: Upper Contact:			 = NA	- .	
Observed:		R PRD NA Other:					_	
	· · · · · · · · · · · · · · · · · · ·					•	_	
	_						_	
FT BG	S		 _					