City of Hayward and its consultants have prepared documents providing a general description of the Site. These documents consist of surveys made available for review and reference. The surveys include the following:

- Rockridge Geotechnical's Final Geotechnical Investigation dated 7/14/17
- ERAS's Revised Soil Sampling Investigation dated 6/26/18
- Soil Sampling Investigation (for PFAS) dated 12/3/18
- EBA's Pre-construction Hazardous Materials Assessment date 5/31/19
- EBA's Project Health and Safety Plan dated 8/20/19

Rockridge Final Geotech Investigation, July 14, 2017

ROCKRIDGE GEOTECHNICAL

Prepared for **RossDrulisCusenbery Architecture Inc.**

FINAL GEOTECHNICAL INVESTIGATION
HAYWARD FIRE STATION #6
& FIRE TRAINING CENTER
1401 WEST WINTON AVENUE
Hayward, California

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July 14, 2017
Project No. 15-919B

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ROCKRIDGE GEOTECHNICAL

July 14, 2017
Project No. 15-919B

Mr. Michael Ross
RossDrulisCusenbery Architecture, Inc.
18294 Sonoma Highway
Sonoma, California 95476

Subject: Final Geotechnical Investigation
Hayward Fire Station #6 & Fire Training Center
1401 West Winton Avenue
Hayward, California

Dear Mr. Ross:

We are pleased to present our final geotechnical report for the proposed new Fire Station #6 (FS#6) and Fire Training Center (FTC) to be constructed at 1401 West Winton Avenue in Hayward, California. Our investigation was performed in accordance with our Consultant Service Agreement with RossDrulisCusenbery Architecture, Inc. dated March 27, 2017.

The site is located on the northern side of West Winton Avenue at its intersection with Saklan Road and south of the Hayward Executive Airport. The project site encompasses approximately 5.6 acres plus an additional 1.1 acre designated for a public parking lot. The western portion of the site is currently occupied by FS#6, which consists of a single-story fire house building, a single-story classroom building, a burn building, and a training tower. The eastern portion of the site is currently undeveloped, except for a paved circular concrete pad at the center of the northern property line. Plans are to demolish the existing improvements and construct a new FS#6 and FTC that will include site improvements and eight new structures.

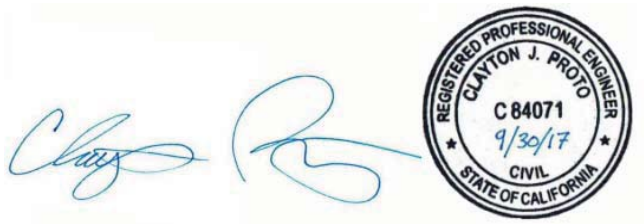
On the basis of our investigation, we conclude the proposed improvements may be constructed as planned, provided the recommendations presented in the attached report are incorporated into the project plans and specifications. The primary geotechnical concerns are the potential for liquefaction-induced ground settlement and the presence of moderately to highly expansive near-surface clay. We conclude the proposed structures may be supported on individual spread footings at interior column locations and continuous, deepened perimeter footings. The perimeter footings should be deepened to act as barriers to reduce the potential for moisture change beneath the slab-on-grade floors. Alternatively, the proposed building may be supported on a stiffened foundation

system, such as a mat. We also recommend floor and mat slabs be underlain by 12 inches of non-expansive soil.

Our report contains specific recommendations regarding earthwork and grading, foundation design, pavement design, and other geotechnical issues. The recommendations contained in our report are based on limited subsurface exploration. Consequently, variations between expected and actual soil conditions may be found in localized areas during construction. Therefore, we should be engaged to observe foundation installation, grading, and fill placement, during which time we may make changes in our recommendations, if deemed necessary.

We appreciate the opportunity to provide our services to you on this project. If you have any questions, please call.

Sincerely yours,
ROCKRIDGE GEOTECHNICAL, INC.



Clayton J. Proto, P.E.
Project Engineer



Linda H.J. Liang, P.E., G.E.
Associate Engineer

Enclosure

QUALITY CONTROL REVIEWER:

Craig S. Shields, P.E., G.E.
Principal Engineer

ROCKRIDGE GEOTECHNICAL

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ROCKRIDGE GEOTECHNICAL

FINAL GEOTECHNICAL INVESTIGATION
HAYWARD FIRE STATION #6 & FIRE TRAINING CENTER
1401 WEST WINTON AVENUE
Hayward, California

1.0 INTRODUCTION

This report presents the results of the final geotechnical investigation performed by Rockridge Geotechnical, Inc. for the proposed new Fire Station #6 (FS#6) and Fire Training Center (FTC) to be constructed at 1401 West Winton Avenue in Hayward, California. The site is located on the northern side of West Winton Avenue at its intersection with Saklan Road and south of the Hayward Executive Airport, as shown on Site Location Map, Figure 1. We previously performed a preliminary geotechnical investigation for this project and presented our preliminary findings and recommendations in a report dated December 14, 2015.

The project site encompasses approximately 5.6 acres plus an additional 1.1 acres designated for a public parking lot. The western portion of the site is currently occupied by FS#6, which consists of a single-story fire house building, a single-story classroom building, a burn building, and a training tower. The eastern portion of the site is currently undeveloped, except for a paved circular concrete pad at the center of the northern property line.

Plans are to demolish the existing improvements and construct a new FS#6 and FTC that will include site improvements and eight new structures as shown on the Site Plan, Figure 2, and as described below:

- **Site Improvements**
    - Street improvements to West Winton Avenue, including deceleration lanes and new sidewalk and accessible paths
    - New concrete pavements, including heavy traffic areas capable of withstanding fire apparatus traffic
    - New asphalt-paved parking areas
    - Permeable gravel surfacing at fire training areas

  - Landscaping areas, including bioswales
  - New utilities
  - Building pads for eight new structures

- **Buildings/Structures**
  - FS#6/Classroom Building (Building 1): Two stories and 20,265 square feet
  - Apparatus Building (Building 2): Single story and 8,272 square feet
  - Hangar Building (Building 3): Single story and 2,916 square feet
  - Storage Building (Building 4): Single story and 1,160 square feet
  - Burn Building (Building 5): Three stories, 4,534 square feet
  - Outdoor Classroom Building (Building 6): Single story and 1,600 square feet
  - USAR/BART Training Structure (Building 7): Three stories, 12,117 square feet
  - Training Tower (Building 8): Four stories, 11,172 square feet.

2.0 SCOPE OF WORK

Our final geotechnical investigation was performed in accordance with our Consultant Service Agreement with RossDrulisCusenbery Architecture, Inc. dated March 27, 2017. Previously, we explored the subsurface conditions at the site by performing two cone penetration tests (CPTs) during our preliminary geotechnical investigation and reviewing boring logs previously drilled at the site by others. To supplement the available subsurface information, we performed an additional seven CPTs, drilled three test borings, and performed laboratory testing on selected soil samples. Based on the results of the CPTs, borings, laboratory tests, and data from previous investigations, we performed engineering analyses to develop design-level conclusions and recommendations regarding:

- site seismicity and seismic hazards, including the potential for liquefaction and lateral spreading, and total and differential settlement resulting from liquefaction and/or cyclic densification
- the most appropriate foundation type(s) for the proposed structures
- design criteria for the recommended foundation type(s), including vertical and lateral capacities for each of the foundation type(s)

- estimates of foundation settlement
- site preparation and grading, including criteria for fill quality and compaction
- subgrade preparation for slab-on-grade floors
- bioswales
- flexible and rigid pavement design
- 2016 California Building Code (CBC) site class and design spectral response acceleration parameters
- corrosivity of the near-surface soil and the potential effects on buried concrete and metal structures and foundations, and recommendations for corrosion protection
- construction considerations.

3.0 FIELD INVESTIGATION AND LABORATORY TESTING

We explored subsurface conditions at the site by performing field investigations in 2015 and 2017. Prior to each mobilization, we obtained a drilling permit from Alameda County Public Works Agency (ACPWA) and contacted Underground Service Alert (USA) to notify them of our work, as required by law. We also retained Precision Locating LLC, a private utility locator, to check that the proposed boring and CPT locations were clear of buried utilities.

3.1 Cone Penetration Tests

Nine CPTs, designated as CPT-1 through CPT-9, were performed to provide in-situ soil data at the approximate locations shown on Figure 2. CPT-1 and CPT-2 were performed by Middle Earth Geo Testing Inc. of Orange, California on October 1, 2015 to a depth of 60 feet below ground surface (bgs). CPT-3 through CPT-9 were performed by Gregg Drilling & Testing Inc. of Martinez, California on April 10, 2017 to a depth of 50 feet bgs.

The CPTs were performed by hydraulically pushing a 1.4-inch-diameter cone-tipped probe with a projected area of 10 square centimeters into the ground. The cone-tipped probe measured tip resistance and the friction sleeve behind the cone tip measured frictional resistance. Electrical strain gauges within the cone continuously measured soil parameters for the entire depth advanced. Soil data, including tip resistance and frictional resistance, were continuously

recorded by a computer while the test was conducted. Accumulated data were processed by computer to provide engineering information such as the behavior types and correlated strength characteristics of the soil encountered. The CPT logs showing tip resistance and friction ratio, as well as interpreted soil behavior type, are presented in Appendix A on Figures A-1 through A-9. Upon completion, the CPT holes were backfilled with cement grout in accordance with ACPWA requirements.

3.2 Test Borings

Three test borings, designated as B-1 through B-3, were drilled on April 10, 2017 by Cascade Drilling Inc. of Richmond, California at the approximate locations shown on Figure 2. The borings were drilled using a truck-mounted drill rig equipped with eight-inch-diameter hollow-stem augers. The borings were drilled to depths between 31.5 and 41.5 feet bgs.

During drilling, our field engineer logged the soil encountered and obtained representative samples for visual classification and laboratory testing. The logs of borings are presented in Appendix B on Figures B-1 through B-3. The soil encountered in the borings was classified in accordance with the classification chart shown on Figure B-4 in Appendix B.

Soil samples were obtained using the following samplers:

- Sprague and Henwood (S&H) split-barrel sampler with a 3.0-inch outside diameter and 2.5-inch inside diameter, lined with 2.43-inch inside diameter stainless steel tubes.
- Standard Penetration Test (SPT) split-barrel sampler with a 2.0-inch outside and 1.5-inch inside diameter, without liners.
- Thin-walled Shelby Tube (ST) sampler with a 3.0-inch outside diameter and 2.875-inch inside diameter.

The S&H and SPT samplers were driven with an automatic, above-ground hammer weighing 140 pounds and falling about 30 inches per drop. The samplers were driven up to 18 inches and the hammer blows required to drive the sampler were recorded every six inches and are presented on the boring logs. A “blow count” is defined as the number of hammer blows per six inches of penetration or 50 blows for six inches or less of penetration. The blow counts required

to drive the S&H and SPT samplers were converted to approximate SPT N-values using factors of 0.8 and 1.35, respectively, to account for sampler type, approximate hammer energy, and the fact that the SPT sampler was driven without liners. The blow counts used for this conversion were the last two blow counts. The converted SPT N-values are presented on the boring logs.

Upon completion of drilling, the boreholes were backfilled with cement grout under the observation of the ACPWA inspector. The soil cuttings generated by the borings were placed in vegetated areas on site.

3.3 Hand-Augered Borings

Samples of near-surface soil were obtained at three locations for laboratory testing using hand-operated auger equipment. We advanced a hand auger at locations adjacent to CPT-1 and CPT-2, as well as at location R-1, as shown on Figure 2. The borings were advanced to depths of 3 to 4 feet bgs to obtain near-surface soil samples for visual classification and laboratory testing.

3.4 Laboratory Testing

We re-examined the soil samples obtained from the borings to confirm the field classifications and selected representative samples for laboratory testing. Soil samples were tested to measure moisture content, dry density, fines content, Atterberg limits, shear strength, consolidation characteristics, and resistance (R-value). The results of the laboratory tests are presented on the boring logs and in Appendix C.

In addition, the corrosivity of near surface soil was tested and evaluated by Project X of Murrieta, California. The corrosivity report is presented in Appendix D.

3.5 Previous Investigations by Others

Woodward-Clyde Consultants (WCC) performed a geotechnical investigation for the existing Fire Station 6 and presented the results in a report titled "*Geotechnical Investigation for the Proposed Fire Station No. 6, West Winton Avenue and Saklan Road, Hayward, California"* and dated January 14, 1975. For their investigation, WCC drilled five soil borings, designated

WCC-1 through WCC-5, at the approximate locations shown on Figure 2 to depths ranging from 13.5 to 25 feet. The WCC boring logs and laboratory test results are presented in Appendix E.

4.0 SUBSURFACE CONDITIONS

A regional geologic map prepared by Graymer, et al. (2006), a portion of which is presented on Figure 3, indicates the site vicinity is underlain by Holocene-age alluvial deposits (Qha). The results of borings and CPTs performed during this and previous investigations indicate the site is underlain by alluvial deposits to the maximum depth explored of 60 feet bgs. The alluvium generally consists of interbedded layers of medium stiff to very stiff clay with varying sand content, and medium dense sand and silty sand. Where explored, the sand and silty sand layers are up to seven feet thick. The results of Atterberg limits tests indicate the near-surface soil consists of clay that has plasticity indexes (PIs) ranging from 20 to 32 and, therefore, is considered to be moderately to highly expansive[1].

Groundwater was measured at depths ranging from about 13 and 16 feet bgs during our field investigation. We anticipate the depth to groundwater will vary several feet seasonally, depending on the amount of rainfall. To estimate the historic high groundwater, we reviewed S*eismic Hazard Zone Report for the Hayward 7.5-minute Quadrangle, Alameda County, California* prepared by the California Geological Survey (CGS, 2003). The report indicates the historic high groundwater in the site vicinity is approximately 10 feet bgs.

[1] Expansive soil is susceptible to volumetric changes with changes in moisture content. (i.e. shrinks when dried and swells well wetted).

5.0 SEISMIC CONSIDERATIONS

5.1 Regional Seismicity

The site is located in the Coast Ranges geomorphic province of California that is characterized by northwest-trending valleys and ridges. These topographic features are controlled by folds and faults that resulted from the collision of the Farallon plate and North American plate and subsequent strike-slip faulting along the San Andreas fault system. The San Andreas Fault is more than 600 miles long from Point Arena in the north to the Gulf of California in the south. The Coast Ranges province is bounded on the east by the Great Valley and on the west by the Pacific Ocean.

The major active faults in the area are the Hayward, San Andreas, Calaveras, and San Gregorio faults. These and other faults in the region are shown on Figure 4. For these and other active faults within a 50-kilometer radius of the site, the distance from the site and estimated mean characteristic Moment magnitude[2] [2007 Working Group on California Earthquake Probabilities (WGCEP) (USGS 2008) and Cao et al. (2003)] are summarized in Table 1.

[2] Moment magnitude is an energy-based scale and provides a physically meaningful measure of the size of a faulting event. Moment magnitude is directly related to average slip and fault rupture area.

TABLE 1
Regional Faults and Seismicity

Fault Segment	Approximate Distance from Site (km)	Direction from Site	Mean Characteristic Moment Magnitude
Total Hayward	4.0	Northeast	7.00
Total Hayward-Rodgers Creek	4.0	Northeast	7.33
Total Calaveras	17	East	7.03
Mount Diablo Thrust	23	Northeast	6.70
N. San Andreas - Peninsula	25	West	7.23
N. San Andreas (1906 event)	25	West	8.05
Monte Vista-Shannon	27	Southwest	6.50
Green Valley Connected	30	Northeast	6.80
Greenville Connected	35	East	7.00
San Gregorio Connected	37	West	7.50
N. San Andreas - North Coast	43	West	7.51
Great Valley 5, Pittsburg Kirby Hills	47	Northeast	6.70

Since 1800, four major earthquakes have been recorded on the northern California section of the San Andreas Fault. In 1836, an earthquake with an estimated maximum intensity of VII on the Modified Mercalli (MM) scale occurred east of Monterey Bay on the San Andreas Fault (Toppozada and Borchardt 1998). The estimated Moment magnitude, M_w, for this earthquake is about 6.25. In 1838, an earthquake occurred with an estimated intensity of about VIII-IX (MM), corresponding to an M_w of about 7.5. The San Francisco Earthquake of 1906 caused the most significant damage in the history of the Bay Area in terms of loss of lives and property damage. This earthquake created a surface rupture along the San Andreas Fault from Shelter Cove to San

Juan Bautista approximately 470 kilometers in length. It had a maximum intensity of XI (MM), an M_w of about 7.9, and was felt 560 kilometers away in Oregon, Nevada, and Los Angeles. The most recent significant earthquake to affect the Bay Area was the Loma Prieta Earthquake of 17 October 1989 with an M_w of 6.9. This earthquake occurred in the Santa Cruz Mountains about 72 kilometers south of the site.

In 1868, an earthquake with an estimated maximum intensity of X on the MM scale occurred on the southern segment (between San Leandro and Fremont) of the Hayward Fault. The estimated M_w for the earthquake is 7.0. In 1861, an earthquake of unknown magnitude (probably an M_w of about 6.5) was reported on the Calaveras Fault. The most recent significant earthquake on this fault was the 1984 Morgan Hill earthquake (M_w = 6.2).

The U.S. Geological Survey's 2014 Working Group on California Earthquake Probabilities has compiled the earthquake fault research for the San Francisco Bay Area in order to estimate the probability of fault segment rupture. They have determined that the overall probability of moment magnitude 6.7 or greater earthquake occurring in the San Francisco region during the next 30 years (starting from 2014) is 72 percent. The highest probabilities are assigned to the Hayward Fault, Calaveras Fault, and the northern segment of the San Andreas Fault. These probabilities are 14.3, 7.4, and 6.4 percent, respectively.

5.2 Geologic Hazards

Because the project site is in a seismically active region, we evaluated the potential for earthquake-induced geologic hazards including ground shaking, ground surface rupture, liquefaction,[3] lateral spreading,[4] and cyclic densification[5]. We used the results of this and previous field investigations to evaluate the potential of these phenomena occurring at the project site.

5.2.1 Ground Shaking

The seismicity of the site is governed by the activity of the Hayward Fault, although ground shaking from future earthquakes on other faults, including the San Andreas, Calaveras, and San Gregorio faults, will also be felt at the site. The intensity of earthquake ground motion at the site will depend upon the characteristics of the generating fault, distance to the earthquake epicenter, and magnitude and duration of the earthquake. The site is about four kilometers from the Hayward Fault. We judge that strong to very strong ground shaking could occur at the site during a large earthquake on one of the nearby faults.

5.2.2 Ground Surface Rupture

Historically, ground surface displacements closely follow the trace of geologically young faults. The site is not within an Earthquake Fault Zone, as defined by the Alquist-Priolo Earthquake Fault Zoning Act, and no known active or potentially active faults exist on the site. We therefore conclude the risk of fault offset at the site from a known active fault is negligible. In a seismically active area, the remote possibility exists for future faulting in areas where no faults

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[3] Liquefaction is a phenomenon where loose, saturated, cohesionless soil experiences temporary reduction in strength during cyclic loading such as that produced by earthquakes.

[4] Lateral spreading is a phenomenon in which surficial soil displaces along a shear zone that has formed within an underlying liquefied layer. Upon reaching mobilization, the surficial blocks are transported downslope or in the direction of a free face by earthquake and gravitational forces.

[5] Cyclic densification is a phenomenon in which non-saturated, cohesionless soil is compacted by earthquake vibrations, causing ground-surface settlement.

previously existed; however, we conclude the risk of surface faulting and consequent secondary ground failure from previously unknown faults is also very low.

5.2.3 Liquefaction and Associated Hazards

Liquefaction is a phenomenon in which saturated soil temporarily loses strength from the build-up of excess pore water pressure, especially during earthquake-induced cyclic loading. Soil susceptible to liquefaction includes loose to medium dense sand and gravel, low-plasticity silt, and some low-plasticity clay deposits. Flow failure, lateral spreading, differential settlement, loss of bearing strength, ground fissures and sand boils are evidence of excess pore pressure generation and liquefaction.

The site has been mapped within a zone of liquefaction potential as shown on the map titled *State of California, Seismic Hazard Zones, Hayward Quadrangle, Official Map*, prepared by the California Geological Survey (CGS), dated July 2, 2003 (see Figure 5).

Liquefaction susceptibility was assessed using the software CLiq v2.1 (GeoLogismiki, 2016), with consideration of laboratory testing performed on soil samples from the borings. CLiq uses measured field CPT data and assesses liquefaction potential, including post-earthquake vertical settlement, given a user-defined earthquake magnitude and peak ground acceleration (PGA). We performed liquefaction triggering analyses using our CPT data in accordance with the methodology proposed by the National Center for Earthquake Engineering Research (NCEER) outlined in Youd et al. (2001), as well as the methodology proposed by Idriss and Boulanger (2014). Settlements were evaluated using a volumetric strain (post-liquefaction reconsolidation) framework as outlined in Ishihara & Yoshimine (1992) and Zhang et al. (2002). Settlements were then modified based on the procedure outlined in Cetin et al. (2009).

For our analysis, we assumed a high groundwater depth of 10 feet bgs and a Moment magnitude 7.33 earthquake, which is consistent with the mean characteristic Moment magnitude for the Hayward Fault, as presented in Table 1. In accordance with the 2016 CBC, we used a PGA of 0.74 times gravity (g) in our liquefaction evaluation; this PGA is consistent with the Maximum

Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration adjusted for site effects (PGA_M).

Our liquefaction analyses indicate that, in general, relatively thin layers of potentially liquefiable soil were encountered in the CPTs below a depth of 10 feet bgs. The potentially liquefiable soils have soil behavior types "sand", "silty sand", "sandy silt" and clayey silt". On the basis of our analysis, we estimate total and differential liquefaction-induced settlements will be on the order of 1/4 to 1-1/4 inches and 1/2 inch over a horizontal distance of 30 feet, respectively.

Based on the methodology proposed by Ishihara (1985), the non-liquefiable soil overlying the potentially liquefiable soil layers is sufficiently thick such that the potential for surface manifestations from liquefaction, such as sand boils, and loss of bearing capacity for shallow foundations, is low. Considering the potentially liquefiable soil layers are not continuous, we conclude the potential for lateral spreading at the site during a major earthquake is nil.

5.2.4 Cyclic Densification

Seismically-induced compaction or cyclic densification of non-saturated sand (sand above the groundwater table) caused by earthquake vibrations may result in differential settlement. The soil encountered above the groundwater table primarily consists of clay which is not susceptible to cyclic densification because of its cohesion. Therefore, we conclude the risk of cyclic densification to occur at the site is nil.

6.0 DISCUSSIONS AND CONCLUSIONS

From a geotechnical standpoint, we conclude the site can be developed as planned, provided the recommendations presented in this report are incorporated into the project plans and specifications and implemented during construction. The primary geotechnical concerns for the project are: 1) the presence of moderately to highly expansive near-surface soil, and 2) the potential for up to 1-1/4 inches of total settlement and 1/2 inch of differential settlement over a horizontal distance of 30 feet due to post-liquefaction reconsolidation following a major

earthquake. Our conclusions for this and other geotechnical aspects of the project are presented in this section.

6.1 Expansive Soil

As discussed in Section 4.0, the near-surface soil is considered to be moderately to highly expansive. Expansive near-surface soil is subject to volume changes during seasonal fluctuations in moisture content. These volume changes can cause movement and cracking of foundations, slabs, and pavements. Therefore, foundations and slabs should be designed and constructed to mitigate the effects of the expansive soil. These effects can be mitigated by moisture-conditioning the expansive clay below slabs, providing non-expansive soil below slabs, and either supporting foundations below the zone of severe moisture change or providing a stiff, shallow foundation that can limit deformation of the superstructure as the underlying soil shrinks and swells.

6.2 Foundation Support and Settlement

The soil underlying the site has moderate strength and moderate compressibility. Therefore, we conclude the proposed structures, which are relatively light, may be supported on individual spread footings at interior column locations and continuous, deepened perimeter footings. The perimeter footings should be deepened to act as barriers to reduce the potential for moisture change beneath the slab-on-grade floors. Alternatively, the proposed buildings may be supported on a stiffened shallow foundation system, such as a mat.

We estimate total settlement of the proposed structures supported on spread footings or mat foundations designed using the allowable bearing pressures presented in Section 7.2 will be will be less than one inch and differential settlement will be less than 1/2 inch over a horizontal distance of 30 feet. As presented in Section 5.2.4, there is the potential for up to 1-1/4 inches of total settlement and 1/2 inch of differential settlement over a horizontal distance of 30 feet due to post-liquefaction reconsolidation following a major earthquake.

6.3 Construction Considerations

The soil to be excavated for the new foundations and underground utilities is expected to be predominantly clay, which can be excavated with conventional earth-moving equipment such as loaders and backhoes. If site grading is performed during the rainy season, repeated loads by heavy equipment will reduce the strength of the surficial soil and decrease its ability to resist deformation; this phenomenon could result in severe rutting and pumping of the exposed subgrade. To reduce the potential for this behavior, heavy rubber-tired equipment as well as vibratory rollers, should be avoided.

Excavations that will be deeper than five feet and will be entered by workers should be sloped or shored in accordance with CAL-OSHA standards (29 CFR Part 1926). The contractor should be responsible for the construction and safety of temporary slopes and shoring.

6.4 Soil Corrosivity

Corrosivity testing was performed by Project X Corrosion Engineers of Murrieta, California on two soil samples obtained from Boring B-1 at a depth of 6 feet and Boring B-2 at a depth of 2.5 feet. The results of the tests, as well as a corrosion evaluation report, are presented in Appendix D of this report.

7.0 RECOMMENDATIONS

Our recommendations for site preparation and grading, foundation design, seismic design, and other geotechnical aspects of the project are presented in this section.

7.1 Site Preparation, Grading, and Fill Placement

Site demolition should include removal of all existing pavements, foundations, and underground utilities. In general, abandoned underground utilities should be removed to the property line or service connections and properly capped or plugged with concrete. Where existing utility lines are outside of the footprint of the proposed improvements and will not interfere with the proposed construction, they may be abandoned in-place provided the lines are filled with lean

concrete or cement grout to the property line. Voids resulting from demolition activities and removal of existing utilities should be properly backfilled with engineered fill following the recommendations provided later in this section and under the observation of our field engineer.

In areas to receive fill or improvements (i.e. building pad subgrade), the soil subgrade should be scarified to a depth of at least eight inches, and moisture-conditioned and compacted to the relative compaction[6] presented below in Table 2. The upper 12 inches of soil subgrade beneath slab-on-grade floors or mat foundations should consist of non-expansive soil; the 12 inches should be measured from the bottom of capillary moisture break layer. Exterior concrete flatwork should also be underlain by four inches of aggregate base over eight inches of non-expansive soil (see Section 7.4). Non-expansive soil may consist of imported select fill or lime-treated on-site clay, as presented in Sections 7.1.1 and 7.1.2, respectively.

[6] Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density of the same material, as determined by the ASTM D1557-09 laboratory compaction procedure.

TABLE 2
Summary of Compaction Requirements

Location	Required Relative Compaction (percent)	Moisture Requirement
Building pad subgrade - expansive clay	87 – 92	4+% above optimum
General fill - lime-treated clay	90+	Above optimum
General fill - expansive clay	87 – 92	4+% above optimum
General fill - low-plasticity soil	90+	Above optimum
Utility trench backfill - expansive clay	87 – 92	4+% above optimum
Utility trench backfill - low-plasticity soil	90+	Above optimum
Utility trench - clean sand or gravel	95+	Near optimum
Pavement subgrade - expansive clay	90+	Above optimum
Pavement subgrade - low-plasticity soil	95+	Above optimum
Pavement - aggregate base	95+	Near optimum
Exterior slabs - expansive clay	87 – 92	4+% above optimum
Exterior slabs - low-plasticity soil	90+	Above optimum

Note: Select fill and lime-treated clay are considered low-plasticity soil.

If grading work is performed during the rainy season, the contractor may find the subgrade material too wet to compact to the recommended relative compaction and will have to be scarified and aerated to lower its moisture content so the specified compaction can be achieved. Material to be dried by aeration should be scarified to a depth of at least eight inches; the scarified soil should be turned at least twice a day to promote uniform drying. Once the moisture content of the aerated soil has been reduced to acceptable levels, the soil should be compacted in accordance with our recommendations. Aeration typically is the least costly method used to stabilize the subgrade soil; however, it generally requires the most time to complete. Other soil stabilization alternatives include over-excavating and placing drier material, and lime treatment.

It is also important that the moisture content of subgrade soil is sufficiently high to reduce the expansion potential. If the grading work is performed during the dry season, moisture-conditioning will likely be required.

7.1.1 Select Fill

Select fill should consist of imported soil that is free of organic matter, contain no rocks or lumps larger than three inches in greatest dimension, have a liquid limit less than 40 and plasticity index less than 12, and be approved by the Geotechnical Engineer. Select fill should be placed in lifts not exceeding eight inches in loose thickness and moisture-conditioned and compacted following the recommendations presented in Table 2.

Samples of proposed select fill material should be submitted to the Geotechnical Engineer at least three business days prior to use at the site. The grading contractor should provide analytical test results or other suitable environmental documentation indicating the imported fill is free of hazardous materials at least three days before use at the site. If this data is not provided, a minimum of two weeks will be required to perform any necessary analytical testing.

7.1.2 Lime Treatment

The lime treatment process should be designed by a contractor specializing in its use and who is experienced in the application of lime in similar soil conditions. Based on our experience with lime treatment, we judge that the specialty contractor should be able to treat the moderately to highly expansive on-site material to produce a non-expansive fill for the upper 12 inches of slab-on-grade or mat subgrade. For planning purposes, we recommend assuming the lime treatment will consist of five percent of Dolomitic Quicklime by dry weight of soil. The dry weight of soil should be assumed to be 100 pounds per cubic foot (pcf) for calculating lime quantities. The specialty contractor should: 1) perform a lime demand test prior to treatment to determine the percentage of Quicklime required to achieve a pH of 12.4 or higher in the treated soil, 2) perform an Atterberg limits test to confirm the proposed percentage of Quicklime will reduce the

plasticity index of the treated soil to 15 or less, and 3) prepare a lime treatment procedure for our review prior to construction.

Prior to lime treatment, we recommend the site be graded to a level pad elevation in accordance with our previous recommendations and all below-grade obstructions removed. The soil treated with lime should be mixed and compacted in one lift. The lime should be thoroughly blended with the soil and allowed to set for 24 hours prior to remixing and compaction. The lime-treated soil should be moisture-conditioned to above optimum moisture content and compacted to at least 90 percent relative compaction.

It should be noted that disposal of lime-treated soil is typically expensive because of the high pH of the treated soil. In addition, lime-treated soil should be completely removed from landscaping areas as the high pH will prevent plant growth.

7.1.3 Utility Trench Backfill

Excavations for utility trenches can be readily made with a backhoe. All trenches should conform to the current CAL-OSHA requirements. To provide uniform support, pipes or conduits should be bedded on a minimum of four inches of sand or fine gravel. After the pipes and conduits are tested, inspected (if required) and approved, they should be covered with six inches of sand or fine gravel, which should be mechanically tamped. The pipe bedding and cover should be eliminated where an impermeable plug is required as described below.

Backfill for utility trenches and other excavations is also considered fill, and should be placed and compacted as according to the recommendations previously presented. If imported clean sand or gravel (defined as soil with less than 10 percent fines) is used as backfill, it should be compacted to at least 95 percent relative compaction. Jetting of trench backfill should not be permitted. Special care should be taken when backfilling utility trenches in pavement areas. Poor compaction may cause excessive settlements, resulting in damage to the pavement section.

Foundations for the proposed structures should be bottomed below an imaginary line extending up at a 1.5:1 (horizontal to vertical) inclination from the base of utility trenches. Alternatively, the portion of the utility trench (excluding bedding) that is below the 1.5:1 line can be backfilled with controlled low-strength material (CLSM) with a 28-day unconfined compressive strength of at least 100 pounds per square inch (psi) or Class 2 aggregate base compacted to at least 95 percent relative compaction.

Where utility trenches enter the building pad, an impermeable plug consisting of CLSM, at least three feet in length, should be installed where the trenches enter the building footprint. Furthermore, where sand- or gravel-backfilled trenches cross planter areas and pass below asphalt or concrete pavements, a similar plug should be placed at the edge of the pavement. The purpose of these recommendations is to reduce the potential for water to become trapped in trenches beneath the building or pavements. This trapped water can cause heaving of soils beneath slabs and softening of subgrade soil beneath pavements.

7.1.4 Drainage and Landscaping

Positive surface drainage should be provided around the buildings to direct surface water away from the foundations. To reduce the potential for water ponding adjacent to buildings, we recommend the ground surface within a horizontal distance of five feet from the buildings slope down away from the buildings with a surface gradient of at least two percent in unpaved areas and one percent in paved areas. In addition, roof downspouts should be discharged into controlled drainage facilities to keep the water away from the foundations. The use of water-intensive landscaping around the perimeter of the buildings should be avoided to reduce the amount of water introduced to the expansive clay subgrade.

Care should be taken to minimize the potential for subsurface water to collect beneath pavements and pedestrian walkways. Where landscape beds and tree wells are immediately adjacent to pavements and flatwork, we recommend vertical cutoff barriers be incorporated into the design

to prevent irrigation water from saturating the subgrade and aggregate base. These barriers may consist of either flexible impermeable membranes or deepened concrete curbs.

Prior experience and industry literature indicate that some species of high water-demand[7] trees can induce ground-surface settlement by drawing water from the expansive clay, causing it to shrink. Where these types of trees are planted near buildings, the ground-surface settlement may result in damage to structure. This problem usually occurs 10 or more years after planting, as the trees reach mature height. To reduce the risk of tree-induced building settlement, we recommend trees of the following genera are not planted within 25 feet of the proposed buildings: *Eucalyptus, Populus, Quercus, Crataegus, Salix, Sorbus* (simple-leafed), *Ulmus, Cupressus, Chamaecyparis,* and *Cupressocyparis.* Because this is a limited list and does not include all genera that may induce ground-surface settlement, a tree specialist should be consulted prior to selection of trees to be planted at the site.

7.1.5 Bioswales

The primary concerns with the proposed bio-retention areas are: 1) providing suitable support for foundations and curbs constructed near the bio-retention areas, and 2) potential for subsurface water from the bio-retention areas to migrate (and possibly build up) beneath pavements and proposed buildings. Consequently, we recommended that bioswales constructed at the site be provided with underdrains and/or drain inlets. In addition, we recommend bioswales be constructed no closer than five feet from buildings or pavements. The subdrain pipes should be installed eight inches above the bottom of the infiltration area for treatment areas. The intent of this recommendation is to allow some infiltration into the underlying soil, but to reduce the potential for bio-retention areas to flood during periods of heavy rainfall. The sides of bioswales should be sloped at a maximum gradient of 1:1 (horizontal: vertical).

[7] "Water-demand" refers to the ability of the tree to withdraw large amounts of water from the soil subgrade, rather than soil suction exerted by the root system.

If bio-retention areas have to be located within five feet of buildings or pavements, a four-inch-diameter perforated subdrain pipe should be placed four inches above the base of the treatment area or the bottom of the treatment area should be lined with an impermeable liner. Where a vertical curb or foundation is constructed near a bio-retention area, the curb and the edge of the foundations should be founded below an imaginary line extending up at an inclination of 1.5:1 (horizontal: vertical) from the base of the bio-retention area. Where bio-retention will be excavated immediately adjacent to thicken mat edges or perimeter footings, (1) mat edge and perimeter footings to extend at least 6 inches below the bottom of the planned bio-retention excavation, and (2) the bottom and sides of the bio-retention area should be lined with an impermeable liner.

7.2 Foundations

7.2.1 Spread Footings

Continuous footings should be at least 18 inches wide and isolated spread footings should be at least 24 inches wide. Perimeter footings should be bottomed at least 30 inches below the lowest adjacent outside grade. The perimeter footing embedment depth may be decreased by six inches where pavement or concrete flatwork is adjacent to the new building. In addition, perimeter footings should be founded below an imaginary line extending up at an inclination of 1.5:1 (horizontal:vertical) from the bottom of any biotreatment/infiltration systems near the buildings. Interior footings should extend at least 24 inches below the bottom of the capillary moisture break.

Spread footings may be designed using allowable bearing pressures of 3,000 pounds per square foot (psf) for dead-plus-live loads and may be increased by one-third for total design loads, which include wind or seismic forces. The allowable bearing pressures for dead-plus-live and total loads include factors of safety of at least 2.0 and 1.5, respectively.

Lateral loads may be resisted by a combination of passive pressure on the vertical faces of the footings and friction between the bottoms of the footings and the supporting soil. To compute

lateral resistance, we recommend using an uniform pressure of 1,500 psf for transient load conditions and an equivalent fluid weight of 240 pounds per cubic foot (pcf) for sustained load conditions; the upper foot of soil should be ignored unless confined by a slab or pavement. Frictional resistance should be computed using a base friction coefficient of 0.30. The passive pressure and frictional resistance values include a factor of safety of at least 1.5 and may be used in combination without reduction.

Footing excavations should be free of standing water, debris, and disturbed materials prior to placing concrete. The bottoms and sides of the footing excavations should be moistened following excavation and maintained in a moist condition until concrete is placed. If the foundation soil dries during construction, the footing will eventually heave, which may result in cracking and distress. We recommend rat slabs consisting of at least two inches of CLSM be placed in the bottoms of the footings to protect them from drying out, softening from ponding water and/or disturbance from foot traffic during construction. We should check footing excavations prior to placement of the rat slabs. The CLSM used to construct the rat slabs should have a 28-day unconfined strength of at least 100 psi and should be poured within two days of footing excavation. The rat slab thickness may be counted as part of the minimum footing embedment.

7.2.2 Mat Foundations

As an alternative to spread footings, the proposed buildings may be supported on a well-reinforced concrete mat. We recommend mat foundations be at least 12 inches thick. The upper 12 inches of mat subgrade should consist of non-expansive soil, as discussed above in Section 7.1. The edges of the mat should be thickened such that the foundation edge is bottomed at least 24 inches below the adjacent exterior grade. In addition, the mat edge should be founded below an imaginary line extending up at an inclination of 1.5:1 (horizontal:vertical) from the bottom of any biotreatment/infiltration systems near the buildings.

Considering the large area of the mat, we expect the average bearing stress under the mat to be low; however, concentrated stresses will occur at column locations and at the edges of the mat. The mat should be designed to impose a maximum dead-plus-live bearing pressure of 3,000 psf on the foundation subgrade soil. This pressure may be increased by one-third for total load conditions. For structural design of the mat foundation, we recommend using a coefficient of vertical subgrade reaction of 10 pounds per cubic inch (pci). This value has been reduced to account for the size of the mat/equivalent footings (therefore, this is not k_{v1} for 1-foot-square plate). Once the structural engineer evaluates the initial distribution of bearing stress on the bottom of the mat, we can review the distribution and revise the coefficients of subgrade reaction, if appropriate.

Conventionally reinforced mat foundations should be designed in accordance with the Wire Reinforcement Institute's (WRI's) publication title *Design of Slab-on-Grade Foundations, An Update* (1996). We recommend the following parameters should be used in conjunction with the WRI design method:

- Climatic rating (C_w) – 15
- Effective Plasticity Index (PI) – 25

Lateral loads may be resisted by a combination of friction along the base of the mat and passive resistance against the vertical faces of the mat foundation. To compute lateral resistance, we recommend using a uniform pressure of 1,500 psf for transient load conditions and an equivalent fluid weight of 240 pcf for sustained load conditions; the upper foot of soil should be ignored unless confined by a slab or pavement. Frictional resistance should be computed using a base friction coefficient of 0.30 where the mat is in contact with soil. Where a vapor retarder is placed beneath the mat, a base friction coefficient of 0.20 should be used. The passive pressure and frictional resistance values include a factor of safety of at least 1.5 and may be used in combination without reduction.

The mat subgrade should be kept moist prior to placement of the vapor retarder (see Section 7.3). We should check the mat subgrade prior to placing the vapor retarder to confirm it is free of standing water, debris, and disturbed materials.

7.3 Capillary Moisture Break and Water Vapor Retarder

If water vapor transmission through the floor or mat slab is undesirable, which is typically the case in spaces to receive floor coverings, spaces used for storage, and/or rooms with limited air circulation (e.g., utility rooms), we recommend a vapor retarder be placed between the bottom of the floor or mat slab and the underlying subgrade. For slab-on-grade floors, we recommend a capillary moisture break be placed beneath the vapor retarder; a capillary moisture break is not required beneath mat foundations.

A capillary moisture break consists of at least four inches of clean, free-draining gravel or crushed rock. The vapor retarder beneath slab-on-grades should meet the requirements for Class B vapor retarders stated in ASTM E1745. The vapor retarder beneath mat foundations, if placed directly on soil subgrade, should meet the requirements for Class A vapor retarders stated in ASTM E1745. The vapor retarder should be placed in accordance with the requirements of ASTM E1643. These requirements include overlapping seams by six inches, taping seams, and sealing penetrations in the vapor retarder.

The particle size of the capillary break material should meet the gradation requirements presented in Table 3.

TABLE 3
Gradation Requirements for Capillary Moisture Break

Sieve Size	Percentage Passing Sieve
1 inch	90 – 100
3/4 inch	30 – 100
1/2 inch	5 – 25
3/8 inch	0 – 6

Concrete mixes with high water/cement (w/c) ratios result in excess water in the concrete, which increases the cure time and results in excessive vapor transmission through the floor or mat slab. Therefore, concrete for the floor or mat slab should have a low w/c ratio - less than 0.50. If the concrete is poured directly over the vapor retarder, we recommend the w/c ratio of the concrete not exceed 0.45 and water not be added in the field. If necessary, workability should be increased by adding plasticizers. In addition, the slab should be properly cured. Before floor coverings, if any, are placed, the contractor should check that the concrete surface and the moisture emission levels (if emission testing is required) meet the manufacturer's requirements.

7.4 Exterior Concrete Flatwork

We recommend a minimum of four inches of Class 2 aggregate base be placed over eight inches of non-expansive soil (see Sections 7.1.1 and 7.1.2) beneath proposed exterior concrete flatwork; the non-expansive soil should extend at least six inches beyond the slab edges. Non-expansive soil beneath exterior slabs, such as patios and sidewalks, should be moisture-conditioned and compacted in accordance with the requirements presented in Table 2. Class 2 aggregate base and select fill beneath concrete flatwork should be compacted to at least 90 percent relative compaction.

Even with 12 inches of non-expansive soil (including aggregate base layer), exterior slabs may experience some cracking due to shrinking and swelling of the underlying expansive soil. Thickening the slab edges and adding additional reinforcement will control this cracking to some

degree. Where slabs are adjacent to landscaped areas, thickening the concrete edge will help control water infiltration beneath the slabs. In addition, where slabs provide access to the building, it would be prudent to dowel the entrance to the building to permit rotation of the slab as the exterior ground shrinks and swells and to prevent a vertical offset at the entries.

7.5 Pavement Design

7.5.1 Flexible (Asphalt Concrete) Pavement Design

The State of California flexible pavement design method was used to develop the recommended asphalt concrete (AC) pavement sections. The final soil subgrade in asphalt-paved areas may consist of recompacted on-site clay or lime-treated native clay. If lime treatment is used to strengthen the soil subgrade, a minimum treatment depth of 18 inches should be used.

Results of laboratory tests indicate the near-surface clay has an R-value less than 5 (see Figure C-6), which is typical for expansive clay. Based on our experience, we assumed a design R-value of 5, which is the minimum R-value for the State of California flexible pavement design method, for untreated on-site clay and an R-value of 25 for lime-treated on-site clay.

Recommended pavement sections for traffic indices (TI) ranging from 4.5 to 7.0 are presented in Table 4. The Civil Engineer for the project should check that the TI's presented in this report are appropriate for the intended use. We can provide additional pavement sections for different TIs upon request.

TABLE 4
Asphalt Pavement Sections

TI	Subgrade Lime Treated?	Asphaltic Concrete (inches)	Class 2 Aggregate Base R = 78 (inches)
4.5	No	2.5	9.5
	Yes	2.5	6.5
5.0	No	3.0	10.0
	Yes	3.0	6.5
5.5	No	3.0	12.0
	Yes	3.0	8.0
6.0	No	3.5	13.0
	Yes	3.5	8.5
7.0	No	4.0	16.0
	Yes	4.0	11.0

The upper eight inches of soil subgrade (treated or untreated) should be moisture-conditioned and compacted in accordance with requirements presented in Section 7.1. In addition, the subgrade should be a firm and non-yielding surface. The subgrade should be proof-rolled under the observation of our field engineer to confirm it is non-yielding prior to placing aggregate base. The aggregate base should be moisture conditioned to near optimum, compacted to at least 95 percent relative compaction, and be non-yielding.

To minimize the potential of irrigation water entering the pavement section, curbs adjacent to landscaped areas should extend through the aggregate base and at least three inches into the underlying soil subgrade.

7.5.2 Rigid (Portland-Cement Concrete) Pavement

Concrete pavement design is based on a maximum single-axle load of 26,000 pounds, a maximum tandem axle load of 44,000 pounds, and heavy truck traffic (i.e. several trucks per

hour). The recommended rigid pavement section for these axle loads is seven inches of Portland cement concrete (PCC) over six inches of Class 2 aggregate base. For areas that will experience only passenger vehicle traffic, the recommended pavement section is five inches of PCC over six inches of Class 2 aggregate base.

The modulus of rupture and unconfined compressive strength of the concrete should be at least 600 and 4,200 pounds per square inch (psi) at 28 days, respectively. Contraction joints should be constructed at 15-foot spacing. Where the outer edge of a concrete pavement meets asphalt pavement, the concrete slab should be thickened by 50 percent at a taper not to exceed a slope of 1 in 10. The pavement should be reinforced with a minimum of No. 4 bars at 18 inches on center in both directions. The subgrade and aggregate base should be compacted in accordance with the recommendations for asphalt pavement in Section 7.5.1.

7.5.3 Non-Permeable Concrete Pavers

Non-permeable concrete pavers for pedestrian traffic should be underlain by at least 12 inches of non-expansive soil consisting of select fill or lime-treated on-site soil as presented in Section 7.1. Where non-permeable concrete pavers will be subject to vehicular traffic, we recommend they consist of fully dentated, interlocking shapes and be at least 80 millimeters (3.15 inches) thick. The pavers should be placed on a 1- to 2-inch-thick sand leveling course underlain by Class 2 aggregate base. The thickness of the Class 2 aggregate base beneath non-permeable pavers subject to vehicular traffic should be consistent with the sections presented for asphalt pavement in Section 7.5.1 for the applicable TI. The subgrade and aggregate base should be compacted in accordance with the recommendations for asphalt pavement in Section 7.5.1.

7.5.4 Permeable Interlocking Concrete Pavers

We recommend permeable interlocking concrete pavements (ICP) be designed in accordance with the guidelines presented by the Interlocking Concrete Pavement Institute (ICPI 2005). These guidelines include specific recommendations for permeable aggregate subbase, base, and bedding courses to be placed beneath ICP pavements. We recommend permeable pavements for

vehicular and pedestrian traffic be designed for no exfiltration of water into the subgrade soil. This requires installing a subdrain system at the base of the pervious aggregate materials, which are underlain by an impermeable liner. ICPI's generalized paver section for no exfiltration traffic is presented on Figure 6.

The soil subgrade beneath ICP pavements should be prepared and compacted in accordance with the recommendations presented in Section 7.1. In addition, the subgrade should be a firm and non-yielding surface. The subgrade should be proof-rolled under the observation of our field engineer to confirm it is non-yielding prior to placing the liner and aggregate base materials. The native soil subgrade at the bottom of the permeable section should slope down toward the drain pipe trench at a gradient of at least two percent. The perforated pipe should slope down to a suitable outlet at a minimum gradient of one percent. The pipe should be placed with the perforations down on a minimum of two inches of permeable subbase.

ICPI's guidelines call for 1-1/2 to 2 inches of bedding material consisting of ASTM No. 8 crushed aggregate directly below the pavers. This material is also recommended for fill material between the pavers. As shown in Table 5 below, this material consists of fine gravel with 10 to 30 percent sand.

TABLE 5
Gradation Requirements for ASTM No. 8 Crushed Aggregate

Sieve Size	Percentage Passing Sieve
1/2 inch	100
3/8 inch	85 – 100
No. 4	10 – 30
No. 8	0 – 10
No. 16	0 – 5

The ASTM No. 8 bedding should be underlain by a permeable base course of ASTM No. 57 crushed aggregate. As shown in Table 6, ASTM No. 57 aggregate consists of crushed open-

graded gravel with a gradation between that of the 3/4-inch drain rock and the ASTM No. 8 aggregate.

TABLE 6
Gradation Requirements for ASTM No. 57 Crushed Aggregate

Sieve Size	Percentage Passing Sieve
1-1/2 inch	100
1 inch	95 – 100
1/2 inch	25 – 60
No. 4	0 – 10
No. 8	0 – 5

The ASTM No. 57 permeable base course should be underlain by a permeable subbase course of ASTM No. 2 crushed aggregate. The gradation requirements for ASTM No. 2 crushed aggregate subbase are presented in Table 7.

TABLE 7
Gradation Requirements for ASTM No. 2 Crushed Aggregate

Sieve Size	Percentage Passing Sieve
3 inch	100
2-1/2 inch	90-100
2 inch	35-70
1-1/2 inch	0-15
3/4 inch	0 -5

The No. 2 crushed aggregate subbase course should be placed in lifts not exceeding 6 inches in loose thickness and compacted using a smooth-drum roller, operated in static (non-vibratory) mode. The subsequent course of No. 57 aggregate may be placed in one lift and should be compacted with a smooth-drum roller in vibratory mode with sufficient passes to create an unyielding surface. Placement and compaction of the permeable aggregate base and subbase

should be performed under the observation of our field engineer. Following compaction of the No. 57 aggregate, the No. 8 bedding, not exceeding 2 inches in loose thickness, should be placed and screeded to a level, undisturbed surface immediately prior to paver installation.

The required thicknesses of the permeable aggregate base and subbase courses depends on the infiltration and water storage design requirements, as well as the traffic loading demand. Recommendation for the minimum permeable ICP pavement section (based on traffic demand) for TI of 6.0 is presented in Table 8; ICP pavement sections for other TI's can be provided upon request. Also included in Table 8 is a recommended section for permeable ICPs subject to pedestrian traffic only.

TABLE 8
Recommended Pavement Sections for
Permeable Interlocking Concrete Pavers

TI	ASTM No. 8 Bedding Aggregate (inches)	ASTM No. 57 Stone Base (inches)	ASTM No. 2 Stone Subbase (inches)
Pedestrian	1.5-2.0	4.0 (10.0)	6.0 (0.0)
6.0	1.5-2.0	4.0	8.0

The above recommended ICP pavement sections are based on the ICPI technical guidelines (ICPI 2005). From a geotechnical standpoint, it is acceptable to design the pedestrian ICP section to exclude the No. 2 subbase course, in which case the No. 57 base course should be increased to 10 inches. From a geotechnical standpoint, it is also acceptable to use compacted structural planting mix in lieu of the No. 57 and No. 2 base courses in locations where the pedestrian ICP section is adjacent to tree wells and is required for promoting root growth.

7.6 Permeable Gravel Surfacing

Where permeable gravel surfacing will be installed, such as in fire training areas, we recommend the permeable gravel surfacing material be underlain by at least six inches of compacted Class 2 aggregate base in non-vehicular areas; where the permeable gravel surfacing will receive occasional vehicular traffic (i.e., fire apparatus for training), the aggregate base layer should be increased to nine inches. The upper eight inches of soil subgrade should be moisture-conditioned and compacted in accordance with requirements presented in Section 7.1. The aggregate base should be moisture conditioned to near optimum, compacted to at least 95 percent relative compaction, and be non-yielding.

7.7 Seismic Design

We understand the proposed buildings will be designed using the 2016 CBC. As discussed in section 5.2.4, the site is underlain by potentially liquefiable soil. For design in accordance with the 2016 CBC and ASCE 41-13, a Site Class F would be used and site-specific response spectra would be needed. However, considering the proposed structures will have a period of 0.5 second or less, ASCE 7-10 does not require site-specific evaluations. Furthermore, considering the liquefiable layers are relatively thin and, therefore, the site will not incur significant nonlinear behavior during strong ground shaking. Consequently, we recommend Site Class D be used for this project.

The latitude and longitude of the site are 37.6541° and -122.1180°, respectively. Hence, in accordance with the 2016 CBC, we recommend the following:

- S_S = 1.923g, S_1 = 0.777g
- S_{MS} = 1.923g, S_{M1} = 1.166g
- S_{DS} = 1.282g, S_{D1} = 0.777g
- PGA_M = 0.74g
- Seismic Design Category E for Risk Categories I, II, and III
- Seismic Design Category F for Risk Category IV

8.0 ADDITIONAL GEOTECHNICAL SERVICES

Prior to construction, Rockridge Geotechnical should review the project plans and specifications to verify that they conform to the intent of our recommendations. During construction, our field engineer should provide on-site observation and testing during site preparation, placement and compaction of fill, and installation of building foundations. These observations will allow us to compare actual with anticipated subsurface conditions and to verify that the contractor's work conforms to the geotechnical aspects of the plans and specifications.

9.0 LIMITATIONS

This geotechnical investigation has been conducted in accordance with the standard of care commonly used as state-of-practice in the profession. No other warranties are either expressed or implied. The recommendations made in this report are based on the assumption that the subsurface conditions do not deviate appreciably from those disclosed in the exploratory borings and CPTs. If any variations or undesirable conditions are encountered during construction, we should be notified so that additional recommendations can be made. The foundation recommendations presented in this report are developed exclusively for the proposed development described in this report and are not valid for other locations and construction in the project vicinity.

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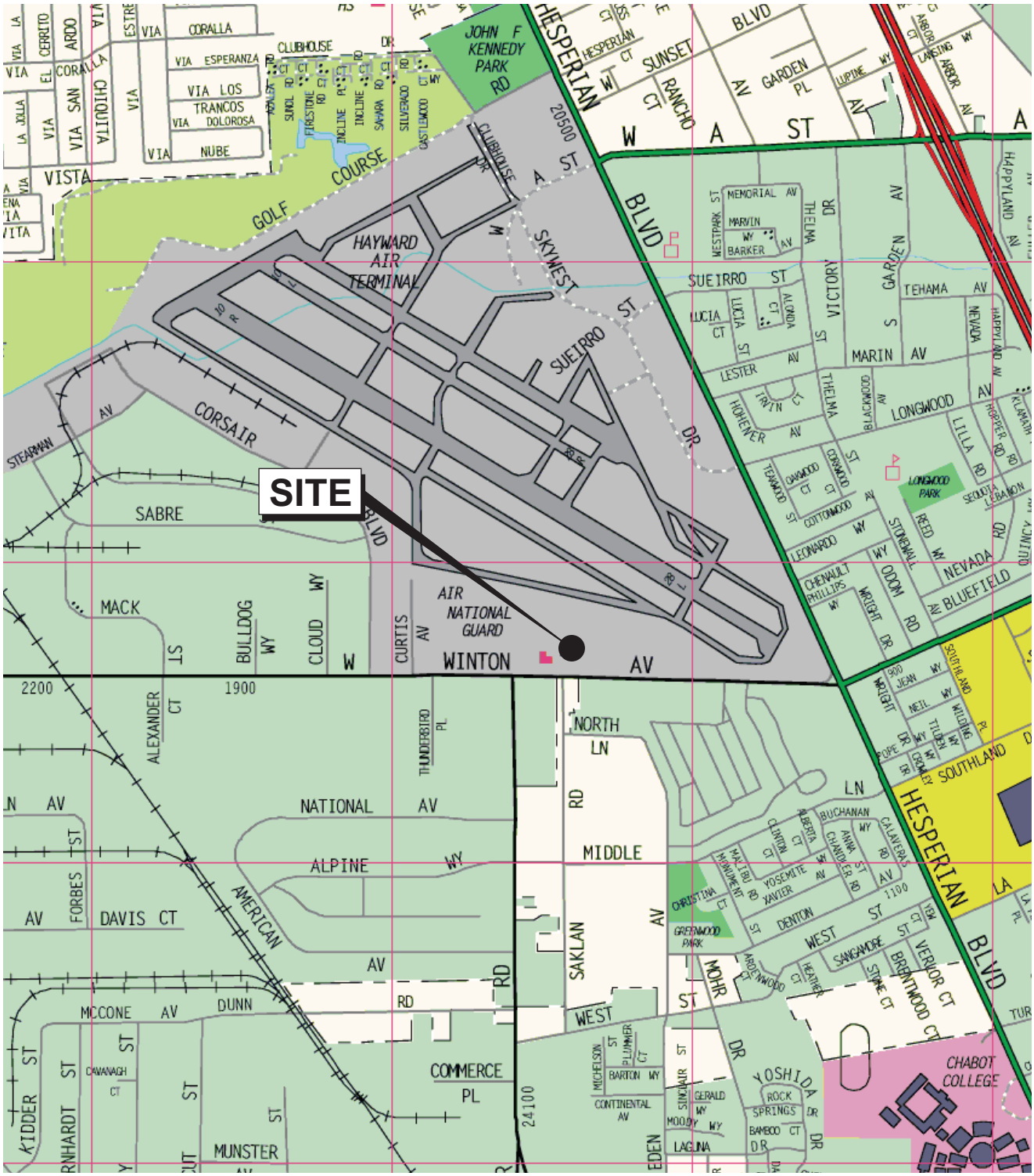
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ROCKRIDGE GEOTECHNICAL

FIGURES



Base map: The Thomas Guide
Alameda County
2002

0 1/4 1/2 Mile

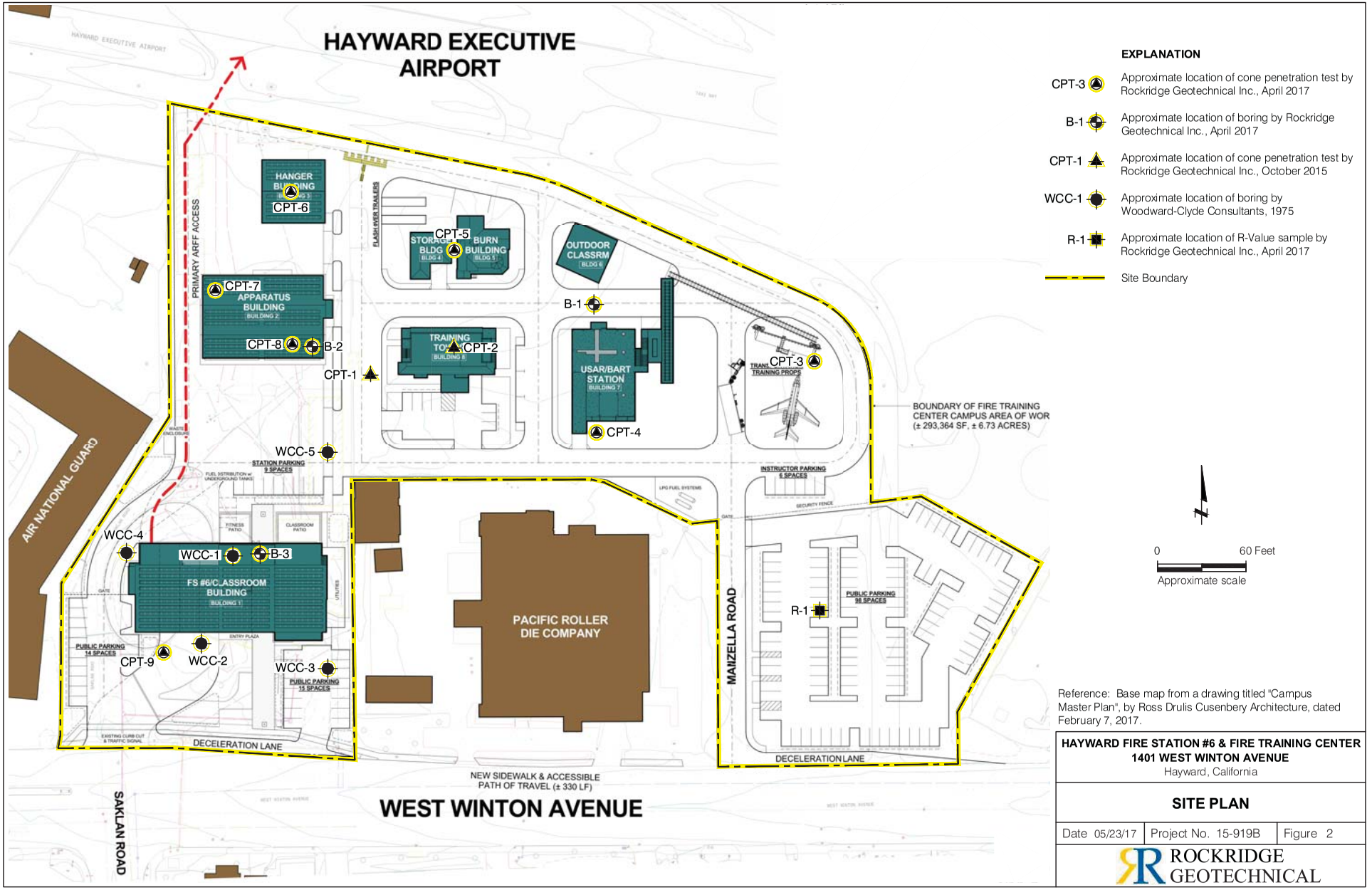
Approximate scale

HAYWARD FIRE STATION #6 & FIRE TRAINING CENTER
1401 WEST WINTON AVENUE
Hayward, California

ROCKRIDGE GEOTECHNICAL

SITE LOCATION MAP

Date 05/12/17	Project No. 15-919B	Figure 1



Reference: Base map from a drawing titled "Campus Master Plan", by Ross Drulis Cusenbery Architecture, dated February 7, 2017.

HAYWARD FIRE STATION #6 & FIRE TRAINING CENTER
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Hayward, California

SITE PLAN

Date 05/23/17	Project No. 15-919B	Figure 2

ROCKRIDGE GEOTECHNICAL



Base map: Google Earth, 2016.
Geology map: Graymer et al. 2006 (USGS)

EXPLANATION

Qha — **Alluvium (Holocene)**

Geologic contact:
dashed where approximate and dotted where concealed, queried where uncertin

0 2,000 4,000 Feet

Approximate Scale

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Hayward, California

ROCKRIDGE GEOTECHNICAL

REGIONAL GEOLOGIC MAP

Date 05/15/17	Project No. 15-919B	Figure 3



Base Map: U.S. Geological Survey (USGS), National Seismic Hazards Maps - Fault Sources, 2014.

EXPLANATION

- Strike slip
- Thrust (Reverse)
- Normal

N

0 5 10 Miles

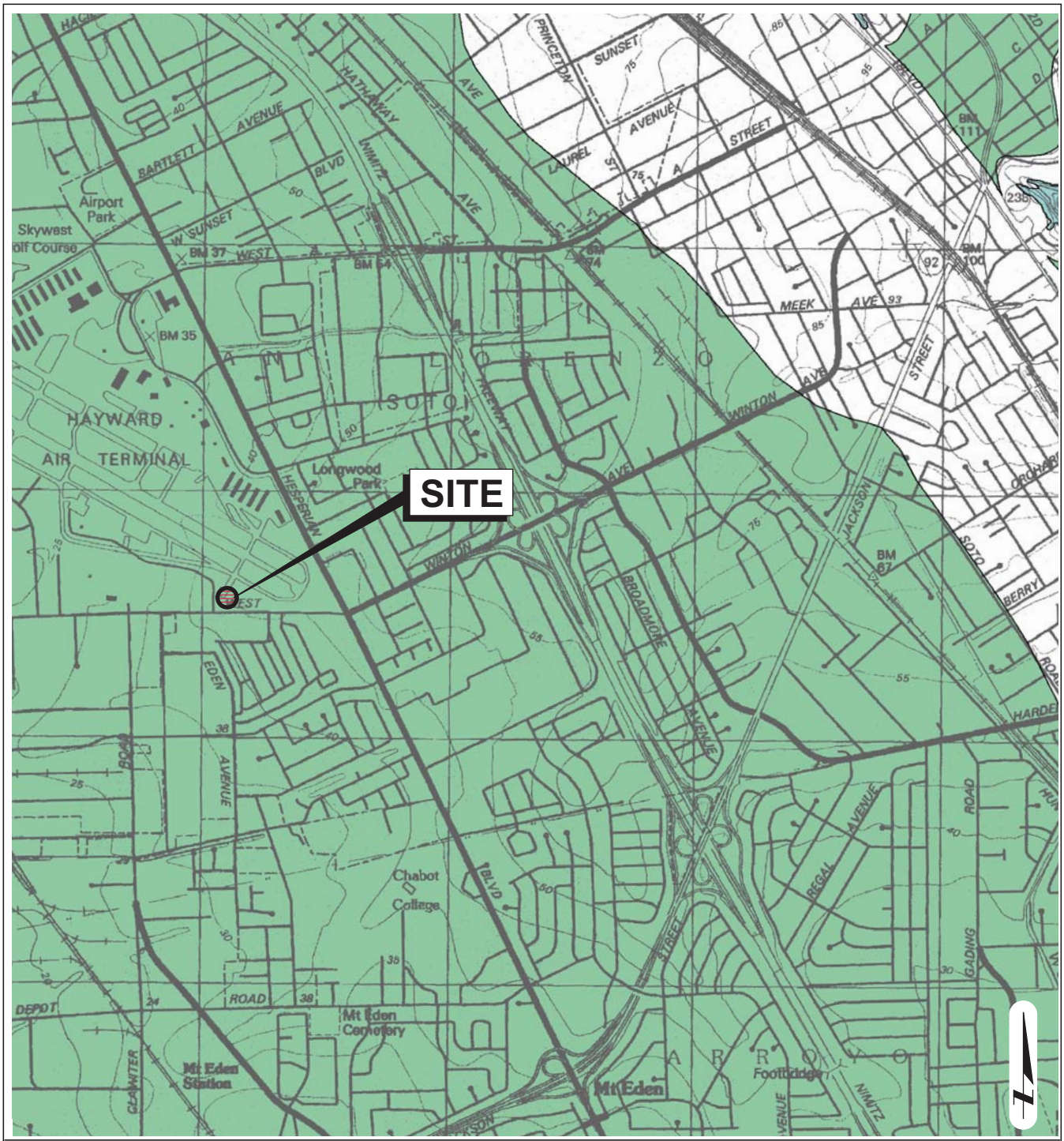
Approximate scale

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ROCKRIDGE GEOTECHNICAL

REGIONAL FAULT MAP

Date 05/12/17	Project No. 15-919B	Figure 4



EXPLANATION

Liquefaction; Areas where historic occurence of liquefaction, or local topographic, geological, geotechnical, and subsurface water conditions indicate a potential for permanent ground displacements.

Earthquake-Induced Landslides; Areas where previous occurence of landslide movement, or local topographic, geological, geotechnical, and subsurface water conditions indicate a potential for permanent ground displacements.

0 2000 4000 Feet

Approximate scale

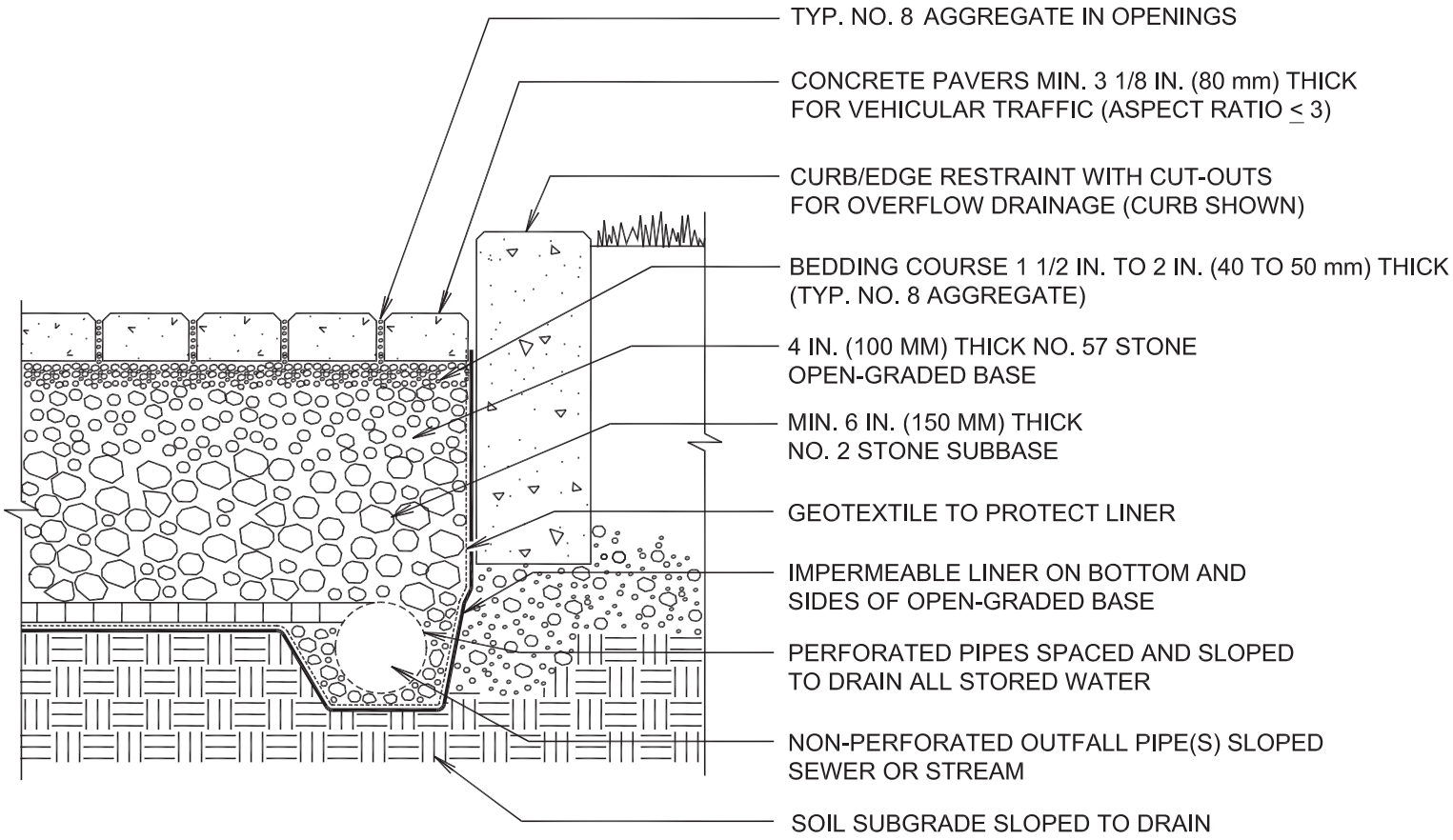
Reference:
State of California "Seismic Hazard Zones"
Hayward Quadrangle.
Released on July 2, 2003

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ROCKRIDGE GEOTECHNICAL

SEISMIC HAZARDS ZONE MAP

Date 05/12/17	Project No. 15-919B	Figure 5



NOTES:

1. NO. 2 STONE SUBBASE THICKNESS VARIES WITH DESIGN. CONSULT ICPI PERMEABLE INTERLOCKING CONCRETE PAVEMENT MANUAL.
2. PERFORATED PIPES MAY BE RAISED FOR WATER STORAGE FROM LARGE RAIN EVENTS WITH OUTLET(S) AT LINER BOTTOM TO DRAIN SMALL RAIN EVENTS.

References:
Interlocking Concrete Pavement Institute: ICPI-70 Permeable Pavement with No Exfiltration to Soil Subgrade, 2013

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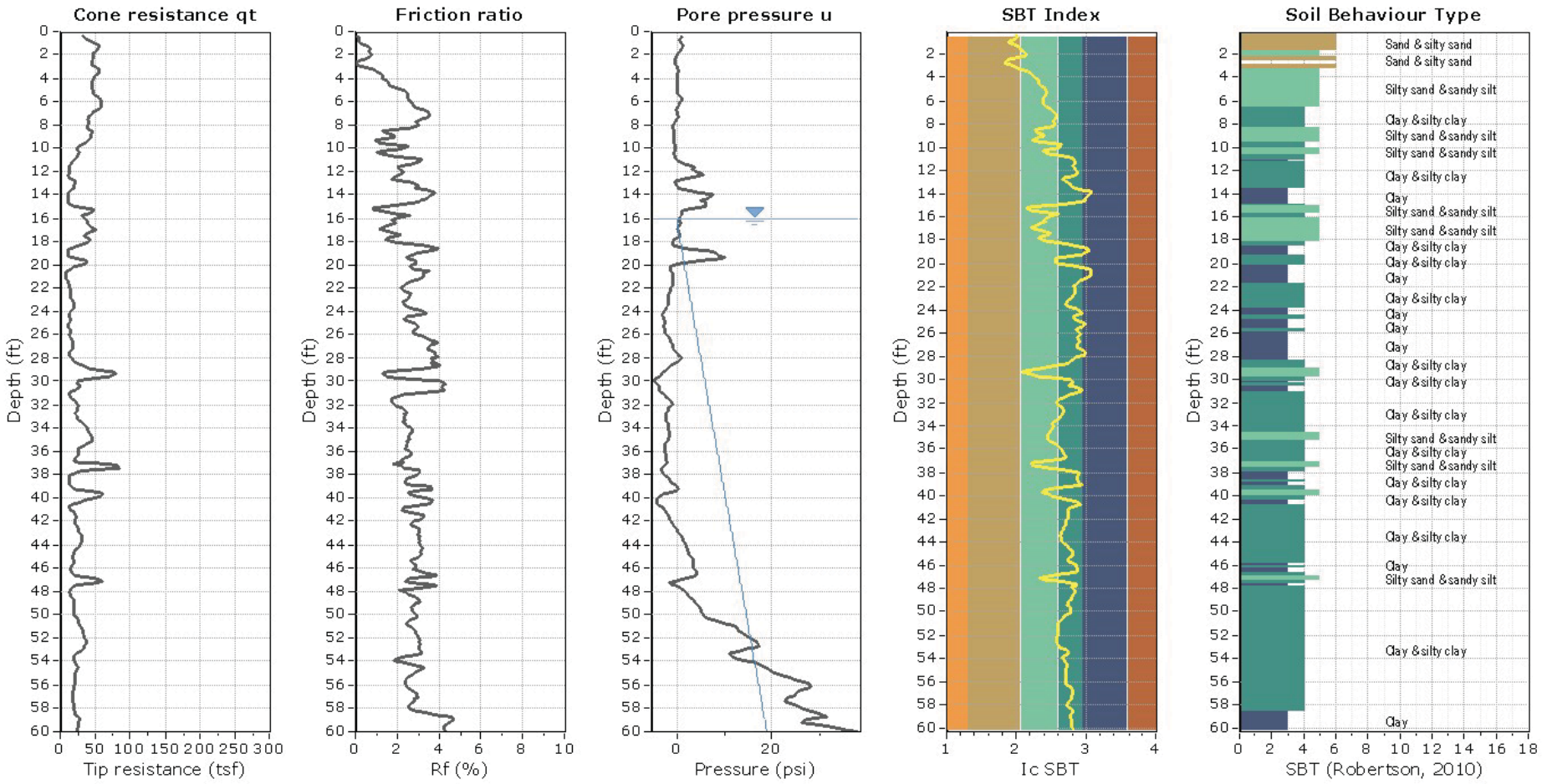
GENERALIZED ICPI PERMEABLE PAVER DETAIL FOR NO EXFILTRATION

Date 05/22/17 | Project No. 15-919B | Figure 6

ROCKRIDGE GEOTECHNICAL

APPENDIX A

Cone Penetration Test Results



SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

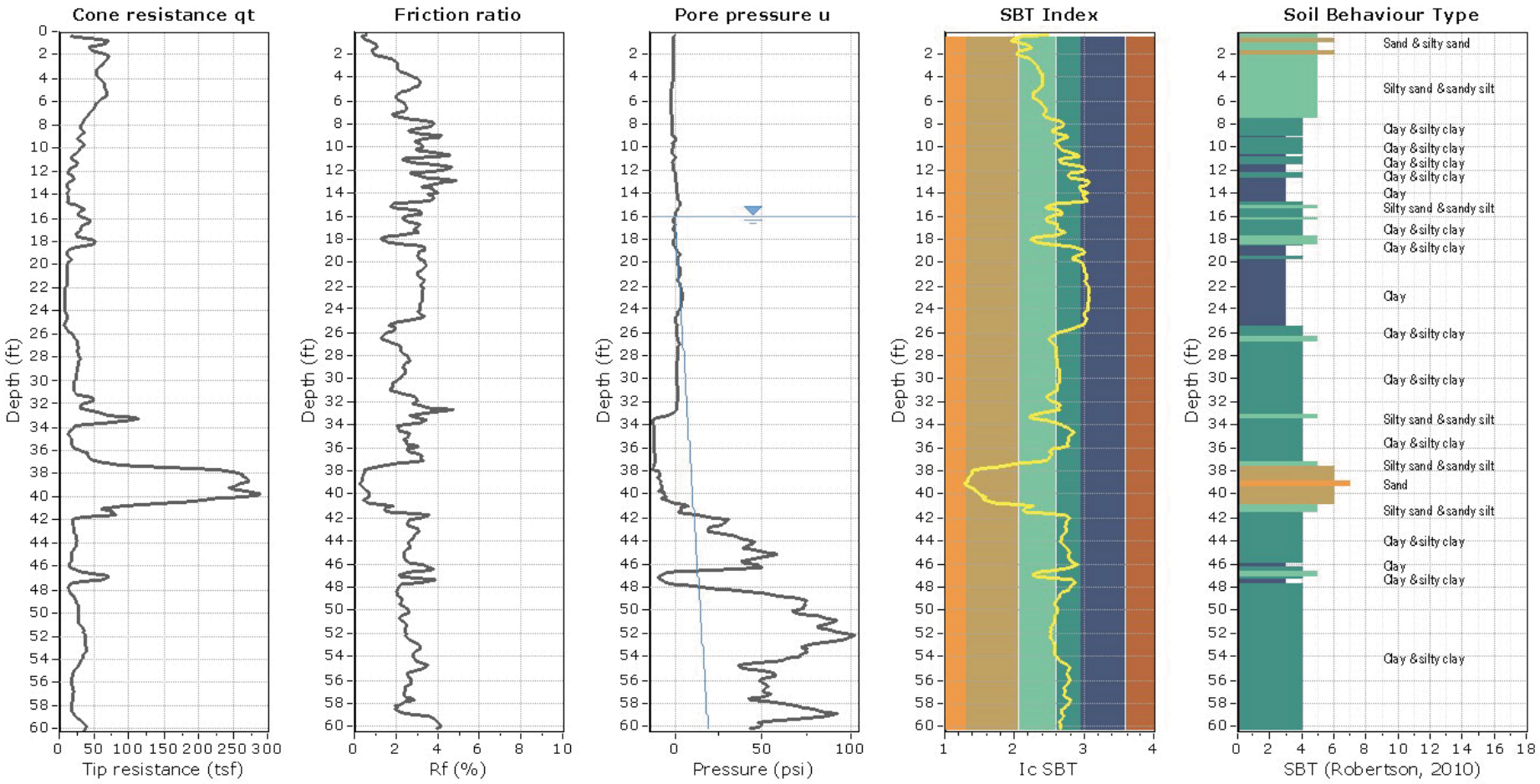
Total depth: 60.04 ft, Date: 10/01/2015
Measured Groundwater Depth: 16 feet
Cone Operator: Middle Earth Geo Testing, Inc.

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Hayward, California

ROCKRIDGE GEOTECHNICAL

CONE PENETRATION TEST RESULTS
CPT-1

Date 05/12/17	Project No. 15-919B	Figure A-1



SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

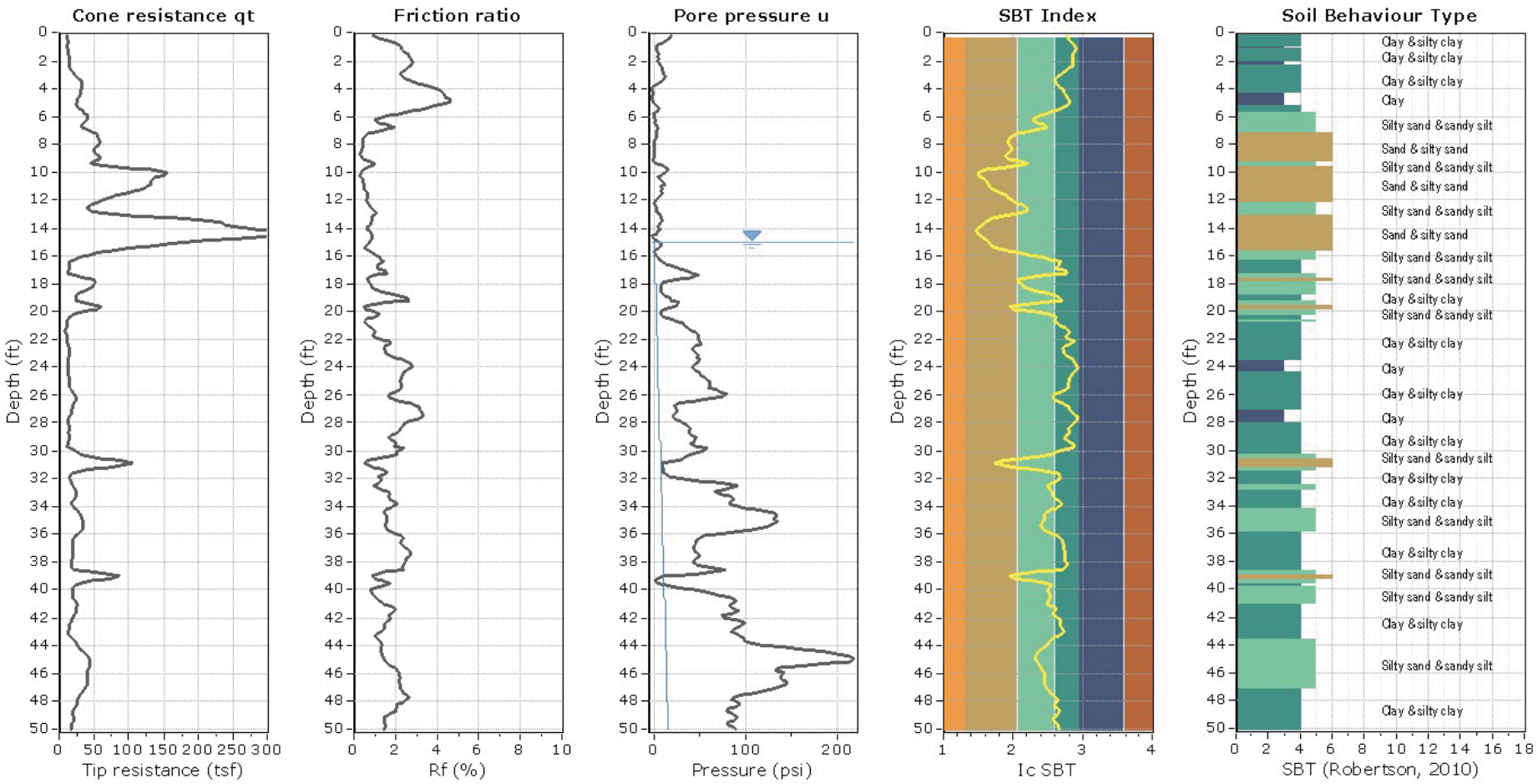
Total depth: 60.21 ft, Date: 10/01/2015
Measured Groundwater Depth: 16 feet
Cone Operator: Middle Earth Geo Testing, Inc.

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Hayward, California

ROCKRIDGE GEOTECHNICAL

CONE PENETRATION TEST RESULTS
CPT-2

Date 05/15/17	Project No. 15-919B	Figure A-2



SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

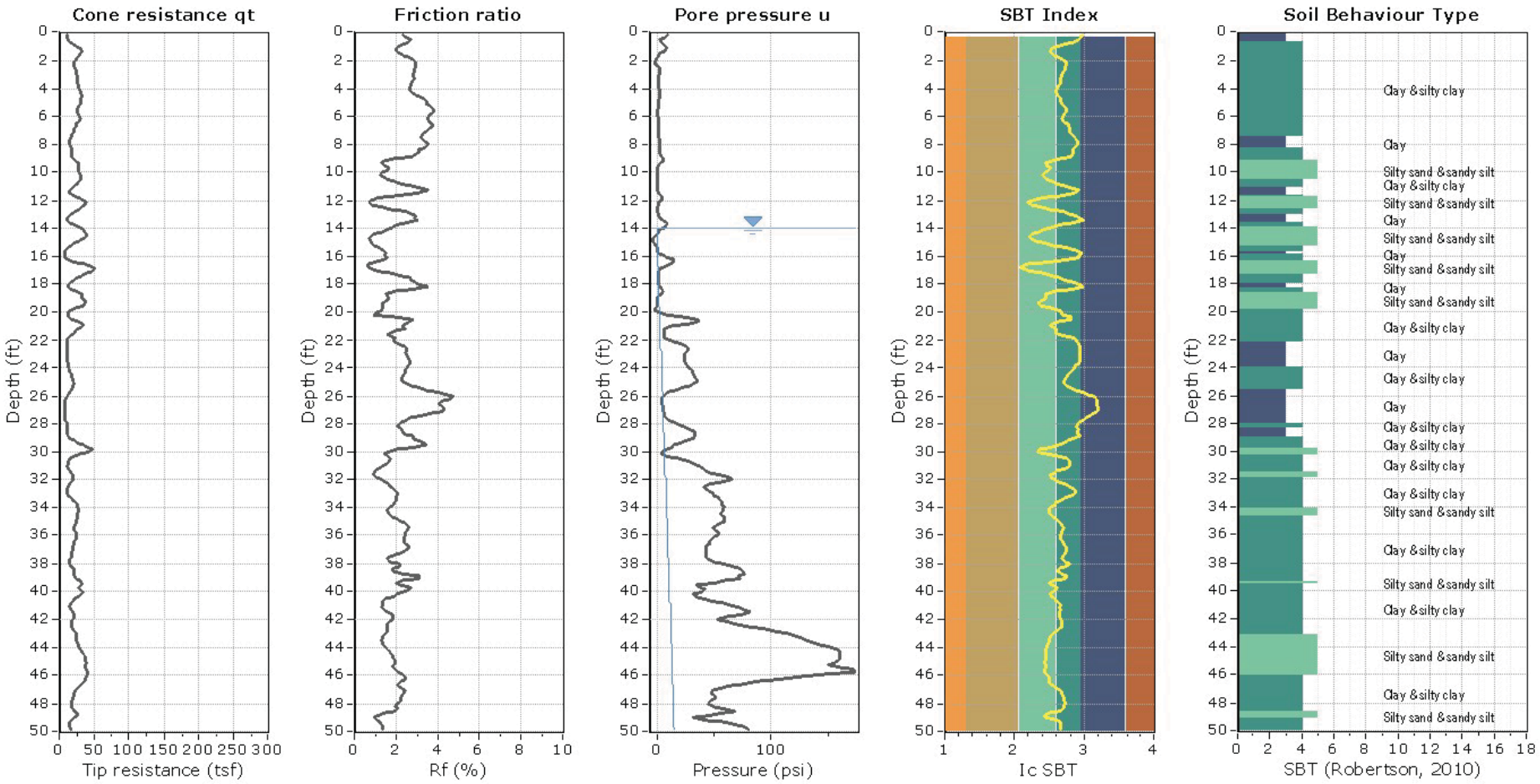
Total depth: 50.03 ft, Date: 4/10/2017
Measured Groundwater Depth: 15 feet
Cone Operator: Gregg Drilling and Testing, Inc.

HAYWARD FIRE STATION #6 & FIRE TRAINING CENTER
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Hayward, California

ROCKRIDGE GEOTECHNICAL

CONE PENETRATION TEST RESULTS
CPT-3

Date 05/15/17	Project No. 15-919B	Figure A-3



SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

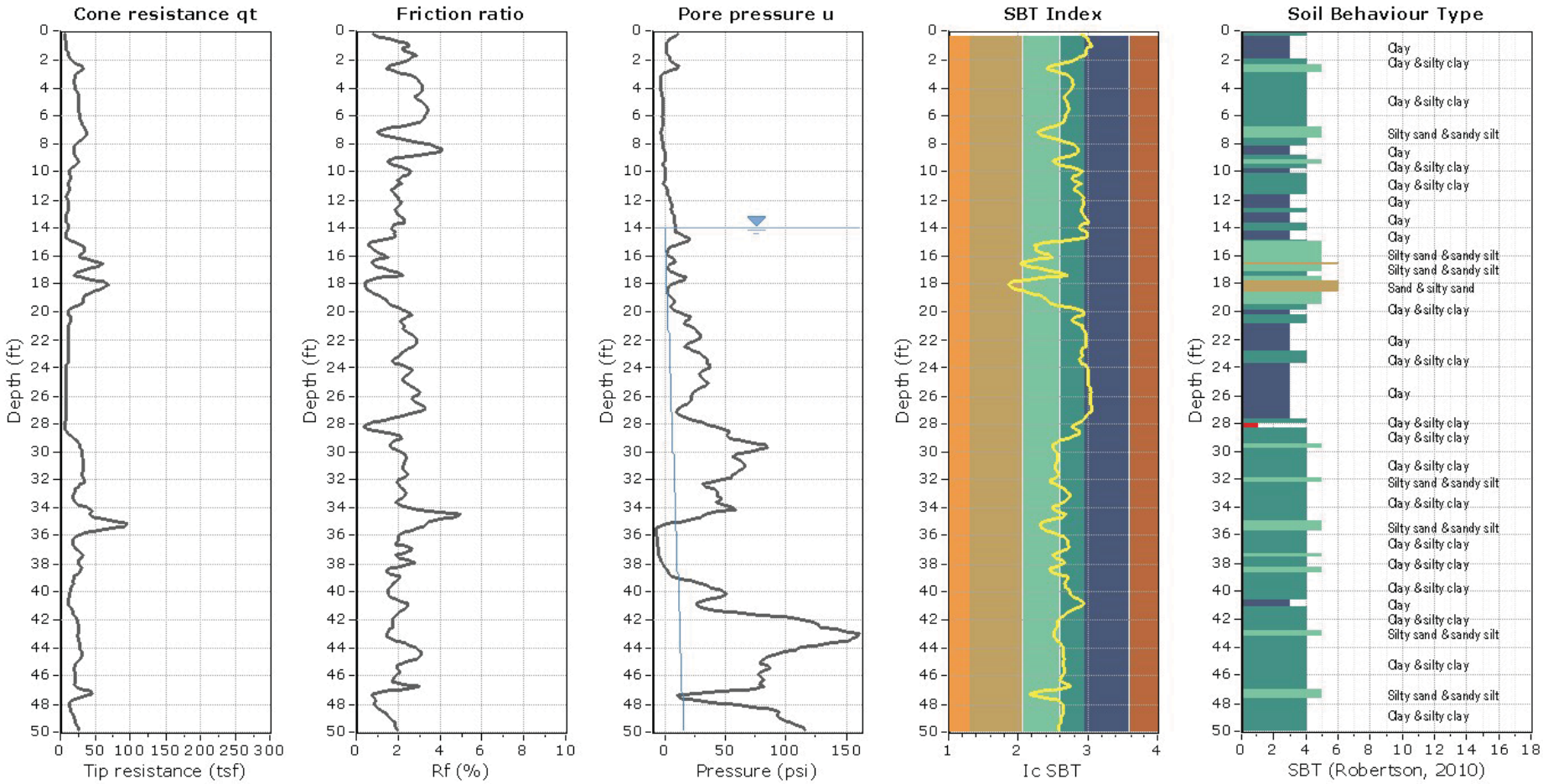
Total depth: 49.87 ft, Date: 4/10/2017
Estimated Groundwater Depth: 14 feet
Cone Operator: Gregg Drilling and Testing, Inc.

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ROCKRIDGE GEOTECHNICAL

CONE PENETRATION TEST RESULTS
CPT-4

Date 05/15/17	Project No. 15-919B	Figure A-4



SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

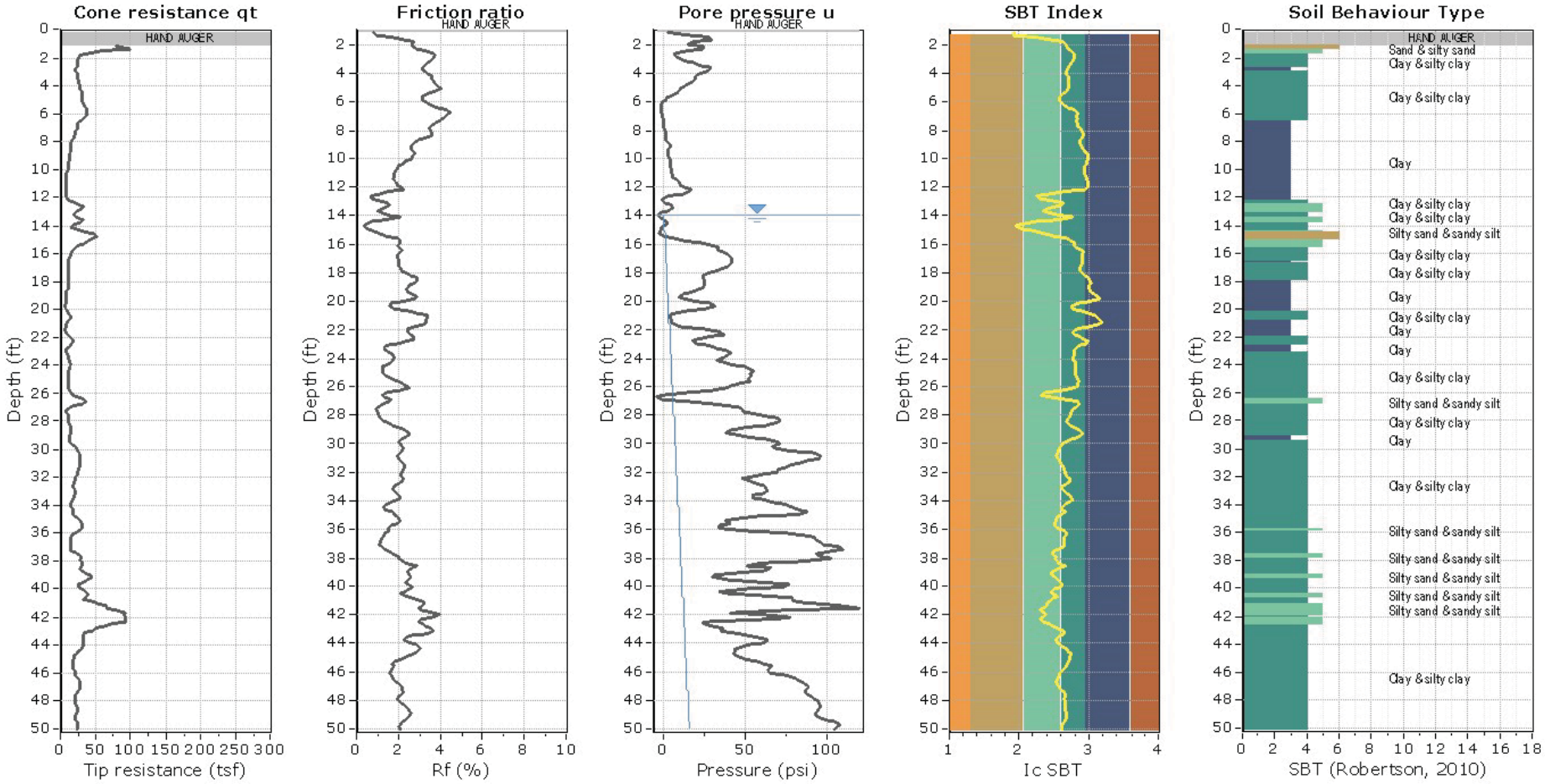
Total depth: 49.87 ft, Date: 4/10/2017
Estimated Groundwater Depth: 14 feet
Cone Operator: Gregg Drilling and Testing, Inc.

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ROCKRIDGE GEOTECHNICAL

CONE PENETRATION TEST RESULTS
CPT-5

Date 05/15/17	Project No. 15-919B	Figure A-5



SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

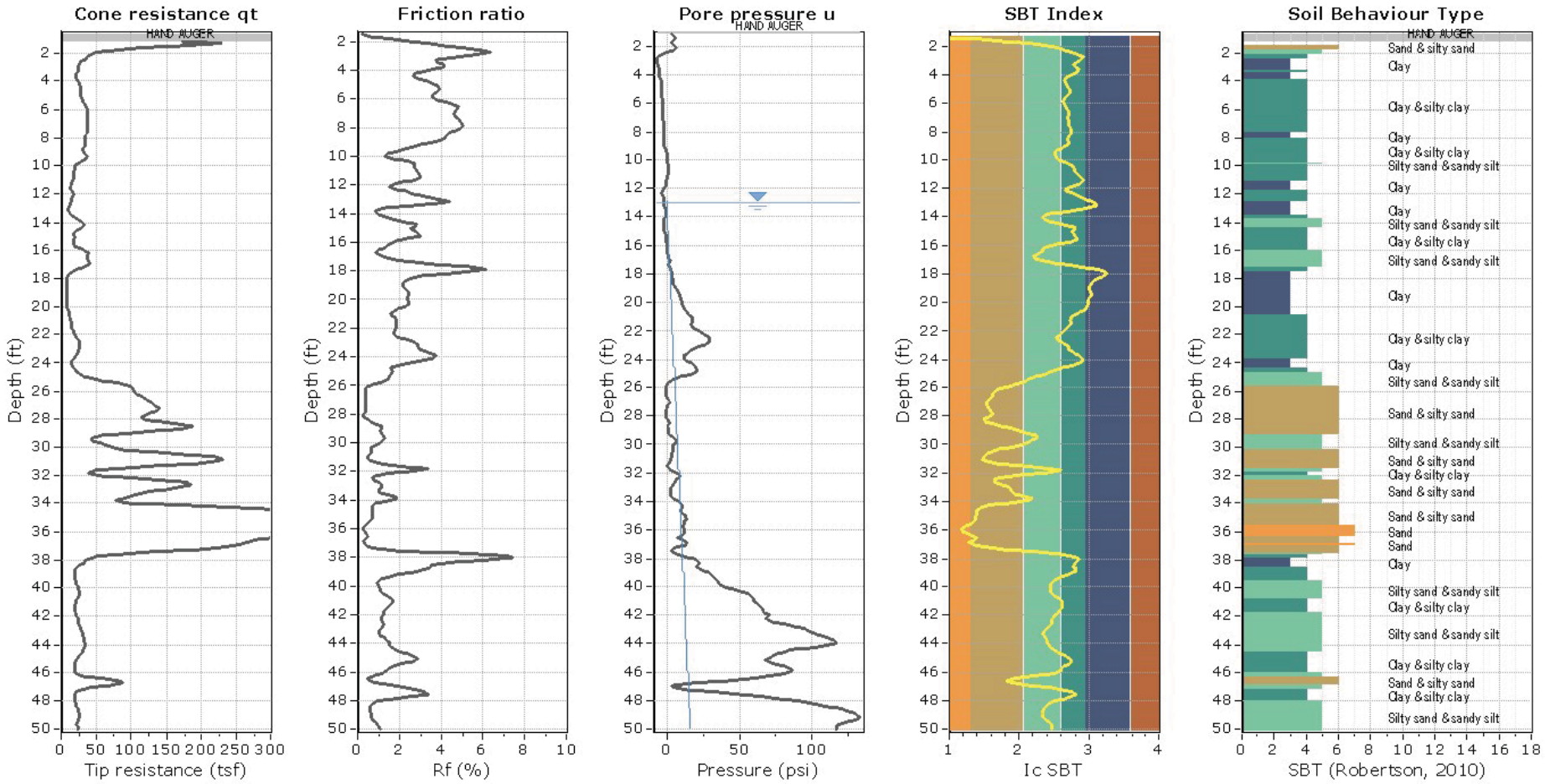
Total depth: 50.03 ft, Date: 4/10/2017
Estimated Groundwater Depth: 14 feet
Cone Operator: Gregg Drilling and Testing, Inc.

HAYWARD FIRE STATION #6 & FIRE TRAINING CENTER
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ROCKRIDGE GEOTECHNICAL

CONE PENETRATION TEST RESULTS
CPT-6

Date 05/15/17	Project No. 15-919B	Figure A-6



SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

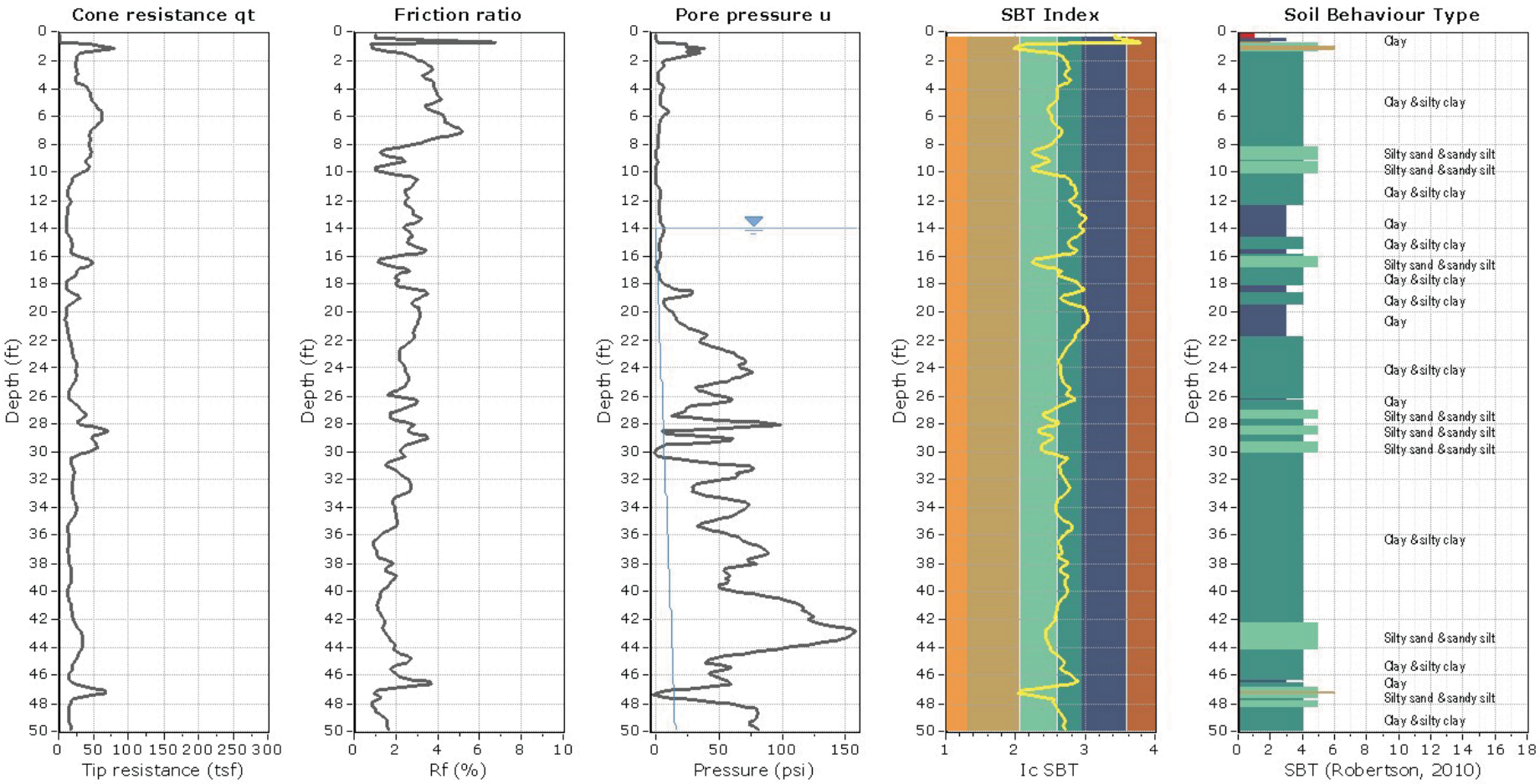
Total depth: 50.03 ft, Date: 4/10/2017
Measured Groundwater Depth: 13 feet
Cone Operator: Gregg Drilling and Testing, Inc.

HAYWARD FIRE STATION #6 & FIRE TRAINING CENTER
1401 WEST WINTON AVENUE
Hayward, California

ROCKRIDGE GEOTECHNICAL

CONE PENETRATION TEST RESULTS
CPT-7

Date 05/12/17	Project No. 15-919B	Figure A-7



SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

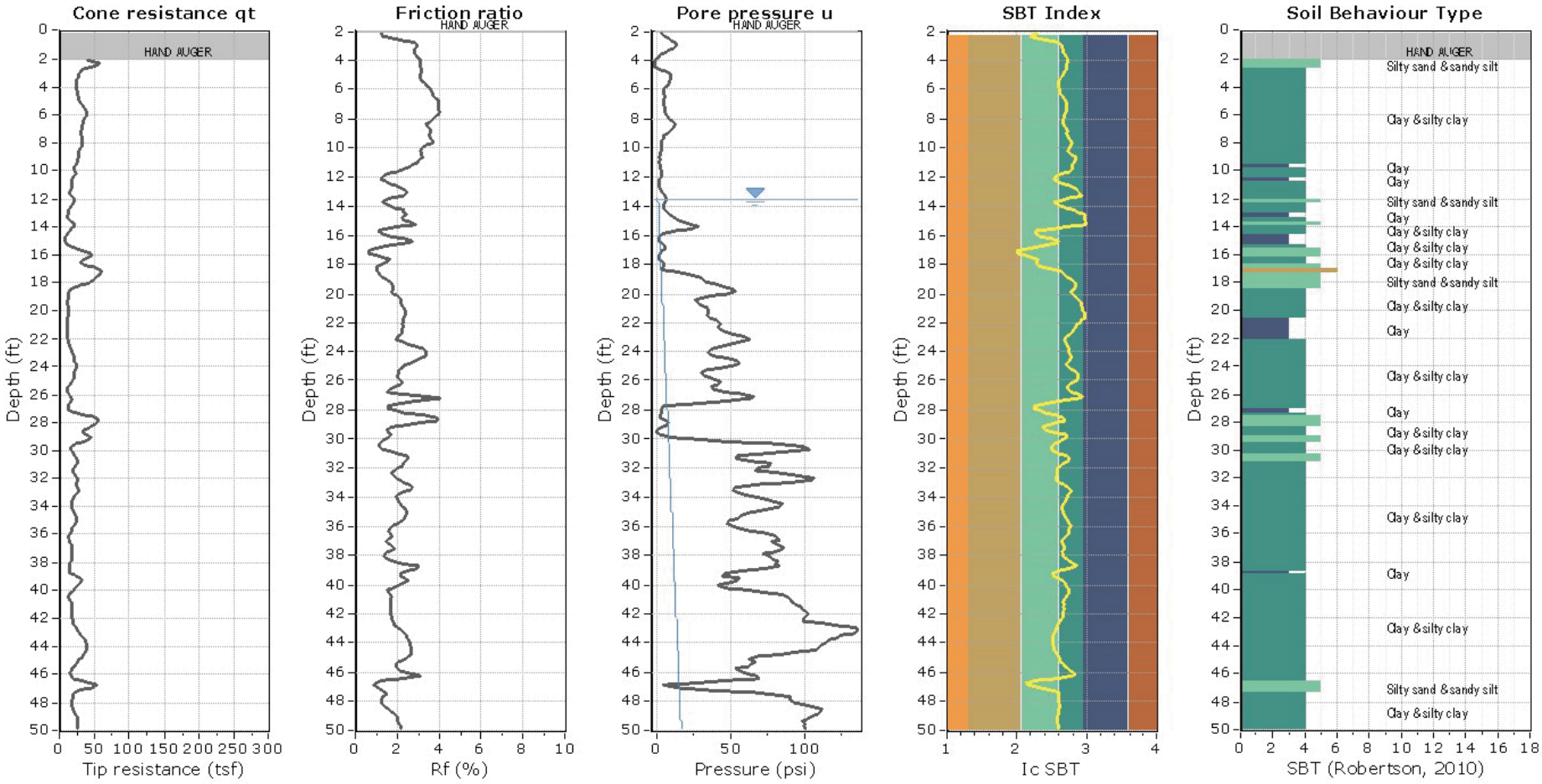
Total depth: 49.87 ft, Date: 4/10/2017
Estimated Groundwater Depth: 14 feet
Cone Operator: Gregg Drilling and Testing, Inc.

HAYWARD FIRE STATION #6 & FIRE TRAINING CENTER
1401 WEST WINTON AVENUE
Hayward, California

ROCKRIDGE GEOTECHNICAL

CONE PENETRATION TEST RESULTS
CPT-8

Date 05/15/17	Project No. 15-919B	Figure A-8



SBT legend

1. Sensitive fine grained
2. Organic material
3. Clay to silty clay
4. Clayey silt to silty clay
5. Silty sand to sandy silt
6. Clean sand to silty sand
7. Gravely sand to sand
8. Very stiff sand to clayey sand
9. Very stiff fine grained

Total depth: 49.87 ft, Date: 4/10/2017
Measured Groundwater Depth: 13.5 feet
Cone Operator: Gregg Drilling and Testing, Inc.

HAYWARD FIRE STATION #6 & FIRE TRAINING CENTER
1401 WEST WINTON AVENUE
Hayward, California

ROCKRIDGE GEOTECHNICAL

CONE PENETRATION TEST RESULTS
CPT-9

Date 05/12/17	Project No. 15-919B	Figure A-9

ROCKRIDGE GEOTECHNICAL

APPENDIX B

Logs of Test Borings

PROJECT: **HAYWARD FIRE STATION #6 & FIRE TRAINING CENTER**
1401 WEST WINTON AVENUE
Hayward, California

Log of Boring B-1

Boring location: See Site Plan, Figure 2 | Logged by: C. Proto
Date started: 4/10/17 | Date finished: 4/10/17
Drilling method: Hollow Stem Auger
Hammer weight/drop: 140 lbs./30 inches | Hammer type: Automatic Hammer
Sampler: Sprague & Henwood (S&H), Standard Penetration Test (SPT), Shebly Tube (ST)

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
1						TOPSOIL dark brown, moist, with rootlets						
2					CL	CLAY with SAND (CL) brown with dark brown mottling, very stiff, moist, fine-grained sand, trace rootlets						
3	S&H		5 12 16	22		LL = 37, PI = 20; see Figure C-5					16.8	111
4												
5					CL	SANDY CLAY (CL) yellow-brown, very stiff, moist, with fine-grained sand, with silt						
6	S&H		8 10 12	18								
7	SPT		3 6 7	18		Corrosion Test; see Appendix D						
8					SP-SM	SAND with SILT (SP-SM) yellow-brown, medium dense, moist, fine-grained sand						
9												
10												
11	S&H		7 10 13	17		fine- to medium-grained sand, trace fine gravel						
12	SPT		4 3 8	15								
13												
14						▽ 4/10/2017 (during drilling)						
15					SM	SILTY SAND (SM) yellow, medium dense, wet, fine-to coarse-grained sand, trace gravel						
16	S&H		2 7 7	11						19.0		
17	SPT		3 4 7	15								
18					CL	CLAY with SAND (CL) yellow-brown, stiff, wet, fine-grained sand, trace silt						
19												
20						soft to medium stiff						
21	S&H		2 2 4	4		LL = 34, PI = 15; see Figure C-5				81	29.2	
22												
23												
24												
25						light gray, stiff						
26	ST		500 psi			Consolidation Test; see Figure C-1 TxUU Test; see Figure C-2	TxUU	2,500	1,100		28.7	92
27												
28					CL	CLAY with SAND (CL) light gray, stiff, wet, fine-grained sand, with silt						
29												
30												
31	S&H		4 5 9	9								
32												

Boring terminated at a depth of 31.5 feet below ground surface.
Boring backfilled with cement grout.
Groundwater encountered at a depth of 14 feet during drilling.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.8 and 1.35, respectively, to account for sampler type and hammer energy.

ROCKRIDGE GEOTECHNICAL

Project No.: 15-919B | Figure: B-1

PROJECT: **HAYWARD FIRE STATION #6 & FIRE TRAINING CENTER**
1401 WEST WINTON AVENUE
Hayward, California

Log of Boring B-2

Boring location: See Site Plan, Figure 2 | Logged by: C. Proto
Date started: 4/10/17 | Date finished: 4/10/17
Drilling method: Hollow Stem Auger
Hammer weight/drop: 140 lbs./30 inches | Hammer type: Automatic Hammer
Sampler: Sprague & Henwood (S&H), Standard Penetration Test (SPT)

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
0						3 inches of asphalt concrete						
0.5						9 inches of aggregate base						
1					CL	CLAY (CL) dark brown, stiff to very stiff, moist, with silt, trace fine-grained sand						
3	GRAB					Corrosion Test; see Appendix D						
5	S&H		6 14 22	29								
6					CL	CLAY with SAND (CL) yellow-brown, very stiff, moist						
8												
9					SM	SILTY SAND (SM) yellow to yellow-brown, medium dense, moist to wet, fine-grained sand, trace clay						
10	S&H		9 7 8	12								
11												
12	SPT		5 7 6	18								
13												
14	S&H		2 4 4	6	CL	SANDY CLAY (CL) olive-brown, medium stiff to stiff, wet, fine-grained sand 4/10/2017 (during drilling) LL = 24, PI = 8; see Figure C-5				62	25.3	98
15	S&H		5 4 7	9								
16												
17	SPT		2 2 3	7								
18					CL	CLAY (CL) yellow, medium to stiff, wet, with silt, trace fine-grained sand						
20	S&H		3 4 7	9								
21					CL	CLAY (CL) olive-gray, stiff, wet sample retrieved with sand catcher						
23												
24					CL	SANDY CLAY (CL) light gray, medium stiff to stiff, wet, fine-grained sand, with silt LL = 29, PI = 10; see Figure C-5				50	28.4	96
25	S&H		3 5 5	8								
27												
28					SC	CLAYEY SAND (SC) yellow-brown, loose, wet, fine-grained sand, trace clay						
30	S&H		4 4 6	8								
31					CL	CLAY with SAND (CL)				82		
32												

ROCKRIDGE GEOTECHNICAL

Project No.: 15-919B | Figure: B-2a

ROCKRIDGE 15-919B.GPJ TR.GDT 6/5/17

PROJECT: **HAYWARD FIRE STATION #6 & FIRE TRAINING CENTER**
1401 WEST WINTON AVENUE
Hayward, California

Log of Boring B-2

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
33						CLAY with SAND (CL) (continued) olive-gray, very stiff, wet, with silt, fine-grained sand LL = 40, PI = 24; see Figure C-5						
34												
35	S&H		4 8 9	14	CL	green-gray, very stiff TxUU Test; see Figure C-3	TxUU	3,000	2,800		22.6	106
36												
37												
38												
39					CL	SANDY CLAY (CL) olive-gray with yellow-brown mottling, stiff, wet, fine-grained sand, trace clay						
40												
41	S&H		4 6 9	12	SC	CLAYEY SAND (SC) olive-gray with yellow brown mottling, medium dense, wet						
42												
43												
44												
45												
46												
47												
48												
49												
50												
51												
52												
53												
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55												
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60												
61												
62												
63												
64												

Boring terminated at a depth of 41.5 feet below ground surface.
Boring backfilled with cement grout.
Groundwater encountered at a depth of 15 feet during drilling.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.8 and 1.35, respectively, to account for sampler type and hammer energy.

ROCKRIDGE GEOTECHNICAL

Project No.: 15-919B
Figure: B-2b

PROJECT: **HAYWARD FIRE STATION #6 & FIRE TRAINING CENTER**
1401 WEST WINTON AVENUE
Hayward, California

Log of Boring B-3

Boring location: See Site Plan, Figure 2 | Logged by: C. Proto
Date started: 4/10/17 | Date finished: 4/10/17
Drilling method: Hollow Stem Auger
Hammer weight/drop: 140 lbs./30 inches | Hammer type: Automatic Hammer
Sampler: Sprague & Henwood (S&H), Standard Penetration Test (SPT)

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
0						12 inches of asphalt concrete						
0.5						6 inches of aggregate base						
2	GRAB				CL	CLAY (CL) dark brown, very stiff, moist, trace sand LL = 41, PI = 25; see Figure C-5						
4						gravel up to 3 inches						
5	S&H		5 11 14	20		brown					19.4	108
7	SPT		5 9 10	26								
8					CL	CLAY (CL) brown, very stiff, moist, with silt, trace fine-grained sand						
10	S&H		2 4 10	11		stiff						
12	SPT		3 3 4	9	SC	CLAYEY SAND (SC) yellow, loose, moist, fine-grained sand, with clay						
14					CL	CLAY (CL) yellow-brown with brown and yellow-brown mottling, stiff, wet, with silt						
15	S&H		3 6 13	15		▽ 4/10/2017 (during drilling)						
17	SPT		4 6 7	18	SM	SILTY SAND (SM) yellow-brown, medium dense, wet, fine-grained sand						
20	S&H		3 7 7	10		CLAY (CL) yellow-brown with dark brown mottling, medium stiff, wet, with silt TxUU Test; see Figure C-4	TxUU	2,000	975		29.7	93
25	S&H		6 10 12	18	CL	olive-gray with brown mottling, grading light gray, very stiff, trace fine-grained sand (sample driven without liners)						
30	S&H		4 6 8	11		stiff						

ROCKRIDGE GEOTECHNICAL

Project No.: 15-919B | Figure: B-3a

PROJECT: **HAYWARD FIRE STATION #6 & FIRE TRAINING CENTER**
1401 WEST WINTON AVENUE
Hayward, California

Log of Boring B-3

DEPTH (feet)	SAMPLES: Sampler Type	SAMPLES: Sample	SAMPLES: Blows/ 6"	SAMPLES: SPT N-Value[1]	LITHOLOGY	MATERIAL DESCRIPTION	LABORATORY TEST DATA: Type of Strength Test	Confining Pressure Lbs/Sq Ft	Shear Strength Lbs/Sq Ft	Fines %	Natural Moisture Content, %	Dry Density Lbs/Cu Ft
33						CLAY (CL) (continued)						
34												
35												
36	S&H		3 6 7	9	CL	olive-gray with brown mottling						
37												
38												
39												
40												
41	S&H		4 9 8	14		with SILTY SAND (SM) inclusions						
42												
43												
44												
45												
46												
47												
48												
49												
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60												
61												
62												
63												
64												

Boring terminated at a depth of 41.5 feet below ground surface.
Boring backfilled with cement grout.
Groundwater encountered at a depth of 16 feet during drilling.

[1] S&H and SPT blow counts for the last two increments were converted to SPT N-Values using factors of 0.8 and 1.35, respectively, to account for sampler type and hammer energy.

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Project No.: 15-919B
Figure: B-3b

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions		Symbols	Typical Names
Coarse-Grained Soils (more than half of soil > no. 200 sieve size)	Gravels (More than half of coarse fraction > no. 4 sieve size)	GW	Well-graded gravels or gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines
		GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
	Sands (More than half of coarse fraction < no. 4 sieve size)	SW	Well-graded sands or gravelly sands, little or no fines
		SP	Poorly-graded sands or gravelly sands, little or no fines
		SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
Fine -Grained Soils (more than half of soil < no. 200 sieve size)	Silts and Clays LL = < 50	ML	Inorganic silts and clayey silts of low plasticity, sandy silts, gravelly silts
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
		OL	Organic silts and organic silt-clays of low plasticity
	Silts and Clays LL = > 50	MH	Inorganic silts of high plasticity
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic silts and clays of high plasticity
Highly Organic Soils		PT	Peat and other highly organic soils

GRAIN SIZE CHART

Classification	Range of Grain Sizes	
	U.S. Standard Sieve Size	Grain Size in Millimeters
Boulders	Above 12"	Above 305
Cobbles	12" to 3"	305 to 76.2
Gravel coarse fine	3" to No. 4 3" to 3/4" 3/4" to No. 4	76.2 to 4.76 76.2 to 19.1 19.1 to 4.76
Sand coarse medium fine	No. 4 to No. 200 No. 4 to No. 10 No. 10 to No. 40 No. 40 to No. 200	4.76 to 0.075 4.76 to 2.00 2.00 to 0.420 0.420 to 0.075
Silt and Clay	Below No. 200	Below 0.075

Unstabilized groundwater level

Stabilized groundwater level

SAMPLE DESIGNATIONS/SYMBOLS

Sample taken with Sprague & Henwood split-barrel sampler with a 3.0-inch outside diameter and a 2.43-inch inside diameter. Darkened area indicates soil recovered

Classification sample taken with Standard Penetration Test sampler

Undisturbed sample taken with thin-walled tube

Disturbed sample

Sampling attempted with no recovery

Core sample

Analytical laboratory sample

Sample taken with Direct Push sampler

Sonic

SAMPLER TYPE

C	Core barrel
CA	California split-barrel sampler with 2.5-inch outside diameter and a 1.93-inch inside diameter
D&M	Dames & Moore piston sampler using 2.5-inch outside diameter, thin-walled tube
O	Osterberg piston sampler using 3.0-inch outside diameter, thin-walled Shelby tube
PT	Pitcher tube sampler using 3.0-inch outside diameter, thin-walled Shelby tube
S&H	Sprague & Henwood split-barrel sampler with a 3.0-inch outside diameter and a 2.43-inch inside diameter
SPT	Standard Penetration Test (SPT) split-barrel sampler with a 2.0-inch outside diameter and a 1.5-inch inside diameter
ST	Shelby Tube (3.0-inch outside diameter, thin-walled tube) advanced with hydraulic pressure

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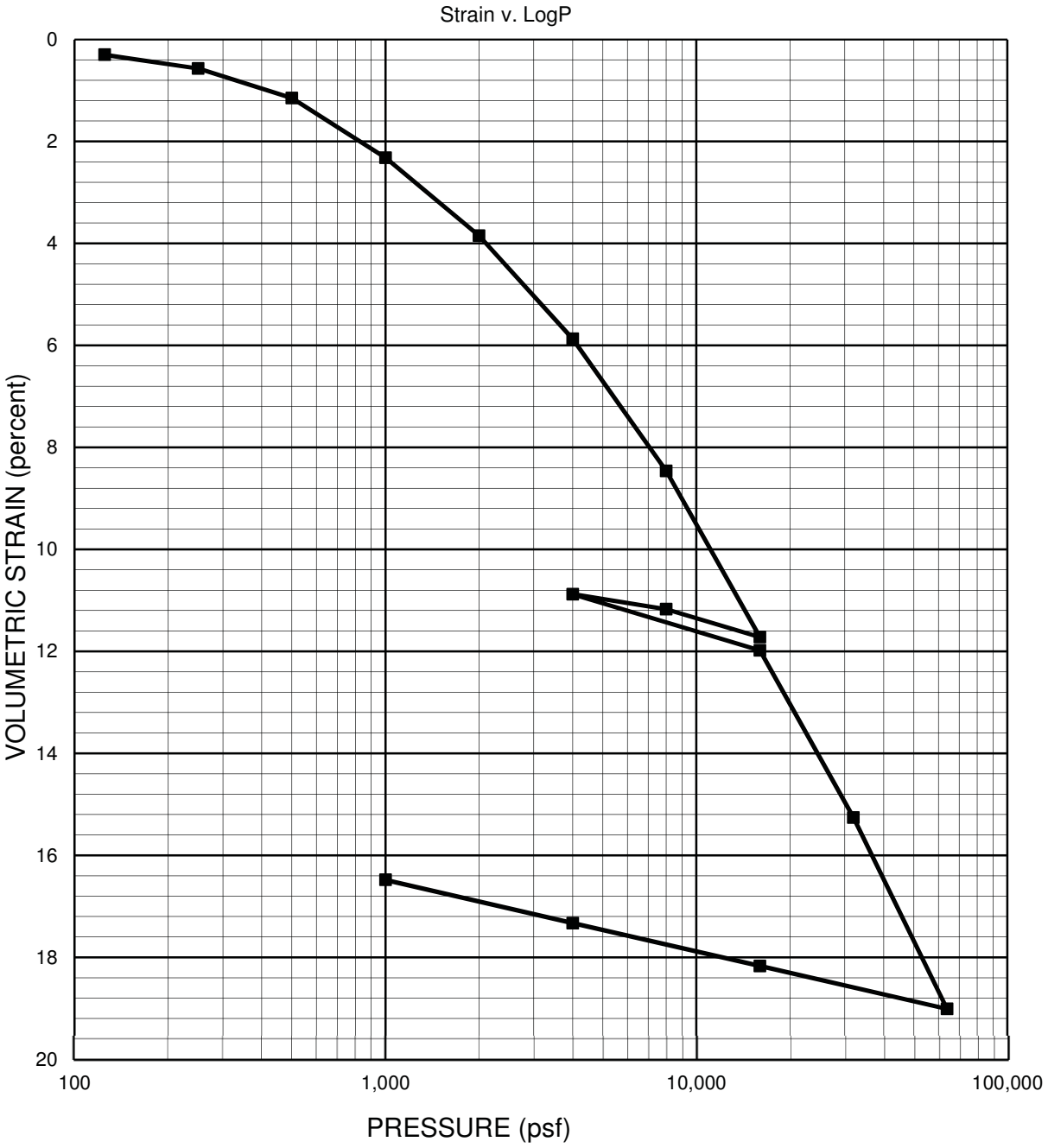
CLASSIFICATION CHART

Date 05/12/17 | Project No. 15-919B | Figure B-4

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APPENDIX C

Laboratory Test Results



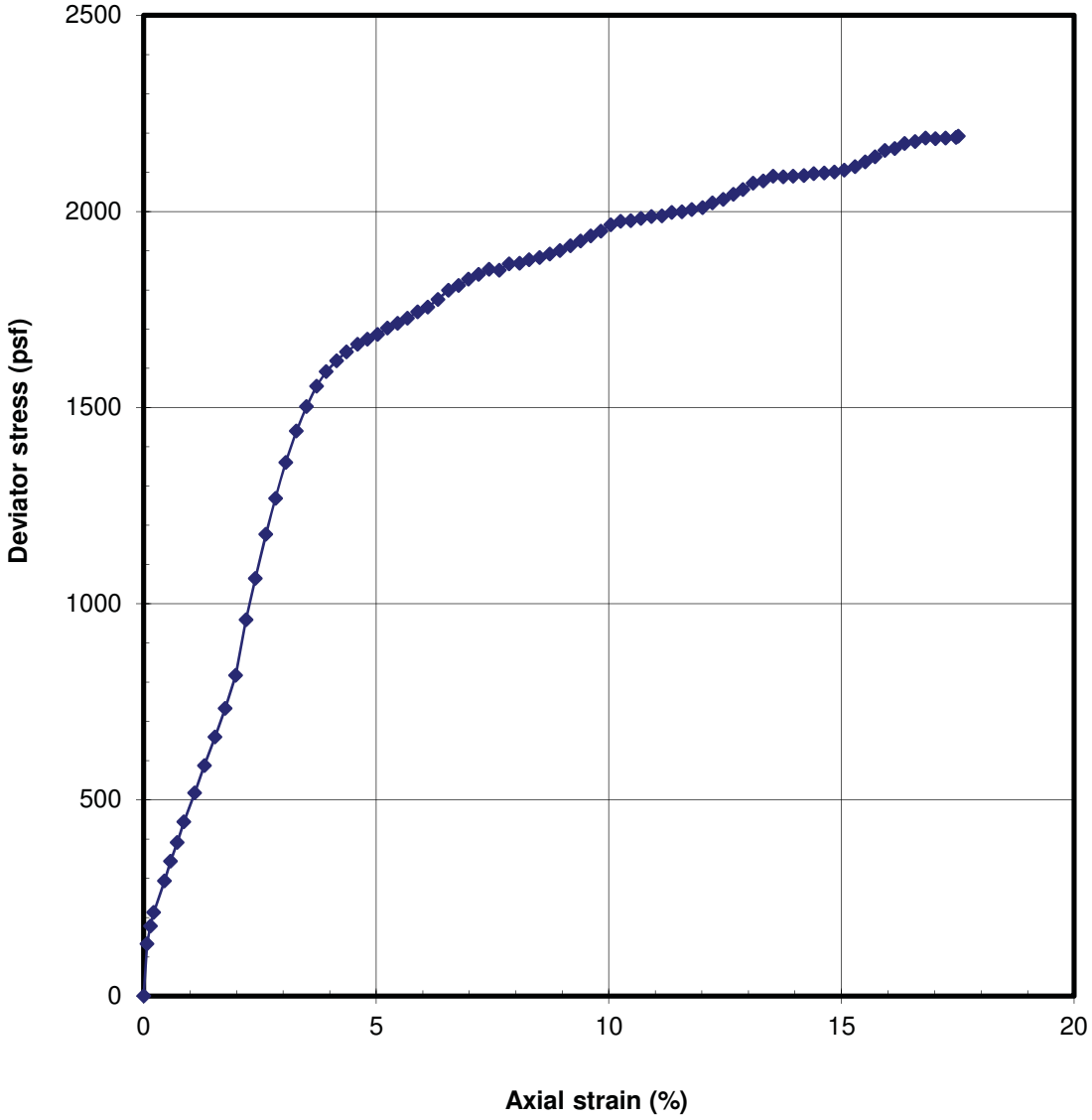
Sampler Type: Shelby Tube				Condition	Before Test			After Test		
Diameter (in)	2.42	Height (in)	1.00	Water Content	w_o	28.7	%	w_f	20.2	%
Overburden Pressure, p_o	2,000	psf		Void Ratio	e_o	0.86		e_f	0.55	
Preconsol. Pressure, p_c	4,000	psf		Saturation	S_o	91.9	%	S_f	100	%
Compression Ratio, $C_{\varepsilon c}$	0.12			Dry Density	γ_d	92	pcf	γ_d	111	pcf
Recompression Ratio, $C_{\varepsilon r}$	0.019	LL	PL	PI		G_s	2.75	(assumed)		
Source:	B-1 at 26.0 feet									
Description:	CLAY with SAND (CL), light gray									

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CONSOLIDATION TEST REPORT

Date 04/29/17 | Project No. 15-919B | Figure C-1



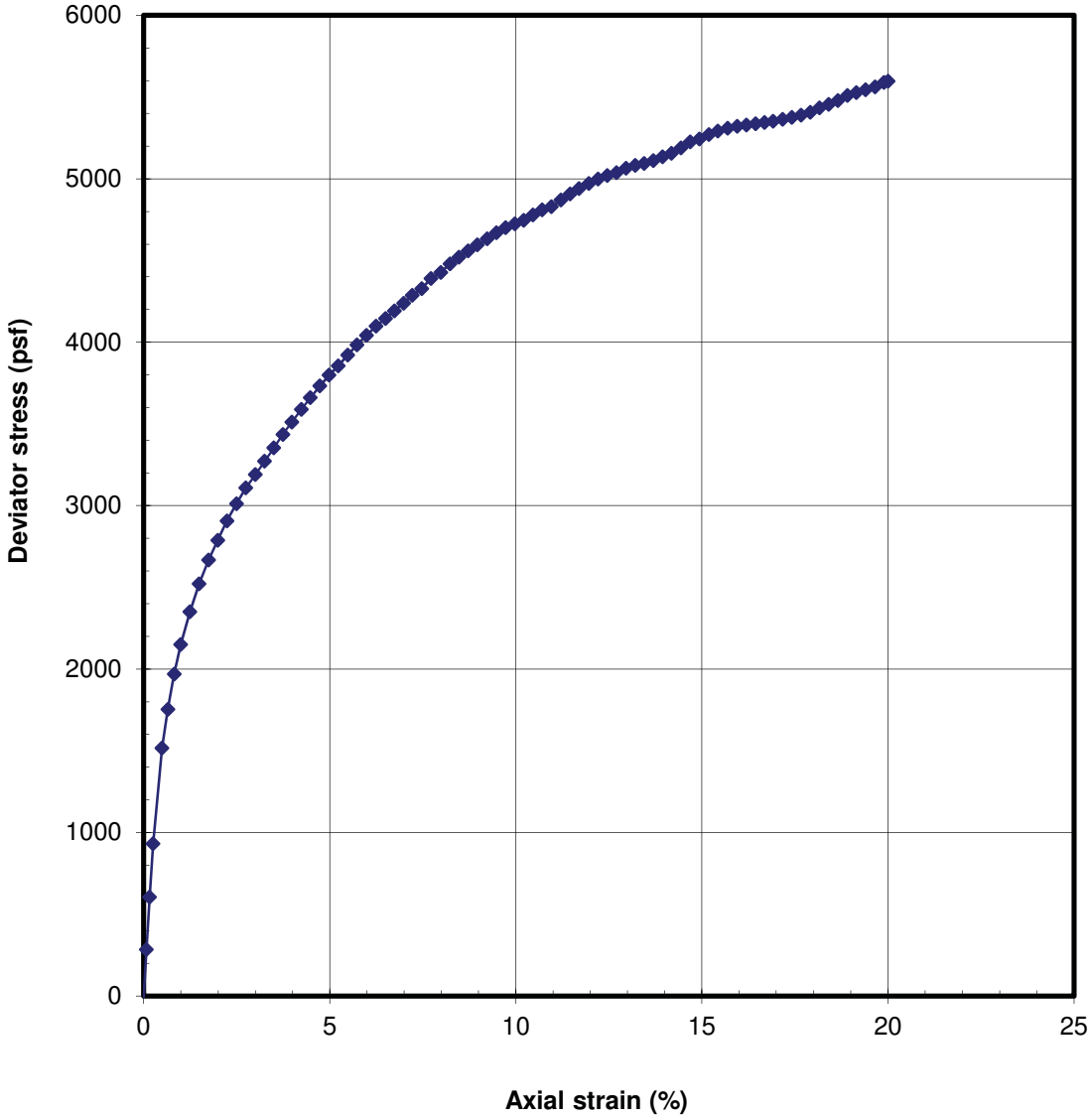
Sampler Type: Shelby Tube		Shear Strength:	1,100 psf
Diameter (in): 2.81	Height (in): 6.51	Strain at Failure:	17.5%
Moisture Content:	28.7 %	Confining Pressure:	2,500 psf
Dry Density:	92 pcf	Strain Rate:	1%/min
Source: B-1 at 25.5 feet			
Description: CLAY with SAND (CL), light gray			

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UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Date: 05/01/17 | Project No. 15-919B | Figure C-2



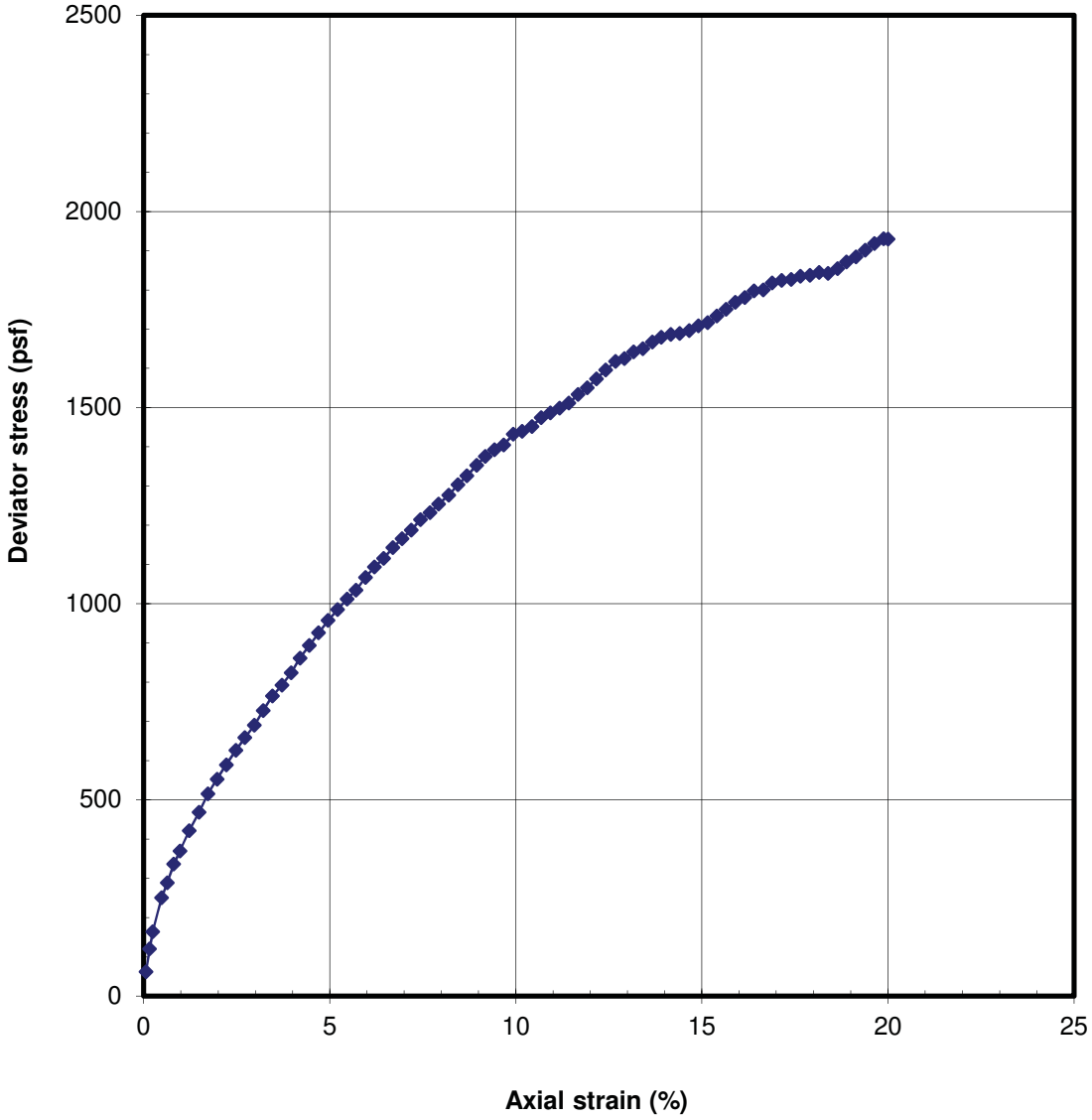
Sampler Type: Sprague & Henwood (S&H)		Shear Strength:	2,800 psf
Diameter (in): 2.39	Height (in): 5.98	Strain at Failure:	20.0%
Moisture Content:	22.6 %	Confining Pressure:	3,000 psf
Dry Density:	106 pcf	Strain Rate:	1%/min
Source: B-2 at 35.5 feet			
Description: CLAY with SAND (CL), green-gray			

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UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Date: 05/01/17 | Project No. 15-919B | Figure C-3



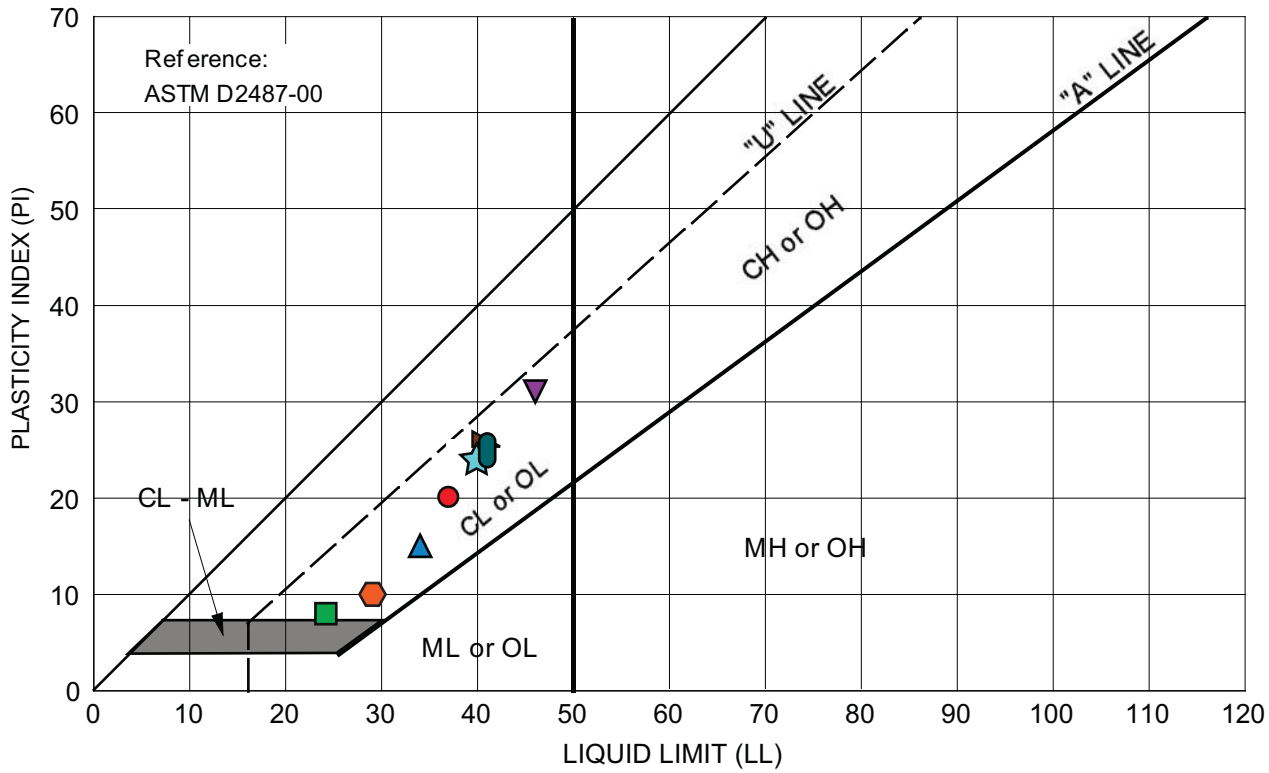
Sampler Type: Sprague & Henwood (S&H)		Shear Strength:	975 psf
Diameter (in): 2.39	Height (in): 5.66	Strain at Failure:	20.0%
Moisture Content:	29.7 %	Confining Pressure:	2,000 psf
Dry Density:	93 pcf	Strain Rate:	1%/min
Source: B-3 at 20.5 feet			
Description: CLAY (CL) yellow-brown with dark brown mottling			

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UNCONSOLIDATED-UNDRAINED TRIAXIAL COMPRESSION TEST

Date: 05/01/17 | Project No. 15-919B | Figure C-4



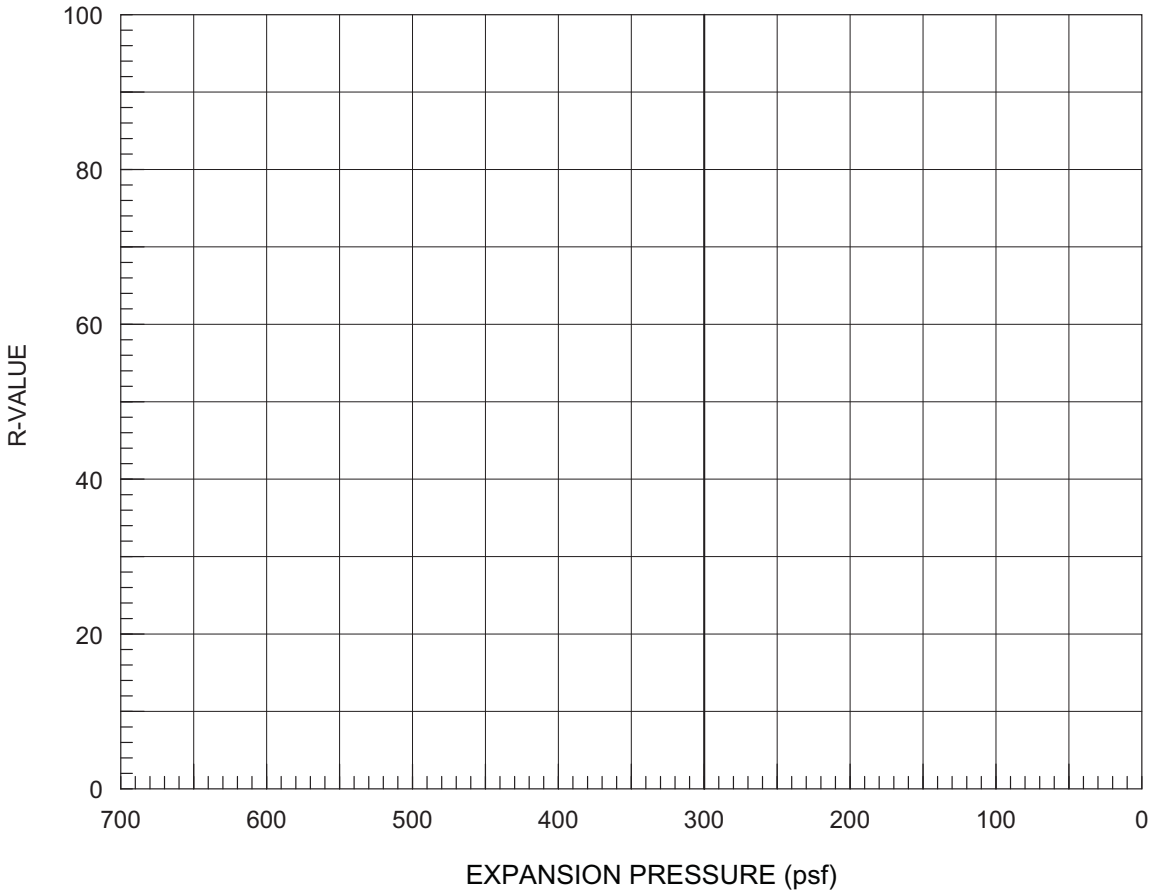
Symbol	Source	Description and Classification	Natural M.C. (%)	Liquid Limit (%)	Plasticity Index (%)	% Passing #200 Sieve
●	B-1 at 3.5 feet	CLAY with SAND (CL), brown with dark brown mottling	16.8	37	20	--
▲	B-1 at 20.5 feet	CLAY with SAND (CL), yellow-brown	29.2	34	15	81
■	B-2 at 13.5 feet	SANDY CLAY (CL), olive-brown	25.3	24	8	62
⬢	B-2 at 26.0 feet	SANDY CLAY (CL), light gray	28.4	29	10	50
★	B-2 at 31.0 feet	CLAY with SAND (CL), olive-gray	--	40	24	82
⬮	B-3 at 2.0- 3.0 feet	CLAY (CL), dark brown	--	41	25	--
▼	CPT-1 at 1.5 feet	CLAY (CL), gray-brown	13.5	46	31	--
◣	CPT-1 at 3.0 feet	CLAY (CL), gray-brown	13.5	41	26	--

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PLASTICITY CHART

Date 05/31/17 | Project No. 15-919B | Figure C-5



Resistance R-Value and Expansion Pressure - Cal Test 301

No.	Compact. Pressure psi	Density pcf	Moist. %	Expansion Pressure psi	Horizontal Press. psi @ 160 psi	Sample Height in.	Exud. Pressure psi	R Value	R Value Corr.
1	120		22.5					<5	

Test Results	Material Description
R-Value at 300 psi exudation pressure = N/A	CLAY (CL), dark brown Sample Source: Proposed parking lot, see Figure 2 (Site Plan) Depth: 1-4'

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R-VALUE TEST REPORT

Date 06/01/17	Project No. 15-919B	Figure C-6

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APPENDIX D

Corrosion Evaluation Report

Corrosion Evaluation Report for Hayward FS#6 + FTC

May 1, 2017

Prepared for:
Clayton Proto
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Oakland, CA 94610
cjproto@rockridgegeo.com

Project X Job #: S170425A
Client Job or PO #: 15-919B

1 Executive Summary

A corrosion evaluation of the soils at Hayward FS#6 + FTC was performed to provide corrosion control recommendations for general construction materials. The site is located at 1401 W Winton Ave, Hayward, CA 94545 having an area of approximately 5 acres. 2 samples were tested to a depth of 6 ft. Site ground water and topography information was provided via Rockridge Geotechnical and determined to be 16 feet below finished grade.

The recommendations outlined herein are not a substitute for any design documents previously prepared for the purpose of construction.

Soil samples were tested for pH, minimum resistivity, chlorides, sulfates, sulfides, nitrates, ammonias, and redox.

Saturated soil resistivities ranged between 1,005 ohm-cm to 1,407 ohm-cm.

The worst of these values is considered to be corrosive to general metals.

PH levels ranged between 7.67 to 8.04 pH. PH levels were determined to be at levels not detrimental to copper or aluminum alloys. The pH of these samples can allow corrosion of steel and iron in moist environments.

Chlorides ranged between 24 mg/kg to 282 mg/kg. Chloride levels in these samples are enough to cause moderate corrosion in metals.

Sulfates ranged between 90 mg/kg to 120 mg/kg. Sulfate levels in these samples are negligible for corrosion of metals and cement. Any type of cement can be used.

Ammonia ranged between 2.0 mg/kg to 40.0 mg/kg. Nitrates ranged between 69.0 mg/kg to 87.0 mg/kg. Concentrations of these elements were high enough to cause accelerated corrosion of copper and copper alloys such as brass.

Sulfides presence was determined to be trace. REDOX ranged between + 114 mV to + 157 mV.

The probability of corrosive bacteria was determined to be low due to the sulfide and positive REDOX levels determined in these samples.

2 Corrosion Control Recommendations

The following recommendations are based upon the results of soil testing.

2.1 Concrete

The highest reading for sulfates was 120 mg/kg or 0.0120 percent by weight.

Per 2012 IBC section 1904.2, referring to ACI 318, section 4.2, sulfate levels in these samples are negligible for corrosion of metals and cement. Any type of cement can be used.

2.2 Steel Reinforced Concrete/ Concrete Mortar Lined & Coated (CML&C)

Chlorides in soil can overcome the corrosion inhibiting property of concrete for steel, as it can also break through passivated surfaces of aluminum and stainless steels.[1,2] The highest concentration of chlorides was 282 mg/kg.

Chloride levels in these samples are enough to cause moderate corrosion of metals in soil or in concrete. The following are the corrosion control options:

1) Maintaining 3 inches of concrete cover over embedded steel with TYPE II cement

   or

2) Prevent contact between concrete and soil using impermeable waterproofing system assuring that water intrusion not occurs.

2.3 Steel Post Tensioning Systems

The proper sealing of stressing holes is of utmost importance in PT Systems. Cut off excess strand 1/2" to 3/4" back in the hole. Coat or paint exposed anchorage, grippers, and stub of strands with "Rust-o-leum" or equal. After tendons have been coated, the concrete contractor shall dry pack blockouts within ten (10) days. A non-shrink, non-metallic, non-porous moisture-insensitive grout (Master EMACO S 488 or equivalent), or epoxy grout shall be used for this purpose. If an encapsulated post-tension system is used, regular non-shrink grout can be used.

Due to the moderate chloride concentration measured on samples obtained from this site, post-tensioned slabs should be protected in accordance with soil considered normal (non-corrosive).[3,4] Additionally, add grease caps to the ends to provide protection against corrosion due to moderate chloride levels.

2.4 Steel Piles

Steel piles are most susceptible to corrosion in disturbed soil where oxygen is available. Further, a dissimilar environment corrosion cell would exist between the steel embedded in concrete, such as pile caps and the steel in the soil. In the cell, the steel in the soil is the anode (corroding metal), and the steel in concrete is the cathode (protected metal). This cell can be minimized by coating the part of the steel piles that will be embedded in concrete to prevent contact with concrete and reinforcing steel.

Piles driven into soils without disturbing soils will avoid oxygen introduction and low corrosion rates unless there is a probability for corrosive anaerobic bacteria. Galvanized steel's zinc coating can provide significant protection for driven piles. In corrosive soils in which normal zinc coatings are not enough, the life of piles can be extended by increasing zinc coating thickness, using sacrificial metal, or providing a combination of epoxy coatings and cathodic protection. Corrosion has been observed to be extremely localized even at and below underground water tables. Pit depths of this magnitude do not have an appreciable effect on the

[1] Design Manual 303: Concrete Cylinder Pipe. Ameron. p.65
[2] *Chapter 19, Table 1904.2.2(1), 2012 International Building Code*
[3] *Post-Tensioning Manual, sixth edition. Post-Tensioning Institute (PTI), Phoenix, AZ, 2006.*
[4] *Specification for Unbonded Single Strand Tendons. Post-tensioning Institute (PTI), Phoenix, AZ, 2000.*

strength or useful life of piling structures because the reduction in pile cross section is not significant.[5] Pitting is of more importance to pipes transporting liquids or gases which should not be leaked into the ground.

The following recommendations are recommended to achieve desired life. We defer to structural engineers to use our estimated corrosion rates and to choose from the corrosion control options listed below.

- Sacrificial metal by use of thicker piles per non-disturbed soil corrosion rates

or

- Galvanized steel piles per non-disturbed soil corrosion rates

or

- Combination of galvanized and sacrificial metal per non-disturbed soil corrosion rates

or

- For no loss of metal, coat entire pile with abrasion resistant epoxy coating such as 3M Scotchkote 323, or PowercreteDD, FastcladER, or equivalent.

or

- Use high yield steel which will corrode at the same rate as mild steel but have greater yield strength and thus be able to suffer more material loss than mild steel.

2.4.1 Expected Corrosion Rate of Steel and Zinc in disturbed soil

In general, the corrosion rate of metals in soil depends on the electrical resistivity, the elemental composition, and the oxygen content of the soil. Soils can vary greatly from one acre to the next, especially at earthquake faults. The better a soil is for farming; the easier it will be for corrosion to take place. Expansive soils will also be considered disturbed simply because of their nature from dry to wet seasons.

In Melvin Romanoff's NBS Circular 579, the corrosion rates of carbon steels and various metals was studied over long term periods. Various metals were placed in various soil types to gather corrosion rate data of all metals in all soil types. Samples were collected and material loss measured over the course of 20 years in some sites. The following corrosion rates were estimated by comparing the worst results of soils tested with similar soils in Romanoff's studies and Highway Research Board's publications.[6] The corrosion rate of zinc in disturbed soils is determined per Romanoff studies and King Nomograph.[7]

Expected Corrosion Rate for Steel = 2.08 mils/year for one sided attack

Expected Corrosion Rate for Zinc = 0.672 mils/year for one sided attack.

Note: 1 mil = 0.001 inch

In undisturbed soils, a corrosion rate of 1 mil/year for steel is expected with little change in the corrosion rate of zinc due to it's low nobility in the galvanic series.

---

[5] Melvin Romanoff, Corrosion of Steel Pilings in Soils, National Bureau of Standards Monograph 58, pg 20.

[6] Field test for Estimating Service Life of Corrugated Metal Culverts, J.L. Beaton, Proc. Highway Research Board, Vol 41, P. 255, 1962

[7] King, R.A. 1977, Corrosion Nomograph, TRRC Supplementary Report, British Corrosion Journal

Per CTM 643: Years to perforation of corrugated galvanized steel culverts

- 25.0 Years to Perforation for a 18 gage metal culvert
- 32.5 Years to Perforation for a 16 gage metal culvert
- 40.0 Years to Perforation for a 14 gage metal culvert
- 55.0 Years to Perforation for a 12 gage metal culvert
- 70.0 Years to Perforation for a 10 gage metal culvert
- 85.1 Years to Perforation for a 8 gage metal culvert

2.4.2 Expected Corrosion Rate of Steel and Zinc in Undisturbed soil

Expected Corrosion Rate for Steel = 1 mils/year for one sided attack

Expected Corrosion Rate for Zinc = 0.672 mils/year for one sided attack.

Note: 1 mil = 0.001 inch

2.5 Steel Storage tanks

Underground fuel tanks must be constructed and protected in accordance with California Underground Storage Tank Regulations, CCR, Title 23, Division 3, Chapter 16. Metals should be protected with cathodic protection or isolated from backfill material with an epoxy coating.

2.6 Steel Pipelines

Though a site may not be corrosive in nature at the time of construction, **installation of corrosion test stations and electrical continuity joint bonding should be performed during construction** so that future corrosion inspections can be performed. If steel pipes with gasket joints or other possibly non-conductive type joints are installed, their joints should be bonded across by welding or pin brazing a #8 AWG copper strand bond cable. Electrical continuity is necessary for corrosion inspections and for cathodic protection.

Corrosion test stations should be installed every 1,000 feet of pipeline.

Test stations shall have two #8 HMWPE copper strand wire test leads welded or pin brazed to the underground pipe, brought up into the test station hand hole and marked CTS. Wires should be brought into test station hand hole at finished grade with 12 inches of wire coiled within test station.

At isolation joints and pipe casings, 4 wire test stations shall be installed using #8 HMWPE copper strand wire test leads. Use different color wires to distinguish which wires are bonded to one side of isolation joint or to casing. Wires should be brought into test station hand hole at finished grade with 12 inches of wire coiled within test station.

Prevent dissimilar metal corrosion cells per NACE SP0286:

1) Electrically isolate dissimilar metal connections
2) Electrically isolate dissimilar coatings (Epoxy vs CML&C) segments connections
3) Electrically isolate river crossing segments
4) Electrically isolate freeway crossing segments

5) Electrically isolate old existing pipelines
6) Electrically isolate aboveground and underground pipe segments

The corrosivity at this site is corrosive to steel. Any piping that must be jack-bored should use abrasion resistant epoxy coating such as 3M Scotchkote 323, or PowercreteDD, or equivalent. The corrosion control options for this site are as follows:

1) Apply impermeable dielectric coating such as minimum 8 mil thick polyurethane, and install cathodic protection system per NACE SP0169, or
2) Wax tape, or
3) Coal tar enamel, or
4) Fusion bonded epoxy, or
5) Apply 3 inch coating of TYPE II. Cement is both a corrosion inhibitor and a coating for ferrous metals.

It is critical for the life of the pipe that the protective wrap contains no openings or holes. Prevent damage to the protective sleeve during backfilling of the pipe trench. Penetrations of any kind within these or other protective materials generally leads to accelerated corrosion failure due to the fact that the corrosion attack is concentrated at the location of these penetrations. Cathodic protection will protect these defects. The better the coating, the less expensive a cathodic protection system will be in anode material and power requirement if needed.

2.7 Steel Fittings

The corrosivity at this site is corrosive to steel. The corrosion control options for this site are as follows:

1) Apply impermeable dielectric coating such as minimum 8 mil thick polyurethane, and install cathodic protection system per NACE SP0169, or
2) Tape coating system, or
3) Wax tape, or
4) Coal tar enamel, or
5) Fusion bonded epoxy, or
6) Apply 3 inch coating of TYPE II concrete. Cement is both a corrosion inhibitor and a coating for ferrous metals.

It is critical for the life of the metal that the protective wrap contains no openings or holes. Prevent damage to the protective sleeve during backfilling of the pipe trench. Penetrations of any kind within these or other protective materials generally leads to accelerated corrosion failure due to the fact that the corrosion attack is concentrated at the location of these penetrations. Cathodic protection will protect these defects. The better the coating, the less expensive a cathodic protection system will be in anode material and power requirement if needed.

2.8 Ductile Iron (DI) Fittings

AWWA C105 developed a 10 point system to classify sites as corrosive or non-corrosive to ductile iron materials. The criterion is based upon soil resistivities, soil drainage, pH, sulfide presence, and reduction-oxidation (REDOX) potential. The soil samples tested for this site resulted in a score of 8 out of 25.5. A score greater or equal to 10 points classifies soils as aggressive to iron materials.

The corrosivity at this site is corrosive to iron. The corrosion control options for this site are as follows:

1) Apply impermeable dielectric coating such as minimum 8 mil thick polyurethane, and install cathodic protection system per NACE SP0169, or
2) Wax tape, or
3) Coal tar enamel, or
4) Fusion bonded epoxy, or
5) Apply 3 inch coating of TYPE II concrete. Cement is both a corrosion inhibitor and a coating for ferrous metals.

It is critical for the life of the metal that the protective wrap contains no openings or holes. Prevent damage to the protective sleeve during backfilling of the pipe trench. Penetrations of any kind within these or other protective materials generally leads to accelerated corrosion failure due to the fact that the corrosion attack is concentrated at the location of these penetrations. Cathodic protection will protect these defects. The better the coating, the less expensive a cathodic protection system will be in anode material and power requirement if needed.

2.9 Ductile Iron Pipe

AWWA C105 developed a 10 point system to classify sites as corrosive or non-corrosive to ductile iron materials. The criterion is based upon soil resistivities, soil drainage, pH, sulfide presence, and reduction-oxidation (REDOX) potential. The soil samples tested for this site resulted in a score of 8 out of 25.5. A score greater or equal to 10 points classifies soils as aggressive to iron materials.

Though a site may not be corrosive in nature at the time of construction, **installation of corrosion test stations and electrical continuity joint bonding should be performed during construction** so that future corrosion inspections can be performed. If steel pipes with gasket joints or other possibly non-conductive type joints are installed, their joints should be bonded across by welding or pin brazing a #8 AWG copper strand bond cable. Electrical continuity is necessary for corrosion inspections and for cathodic protection.

Corrosion test stations should be installed every 1,000 feet of pipeline.

Test stations shall have two #8 HMWPE copper strand wire test leads welded or pin brazed to the underground pipe, brought up into the test station hand hole and marked CTS. Wires should be brought into test station hand hole at finished grade with 12 inches of wire coiled within test station.

At isolation joints and pipe casings, 4 wire test stations shall be installed using #8 HMWPE copper strand wire test leads. Use different color wires to distinguish which wires are bonded to one side of isolation joint or to casing. Wires should be brought into test station hand hole at finished grade with 12 inches of wire coiled within test station.

Prevent dissimilar metal corrosion cells per NACE SP0286:

1) Electrically isolate dissimilar metal connections
2) Electrically isolate dissimilar coatings (Epoxy vs CML&C) segments connections
3) Electrically isolate river crossing segments
4) Electrically isolate freeway crossing segments
5) Electrically isolate old existing pipelines
6) Electrically isolate aboveground and underground pipe segments

The corrosivity at this site is corrosive to iron. Any piping that must be jack-bored should use abrasion resistant epoxy coating such as 3M Scotchkote 323, or PowercreteDD, FastcladER, or equivalent. The corrosion control options for this site are as follows:

1) Apply impermeable dielectric coating such as minimum 8 mil thick polyurethane, and install cathodic protection system per NACE SP0169, or
2) Tape coating system, , and install cathodic protection system per NACE SP0169, or
3) Wax tape, or
4) Coal tar enamel, or
5) Fusion bonded epoxy, or
6) Apply 3 inch coating of TYPE II concrete

It is critical for the life of the metal that the protective wrap contains no openings or holes. Prevent damage to the protective sleeve during backfilling of the pipe trench. Penetrations of any kind within these or other protective materials generally leads to accelerated corrosion failure due to the fact that the corrosion attack is concentrated at the location of these penetrations. Cathodic protection will protect these defects. The better the coating, the less expensive a cathodic protection system will be in anode material and power requirement if needed.

2.10 Copper Materials

Copper is an amphoteric material which is susceptible to corrosion at very high and very low pH. It is one of the most noble metals used in construction thus typically making it an anode when connected to dissimilar metals. Copper's nobility can change with temperature, similar to the phenomenon in zinc. When zinc is at room temperature, it is less noble than steel and can provide cathodic protection to steel. But when zinc is at a temperature above 140F such as in a water heater, it becomes nobler than the steel and the steel becomes the sacrificial anode. This is why zinc is not used in steel water heaters or boilers. Copper when cold has one native potential, but when heated develops a more electronegative electro-potential. Thus hot and cold copper

pipes should be electrically isolated from each other to avoid creation of a thermo-galvanic corrosion cell.

2.10.1 Copper Pipes

The lowest pH for this area was measured to be 7.67. Soil with a pH less than 5.5 is considered aggressive to copper. Copper is also greatly affected by ammonia and nitrate concentrations[8]. The highest nitrate concentration was 87.0 mg/kg and the highest ammonia concentration was 8.5 mg/kg at this site.

These soils were determined to be corrosive to copper and copper alloys such as brass.

Cold water and hot water pipes should be electrically isolated from each other by use of dielectric unions and plastic in wall pipe supports. The following are corrosion control options for underground copper water pipes.

1) Run copper pipes within PVC pipes to prevent soil contact, or
2) Cover piping with a 20 mil epoxy coating free of scratches and defects, or
3) Cover copper pipes with minimum 10 mil polyethylene sleeve over a suitable primer and apply cathodic protection per NACE SP0169

It is critical for the life of the metal that the protective wrap contains no openings or holes. Prevent damage to the protective sleeve during backfilling of the pipe trench. Penetrations of any kind within these or other protective materials generally leads to accelerated corrosion failure due to the fact that the corrosion attack is concentrated at the location of these penetrations. Cathodic protection will protect these defects. The better the coating, the less expensive a cathodic protection system will be in anode material and power requirement if needed.

2.10.2 Brass Fittings

Brass fittings should be electrically isolated from dissimilar metals by use of dielectric unions or isolation joint kits.

These soils were determined to be corrosive to copper and copper alloys such as brass.

The following are corrosion control options for underground brass.

1) Prevent soil contact by use of impermeable coating system such as wax tape, or
2) Prevent soil contact by use of a 20 mil epoxy coating free of scratches and defects, or
3) Cover brass with minimum 10 mil polyethylene sleeve over a suitable primer and apply cathodic protection per NACE SP0169

It is critical for the life of the metal that the protective wrap contains no openings or holes. Prevent damage to the protective sleeve during backfilling of the pipe trench. Penetrations of any kind within these or other protective materials generally leads to accelerated corrosion failure due to the fact that the corrosion attack is concentrated at the location of these penetrations. Cathodic protection will protect these defects. The better the coating, the less expensive a cathodic protection system will be in anode material and power requirement if needed.

[8] Corrosion Data Handbook, Table 6, Corrosion Resistance of copper alloys to various environments, 1995

2.10.3 Bare Copper Grounding Wire

It is assumed that corrosion will occur at all sides of the bare wire, thus the corrosion rate is calculated as a two sided attack determining the time it takes for the corrosion from two sides to meet at the center of the wire. The estimated life of bare copper wire for this site is the following:[9]

Size (AWG)	**Diameter (mils)**	**Est. Time to penetration (Yrs)**
14	64.1	5.5
13	72	6.2
12	80.8	7.0
11	90.7	7.8
10	101.9	8.8
9	114.4	9.9
8	128.5	11.1
7	144.3	12.4
6	162	14.0
5	181.9	15.7
4	204.3	17.6
3	229.4	19.8
2	257.6	22.2
1	289.3	24.9

If the bare copper wire is being used as a grounding wire connected to less noble metals such as galvanized steel or carbon steel, the less noble metals will provide additional cathodic protection to the copper reducing the corrosion rate of the copper.

It is recommended that a corrosion inhibiting and water-repelling coating such as Corrosion X Part No. 90102 by Corrosion Technologies (no affiliation to Project X) be applied to aboveground and belowground copper-to-dissimilar metal connections to reduce risk of dissimilar corrosion.

2.11 Aluminum Pipe/Conduit/Fittings

Aluminum is an amphoteric material prone to pitting corrosion in environments that are very acidic or very alkaline or high in chlorides.

Conditions at this site are safe for aluminum.

Aluminum derives its corrosion resistance from its oxide layer which needs oxygen to regenerate if damaged, similar to stainless steels. Thus aluminum is not good for deep soil applications. Since aluminum corrodes at very alkaline environments, it cannot be encased or placed against cement or mortar such as brick wall mortar up against an aluminum window frame.

[9] Soil-Corrosion studies 1946 and 1948: Copper Alloys, Lead, and Zinc, Melvin Romanoff, National Bureau of Standards, Research Paper RP2077, 1950

Aluminum is also very low on the galvanic series scale making it most likely to become a sacrificial anode when in contact with dissimilar metals in moist environments. Avoid electrical continuity with dissimilar metals by use of insulators, dielectric unions, or isolation joints. Pooling of water at post bottoms or surfaces should be avoided by integrating good drainage.

2.12 Carbon Fiber or Graphite Materials

Carbon fiber or other graphite materials are extremely noble on the galvanic series and should always be electrically isolated from dissimilar metals. They can conduct electricity and will create corrosion cells if placed in contact within a moist environment with any metal.

3 CLOSURE

In addition to soils chemistry and resistivity, another contributing influence to the corrosion of buried metallic structures is stray electrical currents. These electrical currents flowing through the earth originate from buried electrical systems, grounding of electrical systems in residences and commercial buildings and from high voltage overhead power grids. Therefore, it is imperative that the application of protective wraps and/or coatings be properly applied and inspected.

It is the responsibility of the builder and/or contractor to closely monitor the installation of such materials requiring protection in order to assure that the protective wraps or coatings are not damaged.

The recommendations outlined herein are in conformance with current accepted standards of practice that meet or exceed the provisions of the Uniform Building Code (UBC), the International Building Code (IBC), the American Concrete Institute (ACI), National Association of Corrosion Engineers (NACE International), Post-Tensioning Institute Guide Specifications and State of California Department of Transportation, Standard Specifications, American Water Works Association (AWWA) and the Ductile Iron Pipe Research Association (DIPRA).

Our services have been performed with the usual thoroughness and competence of the engineering profession. No other warranty or representation, either expressed or implied, is included or intended.

Please call if you have any questions.

Respectfully Submitted,





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Professional Engineer
California No. M37102
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4 SOIL ANALYSIS LAB RESULTS

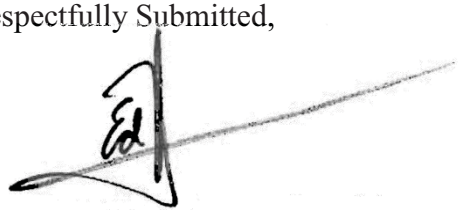
Client: Rockridge Geotechnical
Job Name: Hayward FS#6 + FTC
Client Job Number: 15-919B
Project X Job Number: S170425A
May 1, 2017

	Method	ASTM G187	ASTM G187	ASTM D516		ASTM D512B		SM 4500-E	SM 4500-C	SM 4500-D	ASTM G200	ASTM G51
Bore# / Description	Depth	As-Rec'd Resistivity	Min-Resistivity	Sulfates		Chlorides		Nitrate	Ammonia	Sulfide	Redox	pH
	(ft)	(Ohm-cm)	(Ohm-cm)	(mg/kg)	(wt%)	(mg/kg)	(wt%)	(mg/kg)	(mg/kg)	(mg/kg)	(mV)	
B-1	6	1,407	1,407	120	0.0120	282	0.0282	87	40	4.3	114	8.04
B-2	2.5	3,015	1,005	90	0.0090	24	0.0024	69	2	0.2	157	7.67

Unk = Unknown
NT = Not Tested
ND = 0 = Not Detected
mg/kg = milligrams per kilogram (parts per million) of dry soil weight
mg/L - milligrams per liter of liquid volume
Chemical Analysis performed on 1:3 Soil-To-Water extract

Please call if you have any questions.

Respectfully Submitted,





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Professional Engineer
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Proposed Boring/CPT Locations
Rockridge Geotechnical 3/23/17
N
200 ft
USGS
CPT-3
B-1
CPT-4
CPT-5
B-2
CPT-6
CPT-8
B-3
1401 W Winton Ave
CPT-7
CPT-9
Saklan Rd
Google Earth

Figure 1

5 Corrosion Basics

In general, the corrosion rate of metals in soil depends on the electrical resistivity, the elemental composition, and the oxygen content of the soil. Soils can vary greatly from one acre to the next, especially at earthquake faults. The better a soil is for farming; the easier it will be for corrosion to take place. Oxygen content in soil can be increased during construction. These soils are considered disturbed soils. When construction equipment at a site is simply driving piles into soil without digging into the soil, the activity can still disturb soil down to 3 feet. Expansive soils will also be considered disturbed simply because of their nature from dry to wet seasons.

5.1 Galvanic Series

All metals have a natural electrical potential in soil. This electrical potential is measured using a high impedance voltmeter connected to the metal being tested and with the common lead connected to a copper copper-sulfate reference electrode (CSE). There are many types of reference electrodes. In laboratory measurements, a Standard Hydrogen Electrode (SHE) is commonly used. When different metal alloys are tested they can be ranked into an order from most noble (less corrosion), to least noble (more active corrosion). When a more noble metal is connected to a less noble metal, the less noble metal will become an anode and sacrifice itself through corrosion providing corrosion protection to the more noble metal. This hierarchy is known as the galvanic series named after Luigi Galvani whose experiments with electricity and muscles led Alessandro Volta to discover the reactions between dissimilar metals leading to the early battery. The greater the voltage difference between two metals, the faster the corrosion rate will be.

Table 1- Dissimilar Metal Corrosion Risk

	Zinc	Galvanized Steel	Aluminum	Cast Iron	Lead	Mild Steel	Tin	Copper	Stainless Steel
Zinc	None	Low	Medium	High	High	High	High	High	High
Galvanized Steel	Low	None	Medium	Medium	Medium	High	High	High	High
Aluminum	Medium	Medium	None	Medium	Medium	Medium	Medium	High	High
Cast Iron	High	Medium	Medium	None	Low	Low	Low	Medium	Medium
Lead	High	Medium	Medium	Low	None	Low	Low	Medium	Medium
Mild Steel	High	High	Medium	Low	Low	None	Low	Medium	Medium
Tin	High	High	Medium	Low	Low	Low	None	Medium	Medium
Copper	High	High	High	Medium	Medium	Medium	Medium	None	Low
Stainless Steel	High	High	High	Medium	Medium	Medium	Medium	Low	None

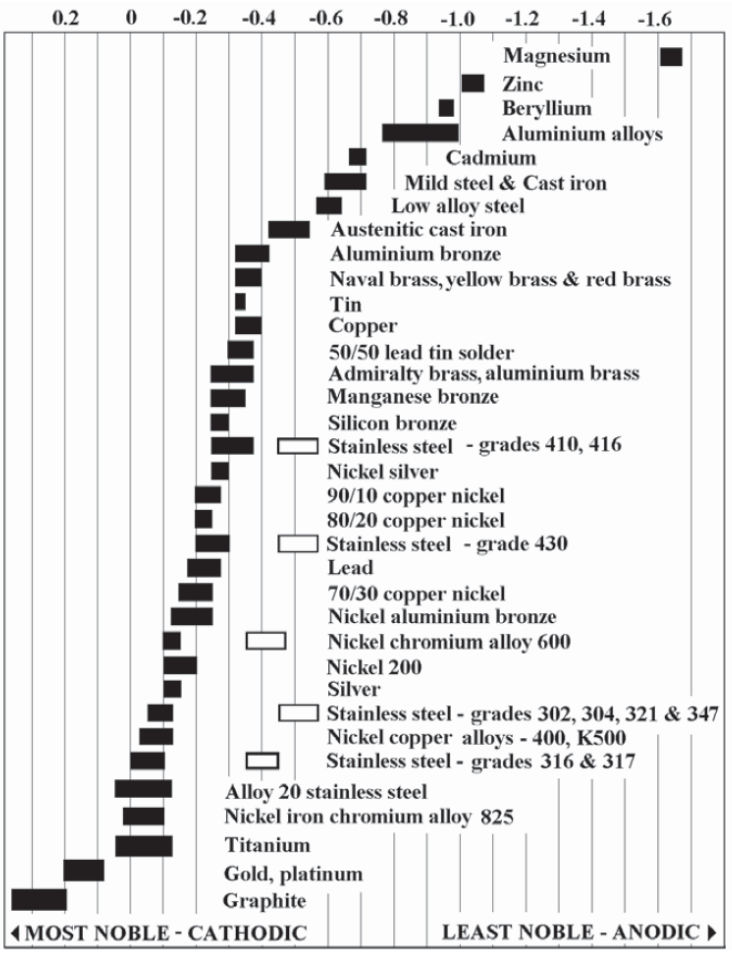


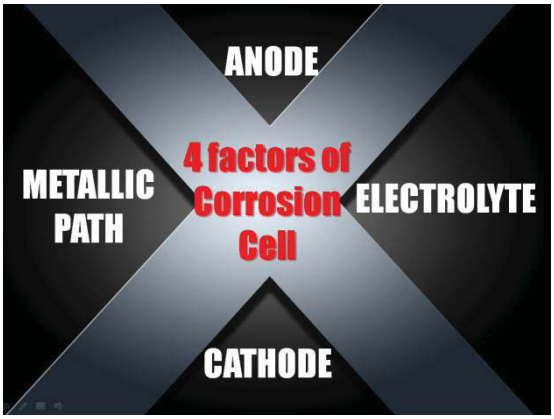
Figure 2 - Galvanic series of metals relative to CSE half cell.

5.2 Pourbaix Diagram

Every metal reacts differently in different environments. In the mid 1900's, Marcel Pourbaix developed the Pourbaix diagram which describes a metal's reaction to an environment dependant on pH and voltage conditions. It describes when a metal remains passive (non-corroding) and in which conditions metals become soluble (corrode). Steels are passive in pH over 12 such as the condition when it is encased in concrete. If the concrete were to carbonate and its pH reduce to below 12, the concrete would no longer be able to act as a corrosion inhibitor and the steel will begin to corrode when moist.

Some metals such as aluminum are amphoteric, meaning that they react with acids and bases. They can corrode in low pH and in high pH conditions. Aluminum alloys are generally passive within a pH of 4 and 8.5 but will corrode outside of those ranges. This is why aluminum cannot be embedded in concrete and why brick mortar should not be laid against an aluminum window frame.

5.3 Corrosion Cell



In order for corrosion to occur, four factors must be present. (1) The anode (2) the cathode (3) the electrolyte and (4) the metallic or conductive path joining the anode and the cathode. If any one of these is removed, corrosion activity will stop. This is how a simple battery produces electricity. An example of a non-metallic yet conductive material is graphite. Graphite is similar in nobility to gold. Do not connect graphite to anything in moist environments.

The anode is where the corrosion occurs, and the cathode is the corrosion free material. Sometimes the anode and cathode are different materials connected by a wire or union. Sometimes the anode and cathode are on the same pipe with one area of the pipe in a low oxygen zone while the other part of the pipe is in a high oxygen zone. A good example of this is a post in the ocean that is repeatedly splashed. Deep underwater, corrosion is minimal, but at the splash zone, the corrosion rate is greatest. Low oxygen zones and crevices can also harbor corrosive bacteria which in moist environments will lead to corrosion. This is why pipes are laid on backfill instead of directly on native cut soil in a trench. Filling a trench slightly with backfill before installing pipe then finishing the backfill creates a uniform environment around the entire surface of the pipe.

The electrolyte is generally water, seawater, or moist soil which allows for the transfer of ions and electrical current. Pure water itself is not very conductive. It is when salts and minerals dissolve into pure water that it becomes a good conductor of electricity and chemical reactions. Metal ores are turned into metal alloys which we use in construction. They naturally want to return to their natural metal ore state but it requires energy to return to it. The corrosion cell, creates the energy needed to return a metal to its natural ore state.

The metallic or conductive path can be a wire or coupling. Examples are steel threaded into a copper joint, or an electrician grounding equipment to steel pipes inadvertently connecting electrical grid copper grounding systems to steel or iron underground pipes.

The ratio of surface area between the anode and the cathode is very important. If the anode is very large, and the cathode is very small, then the corrosion rate will be very small and the anode may live a long life. An example of this is when short copper laterals were connected to a large and long steel pipeline. The steel had plenty of surface area to spread the copper's attack, thus corrosion was not noticeable. But if the copper was the large pipe and the steel the short laterals, the steel would corrode at an amazing rate.

5.4 Design Considerations to Avoid Corrosion

The following recommendations are based upon typical observations and conclusions made by forensic engineers in construction defect lawsuits and NACE International (Corrosion Society) recommendations.

5.4.1 Testing Soil Factors (Resistivity, pH, REDOX, SO, CL, NO3, NH3)

As previously mentioned, different factors can cause corrosion. The most useful and common test for categorizing a soil's corrosivity has been the measure of soil resistivity which is typically measured in units of (ohm-cm) by corrosion engineers and geologists. Soil resistivity is the ability of soil to conduct or resist electrical currents and ion transfer. The lower the soil resistivity, the more conductive and corrosive it is. The following are generally accepted descriptions.

Table 2 - Corrosion Basics- An Introduction, NACE, 1984, pg 191

(Ohm-cm)	Corrosivity Description
0-500	Very Corrosive
500-1,000	Corrosive
1,000-2,000	Moderately Corrosive
2,000-10,000	Mildly Corrosive
Above 10,000	Progressively less corrosive

Testing a soil's pH provides information to reference the Pourbaix diagram of specific metals. Some elements such as ammonia and nitrates can create localized alkaline conditions which will greatly affect amphoteric materials such as aluminum and copper alloys.

Excess sulfates can break-down the structural integrity of concrete and high concentrations of chlorides can overcome concrete's corrosion inhibiting effect on encased ferrous metals and break down protective passivated surface layers on stainless steels and aluminum.

Corrosive bacteria are everywhere but can multiply significantly in anaerobic conditions with plentiful sulfates. The bacteria themselves do not eat the metal but their by-products can form corrosive sulfuric acids. The probability of corrosive bacteria is tested by measuring a soil's oxidation-reduction (REDOX) electro-potential and by testing for the presence of sulfides.

5.4.2 Proper Drainage

It cannot be emphasized enough that pooled stagnant water on metals will eventually lead to corrosion. This stands for internal corrosion and external corrosion situations. In soils, providing good drainage will lower soil moisture content reducing corrosion rates. Attention to properly sealing polyethylene wraps around valves and piping will avoid water intrusion which would allow water to pool against metals. Above ground structures should not have cupped or flat surfaces that will pond water after rain or irrigation events.

Buildings typically have swales when constructed to drain water away from buildings directing it towards an acceptable exit point such as a driveway where it continues draining to a local storm drain. Many homeowners, landscapers and flatwork contractors appear to not be aware of this and destroy swales during remodeling. The majority of garage floor and finished grade elevations are governed by drainage during design.

5.4.3 Avoiding Crevices

Crevices are excellent locations for oxygen differential induced corrosion cells to begin. Crevices can also harbor corrosive bacteria even in the most chemically treated waters. If

water's total alkalinity is low, its ability to maintain a stable pH can also become more difficult within a crevice allowing the pH to drop to acidic levels continuing a pitting process.

5.4.4 Coatings and Cathodic Protection

When faced with a corrosive environment, the best defense against corrosion is removing the electrolyte from the corrosion cell by applying coatings to separate the metal from the soil. During construction and installation, there is always some scratch or damage made to a coating. NACE training recommends that coatings be used as a first line of defense and that sacrificial or impressed current cathodic protection is used as a 2nd line of defense to protect the scratched areas. Use of a good coating dramatically reduces the amount of anodes a CP system would need. If CP is not installed as a 2nd line of defense in an extremely corrosive environment, the small scratched zones will suffer accelerated corrosion. CP details such as anode installation instructions must be designed by corrosion engineers on a per project basis because it depends on soil resistivity, surface area of infrastructure to be protected, and system geometry.

There are two types of cathodic protection systems, a Galvanic Anode Cathodic Protection (GACP) system and an Impressed Current Cathodic Protection (ICCP) system. A Galvanic Anode Cathodic Protection (GACP) system is simpler to install and maintain than an Impressed Current Cathodic Protection (ICCP) system. To protect the metals, they must all be electrically continuous to each other. In a GACP system, sacrificial zinc or magnesium anodes are then buried at locations per the CP design and connected by wire to a structure at various points in system. At the connection points, a wire connecting to the structure and the wire from the anode are joined in a Cathodic Protection Test Station hand hole which looks similar in size and shape to an irrigation valve pull box. By coating the underground structures, one can reduce the number of anodes needed to provide cathodic protection by 80% in many instances.

An ICCP system requires a power source, a rectifier, significantly more trenching, and more expensive type anodes. These systems are typically specified when bare metal is requiring protection in severely corrosive environments in which galvanic anodes do not provide enough power to polarize infrastructure to -850 mV structure-to-soil potential or be able to create a 100 mV potential shift as required by NACE SP169 to control corrosion. In severely corrosive environments, a GACP system simply may not last a required lifetime due to the high rate of consumption of the sacrificial anodes. ICCP system rectifiers must be inspected and adjusted quarterly or at a minimum bi-annually per NACE recommendations. Different anode installations may be possible but for large sites, anodes are placed evenly throughout the site and all anode wires must be trenched to the rectifier. For a large site, it may be beneficial to use two or more rectifiers to reduce wire lengths or trenching.

To simplify, a GACP system can be installed and practically forgotten with minor trenching because the anodes can be installed very close to the structures. An ICCP system must be inspected annually and anode wires run back to the rectifier which itself connects to the pile system. If any type of trenching or development is expected to occur at the site during the life of the site, it is a good idea to inspect the anode connections once a year to make sure wires are not cut and that the infrastructure is still being provided adequate protection. A common situation that occurs with ICCP systems is that a contractor accidently cuts the wires during construction then reconnects them incorrectly, turning the once cathode, into a sacrificing anode.

Design of a cathodic protection system requires that Wenner Four Pin ground resistance measurements per ASTM G57 be performed by corrosion engineers at various locations of the site to determine the best depths and locations for anode installations. Ideally, a sample pile is installed and experiments determining current requirement are conducted. Using this data, the decision is made whether a GACP system is feasible or if an ICCP must be used.

Project X Corrosion Engineers can provide a proposal for cathodic protection design and field work if needed.

5.4.4.1 Good Electrical Continuity

In order for cathodic protection to protect a long pipeline or system of pipes, they must all be electrically continuous to each other so that the electric current from the anode can travel along the pipes, then return through the earth to the anode. Electrical continuity is achieved by welding or pin brazing #8 AWG copper strand bond cable to the end of pipe sticks which have rubber gaskets at bell and spigots. If steel pipes are joined by full weld, bonding wires are not needed.

Electrical continuity between dissimilar metals is not desirable. Isolation joints or di-electric unions should be installed between dissimilar metals, such as steel pipes connecting to a brass valve. Bonding wires should then be welded onto the steel pipes by-passing the brass valve so that the cathodic protection system's current can continue to travel. Another option would be to provide a separate cathodic protection system for steel pipes on both sides of the brass valve.

Typically, gas meters and water meters have dielectric unions installed in them to separate utility property from homeowner property. This also protects them in the case that a home owner somehow electrically connects water pipes or gas pipes to a neighborhood electrical grounding system which can potentially have less noble steel in soil now connected to much more noble copper in soil which will then create a corrosion cell. This is exactly how a lemon powered clock works when a galvanized zinc nail and a steel nail are inserted into a lemon then connected to a clock. The clock is powered by the corrosion cell created.

5.4.4.2 Bad Electrical Continuity

Bad electrical continuity is when two different materials or systems are made electrically continuous (aka shorted) when they were not designed to be electrically continuous. Examples of this would be when gas lines are shorted to water lines or to electrical grounding beds. Very often, fire risers are shorted to electrical grounding systems, and water pipes at business parks. Since fire risers usually have a very short ductile iron pipe in the ground which connects to PVC pipe systems, they tend to experience leaks after 7 to 10 years of being attacked by underground copper systems.

It is absolutely imperative that any copper water piping or other metal conduits penetrating concrete slab or footings, not come in contact with the reinforcing steel or post-tensioning tendons to avoid creation of galvanic corrosion cells.

5.4.4.3 Corrosion Test Stations

Corrosion test stations should be installed every 1,000 feet along pipelines in order to measure corrosion activity in the future. For a simple pipeline, two #8 AWG copper strand bond cable welded or pin brazed onto the pipeline are run up to finished grade and left in a hand hole. Corrosion test stations are used to measure pipe-to-soil electro potential relative to a copper

copper-sulfate reference electrode to determine if the pipe is experiencing significant corrosion activity. By measuring test stations along a pipeline, hot spots can be determined, if any. The wires also allow for electrical continuity testing, condition assessment, and a multitude of other types of tests.

At isolation joints and pipe casings, two wires should be welded to either side of the isolation joint for a total of 4 wires to be brought up to the hand hole. This allows for future tests of the isolation joint, casing separation confirmation, and pipe-to-soil potential readings during corrosion surveys.

5.4.5 Excess Flux in Plumbing

Investigations of internal corrosion of domestic water plumbing systems almost always finds excess flux to be the cause of internal pitting of copper pipes. Some people believe that there is no such thing as too much flux. Flux runs have been observed to travel up to 20 feet with pitting occurring along the flux run. Flushing a soldered plumbing system with hot water for 15 minutes can remove significant amounts of excess flux left in the pipes. If a plumbing system is expected to be stagnant for some time, it should be drained to avoid stagnant water conditions that can lead to pitting and dezincification of yellow brasses.

5.4.6 Landscapers and Irrigation Sprinkler Systems

A significant amount of corrosion of fences is due to landscaper tools scratching fence coatings and irrigation sprinklers spraying these damaged fences. Recycled water typically has a higher salt content than potable drinking water, meaning that it is more corrosive than regular tap water. The same risk from damage and water spray exists for above ground pipe valves and backflow preventers. Fiber glass covers, cages, and concrete footings have worked well to keep tools at an arm's length.

5.4.7 Roof Drainage splash zones

Unbelievably, even the location where your roof drain splashes down can matter. We have seen drainage from a home's roof valley fall directly down onto a gas meter causing it's piping to corrode at an accelerated rate reaching 50% wall thickness within 4 years. It is the same effect as a splash zone in the ocean or in a pool which has a lot of oxygen and agitation that can remove material as it corrodes.

5.4.8 Stray Current Sources

Stray currents which cause material loss when jumping off of metals may originate from direct-current distribution lines, substations, or street railway systems, etc., and flow into a pipe system or other steel structure. Alternating currents may occasionally cause corrosion. The corrosion resulting from stray currents (external sources) is similar to that from galvanic cells (which generate their own current) but different remedial measures may be indicated. In the electrolyte and at the metal-electrolyte interfaces, chemical and electrical reactions occur and are the same as those in the galvanic cell; specifically, the corroding metal is again considered to be the anode from which current leaves to flow to the cathode. Soil and water characteristics affect the corrosion rate in the same manner as with galvanic-type corrosion.

However, stray current strengths may be much higher than those produced by galvanic cells and, as a consequence, corrosion may be much more rapid. Another difference between galvanic-type currents and stray currents is that the latter are more likely to operate over long distances since the anode and cathode are more likely to be remotely separated from one another. Seeking the path of least resistance, the stray current from a foreign installation may travel along a pipeline causing severe corrosion where it leaves the line. Knowing when stray currents are present becomes highly important when remedial measures are undertaken since a simple sacrificial anode system is likely to be ineffectual in preventing corrosion under such circumstances.[10] Stray currents can be avoided by installing proper electrical shielding, installation of isolation joints, or installation of sacrificial jump off anodes at crossings near protected structures such as metal gas pipelines or electrical feeders

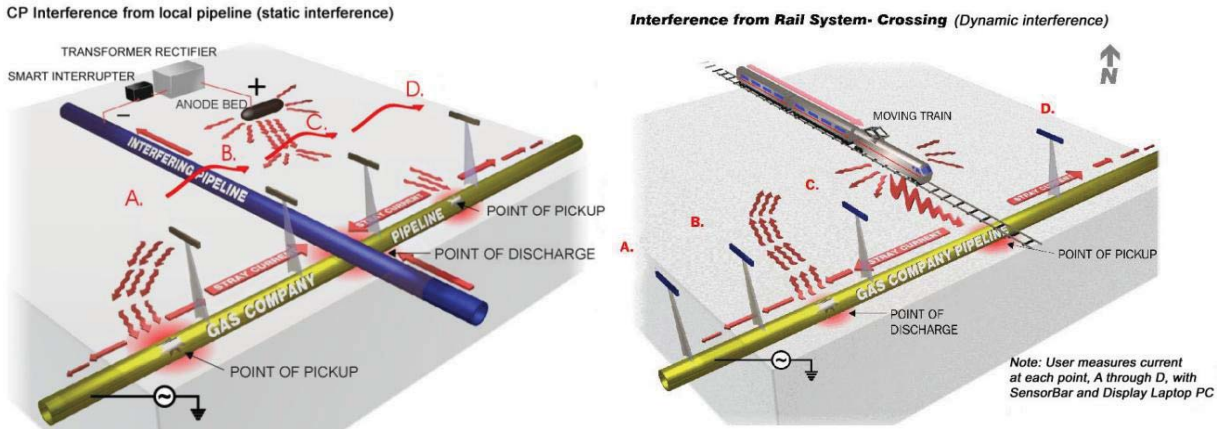


Figure 3 Examples of Stray Current[11]

[10] http://corrosion-doctors.org/StrayCurrent/Introduction.htm

[11] http://www.eastcomassoc.com/

S170425A Rock Ridge - 15-919B - 2 Full

Project X Corrosion Engineering

Corrosion Control - Soil, Water, and Metallurgy Lab

Lab Request Sheet Chain of Custody

Phone: (213) 928-7213 · Fax (951) 226-1720 · www.projectxcorrosion.com
Ship Samples To: 29970 Technology Dr, Suite 105F, Murrieta, CA 92563

IMPORTANT: Please complete Project and Sample Identification Data as you would like it to appear in report & include this form with samples.

Project X Job #:	
Date:	4/24/17

Company Name:	Rockridge Geotechnical	**Contact Name:**	Clayton Proto
Mailing Address:	270 Grand Avenue, Oakland California	**Contact Email:**	cjproto@rockridgegeo.com
Accounting Contact:	Kate Schenk	**Invoice Email:**	kaschenk@rockridgegeo.com
Project Name:	Hayward FS#6 + FTC		
Client Project No:	15-919B	**P.O. #:**	

Phone No. : 510-420-5738x120

	5 Day Normal	3 Day RUSH 75% mark-up	2 Day RUSH 100% mark-up
Turn Around Time:	X		

Results By: ☐ Phone ☐ Fax ☒ Email ☒ Mail ☐ Overnight Mail (charges apply)

Received by: **Default Method**

SPECIAL INSTRUCTIONS:

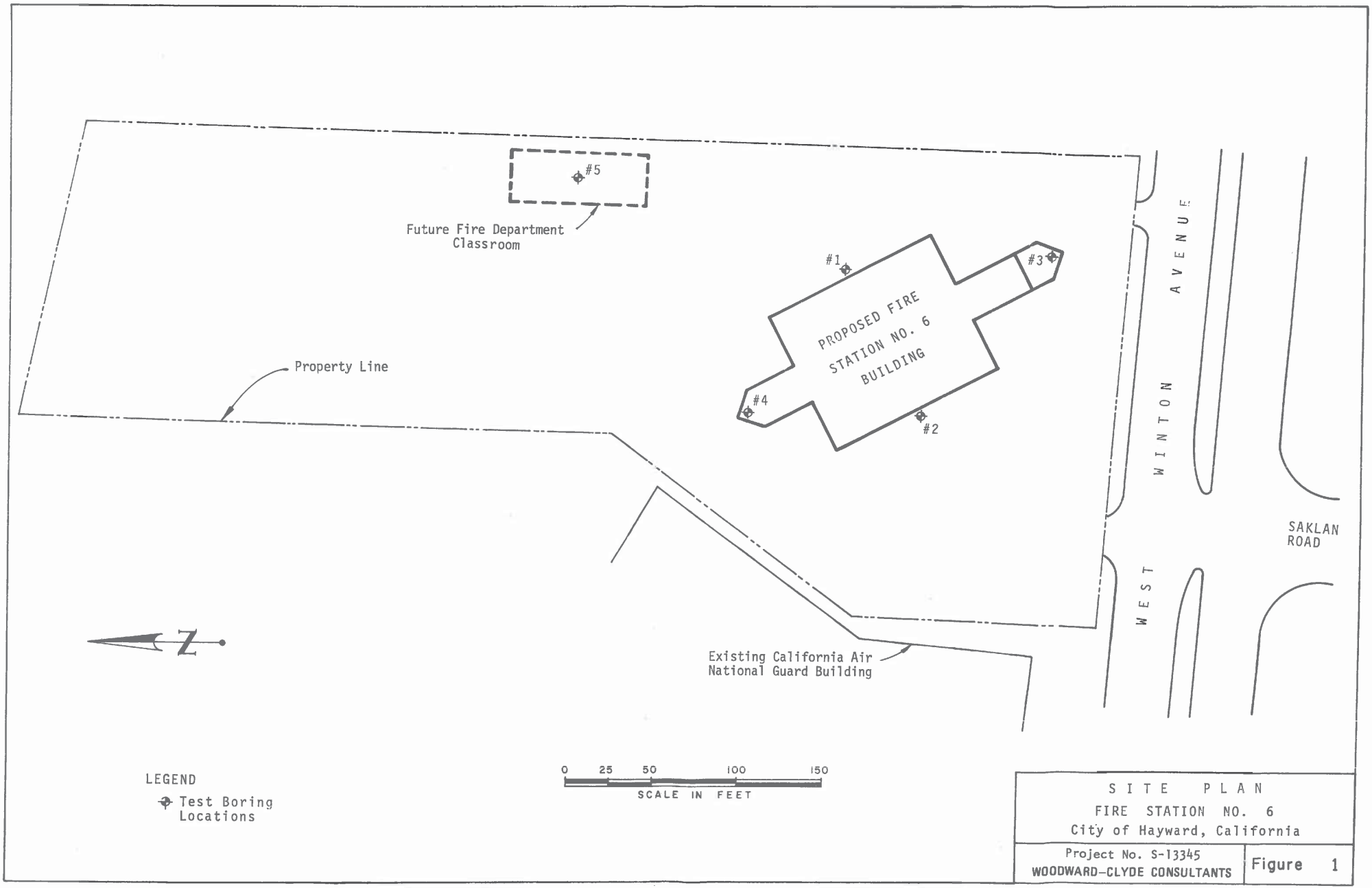
ANALYSIS REQUESTED (Please circle)

	SAMPLE ID - BORE #	DESCRIPTION	DEPTH (ft)	DATE COLLECTED	CORROSION SERIES	Soil Resistivity	pH	Sulfate	Chloride	Redox Potential	BiCarbonate	Alkalinity	Acidity	Nitrate	Ammonia	Sulfide	Moisture Content	Soil Corrosivity Evaluation Report	Metallurgical Analysis	NOTES
					Min. Resistivity, Sulfate, Chloride, Sulfide, Redox, pH, Ammonia, Nitrate	ASTM G187	ASTM G51	ASTM D516	ASTM D512B	SM 2580B	SM 2320B	SM 2520B	SM 2510B	Hach 835	Hach 830	SM 4500-S2	ASTM D2216				
						Caltrans CTM643	AASHTO T 289	Caltrans CTM643	AASHTO T 290	Caltrans CTM417	AASHTO T 291	Caltrans CTM422		SM 4500-NO3	SM 4500-NH3	SM 4500-S2				
1	B-1	CLAY with SAND(CL) brown	6 ft	4/10/17	X													X		
2	B-2	CLAY (CH) dark brown	2.5 ft	4/10/17	X													X		
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				

ROCKRIDGE GEOTECHNICAL

APPENDIX E

Subsurface Information by Others

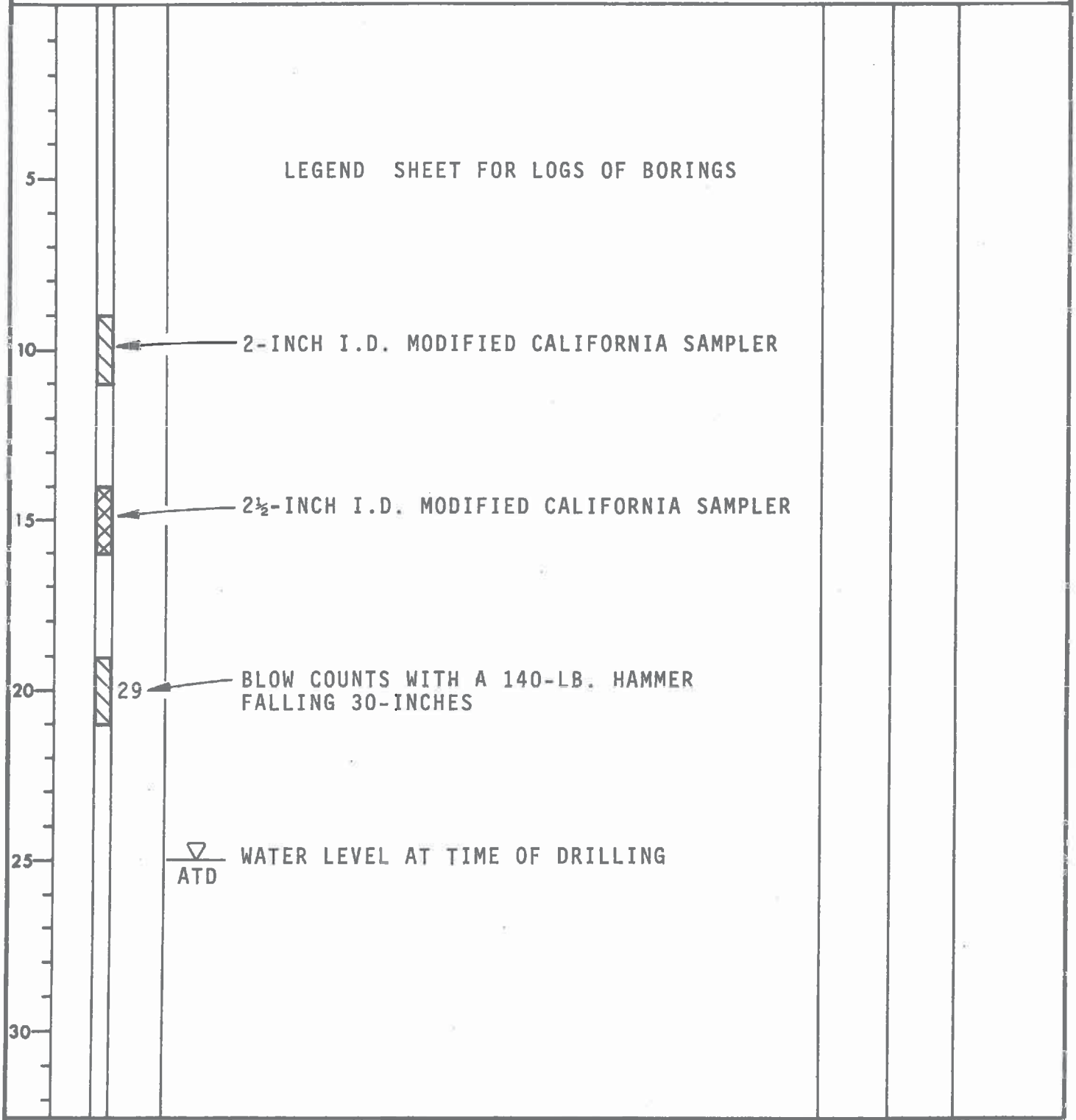

#5
Future Fire Department
Classroom
#1
#3
PROPOSED FIRE
STATION NO. 6
BUILDING
#4
#2
Property Line
WINTON AVENUE
SAKLAN
ROAD
WEST
N
Existing California Air
National Guard Building
LEGEND
Test Boring
Locations
0 25 50 100 150
SCALE IN FEET
SITE PLAN
FIRE STATION NO. 6
City of Hayward, California
Project No. S-13345
WOODWARD-CLYDE CONSULTANTS
Figure 1

Project: HAYWARD FIRE STATION NO. 6	Log of Boring No.

Date Drilled: _____ Hammer Weight: _____

Type of Boring: _____ Remarks: _____

Depth, Ft.	Samples	Blows/Ft.	DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength, psf
			Surface Elevation:			



Job No. S-13345	WOODWARD–CLYDE CONSULTANTS	LEGEND SHEET

Project: HAYWARD FIRE STATION NO. 6

Log of Boring No. 1

Date Drilled: 12-13-74 **Hammer Weight:** 140 Lbs.

Type of Boring: 6" Auger **Remarks:**

Surface Elevation: 39.0 (Approx.)

Depth, Ft.	Samples	Blows/Ft.	DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength, psf
	1	21	SILTY CLAY (CH) Stiff, Black, With Rootlet Holes Very Stiff Dark Brown-Gray Dark Gray-Brown	19	94	2100
5	2	49	SANDY SILTY CLAY (CL) Hard, Brown	19	105	2740
	3	13	SANDY CLAY (CL) Stiff, Brown, With Clayey Sandy Silt and Clayey Sand Layers	19	105	1910
10						
	4	14	Silt (ML)	16	103	610
15			With Sand Lenses ▽ ATD			
	5	13		28	95	--
20			SILTY CLAY (CH) Stiff to Very Stiff, Dark Gray-Brown			
	6	15	SILTY CLAY (CL) Stiff, Gray-Brown	23	104	2760
25			SANDY SILT (ML) Loose, Light Gray-Brown Bottom of Hole @ 25'	26	96	--
30						

Job No. S-13345 | WOODWARD-CLYDE CONSULTANTS | Figure 2

Project: HAYWARD FIRE STATION NO. 6

Log of Boring No. 2

Date Drilled: 12-13-74 **Hammer Weight:** 140 Lbs.

Type of Boring: 6" Auger **Remarks:** --

Surface Elevation: 37.5 (Approx.)

Depth, Ft.	Samples	Blows/Ft.	DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength, psf
0	1	24	SILTY CLAY (CH) Stiff, Black, With Rootlet Holes Very Stiff, Dark Brown-Gray	21	105	--
5			Very Stiff, Dark Gray-Brown			
			SILTY CLAY (CL) Very Stiff, Brown			
	2	22	SANDY CLAY (CL) Stiff to Very Stiff, Brown, With Clayey Sand and Silty Clay Layers	20	106	--
10			Stiff			
	3	12		27	96	--
15			▽ ATD			
			SILTY CLAY (CL) Stiff, Brown			
	4	12		31	93	--
20			Bottom of Hole @ 19'			
25						
30						

Job No. S-13345 | WOODWARD-CLYDE CONSULTANTS | Figure 3

Project: HAYWARD FIRE STATION NO. 6

Log of Boring No. 3

Date Drilled: 12-13-74 **Hammer Weight:** 140 Lbs.

Type of Boring: 6" Auger **Remarks:**

Surface Elevation: 38.5 (Approx.)

Depth, Ft.	Samples	Blows/Ft.	DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength, psf
0	1	39	S I L T Y C L A Y (CH) Stiff, Black, With Rootlet Holes -Dark Brown-Gray -Dark Gray-Brown (CL-CH) -Dark Brown (CL)	20	106	5300
5	2	22	S A N D Y C L A Y (CL) Stiff to Very Stiff, Brown With Clayey Sand Lenses	17	108	--
10	3	12	S I L T Y C L A Y (CL) Stiff, Brown, With Clayey Silt and Sandy Silt Lenses	24	100	--
15			Bottom of Hole @ 14'			
20						
25						
30						

Job No. S-13345 | WOODWARD-CLYDE CONSULTANTS | Figure 4

Project: HAYWARD FIRE STATION NO. 6

Log of Boring No. 4

Date Drilled: 12-13-74 **Hammer Weight:** 140 Lbs.

Type of Boring: 6" Auger **Remarks:**

Surface Elevation: 38.0 (Approx.)

Depth, Ft.	Samples	Blows/Ft.	DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength, psf
			F I L L: Dark Gray Silty Clay With Traces of Rock Fragments			
	1	26	S I L T Y C L A Y (CL-CH) Stiff to Very Stiff, Black, With Rootlet Holes	21	104	6210
5			Dark Brown-Gray			
			Dark Gray-Brown			
			S A N D Y S I L T Y C L A Y (CL) Stiff, Brown			
	2	19	Grading to a Clayey Sandy Silt With Silty Sand and Silty Clay Layers	17	105	3440
10						
	3	14	1" Coarse Sand Lense	21	103	--
15			Bottom of Hole @ 14'			
20						
25						
30						

Job No. S-13345 | WOODWARD-CLYDE CONSULTANTS | Figure 5

Project: HAYWARD FIRE STATION NO. 6

Log of Boring No. 5

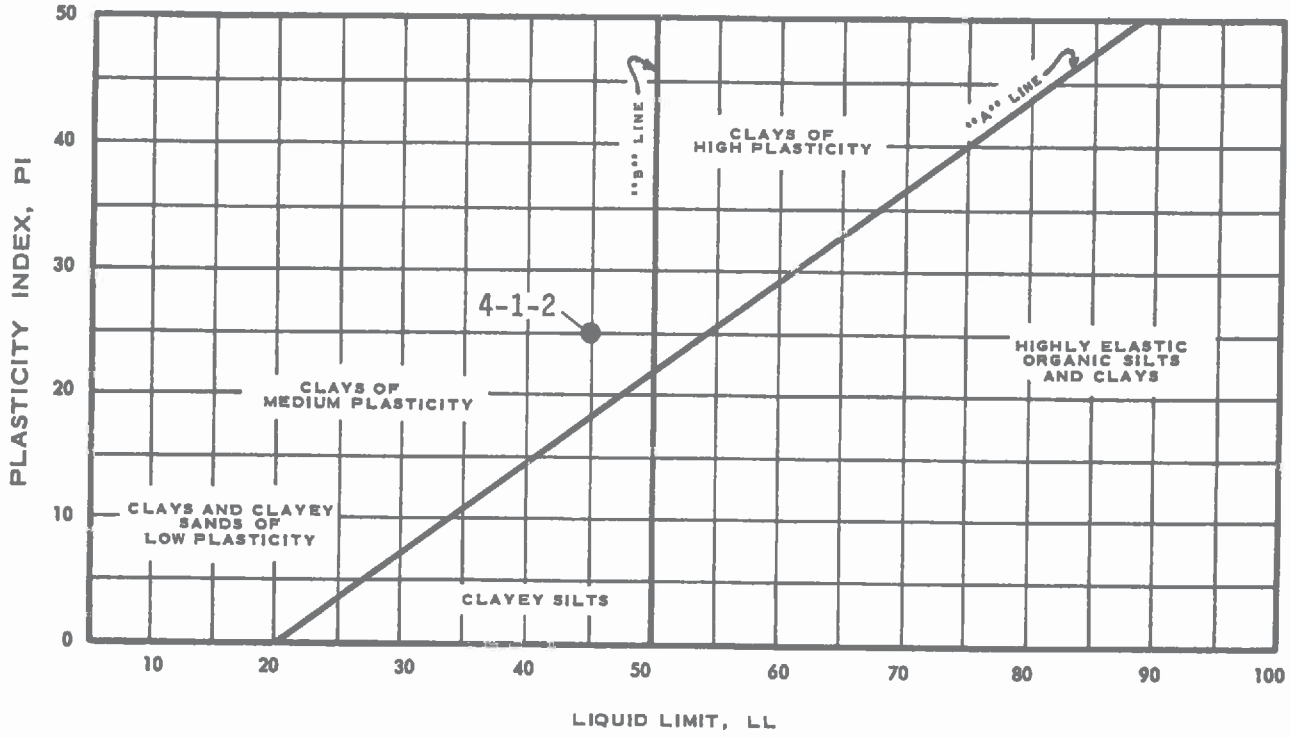
Date Drilled: 12-13-74 **Hammer Weight:** 140 Lbs.

Type of Boring: 6" Auger **Remarks:**

Surface Elevation: 40.5 (Approx.)

Depth, Ft.	Samples	Blows/Ft.	DESCRIPTION	Moisture Content, %	Dry Density pcf	Unconfined Compressive Strength, psf
0	1	24	S I L T Y C L A Y (CH) Stiff, Black, With Rootlet Holes	21	96	--
5			Dark Brown-Gray			
	2	22	S A N D Y C L A Y (CL) Stiff to Very Stiff, Brown	17	110	3290
10			Sandy Clayey Silt (ML)			
			S I L T Y C L A Y (CL): Stiff, Brown			
	3	14	S A N D Y C L A Y (CL): Stiff, Brown	12	105	1460
15			Bottom of Hole @ 13.5'			
20						
25						
30						

Job No. S-13345 | WOODWARD–CLYDE CONSULTANTS | Figure 6



CLASSIFICATION TEST RESULTS

SAMPLE IDENTIFICATION		ATTERBERG LIMITS			GRAIN SIZES – % DRY WEIGHT			
SAMPLE NO.	LETTER DESIGNATION	LIQUID LIMIT	PLASTICITY INDEX	SHRINKAGE LIMIT	SAND	SILT	CLAY	COLLOIDAL
4-1-2	--	45	25	--	9	43	48	32

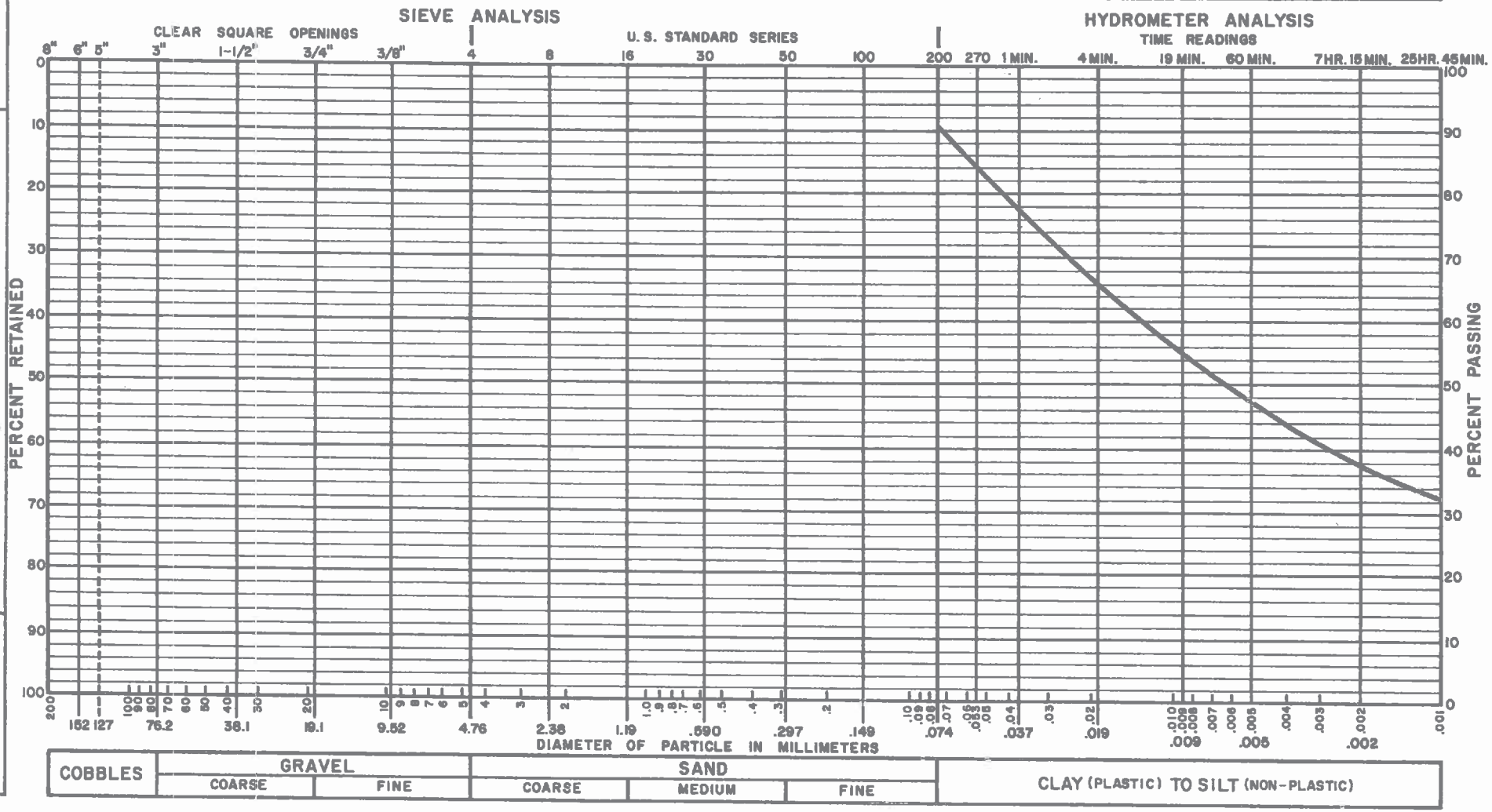
Project No. S-13345 WOODWARD–CLYDE CONSULTANTS	PLASTICITY CLASSIFICATION	Figure 7

Project No. S-13345
WOODWARD-CLYDE CONSULTANTS

GRAIN SIZE DISTRIBUTION CURVE

Figure 8

SAMPLE NO.	SYMBOL	DEPTH	LL	PI	UNIFIED CLASSIFICATION
4-1-2	--	3'	45	25	(CL-CH)



ERAS Revised Soil Sampling Report, June 26, 2018

ERAS
Environmental, Inc.

1533 B Street
Hayward, CA 94541

Phone (510) 247-9885 Facsimile: (510) 886-5399 info@eras.biz

REVISED SOIL SAMPLING INVESTIGATION

at

1401 West Winton Avenue
Hayward, California

ERAS PROJECT NUMBER: 17221

Prepared for

Mr. Dave Hung
Senior Civil Engineer
P.O. Box 2505
South San Francisco, California 94080

June 26, 2018

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3.2 BORING LOCATION AND SAMPLING 3
3.3 ANALYTICAL RESULTS 4

4.0 CONCLUSIONS 6

5.0 REFERENCES 7

FIGURES

1 Property Location Map
2 Boring Location Map

APPENDICES

A Drilling Permit
B Standard Operating Procedures
C Analytical Results
D Average Concentrations of Elements in Alameda County, California

CERTIFICATION

This **Soil Sampling Investigation** at 1401 West Winton Avenue in Hayward, California, has been prepared by ERAS Environmental, Inc. (ERAS) under the supervision of the Registered Professional Geologist whose signature appears hereon.

This report was prepared in general accordance with the accepted standard of practice that exists in Northern California at the time the investigation was performed. Judgments leading to conclusions and recommendations are generally made with an incomplete knowledge of the conditions present. More extensive studies, including additional environmental investigations, can tend to reduce the inherent uncertainties associated with such studies.

Our firm has prepared this report for the Client's exclusive use for this particular project and in accordance with generally accepted professional practices within the area at the time of our investigation. No other representations expressed or implied and no warranty or guarantee is included or intended.

This report may be used only by the client and only for the purposes stated within a reasonable time from its issuance. Land use, site conditions (both on-site and off-site) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report shall notify ERAS of such intended use. Based on the intended use of report, ERAS may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release ERAS from any liability resulting from the use of this report by any unauthorized party.

Sincerely,
ERAS Environmental, Inc.



Curtis Payton, PG 5608
Senior Geologist

Andrew Savage
Project Geologist

Project Geologist

June 26, 2018

1.0 INTRODUCTION

The following report presents the results of the collection and laboratory analysis of soil samples at 1401 West Winton Avenue in Hayward, California (the "Property"). The purpose of this investigation was to characterize the nature and extent of potential chemicals of concern (COCs) for the purposes of waste disposal for a planned construction project on the Property.

The location of the Property is shown on **Figure 1**. The layout of the Property is shown on **Figure 2**.

1.1 BACKGROUND

Eight commercial buildings and a parking area are proposed to be constructed on the Property. Most of the Property is currently undeveloped land. Information regarding the proposed development is contained in a report by Rockridge Geotechnical Entitled Final Geotechnical Investigation, Hayward Fire Station #6 & Fire Training Center, 1401 West Winton Avenue, Hayward, California, dated July 14, 2017.

Based on the geotechnical report, the eight buildings have a total estimated footprint area of approximately 71,000 square feet and the parking area has an area of approximately 35,000 square feet. Waste soil will be generated from excavations for the building slabs and footings, a basement for one of the buildings, a pump test pit, a fuel underground storage tank (UST), and parking area for the proposed City of Hayward Fire Academy. The soil to be disposed from this work consists of an approximate total volume of 7,900 cubic yards (11,850 tons).

A review of historical aerial photographs indicates most of the Property has been undeveloped since 1946. Prior to 1946 until prior to 1958, the southwestern area of the Property contained orchards. The only current development on the Property are several buildings along the western side of the Property associated with a current Hayward Fire Station that was constructed between 1968 and 1980.

The laboratory analyses selected, and the number of samples analyzed were specified by Recology, Inc. Vacaville landfill facility following their waste acceptance criteria. Note that the analytical suite should be acceptable to other local suitable Class 3 or Class 2 landfills, but each disposal facility should be consulted before arrangements for delivery of waste are made.

2.0 REGIONAL GEOLOGY/HYDROLOGY

The subject Property is in the western part of the City of Hayward in the San Francisco Bay area. The San Francisco Bay area occupies a broad alluvial valley that slopes gently northward toward San Francisco Bay and is flanked by alluvial fans deposited at the foot of the Diablo Range to the east and the Santa Cruz Mountains to the west. The northern part of the valley is called the Santa Clara Valley. Hillside areas that are known as the East Bay Hills, a part of the Diablo Range, rise abruptly approximately three miles to the east. Surface topography in the immediate vicinity of the Property is almost flat. Elevation of the Property is approximately 35 feet above Mean Sea Level (MSL) according to the United States Geological Survey (USGS) Hayward Quadrangle Topographic Map. Surface topography in the immediate vicinity of the Property is almost flat. Overall the topography slopes gently down to the west toward San Francisco Bay.

The sediments in the vicinity of the Property are fine-grained alluvial sediments that represent distal deposits of alluvial fans that were deposited by rivers draining upland surfaces to the east of the Property (Helley, et al, 1974). These sediments were deposited in a low energy environment on the margins of San Francisco Bay. At shallow depths beneath these sediments are a series of Recent-age (<10,000 years) blue clay layers that become increasingly thicker toward San Francisco Bay. These clay layers are known as the Bay Mud and were deposited in San Francisco Bay during higher stands of sea level. In the vicinity of the Property it is likely that several hundred feet of these sediments overlie sedimentary rocks of the Jurassic-aged Franciscan Formation bedrock.

The Property is in an area known as the Bay Plain, which is a subarea of the Santa Clara Valley Groundwater Basin (California Department of Water Resources, 1967). The Bay Plain is characterized by thin interbeds of sand, silt and clay deposited in flat lying marshland and shallow low energy alluvial channels. Groundwater occurs at shallow depths in thin discontinuous fine sand beds within deposits of mostly silt and clay.

Note the Property is a closed leak case under the name City of Hayward Fire Station #6 that was closed by the Regional Water Quality Control Board (RWQCB) on July 16, 2009. Based on subsurface sampling previously conducted on the Property as part of an investigation for former fuel USTs it was reported that groundwater was encountered between 18 and 21.5 feet below ground surface (bgs) and the groundwater flow direction was to the west (RWQCB, 2009).

3.0 FIELD WORK PERFORMED

3.1 SCOPE OF INVESTIGATION

Scope of work conducted for this investigation is as follows.

- Obtained a drilling permit from the Alameda County Public Works Agency (ACPWA).

- Prepared a health and safety plan and marked drilling area for utility locating by Underground Service Alert (USA).

- Subcontracted an underground utility locator to clear the boreholes for the presence of underground utility lines.

- Contracted a state licensed drilling contractor to drill twelve (12) of the soil borings. The soil borings were advanced to a maximum depth of approximately 11 feet below ground surface (bgs) for the collection of soil samples. After sample collection, the boreholes were sealed to the surface with cement grout.

- Drilled an additional sixty-seven (67) borings using hand digging equipment to a maximum depth of 6 feet bgs for the collection of soil samples.

- Analyzed the samples from the borings for total petroleum hydrocarbons quantified as gasoline range organics (TPH-gro[1]), volatile organic compounds (VOCs) by EPA Method 8260, total petroleum hydrocarbons quantified as diesel range organics (TPH-dro) and oil range organics (TPH-oro) by EPA Method 8015, semi-volatile organic compounds (SVOCs) by EPA Method 8270, and CAM 17 metals by EPA Method 6020.

- Presentation of the results of the investigation in this technical report.

3.2 BORING LOCATION AND SAMPLING

ERAS collected soil samples to characterize the soil for the disposal of soil generated during the development of the Property. The sampling locations are based on the foundation design drawing by Ross, Drullis and Cusenbery dated January 17, 2018, provided to ERAS by Dave Hung, Senior Civil Engineer, City of Hayward. The locations of soil borings are shown on **Figure 2**.

[1] TPH-gro, TPH-dro, and TPH-oro are methods that compare analytical results to standards for gasoline, diesel and motor oil, respectively. Therefore, analytical results are estimates of quantities based on what would be expected for the range of hydrocarbon results for the standard. Gasoline range organics (gro) are those hydrocarbon compounds that are in the range of C6 to C10, diesel range organics (dro) are those hydrocarbon compounds that are in the range of C10 to C23, and oil range organics (oro) are those hydrocarbon compounds that are in the range of C18 to C36. There can be overlap in reporting methods as well as identification of compounds that fall within the standard that may not necessarily be derived from gasoline, diesel, or oil.

ERAS procured a drilling permit from the ACPWA prior to drilling activities which is included in **Appendix A**. Twelve 2.5-inch diameter soil borings were drilled using a hydraulic push sampling rig by ECA of Aptos, California on March 7, 2018. Nineteen borings were drilled by ERAS using hand digging equipment on March 8th and 9th, 2018. An additional forty-eight borings were drilled by ERAS using hand digging equipment on May 30, 2018.

The locations of the borings are shown on **Figure 2**. The Standard Operating Procedure for direct-push sampling and hand boring are included in **Appendix B**.

A total of seventy-nine (79) borings were drilled on the Property as follows.

- Nineteen (19) to 1-foot bgs (slab foundation areas)
- Forty-eight (48) to 1.5-feet bgs (parking lot)
- Eight to 2 feet bgs (perimeter footings)
- One to 5 feet bgs (elevator pit)
- One to 6 feet bgs (basement)
- Two to 11 feet bgs (pump test pit and future UST location)

Soil was continuously cored for lithologic logging. The soil cores were logged by ERAS geologist Greg Munsell. The subsurface lithology encountered consisted of silty clay. Groundwater was not encountered in the borings.

A total of thirty-two (32) four-part composite samples were consolidated for analysis from the borings. The soil samples were kept chilled pending transport under chain-of-custody procedures to a California certified environmental analytical laboratory.

No evidence of VOC or petroleum hydrocarbon impact was observed in the form of odors, discoloration, or elevated organic vapor meter (OVM) readings.

3.3 ANALYTICAL RESULTS

The analytical laboratory report is included in **Appendix C**. The samples were analyzed for TPH-gro and VOCs by EPA Method 8260, TPH-dro and TPH-oro by EPA Method 8015, SVOCs by EPA Method 8270, and CAM 17 metals by EPA Method 6020.

No concentrations of TPH-g, VOCs, or SVOCs were detected above the laboratory reporting limits (LRL). The results of analysis of soil samples from the borings indicated the presence of the following.

	Concentration in mg/Kg	Direct contact ESL in mg/Kg
Antimony	<0.5 to 3.0	470
Arsenic	**4.1 to 7.8**	0.31
Barium	69 to 220	220,000
Cadmium	<0.25 to 0.85	580
Chromium	39 to 69	1,800,000
Cobalt	8.3 to 17	350

Copper	19 to 59	47,000
Lead	4.1 to 110*	320
Mercury	<0.050 to 0.19	190
Molybdenum	<0.50 to 0.68	5,800
Nickel	38 to 57	11,000
Vanadium	34 to 71	5,800
Zinc	40 to 72	350,000
TPH-dro	<1.0 to 38	1,100
TPH-oro	<5.0 to 990	140,000

Notes:
ESL – Environmental screening limits set forth by the California Regional Water Quality Control Board as of February 2016, for direct exposure human health for a commercial site
TPH-oro – Total petroleum hydrocarbon quantified as oil range organics
TPH-dro – Total petroleum hydrocarbons quantified as diesel range organics
mg/kg – milligram per kilogram
* – the sample B-25, 26, 27, 28 COMP with concentration of 110 mg/Kg of lead exceeds disposal criteria
Bold text exceeds the direct contact ESL for a commercial site

Background arsenic concentrations in Bay Area soils often exceed health-based direct-contact goals for arsenic. The United States Geological Survey (USGS) has prepared an online summary of element data by County for the Conterminous US. The data presented for Alameda County (USGS, 2016) indicates a mean of 8.396 mg/kg, a standard deviation of 2.253 mg/kg, and a range of 4.184 mg/kg to 17.411 mg/kg (included as **Attachment D**). The concentrations of arsenic detected in the samples collected from the Property were within the background range for Alameda County and are therefore not considered anthropogenic.

All concentrations of arsenic are above their respective ESL for direct contact and therefore engineering controls to protect workers during construction activities will be required. Engineering controls may include – but are not limited to – dust control using water application.

The concentration of lead in sample B-25, 26, 27, 28 COMP of 110 mg/Kg exceeded non-hazardous disposal criteria and the sample was reanalyzed using the Waste Extraction Test (WET) to determine the Soluble Threshold Limit Concentration (STLC). The result of the analysis by STLC indicated a concentration of 3.1 mg/L which meets disposal criteria for non-hazardous waste.

4.0 CONCLUSIONS

ERAS drilled a total of 79 soil borings B-1 through B-79 on March 7th, 8th and 9th, and May 30th, 2018 for the collection of soil samples. The purpose of this investigation was to characterize the nature and extent of potential chemicals of concern (COCs) for the purposes of waste disposal for a planned construction project on the Property.

The soil samples were analyzed were analyzed for TPH-gro and VOCs by EPA Method 8260, TPH-dro and TPH-oro by EPA Method 8015, SVOCs by EPA Method 8270, and CAM 17 metals by EPA Method 6020 based on waste acceptance criteria from the Recology Vacaville landfill. The analyses indicated that all soil meets disposal criteria as non-hazardous waste.

Note that the analytical suite should be acceptable to other local suitable Class 3 or Class 2 landfills, but each disposal facility should be consulted before arrangements for delivery of waste are made.

Background arsenic concentrations in Bay Area soils often exceed health-based direct-contact goals for arsenic. The USGS has prepared an online summary of element data by County for the Conterminous US. The data presented for Alameda County (USGS, 2016) indicates a mean of 8.396 mg/kg, a standard deviation of 2.253 mg/kg, and a range of 4.184 mg/kg to 17.411 mg/kg. The concentrations of arsenic detected in the samples collected from the Property were within the background range for Alameda County and are therefore not considered anthropogenic.

However, the concentrations of arsenic are above the direct exposure human health ESL of 0.31 mg/kg and therefore engineering controls to protect workers during construction activities will be required. ERAS recommends that a Soil Management Plan (SMP) be prepared for excavation activities, and worker safety, to appropriately manage worker exposures using engineering controls and appropriate personal protective equipment.

The National Institute for Occupational Safety and Health (NIOSH) is the Federal agency responsible for conducting research and making recommendations for the prevention of work related disease and injury, including exposure to hazardous chemicals in air (NIOSH 2007). NIOSH develops and periodically revises Recommended Exposure Limits (RELs) for hazardous substances in the workplace. The RELs are used to promulgate Permissible Exposure Limits (PELs) under the Occupational Safety and Health Act (OSHA). OSHA PELs are derived for an occupational setting, where the: 1. Chemical in question is used in the industrial process; 2. Workers and others who might be exposed to the chemical have knowledge of the chemicals presence; 3. Workers receive appropriate health and safety training; and 4. Workers may be provided with personal protective equipment to minimize exposures. Soil and Groundwater Management Plans should consider these criteria.

5.0 REFERENCES

California Environmental Protection Agency, San Francisco Bay Regional Water Quality Control Board, Environmental Screening Levels (Interim Final – February 2016).

California Regional Water Quality Control Board, Water Quality Control Plan, San Francisco Bay Basin Region (2), December 1986.

California Regional Water Quality Control Board, Closure Letter for Leaking Underground Storage Tank Case, City of Hayward Fire Station #6, 1401 West Winton Avenue, Hayward, Alameda County, July 16, 2009.

Goldman, Harold B., Geology of San Francisco Bay prepared for San Francisco Bay Conservation and Development Commission, February 1967.

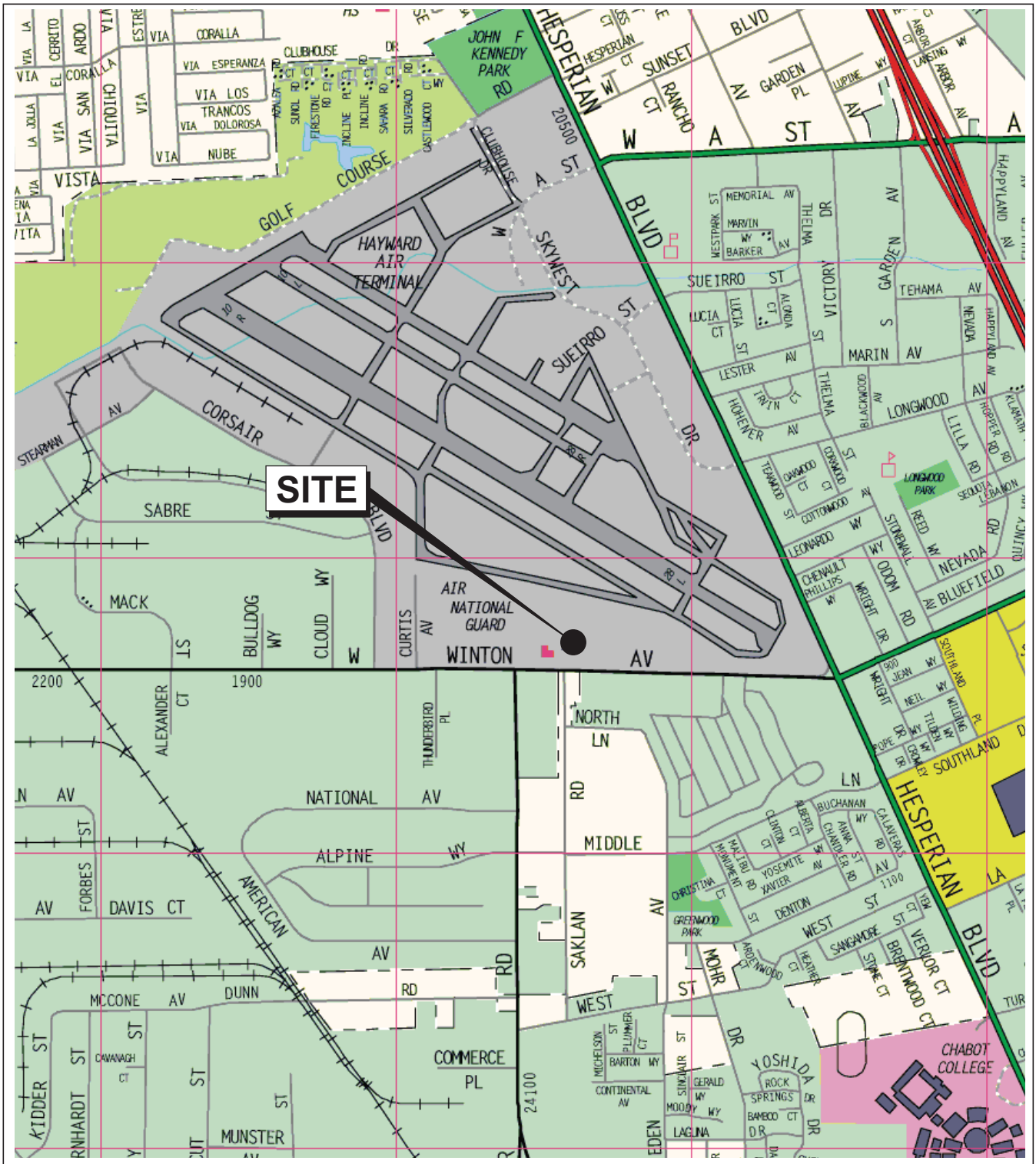
Helley, E.J., La Joie, K.R., Spangle, W.E., and Blair, M.L., Flatland Deposits of the San Francisco Bay Region, California - their geology and engineering properties and their importance to comprehensive planning, U.S. Geological Survey Professional Paper 943, 1974.

Rockridge Geotechnical, Final Geotechnical Investigation, Hayward Fire Station #6 & Fire Training Center, 1401 West Winton Avenue, Hayward, California, July 14, 2017.

Ross Drulis Cusenbery, Architectural Site Plan – Overall Campus, January 17, 2018.

USGS, National Geochemical Survey, Open File Report 2004-1001 – version 4 (last modified 20 December 2016)

FIGURES



Base map: The Thomas Guide
Alameda County
2002

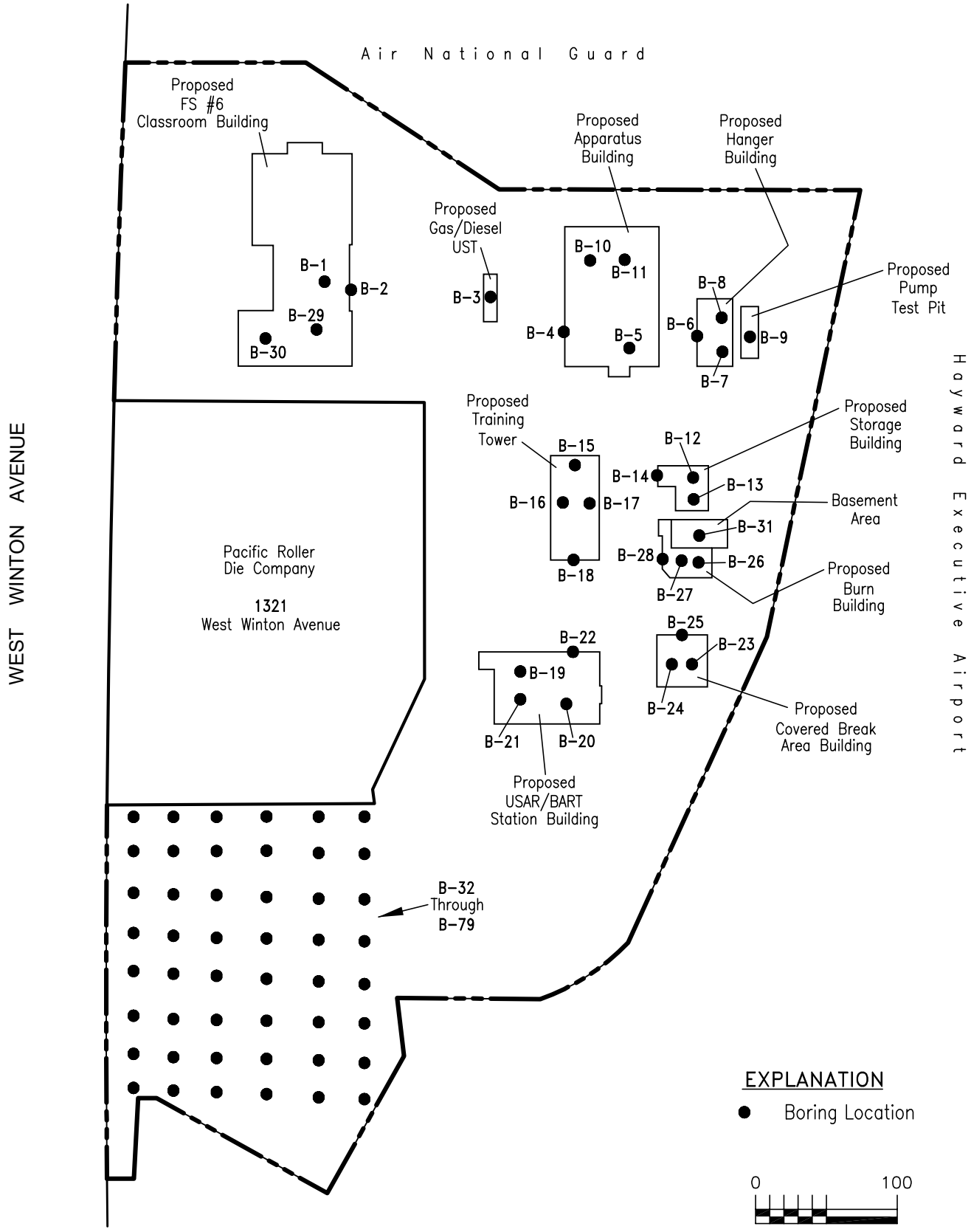
0 1/4 1/2 Mile

Approximate scale

HAYWARD FIRE STATION #6 & FIRE TRAINING CENTER
1401 WEST WINTON AVENUE
Hayward, California

PROPERTY LOCATION MAP

Date 2018	Project No. 17221	Figure 1



BORING LOCATION MAP — FIGURE 2

Project No. 17221
1401 West Winton Avenue
Hayward, California

June, 2018

ERAS Environmental

APPENDIX A

Drilling Permit

Alameda County Public Works Agency - Water Resources Well Permit

Public Works Agency
Alameda County

399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 02/21/2018 By jamesy

Permit Numbers: W2018-0122
Permits Valid from 03/07/2018 to 03/07/2018

Application Id:	1518820347873	**City of Project Site:**	Hayward
Site Location:	1401 W Winton Ave, Hayward, CA 94545, USA eight borings to 2 feet, two borings to 11 feet, one boring to 6 feet, and one boring to 5 feet for the collection of soil samples		
Project Start Date:	03/07/2018	**Completion Date:**	03/07/2018
Assigned Inspector:	Contact Marcelino Vialpando at (510) 670-5760 or Marcelino@acpwa.org		
Applicant:	ERAS Environmental Inc. - Andrew Savage 1533 B Street, Hayward, CA 94541	**Phone:**	510-247-9885 x302
Property Owner:	City of Hayward Fire Department 777 B Street, Hayward, CA 94541	**Phone:**	--
Client:	City of Hayward Fire Department 777 B Street, Hayward, CA 94541	**Phone:**	--
Contact:	Andrew Savage	**Phone:** **Cell:**	510-247-9885 x302 925-330-8926

	Total Due:	$265.00
Receipt Number: WR2018-0093	**Total Amount Paid:**	$265.00
Payer Name : Andrew Savage	Paid By: MC	**PAID IN FULL**

Works Requesting Permits:

Borehole(s) for Investigation-Contamination Study - 12 Boreholes
Driller: Environmental Control Associates (ECA) - Lic #: 695970 - Method: DP **Work Total: $265.00**

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2018-0122	02/21/2018	06/05/2018	12	2.75 in.	12.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.

2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.

3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

4. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities

APPENDIX B

Standard Operating Procedures

STANDARD OPERATING PROCEDURE – DIRECT PUSH BORINGS

SOIL CORING AND SAMPLING PROCEDURES

Prior to drilling, all boreholes will be hand dug to a depth of 4-5 feet below ground surface (bgs) to check for underground utilities.

Soil and groundwater samples are collected for lithologic and chemical analyses using a direct driven soil coring system. A hydraulic hammer drives sampling rods into the ground to collect continuous soil cores. As the rods are advanced, soil is driven into an approximately 2.5-inch-diamter sample barrel that is attached to the end of the rods. Soil samples are collected in sleeves inside the sample barrel as the rods are advanced. After being driven 4 to 5 feet into the ground, the rods are removed from the borehole. The sleeve containing the soil core is removed from the sample barrel, and can then be preserved for chemical analyses, or used for lithologic description. This process is repeated until the desired depth or instrument refusal is reached.

A soil core interval selected for analyses is cut from the sleeve using a pre-cleaned hacksaw. The ends of the tube are covered with aluminum foil or Teflon liner and sealed with plastic caps. The soil-filled liner is labeled with the bore number, sample depth, site location, date, and time. The samples are placed in bags and stored in a cooler containing ice. Soil from the core adjacent to the interval selected for analyses is placed in a plastic zip-top bag. The soil is allowed to volatilize for a period of time, depending on the ambient temperature. The soil is scanned with a flame-ionization detector (FID) or photo-ionization detector (PID).

All sample barrels, rods, and tools (e.g. hacksaw) are cleaned with Alconox or equivalent detergent and de-ionized water. All rinsate from the cleaning is contained in 55-gallon drums at the project site.

GROUNDWATER SAMPLING FROM DIRECT PUSH BORINGS

After the targeted water-bearing zone has been penetrated, the soil-sample barrel is removed from the borehole. Small-diameter well casing with 0.010-inch slotted well screen may be installed in the borehole to facilitate the collection of groundwater samples. Threaded sections of PVC are lowered into the borehole. Groundwater samples may then be collected with a bailer, peristaltic pump, submersible or other appropriate pump until adequate sample volume is obtained. Perstaltic pumps are not used in applications requiring a lift of greater than 1 foot of net head.

Groundwater samples are preserved, stored in an ice-filled cooler, and are delivered, under chain-of-custody, to a laboratory certified by the California Department of Health Services (DHS) for hazardous materials analysis.

BOREHOLE GROUTING FOR DIRECT PUSH BORINGS

Upon completion of soil and water sampling, boreholes will be abandoned with neat cement grout to the surface. If the borehole was advanced into groundwater, the grout is pumped through a grouting tube positioned at the bottom of the borehole.

STANDARD OPERATING PROCEDURE– HAND BORINGS

SOIL CORING AND SAMPLING PROCEDURES

Prior to drilling, the surface is either cored if concrete or hammered through using a pick, if asphalt.

A hand operated coring device equipped with a 3-inch diameter auger bit is advanced into the soil until full. The auger is removed and emptied, and this process is repeated until the desired depth is reached. The hand auger is removed and a slide hammer core sampling device, equipped with two 3-inch long, 2-inch diameter brass liners is advanced six inches into the undisturbed soil at the bottom of the borehole.

One of the 3-inch liners is selected, and the ends of the tube are covered with Teflon liner and sealed with plastic caps. The soil-filled liner is labeled with the borehole number, sample depth, site location, date, and time. The samples are placed in bags and stored in a cooler containing ice. Soil from the core adjacent to the interval selected for analyses is placed in a plastic zip-top bag. The soil is allowed to volatilize for a period of time, depending on the ambient temperature. The soil is scanned with a flame-ionization detector (FID) or photo-ionization detector (PID).

All sample barrels, rods, and tools are cleaned with Alconox or equivalent detergent and de-ionized water. All rinsate from the cleaning is contained in covered 5-gallon plastic buckets or 55-gallon drums at the project site.

BOREHOLE GROUTING FOR HAND BORINGS

Upon completion of soil and water sampling, boreholes will be abandoned with neat cement grout. If the borehole was advanced into groundwater, the grout is pumped through a grouting tube positioned at the bottom of the borehole.

APPENDIX C

Analytical Results

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1803578

Report Created for: ERAS Environmental, Inc.

1533 B Street
Hayward, CA 94541

Project Contact: Greg Munsell
Project P.O.:
Project: 17221; 1401 West Winton, Hayward

Project Received: 03/09/2018

Analytical Report reviewed & approved for release on 03/19/2018 by:



Christine Askari
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: ERAS Environmental, Inc.
Project: 17221; 1401 West Winton, Hayward
WorkOrder: 1803578

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Glossary of Terms & Qualifier Definitions

Client: ERAS Environmental, Inc.
Project: 17221; 1401 West Winton, Hayward
WorkOrder: 1803578

Analytical Qualifiers

S	Surrogate spike recovery outside accepted recovery limits
a3	Sample diluted due to high organic content.
a4	Reporting limits raised due to the sample's matrix prohibiting a full volume extraction.
c2	Surrogate recovery outside of the control limits due to matrix interference.
e2	Diesel range compounds are significant; no recognizable pattern
e7	Oil range compounds are significant

Quality Control Qualifiers

F2	LCS/LCSD recovery and/or RPD is out of acceptance criteria.
F3	The surrogate standard recovery and/or RPD is outside of acceptance limits.
F7	LCS recovery for this compound is above acceptance limits but the sample analytes were not detected; therefore, the data is reportable.
F10	MS/MSD outside control limits. Physical or chemical interferences exist due to sample matrix.

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1 & 2 COMP	1803578-001A	Soil	03/09/2018 08:20	GC17 03131826.D	154535

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	40	20	03/13/2018 21:20
Acenaphthylene	ND	40	20	03/13/2018 21:20
Acetochlor	ND	40	20	03/13/2018 21:20
Anthracene	ND	40	20	03/13/2018 21:20
Benzidine	ND	210	20	03/13/2018 21:20
Benzo (a) anthracene	ND	40	20	03/13/2018 21:20
Benzo (a) pyrene	ND	40	20	03/13/2018 21:20
Benzo (b) fluoranthene	ND	40	20	03/13/2018 21:20
Benzo (g,h,i) perylene	ND	40	20	03/13/2018 21:20
Benzo (k) fluoranthene	ND	40	20	03/13/2018 21:20
Benzyl Alcohol	ND	210	20	03/13/2018 21:20
1,1-Biphenyl	ND	40	20	03/13/2018 21:20
Bis (2-chloroethoxy) Methane	ND	40	20	03/13/2018 21:20
Bis (2-chloroethyl) Ether	ND	40	20	03/13/2018 21:20
Bis (2-chloroisopropyl) Ether	ND	40	20	03/13/2018 21:20
Bis (2-ethylhexyl) Adipate	ND	40	20	03/13/2018 21:20
Bis (2-ethylhexyl) Phthalate	ND	40	20	03/13/2018 21:20
4-Bromophenyl Phenyl Ether	ND	40	20	03/13/2018 21:20
Butylbenzyl Phthalate	ND	40	20	03/13/2018 21:20
4-Chloroaniline	ND	80	20	03/13/2018 21:20
4-Chloro-3-methylphenol	ND	40	20	03/13/2018 21:20
2-Chloronaphthalene	ND	40	20	03/13/2018 21:20
2-Chlorophenol	ND	40	20	03/13/2018 21:20
4-Chlorophenyl Phenyl Ether	ND	40	20	03/13/2018 21:20
Chrysene	ND	40	20	03/13/2018 21:20
Dibenzo (a,h) anthracene	ND	40	20	03/13/2018 21:20
Dibenzofuran	ND	40	20	03/13/2018 21:20
Di-n-butyl Phthalate	ND	40	20	03/13/2018 21:20
1,2-Dichlorobenzene	ND	40	20	03/13/2018 21:20
1,3-Dichlorobenzene	ND	40	20	03/13/2018 21:20
1,4-Dichlorobenzene	ND	40	20	03/13/2018 21:20
3,3-Dichlorobenzidine	ND	80	20	03/13/2018 21:20
2,4-Dichlorophenol	ND	40	20	03/13/2018 21:20
Diethyl Phthalate	ND	40	20	03/13/2018 21:20
2,4-Dimethylphenol	ND	40	20	03/13/2018 21:20
Dimethyl Phthalate	ND	40	20	03/13/2018 21:20
4,6-Dinitro-2-methylphenol	ND	210	20	03/13/2018 21:20

(Cont.)

NELAP 4033ORELAP

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1 & 2 COMP	1803578-001A	Soil	03/09/2018 08:20	GC17 03131826.D	154535

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	1000	20	03/13/2018 21:20
2,4-Dinitrotoluene	ND	40	20	03/13/2018 21:20
2,6-Dinitrotoluene	ND	40	20	03/13/2018 21:20
Di-n-octyl Phthalate	ND	80	20	03/13/2018 21:20
1,2-Diphenylhydrazine	ND	40	20	03/13/2018 21:20
Fluoranthene	ND	40	20	03/13/2018 21:20
Fluorene	ND	40	20	03/13/2018 21:20
Hexachlorobenzene	ND	40	20	03/13/2018 21:20
Hexachlorobutadiene	ND	40	20	03/13/2018 21:20
Hexachlorocyclopentadiene	ND	210	20	03/13/2018 21:20
Hexachloroethane	ND	40	20	03/13/2018 21:20
Indeno (1,2,3-cd) pyrene	ND	40	20	03/13/2018 21:20
Isophorone	ND	40	20	03/13/2018 21:20
2-Methylnaphthalene	ND	40	20	03/13/2018 21:20
2-Methylphenol (o-Cresol)	ND	40	20	03/13/2018 21:20
3 & 4-Methylphenol (m,p-Cresol)	ND	40	20	03/13/2018 21:20
Naphthalene	ND	40	20	03/13/2018 21:20
2-Nitroaniline	ND	210	20	03/13/2018 21:20
3-Nitroaniline	ND	210	20	03/13/2018 21:20
4-Nitroaniline	ND	210	20	03/13/2018 21:20
Nitrobenzene	ND	40	20	03/13/2018 21:20
2-Nitrophenol	ND	210	20	03/13/2018 21:20
4-Nitrophenol	ND	210	20	03/13/2018 21:20
N-Nitrosodiphenylamine	ND	40	20	03/13/2018 21:20
N-Nitrosodi-n-propylamine	ND	40	20	03/13/2018 21:20
Pentachlorophenol	ND	210	20	03/13/2018 21:20
Phenanthrene	ND	40	20	03/13/2018 21:20
Phenol	ND	40	20	03/13/2018 21:20
Pyrene	ND	40	20	03/13/2018 21:20
Pyridine	ND	40	20	03/13/2018 21:20
1,2,4-Trichlorobenzene	ND	40	20	03/13/2018 21:20
2,4,5-Trichlorophenol	ND	40	20	03/13/2018 21:20
2,4,6-Trichlorophenol	ND	40	20	03/13/2018 21:20

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1 & 2 COMP	1803578-001A	Soil	03/09/2018 08:20	GC17 03131826.D	154535

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	108	30-130		03/13/2018 21:20
Phenol-d5	78	30-130		03/13/2018 21:20
Nitrobenzene-d5	97	30-130		03/13/2018 21:20
2-Fluorobiphenyl	87	30-130		03/13/2018 21:20
2,4,6-Tribromophenol	63	16-130		03/13/2018 21:20
4-Terphenyl-d14	107	30-130		03/13/2018 21:20

Analyst(s): REB Analytical Comments: a3,a4

(Cont.)

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
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Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-3,4 & 5 COMP	1803578-002A	Soil	03/09/2018 08:56	GC17 03131827.D	154535

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	2.0	1	03/13/2018 21:47
Acenaphthylene	ND	2.0	1	03/13/2018 21:47
Acetochlor	ND	2.0	1	03/13/2018 21:47
Anthracene	ND	2.0	1	03/13/2018 21:47
Benzidine	ND	10	1	03/13/2018 21:47
Benzo (a) anthracene	ND	2.0	1	03/13/2018 21:47
Benzo (a) pyrene	ND	2.0	1	03/13/2018 21:47
Benzo (b) fluoranthene	ND	2.0	1	03/13/2018 21:47
Benzo (g,h,i) perylene	ND	2.0	1	03/13/2018 21:47
Benzo (k) fluoranthene	ND	2.0	1	03/13/2018 21:47
Benzyl Alcohol	ND	10	1	03/13/2018 21:47
1,1-Biphenyl	ND	2.0	1	03/13/2018 21:47
Bis (2-chloroethoxy) Methane	ND	2.0	1	03/13/2018 21:47
Bis (2-chloroethyl) Ether	ND	2.0	1	03/13/2018 21:47
Bis (2-chloroisopropyl) Ether	ND	2.0	1	03/13/2018 21:47
Bis (2-ethylhexyl) Adipate	ND	2.0	1	03/13/2018 21:47
Bis (2-ethylhexyl) Phthalate	ND	2.0	1	03/13/2018 21:47
4-Bromophenyl Phenyl Ether	ND	2.0	1	03/13/2018 21:47
Butylbenzyl Phthalate	ND	2.0	1	03/13/2018 21:47
4-Chloroaniline	ND	4.0	1	03/13/2018 21:47
4-Chloro-3-methylphenol	ND	2.0	1	03/13/2018 21:47
2-Chloronaphthalene	ND	2.0	1	03/13/2018 21:47
2-Chlorophenol	ND	2.0	1	03/13/2018 21:47
4-Chlorophenyl Phenyl Ether	ND	2.0	1	03/13/2018 21:47
Chrysene	ND	2.0	1	03/13/2018 21:47
Dibenzo (a,h) anthracene	ND	2.0	1	03/13/2018 21:47
Dibenzofuran	ND	2.0	1	03/13/2018 21:47
Di-n-butyl Phthalate	ND	2.0	1	03/13/2018 21:47
1,2-Dichlorobenzene	ND	2.0	1	03/13/2018 21:47
1,3-Dichlorobenzene	ND	2.0	1	03/13/2018 21:47
1,4-Dichlorobenzene	ND	2.0	1	03/13/2018 21:47
3,3-Dichlorobenzidine	ND	4.0	1	03/13/2018 21:47
2,4-Dichlorophenol	ND	2.0	1	03/13/2018 21:47
Diethyl Phthalate	ND	2.0	1	03/13/2018 21:47
2,4-Dimethylphenol	ND	2.0	1	03/13/2018 21:47
Dimethyl Phthalate	ND	2.0	1	03/13/2018 21:47
4,6-Dinitro-2-methylphenol	ND	10	1	03/13/2018 21:47

(Cont.)

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-3,4 & 5 COMP	1803578-002A	Soil	03/09/2018 08:56	GC17 03131827.D	154535

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	50	1	03/13/2018 21:47
2,4-Dinitrotoluene	ND	2.0	1	03/13/2018 21:47
2,6-Dinitrotoluene	ND	2.0	1	03/13/2018 21:47
Di-n-octyl Phthalate	ND	4.0	1	03/13/2018 21:47
1,2-Diphenylhydrazine	ND	2.0	1	03/13/2018 21:47
Fluoranthene	ND	2.0	1	03/13/2018 21:47
Fluorene	ND	2.0	1	03/13/2018 21:47
Hexachlorobenzene	ND	2.0	1	03/13/2018 21:47
Hexachlorobutadiene	ND	2.0	1	03/13/2018 21:47
Hexachlorocyclopentadiene	ND	10	1	03/13/2018 21:47
Hexachloroethane	ND	2.0	1	03/13/2018 21:47
Indeno (1,2,3-cd) pyrene	ND	2.0	1	03/13/2018 21:47
Isophorone	ND	2.0	1	03/13/2018 21:47
2-Methylnaphthalene	ND	2.0	1	03/13/2018 21:47
2-Methylphenol (o-Cresol)	ND	2.0	1	03/13/2018 21:47
3 & 4-Methylphenol (m,p-Cresol)	ND	2.0	1	03/13/2018 21:47
Naphthalene	ND	2.0	1	03/13/2018 21:47
2-Nitroaniline	ND	10	1	03/13/2018 21:47
3-Nitroaniline	ND	10	1	03/13/2018 21:47
4-Nitroaniline	ND	10	1	03/13/2018 21:47
Nitrobenzene	ND	2.0	1	03/13/2018 21:47
2-Nitrophenol	ND	10	1	03/13/2018 21:47
4-Nitrophenol	ND	10	1	03/13/2018 21:47
N-Nitrosodiphenylamine	ND	2.0	1	03/13/2018 21:47
N-Nitrosodi-n-propylamine	ND	2.0	1	03/13/2018 21:47
Pentachlorophenol	ND	10	1	03/13/2018 21:47
Phenanthrene	ND	2.0	1	03/13/2018 21:47
Phenol	ND	2.0	1	03/13/2018 21:47
Pyrene	ND	2.0	1	03/13/2018 21:47
Pyridine	ND	2.0	1	03/13/2018 21:47
1,2,4-Trichlorobenzene	ND	2.0	1	03/13/2018 21:47
2,4,5-Trichlorophenol	ND	2.0	1	03/13/2018 21:47
2,4,6-Trichlorophenol	ND	2.0	1	03/13/2018 21:47

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-3,4 & 5 COMP	1803578-002A	Soil	03/09/2018 08:56	GC17 03131827.D	154535

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	100	30-130		03/13/2018 21:47
Phenol-d5	73	30-130		03/13/2018 21:47
Nitrobenzene-d5	88	30-130		03/13/2018 21:47
2-Fluorobiphenyl	76	30-130		03/13/2018 21:47
2,4,6-Tribromophenol	37	16-130		03/13/2018 21:47
4-Terphenyl-d14	87	30-130		03/13/2018 21:47

Analyst(s): REB Analytical Comments: a4

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-6,7,8 COMP	1803578-005A	Soil	03/08/2018 09:22	GC17 03131828.D	154535

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	40	20	03/13/2018 22:14
Acenaphthylene	ND	40	20	03/13/2018 22:14
Acetochlor	ND	40	20	03/13/2018 22:14
Anthracene	ND	40	20	03/13/2018 22:14
Benzidine	ND	210	20	03/13/2018 22:14
Benzo (a) anthracene	ND	40	20	03/13/2018 22:14
Benzo (a) pyrene	ND	40	20	03/13/2018 22:14
Benzo (b) fluoranthene	ND	40	20	03/13/2018 22:14
Benzo (g,h,i) perylene	ND	40	20	03/13/2018 22:14
Benzo (k) fluoranthene	ND	40	20	03/13/2018 22:14
Benzyl Alcohol	ND	210	20	03/13/2018 22:14
1,1-Biphenyl	ND	40	20	03/13/2018 22:14
Bis (2-chloroethoxy) Methane	ND	40	20	03/13/2018 22:14
Bis (2-chloroethyl) Ether	ND	40	20	03/13/2018 22:14
Bis (2-chloroisopropyl) Ether	ND	40	20	03/13/2018 22:14
Bis (2-ethylhexyl) Adipate	ND	40	20	03/13/2018 22:14
Bis (2-ethylhexyl) Phthalate	ND	40	20	03/13/2018 22:14
4-Bromophenyl Phenyl Ether	ND	40	20	03/13/2018 22:14
Butylbenzyl Phthalate	ND	40	20	03/13/2018 22:14
4-Chloroaniline	ND	80	20	03/13/2018 22:14
4-Chloro-3-methylphenol	ND	40	20	03/13/2018 22:14
2-Chloronaphthalene	ND	40	20	03/13/2018 22:14
2-Chlorophenol	ND	40	20	03/13/2018 22:14
4-Chlorophenyl Phenyl Ether	ND	40	20	03/13/2018 22:14
Chrysene	ND	40	20	03/13/2018 22:14
Dibenzo (a,h) anthracene	ND	40	20	03/13/2018 22:14
Dibenzofuran	ND	40	20	03/13/2018 22:14
Di-n-butyl Phthalate	ND	40	20	03/13/2018 22:14
1,2-Dichlorobenzene	ND	40	20	03/13/2018 22:14
1,3-Dichlorobenzene	ND	40	20	03/13/2018 22:14
1,4-Dichlorobenzene	ND	40	20	03/13/2018 22:14
3,3-Dichlorobenzidine	ND	80	20	03/13/2018 22:14
2,4-Dichlorophenol	ND	40	20	03/13/2018 22:14
Diethyl Phthalate	ND	40	20	03/13/2018 22:14
2,4-Dimethylphenol	ND	40	20	03/13/2018 22:14
Dimethyl Phthalate	ND	40	20	03/13/2018 22:14
4,6-Dinitro-2-methylphenol	ND	210	20	03/13/2018 22:14

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-6,7,8 COMP	1803578-005A	Soil	03/08/2018 09:22	GC17 03131828.D	154535

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	1000	20	03/13/2018 22:14
2,4-Dinitrotoluene	ND	40	20	03/13/2018 22:14
2,6-Dinitrotoluene	ND	40	20	03/13/2018 22:14
Di-n-octyl Phthalate	ND	80	20	03/13/2018 22:14
1,2-Diphenylhydrazine	ND	40	20	03/13/2018 22:14
Fluoranthene	ND	40	20	03/13/2018 22:14
Fluorene	ND	40	20	03/13/2018 22:14
Hexachlorobenzene	ND	40	20	03/13/2018 22:14
Hexachlorobutadiene	ND	40	20	03/13/2018 22:14
Hexachlorocyclopentadiene	ND	210	20	03/13/2018 22:14
Hexachloroethane	ND	40	20	03/13/2018 22:14
Indeno (1,2,3-cd) pyrene	ND	40	20	03/13/2018 22:14
Isophorone	ND	40	20	03/13/2018 22:14
2-Methylnaphthalene	ND	40	20	03/13/2018 22:14
2-Methylphenol (o-Cresol)	ND	40	20	03/13/2018 22:14
3 & 4-Methylphenol (m,p-Cresol)	ND	40	20	03/13/2018 22:14
Naphthalene	ND	40	20	03/13/2018 22:14
2-Nitroaniline	ND	210	20	03/13/2018 22:14
3-Nitroaniline	ND	210	20	03/13/2018 22:14
4-Nitroaniline	ND	210	20	03/13/2018 22:14
Nitrobenzene	ND	40	20	03/13/2018 22:14
2-Nitrophenol	ND	210	20	03/13/2018 22:14
4-Nitrophenol	ND	210	20	03/13/2018 22:14
N-Nitrosodiphenylamine	ND	40	20	03/13/2018 22:14
N-Nitrosodi-n-propylamine	ND	40	20	03/13/2018 22:14
Pentachlorophenol	ND	210	20	03/13/2018 22:14
Phenanthrene	ND	40	20	03/13/2018 22:14
Phenol	ND	40	20	03/13/2018 22:14
Pyrene	ND	40	20	03/13/2018 22:14
Pyridine	ND	40	20	03/13/2018 22:14
1,2,4-Trichlorobenzene	ND	40	20	03/13/2018 22:14
2,4,5-Trichlorophenol	ND	40	20	03/13/2018 22:14
2,4,6-Trichlorophenol	ND	40	20	03/13/2018 22:14

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-6,7,8 COMP	**1803578-005A**	**Soil**	**03/08/2018 09:22**	**GC17 03131828.D**	**154535**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	99	30-130		03/13/2018 22:14
Phenol-d5	73	30-130		03/13/2018 22:14
Nitrobenzene-d5	94	30-130		03/13/2018 22:14
2-Fluorobiphenyl	73	30-130		03/13/2018 22:14
2,4,6-Tribromophenol	70	16-130		03/13/2018 22:14
4-Terphenyl-d14	81	30-130		03/13/2018 22:14

Analyst(s): REB Analytical Comments: a3,a4

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9,10,11,12 COMP	1803578-006A	Soil	03/08/2018 10:14	GC17 03131829.D	154535

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	2.0	1	03/13/2018 22:41
Acenaphthylene	ND	2.0	1	03/13/2018 22:41
Acetochlor	ND	2.0	1	03/13/2018 22:41
Anthracene	ND	2.0	1	03/13/2018 22:41
Benzidine	ND	10	1	03/13/2018 22:41
Benzo (a) anthracene	ND	2.0	1	03/13/2018 22:41
Benzo (a) pyrene	ND	2.0	1	03/13/2018 22:41
Benzo (b) fluoranthene	ND	2.0	1	03/13/2018 22:41
Benzo (g,h,i) perylene	ND	2.0	1	03/13/2018 22:41
Benzo (k) fluoranthene	ND	2.0	1	03/13/2018 22:41
Benzyl Alcohol	ND	10	1	03/13/2018 22:41
1,1-Biphenyl	ND	2.0	1	03/13/2018 22:41
Bis (2-chloroethoxy) Methane	ND	2.0	1	03/13/2018 22:41
Bis (2-chloroethyl) Ether	ND	2.0	1	03/13/2018 22:41
Bis (2-chloroisopropyl) Ether	ND	2.0	1	03/13/2018 22:41
Bis (2-ethylhexyl) Adipate	ND	2.0	1	03/13/2018 22:41
Bis (2-ethylhexyl) Phthalate	ND	2.0	1	03/13/2018 22:41
4-Bromophenyl Phenyl Ether	ND	2.0	1	03/13/2018 22:41
Butylbenzyl Phthalate	ND	2.0	1	03/13/2018 22:41
4-Chloroaniline	ND	4.0	1	03/13/2018 22:41
4-Chloro-3-methylphenol	ND	2.0	1	03/13/2018 22:41
2-Chloronaphthalene	ND	2.0	1	03/13/2018 22:41
2-Chlorophenol	ND	2.0	1	03/13/2018 22:41
4-Chlorophenyl Phenyl Ether	ND	2.0	1	03/13/2018 22:41
Chrysene	ND	2.0	1	03/13/2018 22:41
Dibenzo (a,h) anthracene	ND	2.0	1	03/13/2018 22:41
Dibenzofuran	ND	2.0	1	03/13/2018 22:41
Di-n-butyl Phthalate	ND	2.0	1	03/13/2018 22:41
1,2-Dichlorobenzene	ND	2.0	1	03/13/2018 22:41
1,3-Dichlorobenzene	ND	2.0	1	03/13/2018 22:41
1,4-Dichlorobenzene	ND	2.0	1	03/13/2018 22:41
3,3-Dichlorobenzidine	ND	4.0	1	03/13/2018 22:41
2,4-Dichlorophenol	ND	2.0	1	03/13/2018 22:41
Diethyl Phthalate	ND	2.0	1	03/13/2018 22:41
2,4-Dimethylphenol	ND	2.0	1	03/13/2018 22:41
Dimethyl Phthalate	ND	2.0	1	03/13/2018 22:41
4,6-Dinitro-2-methylphenol	ND	10	1	03/13/2018 22:41

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9,10,11,12 COMP	1803578-006A	Soil	03/08/2018 10:14	GC17 03131829.D	154535

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	50	1	03/13/2018 22:41
2,4-Dinitrotoluene	ND	2.0	1	03/13/2018 22:41
2,6-Dinitrotoluene	ND	2.0	1	03/13/2018 22:41
Di-n-octyl Phthalate	ND	4.0	1	03/13/2018 22:41
1,2-Diphenylhydrazine	ND	2.0	1	03/13/2018 22:41
Fluoranthene	ND	2.0	1	03/13/2018 22:41
Fluorene	ND	2.0	1	03/13/2018 22:41
Hexachlorobenzene	ND	2.0	1	03/13/2018 22:41
Hexachlorobutadiene	ND	2.0	1	03/13/2018 22:41
Hexachlorocyclopentadiene	ND	10	1	03/13/2018 22:41
Hexachloroethane	ND	2.0	1	03/13/2018 22:41
Indeno (1,2,3-cd) pyrene	ND	2.0	1	03/13/2018 22:41
Isophorone	ND	2.0	1	03/13/2018 22:41
2-Methylnaphthalene	ND	2.0	1	03/13/2018 22:41
2-Methylphenol (o-Cresol)	ND	2.0	1	03/13/2018 22:41
3 & 4-Methylphenol (m,p-Cresol)	ND	2.0	1	03/13/2018 22:41
Naphthalene	ND	2.0	1	03/13/2018 22:41
2-Nitroaniline	ND	10	1	03/13/2018 22:41
3-Nitroaniline	ND	10	1	03/13/2018 22:41
4-Nitroaniline	ND	10	1	03/13/2018 22:41
Nitrobenzene	ND	2.0	1	03/13/2018 22:41
2-Nitrophenol	ND	10	1	03/13/2018 22:41
4-Nitrophenol	ND	10	1	03/13/2018 22:41
N-Nitrosodiphenylamine	ND	2.0	1	03/13/2018 22:41
N-Nitrosodi-n-propylamine	ND	2.0	1	03/13/2018 22:41
Pentachlorophenol	ND	10	1	03/13/2018 22:41
Phenanthrene	ND	2.0	1	03/13/2018 22:41
Phenol	ND	2.0	1	03/13/2018 22:41
Pyrene	ND	2.0	1	03/13/2018 22:41
Pyridine	ND	2.0	1	03/13/2018 22:41
1,2,4-Trichlorobenzene	ND	2.0	1	03/13/2018 22:41
2,4,5-Trichlorophenol	ND	2.0	1	03/13/2018 22:41
2,4,6-Trichlorophenol	ND	2.0	1	03/13/2018 22:41

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9,10,11,12 COMP	1803578-006A	Soil	03/08/2018 10:14	GC17 03131829.D	154535

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	99	30-130		03/13/2018 22:41
Phenol-d5	77	30-130		03/13/2018 22:41
Nitrobenzene-d5	85	30-130		03/13/2018 22:41
2-Fluorobiphenyl	76	30-130		03/13/2018 22:41
2,4,6-Tribromophenol	46	16-130		03/13/2018 22:41
4-Terphenyl-d14	86	30-130		03/13/2018 22:41

Analyst(s): REB Analytical Comments: a4

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-13,14,15 COMP	1803578-009A	Soil	03/08/2018 09:26	GC17 03131832.D	154535

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.25	1	03/14/2018 00:02
Acenaphthylene	ND	0.25	1	03/14/2018 00:02
Acetochlor	ND	0.25	1	03/14/2018 00:02
Anthracene	ND	0.25	1	03/14/2018 00:02
Benzidine	ND	1.3	1	03/14/2018 00:02
Benzo (a) anthracene	ND	0.25	1	03/14/2018 00:02
Benzo (a) pyrene	ND	0.25	1	03/14/2018 00:02
Benzo (b) fluoranthene	ND	0.25	1	03/14/2018 00:02
Benzo (g,h,i) perylene	ND	0.25	1	03/14/2018 00:02
Benzo (k) fluoranthene	ND	0.25	1	03/14/2018 00:02
Benzyl Alcohol	ND	1.3	1	03/14/2018 00:02
1,1-Biphenyl	ND	0.25	1	03/14/2018 00:02
Bis (2-chloroethoxy) Methane	ND	0.25	1	03/14/2018 00:02
Bis (2-chloroethyl) Ether	ND	0.25	1	03/14/2018 00:02
Bis (2-chloroisopropyl) Ether	ND	0.25	1	03/14/2018 00:02
Bis (2-ethylhexyl) Adipate	ND	0.25	1	03/14/2018 00:02
Bis (2-ethylhexyl) Phthalate	ND	0.25	1	03/14/2018 00:02
4-Bromophenyl Phenyl Ether	ND	0.25	1	03/14/2018 00:02
Butylbenzyl Phthalate	ND	0.25	1	03/14/2018 00:02
4-Chloroaniline	ND	0.50	1	03/14/2018 00:02
4-Chloro-3-methylphenol	ND	0.25	1	03/14/2018 00:02
2-Chloronaphthalene	ND	0.25	1	03/14/2018 00:02
2-Chlorophenol	ND	0.25	1	03/14/2018 00:02
4-Chlorophenyl Phenyl Ether	ND	0.25	1	03/14/2018 00:02
Chrysene	ND	0.25	1	03/14/2018 00:02
Dibenzo (a,h) anthracene	ND	0.25	1	03/14/2018 00:02
Dibenzofuran	ND	0.25	1	03/14/2018 00:02
Di-n-butyl Phthalate	ND	0.25	1	03/14/2018 00:02
1,2-Dichlorobenzene	ND	0.25	1	03/14/2018 00:02
1,3-Dichlorobenzene	ND	0.25	1	03/14/2018 00:02
1,4-Dichlorobenzene	ND	0.25	1	03/14/2018 00:02
3,3-Dichlorobenzidine	ND	0.50	1	03/14/2018 00:02
2,4-Dichlorophenol	ND	0.25	1	03/14/2018 00:02
Diethyl Phthalate	ND	0.25	1	03/14/2018 00:02
2,4-Dimethylphenol	ND	0.25	1	03/14/2018 00:02
Dimethyl Phthalate	ND	0.25	1	03/14/2018 00:02
4,6-Dinitro-2-methylphenol	ND	1.3	1	03/14/2018 00:02

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-13,14,15 COMP	1803578-009A	Soil	03/08/2018 09:26	GC17 03131832.D	154535

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	6.3	1	03/14/2018 00:02
2,4-Dinitrotoluene	ND	0.25	1	03/14/2018 00:02
2,6-Dinitrotoluene	ND	0.25	1	03/14/2018 00:02
Di-n-octyl Phthalate	ND	0.50	1	03/14/2018 00:02
1,2-Diphenylhydrazine	ND	0.25	1	03/14/2018 00:02
Fluoranthene	ND	0.25	1	03/14/2018 00:02
Fluorene	ND	0.25	1	03/14/2018 00:02
Hexachlorobenzene	ND	0.25	1	03/14/2018 00:02
Hexachlorobutadiene	ND	0.25	1	03/14/2018 00:02
Hexachlorocyclopentadiene	ND	1.3	1	03/14/2018 00:02
Hexachloroethane	ND	0.25	1	03/14/2018 00:02
Indeno (1,2,3-cd) pyrene	ND	0.25	1	03/14/2018 00:02
Isophorone	ND	0.25	1	03/14/2018 00:02
2-Methylnaphthalene	ND	0.25	1	03/14/2018 00:02
2-Methylphenol (o-Cresol)	ND	0.25	1	03/14/2018 00:02
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	03/14/2018 00:02
Naphthalene	ND	0.25	1	03/14/2018 00:02
2-Nitroaniline	ND	1.3	1	03/14/2018 00:02
3-Nitroaniline	ND	1.3	1	03/14/2018 00:02
4-Nitroaniline	ND	1.3	1	03/14/2018 00:02
Nitrobenzene	ND	0.25	1	03/14/2018 00:02
2-Nitrophenol	ND	1.3	1	03/14/2018 00:02
4-Nitrophenol	ND	1.3	1	03/14/2018 00:02
N-Nitrosodiphenylamine	ND	0.25	1	03/14/2018 00:02
N-Nitrosodi-n-propylamine	ND	0.25	1	03/14/2018 00:02
Pentachlorophenol	ND	1.3	1	03/14/2018 00:02
Phenanthrene	ND	0.25	1	03/14/2018 00:02
Phenol	ND	0.25	1	03/14/2018 00:02
Pyrene	ND	0.25	1	03/14/2018 00:02
Pyridine	ND	0.25	1	03/14/2018 00:02
1,2,4-Trichlorobenzene	ND	0.25	1	03/14/2018 00:02
2,4,5-Trichlorophenol	ND	0.25	1	03/14/2018 00:02
2,4,6-Trichlorophenol	ND	0.25	1	03/14/2018 00:02

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-13,14,15 COMP	**1803578-009A**	**Soil**	**03/08/2018 09:26**	**GC17 03131832.D**	**154535**

Analytes	Result	RL	DF	Date Analyzed

Surrogates	REC (%)	Qualifiers	Limits	Date Analyzed
2-Fluorophenol	137	S	30-130	03/14/2018 00:02
Phenol-d5	126		30-130	03/14/2018 00:02
Nitrobenzene-d5	128		30-130	03/14/2018 00:02
2-Fluorobiphenyl	106		30-130	03/14/2018 00:02
2,4,6-Tribromophenol	81		16-130	03/14/2018 00:02
4-Terphenyl-d14	125		30-130	03/14/2018 00:02

Analyst(s): REB Analytical Comments: c2

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-16,17,18 COMP	1803578-010A	Soil	03/08/2018 09:55	GC17 03131833.D	154535

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.25	1	03/14/2018 00:29
Acenaphthylene	ND	0.25	1	03/14/2018 00:29
Acetochlor	ND	0.25	1	03/14/2018 00:29
Anthracene	ND	0.25	1	03/14/2018 00:29
Benzidine	ND	1.3	1	03/14/2018 00:29
Benzo (a) anthracene	ND	0.25	1	03/14/2018 00:29
Benzo (a) pyrene	ND	0.25	1	03/14/2018 00:29
Benzo (b) fluoranthene	ND	0.25	1	03/14/2018 00:29
Benzo (g,h,i) perylene	ND	0.25	1	03/14/2018 00:29
Benzo (k) fluoranthene	ND	0.25	1	03/14/2018 00:29
Benzyl Alcohol	ND	1.3	1	03/14/2018 00:29
1,1-Biphenyl	ND	0.25	1	03/14/2018 00:29
Bis (2-chloroethoxy) Methane	ND	0.25	1	03/14/2018 00:29
Bis (2-chloroethyl) Ether	ND	0.25	1	03/14/2018 00:29
Bis (2-chloroisopropyl) Ether	ND	0.25	1	03/14/2018 00:29
Bis (2-ethylhexyl) Adipate	ND	0.25	1	03/14/2018 00:29
Bis (2-ethylhexyl) Phthalate	ND	0.25	1	03/14/2018 00:29
4-Bromophenyl Phenyl Ether	ND	0.25	1	03/14/2018 00:29
Butylbenzyl Phthalate	ND	0.25	1	03/14/2018 00:29
4-Chloroaniline	ND	0.50	1	03/14/2018 00:29
4-Chloro-3-methylphenol	ND	0.25	1	03/14/2018 00:29
2-Chloronaphthalene	ND	0.25	1	03/14/2018 00:29
2-Chlorophenol	ND	0.25	1	03/14/2018 00:29
4-Chlorophenyl Phenyl Ether	ND	0.25	1	03/14/2018 00:29
Chrysene	ND	0.25	1	03/14/2018 00:29
Dibenzo (a,h) anthracene	ND	0.25	1	03/14/2018 00:29
Dibenzofuran	ND	0.25	1	03/14/2018 00:29
Di-n-butyl Phthalate	ND	0.25	1	03/14/2018 00:29
1,2-Dichlorobenzene	ND	0.25	1	03/14/2018 00:29
1,3-Dichlorobenzene	ND	0.25	1	03/14/2018 00:29
1,4-Dichlorobenzene	ND	0.25	1	03/14/2018 00:29
3,3-Dichlorobenzidine	ND	0.50	1	03/14/2018 00:29
2,4-Dichlorophenol	ND	0.25	1	03/14/2018 00:29
Diethyl Phthalate	ND	0.25	1	03/14/2018 00:29
2,4-Dimethylphenol	ND	0.25	1	03/14/2018 00:29
Dimethyl Phthalate	ND	0.25	1	03/14/2018 00:29
4,6-Dinitro-2-methylphenol	ND	1.3	1	03/14/2018 00:29

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-16,17,18 COMP	1803578-010A	Soil	03/08/2018 09:55	GC17 03131833.D	154535

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	6.3	1	03/14/2018 00:29
2,4-Dinitrotoluene	ND	0.25	1	03/14/2018 00:29
2,6-Dinitrotoluene	ND	0.25	1	03/14/2018 00:29
Di-n-octyl Phthalate	ND	0.50	1	03/14/2018 00:29
1,2-Diphenylhydrazine	ND	0.25	1	03/14/2018 00:29
Fluoranthene	ND	0.25	1	03/14/2018 00:29
Fluorene	ND	0.25	1	03/14/2018 00:29
Hexachlorobenzene	ND	0.25	1	03/14/2018 00:29
Hexachlorobutadiene	ND	0.25	1	03/14/2018 00:29
Hexachlorocyclopentadiene	ND	1.3	1	03/14/2018 00:29
Hexachloroethane	ND	0.25	1	03/14/2018 00:29
Indeno (1,2,3-cd) pyrene	ND	0.25	1	03/14/2018 00:29
Isophorone	ND	0.25	1	03/14/2018 00:29
2-Methylnaphthalene	ND	0.25	1	03/14/2018 00:29
2-Methylphenol (o-Cresol)	ND	0.25	1	03/14/2018 00:29
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	03/14/2018 00:29
Naphthalene	ND	0.25	1	03/14/2018 00:29
2-Nitroaniline	ND	1.3	1	03/14/2018 00:29
3-Nitroaniline	ND	1.3	1	03/14/2018 00:29
4-Nitroaniline	ND	1.3	1	03/14/2018 00:29
Nitrobenzene	ND	0.25	1	03/14/2018 00:29
2-Nitrophenol	ND	1.3	1	03/14/2018 00:29
4-Nitrophenol	ND	1.3	1	03/14/2018 00:29
N-Nitrosodiphenylamine	ND	0.25	1	03/14/2018 00:29
N-Nitrosodi-n-propylamine	ND	0.25	1	03/14/2018 00:29
Pentachlorophenol	ND	1.3	1	03/14/2018 00:29
Phenanthrene	ND	0.25	1	03/14/2018 00:29
Phenol	ND	0.25	1	03/14/2018 00:29
Pyrene	ND	0.25	1	03/14/2018 00:29
Pyridine	ND	0.25	1	03/14/2018 00:29
1,2,4-Trichlorobenzene	ND	0.25	1	03/14/2018 00:29
2,4,5-Trichlorophenol	ND	0.25	1	03/14/2018 00:29
2,4,6-Trichlorophenol	ND	0.25	1	03/14/2018 00:29

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-16,17,18 COMP	**1803578-010A**	**Soil**	**03/08/2018 09:55**	**GC17 03131833.D**	**154535**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	114	30-130		03/14/2018 00:29
Phenol-d5	107	30-130		03/14/2018 00:29
Nitrobenzene-d5	108	30-130		03/14/2018 00:29
2-Fluorobiphenyl	87	30-130		03/14/2018 00:29
2,4,6-Tribromophenol	72	16-130		03/14/2018 00:29
4-Terphenyl-d14	109	30-130		03/14/2018 00:29

Analyst(s): REB

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-19,20,21,22 COMP	1803578-013A	Soil	03/08/2018 10:59	GC17 03131830.D	154535

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	2.0	1	03/13/2018 23:08
Acenaphthylene	ND	2.0	1	03/13/2018 23:08
Acetochlor	ND	2.0	1	03/13/2018 23:08
Anthracene	ND	2.0	1	03/13/2018 23:08
Benzidine	ND	10	1	03/13/2018 23:08
Benzo (a) anthracene	ND	2.0	1	03/13/2018 23:08
Benzo (a) pyrene	ND	2.0	1	03/13/2018 23:08
Benzo (b) fluoranthene	ND	2.0	1	03/13/2018 23:08
Benzo (g,h,i) perylene	ND	2.0	1	03/13/2018 23:08
Benzo (k) fluoranthene	ND	2.0	1	03/13/2018 23:08
Benzyl Alcohol	ND	10	1	03/13/2018 23:08
1,1-Biphenyl	ND	2.0	1	03/13/2018 23:08
Bis (2-chloroethoxy) Methane	ND	2.0	1	03/13/2018 23:08
Bis (2-chloroethyl) Ether	ND	2.0	1	03/13/2018 23:08
Bis (2-chloroisopropyl) Ether	ND	2.0	1	03/13/2018 23:08
Bis (2-ethylhexyl) Adipate	ND	2.0	1	03/13/2018 23:08
Bis (2-ethylhexyl) Phthalate	ND	2.0	1	03/13/2018 23:08
4-Bromophenyl Phenyl Ether	ND	2.0	1	03/13/2018 23:08
Butylbenzyl Phthalate	ND	2.0	1	03/13/2018 23:08
4-Chloroaniline	ND	4.0	1	03/13/2018 23:08
4-Chloro-3-methylphenol	ND	2.0	1	03/13/2018 23:08
2-Chloronaphthalene	ND	2.0	1	03/13/2018 23:08
2-Chlorophenol	ND	2.0	1	03/13/2018 23:08
4-Chlorophenyl Phenyl Ether	ND	2.0	1	03/13/2018 23:08
Chrysene	ND	2.0	1	03/13/2018 23:08
Dibenzo (a,h) anthracene	ND	2.0	1	03/13/2018 23:08
Dibenzofuran	ND	2.0	1	03/13/2018 23:08
Di-n-butyl Phthalate	ND	2.0	1	03/13/2018 23:08
1,2-Dichlorobenzene	ND	2.0	1	03/13/2018 23:08
1,3-Dichlorobenzene	ND	2.0	1	03/13/2018 23:08
1,4-Dichlorobenzene	ND	2.0	1	03/13/2018 23:08
3,3-Dichlorobenzidine	ND	4.0	1	03/13/2018 23:08
2,4-Dichlorophenol	ND	2.0	1	03/13/2018 23:08
Diethyl Phthalate	ND	2.0	1	03/13/2018 23:08
2,4-Dimethylphenol	ND	2.0	1	03/13/2018 23:08
Dimethyl Phthalate	ND	2.0	1	03/13/2018 23:08
4,6-Dinitro-2-methylphenol	ND	10	1	03/13/2018 23:08

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-19,20,21,22 COMP	1803578-013A	Soil	03/08/2018 10:59	GC17 03131830.D	154535

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	50	1	03/13/2018 23:08
2,4-Dinitrotoluene	ND	2.0	1	03/13/2018 23:08
2,6-Dinitrotoluene	ND	2.0	1	03/13/2018 23:08
Di-n-octyl Phthalate	ND	4.0	1	03/13/2018 23:08
1,2-Diphenylhydrazine	ND	2.0	1	03/13/2018 23:08
Fluoranthene	ND	2.0	1	03/13/2018 23:08
Fluorene	ND	2.0	1	03/13/2018 23:08
Hexachlorobenzene	ND	2.0	1	03/13/2018 23:08
Hexachlorobutadiene	ND	2.0	1	03/13/2018 23:08
Hexachlorocyclopentadiene	ND	10	1	03/13/2018 23:08
Hexachloroethane	ND	2.0	1	03/13/2018 23:08
Indeno (1,2,3-cd) pyrene	ND	2.0	1	03/13/2018 23:08
Isophorone	ND	2.0	1	03/13/2018 23:08
2-Methylnaphthalene	ND	2.0	1	03/13/2018 23:08
2-Methylphenol (o-Cresol)	ND	2.0	1	03/13/2018 23:08
3 & 4-Methylphenol (m,p-Cresol)	ND	2.0	1	03/13/2018 23:08
Naphthalene	ND	2.0	1	03/13/2018 23:08
2-Nitroaniline	ND	10	1	03/13/2018 23:08
3-Nitroaniline	ND	10	1	03/13/2018 23:08
4-Nitroaniline	ND	10	1	03/13/2018 23:08
Nitrobenzene	ND	2.0	1	03/13/2018 23:08
2-Nitrophenol	ND	10	1	03/13/2018 23:08
4-Nitrophenol	ND	10	1	03/13/2018 23:08
N-Nitrosodiphenylamine	ND	2.0	1	03/13/2018 23:08
N-Nitrosodi-n-propylamine	ND	2.0	1	03/13/2018 23:08
Pentachlorophenol	ND	10	1	03/13/2018 23:08
Phenanthrene	ND	2.0	1	03/13/2018 23:08
Phenol	ND	2.0	1	03/13/2018 23:08
Pyrene	ND	2.0	1	03/13/2018 23:08
Pyridine	ND	2.0	1	03/13/2018 23:08
1,2,4-Trichlorobenzene	ND	2.0	1	03/13/2018 23:08
2,4,5-Trichlorophenol	ND	2.0	1	03/13/2018 23:08
2,4,6-Trichlorophenol	ND	2.0	1	03/13/2018 23:08

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-19,20,21,22 COMP	1803578-013A	Soil	03/08/2018 10:59	GC17 03131830.D	154535

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	99	30-130		03/13/2018 23:08
Phenol-d5	74	30-130		03/13/2018 23:08
Nitrobenzene-d5	87	30-130		03/13/2018 23:08
2-Fluorobiphenyl	78	30-130		03/13/2018 23:08
2,4,6-Tribromophenol	42	16-130		03/13/2018 23:08
4-Terphenyl-d14	86	30-130		03/13/2018 23:08

Analyst(s): REB Analytical Comments: a4

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-22,23,24,25 COMP	1803578-014A	Soil	03/09/2018 10:29	GC17 03131834.D	154535

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.25	1	03/14/2018 00:56
Acenaphthylene	ND	0.25	1	03/14/2018 00:56
Acetochlor	ND	0.25	1	03/14/2018 00:56
Anthracene	ND	0.25	1	03/14/2018 00:56
Benzidine	ND	1.3	1	03/14/2018 00:56
Benzo (a) anthracene	ND	0.25	1	03/14/2018 00:56
Benzo (a) pyrene	ND	0.25	1	03/14/2018 00:56
Benzo (b) fluoranthene	ND	0.25	1	03/14/2018 00:56
Benzo (g,h,i) perylene	ND	0.25	1	03/14/2018 00:56
Benzo (k) fluoranthene	ND	0.25	1	03/14/2018 00:56
Benzyl Alcohol	ND	1.3	1	03/14/2018 00:56
1,1-Biphenyl	ND	0.25	1	03/14/2018 00:56
Bis (2-chloroethoxy) Methane	ND	0.25	1	03/14/2018 00:56
Bis (2-chloroethyl) Ether	ND	0.25	1	03/14/2018 00:56
Bis (2-chloroisopropyl) Ether	ND	0.25	1	03/14/2018 00:56
Bis (2-ethylhexyl) Adipate	ND	0.25	1	03/14/2018 00:56
Bis (2-ethylhexyl) Phthalate	ND	0.25	1	03/14/2018 00:56
4-Bromophenyl Phenyl Ether	ND	0.25	1	03/14/2018 00:56
Butylbenzyl Phthalate	ND	0.25	1	03/14/2018 00:56
4-Chloroaniline	ND	0.50	1	03/14/2018 00:56
4-Chloro-3-methylphenol	ND	0.25	1	03/14/2018 00:56
2-Chloronaphthalene	ND	0.25	1	03/14/2018 00:56
2-Chlorophenol	ND	0.25	1	03/14/2018 00:56
4-Chlorophenyl Phenyl Ether	ND	0.25	1	03/14/2018 00:56
Chrysene	ND	0.25	1	03/14/2018 00:56
Dibenzo (a,h) anthracene	ND	0.25	1	03/14/2018 00:56
Dibenzofuran	ND	0.25	1	03/14/2018 00:56
Di-n-butyl Phthalate	ND	0.25	1	03/14/2018 00:56
1,2-Dichlorobenzene	ND	0.25	1	03/14/2018 00:56
1,3-Dichlorobenzene	ND	0.25	1	03/14/2018 00:56
1,4-Dichlorobenzene	ND	0.25	1	03/14/2018 00:56
3,3-Dichlorobenzidine	ND	0.50	1	03/14/2018 00:56
2,4-Dichlorophenol	ND	0.25	1	03/14/2018 00:56
Diethyl Phthalate	ND	0.25	1	03/14/2018 00:56
2,4-Dimethylphenol	ND	0.25	1	03/14/2018 00:56
Dimethyl Phthalate	ND	0.25	1	03/14/2018 00:56
4,6-Dinitro-2-methylphenol	ND	1.3	1	03/14/2018 00:56

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-22,23,24,25 COMP	1803578-014A	Soil	03/09/2018 10:29	GC17 03131834.D	154535

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	6.3	1	03/14/2018 00:56
2,4-Dinitrotoluene	ND	0.25	1	03/14/2018 00:56
2,6-Dinitrotoluene	ND	0.25	1	03/14/2018 00:56
Di-n-octyl Phthalate	ND	0.50	1	03/14/2018 00:56
1,2-Diphenylhydrazine	ND	0.25	1	03/14/2018 00:56
Fluoranthene	ND	0.25	1	03/14/2018 00:56
Fluorene	ND	0.25	1	03/14/2018 00:56
Hexachlorobenzene	ND	0.25	1	03/14/2018 00:56
Hexachlorobutadiene	ND	0.25	1	03/14/2018 00:56
Hexachlorocyclopentadiene	ND	1.3	1	03/14/2018 00:56
Hexachloroethane	ND	0.25	1	03/14/2018 00:56
Indeno (1,2,3-cd) pyrene	ND	0.25	1	03/14/2018 00:56
Isophorone	ND	0.25	1	03/14/2018 00:56
2-Methylnaphthalene	ND	0.25	1	03/14/2018 00:56
2-Methylphenol (o-Cresol)	ND	0.25	1	03/14/2018 00:56
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	03/14/2018 00:56
Naphthalene	ND	0.25	1	03/14/2018 00:56
2-Nitroaniline	ND	1.3	1	03/14/2018 00:56
3-Nitroaniline	ND	1.3	1	03/14/2018 00:56
4-Nitroaniline	ND	1.3	1	03/14/2018 00:56
Nitrobenzene	ND	0.25	1	03/14/2018 00:56
2-Nitrophenol	ND	1.3	1	03/14/2018 00:56
4-Nitrophenol	ND	1.3	1	03/14/2018 00:56
N-Nitrosodiphenylamine	ND	0.25	1	03/14/2018 00:56
N-Nitrosodi-n-propylamine	ND	0.25	1	03/14/2018 00:56
Pentachlorophenol	ND	1.3	1	03/14/2018 00:56
Phenanthrene	ND	0.25	1	03/14/2018 00:56
Phenol	ND	0.25	1	03/14/2018 00:56
Pyrene	ND	0.25	1	03/14/2018 00:56
Pyridine	ND	0.25	1	03/14/2018 00:56
1,2,4-Trichlorobenzene	ND	0.25	1	03/14/2018 00:56
2,4,5-Trichlorophenol	ND	0.25	1	03/14/2018 00:56
2,4,6-Trichlorophenol	ND	0.25	1	03/14/2018 00:56

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-22,23,24,25 COMP	1803578-014A	Soil	03/09/2018 10:29	GC17 03131834.D	154535

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	98	30-130		03/14/2018 00:56
Phenol-d5	89	30-130		03/14/2018 00:56
Nitrobenzene-d5	92	30-130		03/14/2018 00:56
2-Fluorobiphenyl	76	30-130		03/14/2018 00:56
2,4,6-Tribromophenol	74	16-130		03/14/2018 00:56
4-Terphenyl-d14	91	30-130		03/14/2018 00:56

Analyst(s): REB

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-25,26,27,28 COMP	1803578-017A	Soil	03/09/2018 07:42	GC17 03131831.D	154535

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	2.0	1	03/13/2018 23:35
Acenaphthylene	ND	2.0	1	03/13/2018 23:35
Acetochlor	ND	2.0	1	03/13/2018 23:35
Anthracene	ND	2.0	1	03/13/2018 23:35
Benzidine	ND	10	1	03/13/2018 23:35
Benzo (a) anthracene	ND	2.0	1	03/13/2018 23:35
Benzo (a) pyrene	ND	2.0	1	03/13/2018 23:35
Benzo (b) fluoranthene	ND	2.0	1	03/13/2018 23:35
Benzo (g,h,i) perylene	ND	2.0	1	03/13/2018 23:35
Benzo (k) fluoranthene	ND	2.0	1	03/13/2018 23:35
Benzyl Alcohol	ND	10	1	03/13/2018 23:35
1,1-Biphenyl	ND	2.0	1	03/13/2018 23:35
Bis (2-chloroethoxy) Methane	ND	2.0	1	03/13/2018 23:35
Bis (2-chloroethyl) Ether	ND	2.0	1	03/13/2018 23:35
Bis (2-chloroisopropyl) Ether	ND	2.0	1	03/13/2018 23:35
Bis (2-ethylhexyl) Adipate	ND	2.0	1	03/13/2018 23:35
Bis (2-ethylhexyl) Phthalate	ND	2.0	1	03/13/2018 23:35
4-Bromophenyl Phenyl Ether	ND	2.0	1	03/13/2018 23:35
Butylbenzyl Phthalate	ND	2.0	1	03/13/2018 23:35
4-Chloroaniline	ND	4.0	1	03/13/2018 23:35
4-Chloro-3-methylphenol	ND	2.0	1	03/13/2018 23:35
2-Chloronaphthalene	ND	2.0	1	03/13/2018 23:35
2-Chlorophenol	ND	2.0	1	03/13/2018 23:35
4-Chlorophenyl Phenyl Ether	ND	2.0	1	03/13/2018 23:35
Chrysene	ND	2.0	1	03/13/2018 23:35
Dibenzo (a,h) anthracene	ND	2.0	1	03/13/2018 23:35
Dibenzofuran	ND	2.0	1	03/13/2018 23:35
Di-n-butyl Phthalate	ND	2.0	1	03/13/2018 23:35
1,2-Dichlorobenzene	ND	2.0	1	03/13/2018 23:35
1,3-Dichlorobenzene	ND	2.0	1	03/13/2018 23:35
1,4-Dichlorobenzene	ND	2.0	1	03/13/2018 23:35
3,3-Dichlorobenzidine	ND	4.0	1	03/13/2018 23:35
2,4-Dichlorophenol	ND	2.0	1	03/13/2018 23:35
Diethyl Phthalate	ND	2.0	1	03/13/2018 23:35
2,4-Dimethylphenol	ND	2.0	1	03/13/2018 23:35
Dimethyl Phthalate	ND	2.0	1	03/13/2018 23:35
4,6-Dinitro-2-methylphenol	ND	10	1	03/13/2018 23:35

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-25,26,27,28 COMP	1803578-017A	Soil	03/09/2018 07:42	GC17 03131831.D	154535

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	50	1	03/13/2018 23:35
2,4-Dinitrotoluene	ND	2.0	1	03/13/2018 23:35
2,6-Dinitrotoluene	ND	2.0	1	03/13/2018 23:35
Di-n-octyl Phthalate	ND	4.0	1	03/13/2018 23:35
1,2-Diphenylhydrazine	ND	2.0	1	03/13/2018 23:35
Fluoranthene	ND	2.0	1	03/13/2018 23:35
Fluorene	ND	2.0	1	03/13/2018 23:35
Hexachlorobenzene	ND	2.0	1	03/13/2018 23:35
Hexachlorobutadiene	ND	2.0	1	03/13/2018 23:35
Hexachlorocyclopentadiene	ND	10	1	03/13/2018 23:35
Hexachloroethane	ND	2.0	1	03/13/2018 23:35
Indeno (1,2,3-cd) pyrene	ND	2.0	1	03/13/2018 23:35
Isophorone	ND	2.0	1	03/13/2018 23:35
2-Methylnaphthalene	ND	2.0	1	03/13/2018 23:35
2-Methylphenol (o-Cresol)	ND	2.0	1	03/13/2018 23:35
3 & 4-Methylphenol (m,p-Cresol)	ND	2.0	1	03/13/2018 23:35
Naphthalene	ND	2.0	1	03/13/2018 23:35
2-Nitroaniline	ND	10	1	03/13/2018 23:35
3-Nitroaniline	ND	10	1	03/13/2018 23:35
4-Nitroaniline	ND	10	1	03/13/2018 23:35
Nitrobenzene	ND	2.0	1	03/13/2018 23:35
2-Nitrophenol	ND	10	1	03/13/2018 23:35
4-Nitrophenol	ND	10	1	03/13/2018 23:35
N-Nitrosodiphenylamine	ND	2.0	1	03/13/2018 23:35
N-Nitrosodi-n-propylamine	ND	2.0	1	03/13/2018 23:35
Pentachlorophenol	ND	10	1	03/13/2018 23:35
Phenanthrene	ND	2.0	1	03/13/2018 23:35
Phenol	ND	2.0	1	03/13/2018 23:35
Pyrene	ND	2.0	1	03/13/2018 23:35
Pyridine	ND	2.0	1	03/13/2018 23:35
1,2,4-Trichlorobenzene	ND	2.0	1	03/13/2018 23:35
2,4,5-Trichlorophenol	ND	2.0	1	03/13/2018 23:35
2,4,6-Trichlorophenol	ND	2.0	1	03/13/2018 23:35

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-25,26,27,28 COMP	1803578-017A	Soil	03/09/2018 07:42	GC17 03131831.D	154535

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	101	30-130		03/13/2018 23:35
Phenol-d5	73	30-130		03/13/2018 23:35
Nitrobenzene-d5	84	30-130		03/13/2018 23:35
2-Fluorobiphenyl	74	30-130		03/13/2018 23:35
2,4,6-Tribromophenol	69	16-130		03/13/2018 23:35
4-Terphenyl-d14	87	30-130		03/13/2018 23:35

Analyst(s): REB Analytical Comments: a4

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-28,29,30,31 COMP	1803578-018A	Soil	03/09/2018 07:52	GC17 03131822.D	154636

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.25	1	03/13/2018 19:31
Acenaphthylene	ND	0.25	1	03/13/2018 19:31
Acetochlor	ND	0.25	1	03/13/2018 19:31
Anthracene	ND	0.25	1	03/13/2018 19:31
Benzidine	ND	1.3	1	03/13/2018 19:31
Benzo (a) anthracene	ND	0.25	1	03/13/2018 19:31
Benzo (a) pyrene	ND	0.25	1	03/13/2018 19:31
Benzo (b) fluoranthene	ND	0.25	1	03/13/2018 19:31
Benzo (g,h,i) perylene	ND	0.25	1	03/13/2018 19:31
Benzo (k) fluoranthene	ND	0.25	1	03/13/2018 19:31
Benzyl Alcohol	ND	1.3	1	03/13/2018 19:31
1,1-Biphenyl	ND	0.25	1	03/13/2018 19:31
Bis (2-chloroethoxy) Methane	ND	0.25	1	03/13/2018 19:31
Bis (2-chloroethyl) Ether	ND	0.25	1	03/13/2018 19:31
Bis (2-chloroisopropyl) Ether	ND	0.25	1	03/13/2018 19:31
Bis (2-ethylhexyl) Adipate	ND	0.25	1	03/13/2018 19:31
Bis (2-ethylhexyl) Phthalate	ND	0.25	1	03/13/2018 19:31
4-Bromophenyl Phenyl Ether	ND	0.25	1	03/13/2018 19:31
Butylbenzyl Phthalate	ND	0.25	1	03/13/2018 19:31
4-Chloroaniline	ND	0.50	1	03/13/2018 19:31
4-Chloro-3-methylphenol	ND	0.25	1	03/13/2018 19:31
2-Chloronaphthalene	ND	0.25	1	03/13/2018 19:31
2-Chlorophenol	ND	0.25	1	03/13/2018 19:31
4-Chlorophenyl Phenyl Ether	ND	0.25	1	03/13/2018 19:31
Chrysene	ND	0.25	1	03/13/2018 19:31
Dibenzo (a,h) anthracene	ND	0.25	1	03/13/2018 19:31
Dibenzofuran	ND	0.25	1	03/13/2018 19:31
Di-n-butyl Phthalate	ND	0.25	1	03/13/2018 19:31
1,2-Dichlorobenzene	ND	0.25	1	03/13/2018 19:31
1,3-Dichlorobenzene	ND	0.25	1	03/13/2018 19:31
1,4-Dichlorobenzene	ND	0.25	1	03/13/2018 19:31
3,3-Dichlorobenzidine	ND	0.50	1	03/13/2018 19:31
2,4-Dichlorophenol	ND	0.25	1	03/13/2018 19:31
Diethyl Phthalate	ND	0.25	1	03/13/2018 19:31
2,4-Dimethylphenol	ND	0.25	1	03/13/2018 19:31
Dimethyl Phthalate	ND	0.25	1	03/13/2018 19:31
4,6-Dinitro-2-methylphenol	ND	1.3	1	03/13/2018 19:31

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-28,29,30,31 COMP	1803578-018A	Soil	03/09/2018 07:52	GC17 03131822.D	154636

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	6.3	1	03/13/2018 19:31
2,4-Dinitrotoluene	ND	0.25	1	03/13/2018 19:31
2,6-Dinitrotoluene	ND	0.25	1	03/13/2018 19:31
Di-n-octyl Phthalate	ND	0.50	1	03/13/2018 19:31
1,2-Diphenylhydrazine	ND	0.25	1	03/13/2018 19:31
Fluoranthene	ND	0.25	1	03/13/2018 19:31
Fluorene	ND	0.25	1	03/13/2018 19:31
Hexachlorobenzene	ND	0.25	1	03/13/2018 19:31
Hexachlorobutadiene	ND	0.25	1	03/13/2018 19:31
Hexachlorocyclopentadiene	ND	1.3	1	03/13/2018 19:31
Hexachloroethane	ND	0.25	1	03/13/2018 19:31
Indeno (1,2,3-cd) pyrene	ND	0.25	1	03/13/2018 19:31
Isophorone	ND	0.25	1	03/13/2018 19:31
2-Methylnaphthalene	ND	0.25	1	03/13/2018 19:31
2-Methylphenol (o-Cresol)	ND	0.25	1	03/13/2018 19:31
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	03/13/2018 19:31
Naphthalene	ND	0.25	1	03/13/2018 19:31
2-Nitroaniline	ND	1.3	1	03/13/2018 19:31
3-Nitroaniline	ND	1.3	1	03/13/2018 19:31
4-Nitroaniline	ND	1.3	1	03/13/2018 19:31
Nitrobenzene	ND	0.25	1	03/13/2018 19:31
2-Nitrophenol	ND	1.3	1	03/13/2018 19:31
4-Nitrophenol	ND	1.3	1	03/13/2018 19:31
N-Nitrosodiphenylamine	ND	0.25	1	03/13/2018 19:31
N-Nitrosodi-n-propylamine	ND	0.25	1	03/13/2018 19:31
Pentachlorophenol	ND	1.3	1	03/13/2018 19:31
Phenanthrene	ND	0.25	1	03/13/2018 19:31
Phenol	ND	0.25	1	03/13/2018 19:31
Pyrene	ND	0.25	1	03/13/2018 19:31
Pyridine	ND	0.25	1	03/13/2018 19:31
1,2,4-Trichlorobenzene	ND	0.25	1	03/13/2018 19:31
2,4,5-Trichlorophenol	ND	0.25	1	03/13/2018 19:31
2,4,6-Trichlorophenol	ND	0.25	1	03/13/2018 19:31

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B
Date Prepared:	3/12/18-3/13/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-28,29,30,31 COMP	1803578-018A	Soil	03/09/2018 07:52	GC17 03131822.D	154636

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	99	30-130		03/13/2018 19:31
Phenol-d5	91	30-130		03/13/2018 19:31
Nitrobenzene-d5	94	30-130		03/13/2018 19:31
2-Fluorobiphenyl	79	30-130		03/13/2018 19:31
2,4,6-Tribromophenol	66	16-130		03/13/2018 19:31
4-Terphenyl-d14	91	30-130		03/13/2018 19:31

Analyst(s): REB

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3050B
Date Prepared:	3/9/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1 & 2 COMP	**1803578-001A**	**Soil**	**03/09/2018 08:20**	**ICP-MS3 192SMPL.D**	**154486**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	03/14/2018 04:00
Arsenic	**6.9**	0.50	1	03/14/2018 04:00
Barium	**110**	5.0	1	03/14/2018 04:00
Beryllium	ND	0.50	1	03/14/2018 04:00
Cadmium	ND	0.25	1	03/14/2018 04:00
Chromium	**43**	0.50	1	03/14/2018 04:00
Cobalt	**12**	0.50	1	03/14/2018 04:00
Copper	**43**	0.50	1	03/14/2018 04:00
Lead	**8.7**	0.50	1	03/14/2018 04:00
Mercury	**0.19**	0.050	1	03/14/2018 04:00
Molybdenum	**0.68**	0.50	1	03/14/2018 04:00
Nickel	**39**	0.50	1	03/14/2018 04:00
Selenium	ND	0.50	1	03/14/2018 04:00
Silver	ND	0.50	1	03/14/2018 04:00
Thallium	ND	0.50	1	03/14/2018 04:00
Vanadium	**71**	0.50	1	03/14/2018 04:00
Zinc	**58**	5.0	1	03/14/2018 04:00

Surrogates	REC (%)	Limits	
Terbium	92	70-130	03/14/2018 04:00

Analyst(s): ND

(Cont.)

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3050B
Date Prepared:	3/9/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-3,4 & 5 COMP	**1803578-002A**	**Soil**	**03/09/2018 08:56**	**ICP-MS3 193SMPL.D**	**154486**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	03/14/2018 04:06
Arsenic	**4.5**	0.50	1	03/14/2018 04:06
Barium	**130**	5.0	1	03/14/2018 04:06
Beryllium	ND	0.50	1	03/14/2018 04:06
Cadmium	ND	0.25	1	03/14/2018 04:06
Chromium	**56**	0.50	1	03/14/2018 04:06
Cobalt	**17**	0.50	1	03/14/2018 04:06
Copper	**43**	0.50	1	03/14/2018 04:06
Lead	**4.1**	0.50	1	03/14/2018 04:06
Mercury	ND	0.050	1	03/14/2018 04:06
Molybdenum	**0.55**	0.50	1	03/14/2018 04:06
Nickel	**57**	0.50	1	03/14/2018 04:06
Selenium	ND	0.50	1	03/14/2018 04:06
Silver	ND	0.50	1	03/14/2018 04:06
Thallium	ND	0.50	1	03/14/2018 04:06
Vanadium	**62**	0.50	1	03/14/2018 04:06
Zinc	**55**	5.0	1	03/14/2018 04:06

Surrogates	REC (%)	Limits	
Terbium	97	70-130	03/14/2018 04:06

Analyst(s): ND

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3050B
Date Prepared:	3/9/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-6,7,8 COMP	**1803578-005A**	**Soil**	**03/08/2018 09:22**	**ICP-MS3 194SMPL.D**	**154486**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	03/14/2018 04:13
Arsenic	**4.6**	0.50	1	03/14/2018 04:13
Barium	**100**	5.0	1	03/14/2018 04:13
Beryllium	ND	0.50	1	03/14/2018 04:13
Cadmium	ND	0.25	1	03/14/2018 04:13
Chromium	**39**	0.50	1	03/14/2018 04:13
Cobalt	**9.7**	0.50	1	03/14/2018 04:13
Copper	**27**	0.50	1	03/14/2018 04:13
Lead	**7.3**	0.50	1	03/14/2018 04:13
Mercury	**0.099**	0.050	1	03/14/2018 04:13
Molybdenum	**0.66**	0.50	1	03/14/2018 04:13
Nickel	**39**	0.50	1	03/14/2018 04:13
Selenium	ND	0.50	1	03/14/2018 04:13
Silver	ND	0.50	1	03/14/2018 04:13
Thallium	ND	0.50	1	03/14/2018 04:13
Vanadium	**44**	0.50	1	03/14/2018 04:13
Zinc	**40**	5.0	1	03/14/2018 04:13

Surrogates	REC (%)	Limits	
Terbium	91	70-130	03/14/2018 04:13

Analyst(s): ND

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3050B
Date Prepared:	3/9/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9,10,11,12 COMP	**1803578-006A**	**Soil**	**03/08/2018 10:14**	**ICP-MS2 290SMPL.D**	**154486**

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	03/13/2018 20:32
Arsenic	**4.1**	0.50	1	03/13/2018 20:32
Barium	**98**	5.0	1	03/13/2018 20:32
Beryllium	ND	0.50	1	03/13/2018 20:32
Cadmium	ND	0.25	1	03/13/2018 20:32
Chromium	**50**	0.50	1	03/13/2018 20:32
Cobalt	**14**	0.50	1	03/13/2018 20:32
Copper	**39**	0.50	1	03/13/2018 20:32
Lead	**10**	0.50	1	03/13/2018 20:32
Mercury	**0.051**	0.050	1	03/13/2018 20:32
Molybdenum	ND	0.50	1	03/13/2018 20:32
Nickel	**40**	0.50	1	03/13/2018 20:32
Selenium	ND	0.50	1	03/13/2018 20:32
Silver	ND	0.50	1	03/13/2018 20:32
Thallium	ND	0.50	1	03/13/2018 20:32
Vanadium	**54**	0.50	1	03/13/2018 20:32
Zinc	**54**	5.0	1	03/13/2018 20:32

Surrogates	REC (%)	Limits	
Terbium	98	70-130	03/13/2018 20:32

Analyst(s): JC

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3050B
Date Prepared:	3/9/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-13,14,15 COMP	**1803578-009A**	**Soil**	**03/08/2018 09:26**	**ICP-MS2 291SMPL.D**	**154486**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.59**	0.50	1	03/13/2018 20:38
Arsenic	**7.2**	0.50	1	03/13/2018 20:38
Barium	**170**	5.0	1	03/13/2018 20:38
Beryllium	ND	0.50	1	03/13/2018 20:38
Cadmium	**0.32**	0.25	1	03/13/2018 20:38
Chromium	**43**	0.50	1	03/13/2018 20:38
Cobalt	**10**	0.50	1	03/13/2018 20:38
Copper	**33**	0.50	1	03/13/2018 20:38
Lead	**26**	0.50	1	03/13/2018 20:38
Mercury	**0.073**	0.050	1	03/13/2018 20:38
Molybdenum	ND	0.50	1	03/13/2018 20:38
Nickel	**47**	0.50	1	03/13/2018 20:38
Selenium	ND	0.50	1	03/13/2018 20:38
Silver	ND	0.50	1	03/13/2018 20:38
Thallium	ND	0.50	1	03/13/2018 20:38
Vanadium	**41**	0.50	1	03/13/2018 20:38
Zinc	**66**	5.0	1	03/13/2018 20:38

Surrogates	REC (%)	Limits	
Terbium	96	70-130	03/13/2018 20:38

Analyst(s): JC

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3050B
Date Prepared:	3/9/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-16,17,18 COMP	**1803578-010A**	**Soil**	**03/08/2018 09:55**	**ICP-MS2 292SMPL.D**	**154490**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**3.0**	0.50	1	03/13/2018 20:44
Arsenic	**5.0**	0.50	1	03/13/2018 20:44
Barium	**150**	5.0	1	03/13/2018 20:44
Beryllium	ND	0.50	1	03/13/2018 20:44
Cadmium	**0.27**	0.25	1	03/13/2018 20:44
Chromium	**40**	0.50	1	03/13/2018 20:44
Cobalt	**9.0**	0.50	1	03/13/2018 20:44
Copper	**29**	0.50	1	03/13/2018 20:44
Lead	**27**	0.50	1	03/13/2018 20:44
Mercury	**0.072**	0.050	1	03/13/2018 20:44
Molybdenum	ND	0.50	1	03/13/2018 20:44
Nickel	**39**	0.50	1	03/13/2018 20:44
Selenium	ND	0.50	1	03/13/2018 20:44
Silver	ND	0.50	1	03/13/2018 20:44
Thallium	ND	0.50	1	03/13/2018 20:44
Vanadium	**34**	0.50	1	03/13/2018 20:44
Zinc	**75**	5.0	1	03/13/2018 20:44

Surrogates	REC (%)	Limits	
Terbium	91	70-130	03/13/2018 20:44

Analyst(s): JC

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3050B
Date Prepared:	3/9/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-19,20,21,22 COMP	**1803578-013A**	**Soil**	**03/08/2018 10:59**	**ICP-MS3 187SMPL.D**	**154490**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.54**	0.50	1	03/14/2018 03:29
Arsenic	**6.0**	0.50	1	03/14/2018 03:29
Barium	**170**	5.0	1	03/14/2018 03:29
Beryllium	ND	0.50	1	03/14/2018 03:29
Cadmium	**0.33**	0.25	1	03/14/2018 03:29
Chromium	**46**	0.50	1	03/14/2018 03:29
Cobalt	**11**	0.50	1	03/14/2018 03:29
Copper	**37**	0.50	1	03/14/2018 03:29
Lead	**23**	0.50	1	03/14/2018 03:29
Mercury	ND	0.050	1	03/14/2018 03:29
Molybdenum	ND	0.50	1	03/14/2018 03:29
Nickel	**47**	0.50	1	03/14/2018 03:29
Selenium	ND	0.50	1	03/14/2018 03:29
Silver	ND	0.50	1	03/14/2018 03:29
Thallium	ND	0.50	1	03/14/2018 03:29
Vanadium	**42**	0.50	1	03/14/2018 03:29
Zinc	**52**	5.0	1	03/14/2018 03:29

Surrogates	REC (%)	Limits	
Terbium	102	70-130	03/14/2018 03:29

Analyst(s): ND

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3050B
Date Prepared:	3/9/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-22,23,24,25 COMP	**1803578-014A**	**Soil**	**03/09/2018 10:29**	**ICP-MS3 117SMPL.D**	**154490**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.57**	0.50	1	03/13/2018 02:26
Arsenic	**4.4**	0.50	1	03/13/2018 02:26
Barium	**170**	5.0	1	03/13/2018 02:26
Beryllium	ND	0.50	1	03/13/2018 02:26
Cadmium	ND	0.25	1	03/13/2018 02:26
Chromium	**39**	0.50	1	03/13/2018 02:26
Cobalt	**9.0**	0.50	1	03/13/2018 02:26
Copper	**23**	0.50	1	03/13/2018 02:26
Lead	**18**	0.50	1	03/13/2018 02:26
Mercury	ND	0.050	1	03/13/2018 02:26
Molybdenum	ND	0.50	1	03/13/2018 02:26
Nickel	**41**	0.50	1	03/13/2018 02:26
Selenium	ND	0.50	1	03/13/2018 02:26
Silver	ND	0.50	1	03/13/2018 02:26
Thallium	ND	0.50	1	03/13/2018 02:26
Vanadium	**35**	0.50	1	03/13/2018 02:26
Zinc	**43**	5.0	1	03/13/2018 02:26

Surrogates	REC (%)	Limits	
Terbium	96	70-130	03/13/2018 02:26

Analyst(s): JC

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3050B
Date Prepared:	3/9/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-25,26,27,28 COMP	**1803578-017A**	**Soil**	**03/09/2018 07:42**	**ICP-MS3 191SMPL.D**	**154490**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.81**	0.50	1	03/14/2018 03:54
Arsenic	**4.5**	0.50	1	03/14/2018 03:54
Barium	**69**	5.0	1	03/14/2018 03:54
Beryllium	ND	0.50	1	03/14/2018 03:54
Cadmium	**0.85**	0.25	1	03/14/2018 03:54
Chromium	**69**	0.50	1	03/14/2018 03:54
Cobalt	**16**	0.50	1	03/14/2018 03:54
Copper	**59**	0.50	1	03/14/2018 03:54
Lead	**110**	0.50	1	03/14/2018 03:54
Mercury	**0.067**	0.050	1	03/14/2018 03:54
Molybdenum	ND	0.50	1	03/14/2018 03:54
Nickel	**52**	0.50	1	03/14/2018 03:54
Selenium	ND	0.50	1	03/14/2018 03:54
Silver	ND	0.50	1	03/14/2018 03:54
Thallium	ND	0.50	1	03/14/2018 03:54
Vanadium	**50**	0.50	1	03/14/2018 03:54
Zinc	**62**	5.0	1	03/14/2018 03:54

Surrogates	REC (%)	Limits	
Terbium	94	70-130	03/14/2018 03:54

Analyst(s): ND

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3050B
Date Prepared:	3/9/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-28,29,30,31 COMP	**1803578-018A**	**Soil**	**03/09/2018 07:52**	**ICP-MS3 094SMPL.D**	**154490**

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.73**	0.50	1	03/13/2018 00:03
Arsenic	**7.3**	0.50	1	03/13/2018 00:03
Barium	**150**	5.0	1	03/13/2018 00:03
Beryllium	ND	0.50	1	03/13/2018 00:03
Cadmium	**0.40**	0.25	1	03/13/2018 00:03
Chromium	**42**	0.50	1	03/13/2018 00:03
Cobalt	**9.8**	0.50	1	03/13/2018 00:03
Copper	**35**	0.50	1	03/13/2018 00:03
Lead	**28**	0.50	1	03/13/2018 00:03
Mercury	**0.16**	0.050	1	03/13/2018 00:03
Molybdenum	ND	0.50	1	03/13/2018 00:03
Nickel	**38**	0.50	1	03/13/2018 00:03
Selenium	ND	0.50	1	03/13/2018 00:03
Silver	ND	0.50	1	03/13/2018 00:03
Thallium	ND	0.50	1	03/13/2018 00:03
Vanadium	**44**	0.50	1	03/13/2018 00:03
Zinc	**72**	5.0	1	03/13/2018 00:03

Surrogates	REC (%)	Limits	
Terbium	101	70-130	03/13/2018 00:03

Analyst(s): JC

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B/3630C
Date Prepared:	3/9/18	**Analytical Method:**	SW8015B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1 & 2 COMP	**1803578-001A**	**Soil**	**03/09/2018 08:20**	**GC11B 03141845.D**	**154434**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**38**	20	20	03/15/2018 04:32
TPH-Motor Oil (C18-C36)	**990**	100	20	03/15/2018 04:32

Surrogates	REC (%)	Limits	
C9	91	74-123	03/15/2018 04:32

Analyst(s): JIS Analytical Comments: e7,e2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-3,4 & 5 COMP	**1803578-002A**	**Soil**	**03/09/2018 08:56**	**GC9a 03141850.D**	**154434**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	03/15/2018 06:17
TPH-Motor Oil (C18-C36)	**7.4**	5.0	1	03/15/2018 06:17

Surrogates	REC (%)	Limits	
C9	103	74-123	03/15/2018 06:17

Analyst(s): JIS Analytical Comments: e7

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-6,7,8 COMP	**1803578-005A**	**Soil**	**03/08/2018 09:22**	**GC6A 03151882.D**	**154434**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**5.5**	2.0	2	03/16/2018 11:29
TPH-Motor Oil (C18-C36)	**150**	10	2	03/16/2018 11:29

Surrogates	REC (%)	Limits	
C9	104	74-123	03/16/2018 11:29

Analyst(s): JIS Analytical Comments: e7,e2

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B/3630C
Date Prepared:	3/9/18	**Analytical Method:**	SW8015B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9,10,11,12 COMP	**1803578-006A**	**Soil**	**03/08/2018 10:14**	**GC9a 03141858.D**	**154434**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	**1.0**	1.0	1	03/15/2018 08:52
TPH-Motor Oil (C18-C36)	**43**	5.0	1	03/15/2018 08:52

Surrogates	REC (%)	Limits	
C9	98	74-123	03/15/2018 08:52

Analyst(s): JIS Analytical Comments: e7,e2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-13,14,15 COMP	**1803578-009A**	**Soil**	**03/08/2018 09:26**	**GC9a 03151810.D**	**154489**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	03/15/2018 14:13
TPH-Motor Oil (C18-C36)	ND	5.0	1	03/15/2018 14:13

Surrogates	REC (%)	Limits	
C9	100	74-123	03/15/2018 14:13

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-16,17,18 COMP	**1803578-010A**	**Soil**	**03/08/2018 09:55**	**GC9b 03141809.D**	**154489**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	03/14/2018 17:21
TPH-Motor Oil (C18-C36)	ND	5.0	1	03/14/2018 17:21

Surrogates	REC (%)	Limits	
C9	91	74-123	03/14/2018 17:21

Analyst(s): JIS

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B/3630C
Date Prepared:	3/9/18	**Analytical Method:**	SW8015B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-19,20,21,22 COMP	**1803578-013A**	**Soil**	**03/08/2018 10:59**	**GC9a 03141830.D**	**154489**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	03/14/2018 23:49
TPH-Motor Oil (C18-C36)	ND	5.0	1	03/14/2018 23:49

Surrogates	REC (%)	Limits	
C9	102	74-123	03/14/2018 23:49

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-22,23,24,25 COMP	**1803578-014A**	**Soil**	**03/09/2018 10:29**	**GC9a 03141846.D**	**154489**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	03/15/2018 04:59
TPH-Motor Oil (C18-C36)	ND	5.0	1	03/15/2018 04:59

Surrogates	REC (%)	Limits	
C9	105	74-123	03/15/2018 04:59

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-25,26,27,28 COMP	**1803578-017A**	**Soil**	**03/09/2018 07:42**	**GC9b 03151809.D**	**154489**

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	03/15/2018 14:13
TPH-Motor Oil (C18-C36)	**8.6**	5.0	1	03/15/2018 14:13

Surrogates	REC (%)	Limits	
C9	89	74-123	03/15/2018 14:13

Analyst(s): JIS Analytical Comments: e7

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW3550B/3630C
Date Prepared:	3/9/18	**Analytical Method:**	SW8015B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-28,29,30,31 COMP	1803578-018A	Soil	03/09/2018 07:52	GC9a 03131864.D	154489

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	03/14/2018 05:53
TPH-Motor Oil (C18-C36)	ND	5.0	1	03/14/2018 05:53

Surrogates	REC (%)	Limits	
C9	103	74-123	03/14/2018 05:53

Analyst(s): JIS

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/12/18	**BatchID:**	154535
Date Analyzed:	3/12/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS/LCSD-154535

QC Summary Report for SW8270C

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Acenaphthene	ND	0.25	-	-	-
Acenaphthylene	ND	0.25	-	-	-
Acetochlor	ND	0.25	-	-	-
Anthracene	ND	0.25	-	-	-
Benzidine	ND	1.3	-	-	-
Benzo (a) anthracene	ND	0.25	-	-	-
Benzo (a) pyrene	ND	0.25	-	-	-
Benzo (b) fluoranthene	ND	0.25	-	-	-
Benzo (g,h,i) perylene	ND	0.25	-	-	-
Benzo (k) fluoranthene	ND	0.25	-	-	-
Benzyl Alcohol	ND	1.3	-	-	-
1,1-Biphenyl	ND	0.25	-	-	-
Bis (2-chloroethoxy) Methane	ND	0.25	-	-	-
Bis (2-chloroethyl) Ether	ND	0.25	-	-	-
Bis (2-chloroisopropyl) Ether	ND	0.25	-	-	-
Bis (2-ethylhexyl) Adipate	ND	0.25	-	-	-
Bis (2-ethylhexyl) Phthalate	ND	0.25	-	-	-
4-Bromophenyl Phenyl Ether	ND	0.25	-	-	-
Butylbenzyl Phthalate	ND	0.25	-	-	-
4-Chloroaniline	ND	0.50	-	-	-
4-Chloro-3-methylphenol	ND	0.25	-	-	-
2-Chloronaphthalene	ND	0.25	-	-	-
2-Chlorophenol	ND	0.25	-	-	-
4-Chlorophenyl Phenyl Ether	ND	0.25	-	-	-
Chrysene	ND	0.25	-	-	-
Dibenzo (a,h) anthracene	ND	0.25	-	-	-
Dibenzofuran	ND	0.25	-	-	-
Di-n-butyl Phthalate	ND	0.25	-	-	-
1,2-Dichlorobenzene	ND	0.25	-	-	-
1,3-Dichlorobenzene	ND	0.25	-	-	-
1,4-Dichlorobenzene	ND	0.25	-	-	-
3,3-Dichlorobenzidine	ND	0.50	-	-	-
2,4-Dichlorophenol	ND	0.25	-	-	-
Diethyl Phthalate	ND	0.25	-	-	-
2,4-Dimethylphenol	ND	0.25	-	-	-
Dimethyl Phthalate	ND	0.25	-	-	-
4,6-Dinitro-2-methylphenol	ND	1.3	-	-	-
2,4-Dinitrophenol	ND	6.3	-	-	-
2,4-Dinitrotoluene	ND	0.25	-	-	-

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/12/18	**BatchID:**	154535
Date Analyzed:	3/12/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS/LCSD-154535

QC Summary Report for SW8270C

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
2,6-Dinitrotoluene	ND	0.25	-	-	-
Di-n-octyl Phthalate	ND	0.50	-	-	-
1,2-Diphenylhydrazine	ND	0.25	-	-	-
Fluoranthene	ND	0.25	-	-	-
Fluorene	ND	0.25	-	-	-
Hexachlorobenzene	ND	0.25	-	-	-
Hexachlorobutadiene	ND	0.25	-	-	-
Hexachlorocyclopentadiene	ND	1.3	-	-	-
Hexachloroethane	ND	0.25	-	-	-
Indeno (1,2,3-cd) pyrene	ND	0.25	-	-	-
Isophorone	ND	0.25	-	-	-
2-Methylnaphthalene	ND	0.25	-	-	-
2-Methylphenol (o-Cresol)	ND	0.25	-	-	-
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	-	-	-
Naphthalene	ND	0.25	-	-	-
2-Nitroaniline	ND	1.3	-	-	-
3-Nitroaniline	ND	1.3	-	-	-
4-Nitroaniline	ND	1.3	-	-	-
Nitrobenzene	ND	0.25	-	-	-
2-Nitrophenol	ND	1.3	-	-	-
4-Nitrophenol	ND	1.3	-	-	-
N-Nitrosodiphenylamine	ND	0.25	-	-	-
N-Nitrosodi-n-propylamine	ND	0.25	-	-	-
Pentachlorophenol	ND	1.3	-	-	-
Phenanthrene	ND	0.25	-	-	-
Phenol	ND	0.25	-	-	-
Pyrene	ND	0.25	-	-	-
Pyridine	ND	0.25	-	-	-
1,2,4-Trichlorobenzene	ND	0.25	-	-	-
2,4,5-Trichlorophenol	ND	0.25	-	-	-
2,4,6-Trichlorophenol	ND	0.25	-	-	-

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/12/18	**BatchID:**	154535
Date Analyzed:	3/12/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS/LCSD-154535

QC Summary Report for SW8270C

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Surrogate Recovery					
2-Fluorophenol	5.72		5	114	30-130
Phenol-d5	5.37		5	107	30-130
Nitrobenzene-d5	5.72		5	114	30-130
2-Fluorobiphenyl	4.64		5	93	30-130
2,4,6-Tribromophenol	5.00		5	100	16-130
4-Terphenyl-d14	5.24		5	105	30-130

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/12/18	**BatchID:**	154535
Date Analyzed:	3/12/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS/LCSD-154535

QC Summary Report for SW8270C

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acenaphthene	4.11	3.96	5	82	79	46-118	3.75	30
Acenaphthylene	4.87	4.68	5	97	94	43-122	3.98	30
Anthracene	4.43	4.32	5	89	86	47-125	2.53	30
Benzidine	1.46	1.34	5	29	27	13-83	9.00	30
Benzo (a) anthracene	4.40	4.16	5	88	83	53-117	5.42	30
Benzo (a) pyrene	4.73	4.54	5	95	91	53-138	4.08	30
Benzo (b) fluoranthene	4.39	4.41	5	88	88	48-125	0	30
Benzo (g,h,i) perylene	5.09	4.86	5	102	97	51-146	4.77	30
Benzo (k) fluoranthene	4.58	4.11	5	92	82	53-124	11.0	30
Benzyl Alcohol	3.72	3.53	5	74	71	51-105	5.24	30
Bis (2-chloroethoxy) Methane	4.24	4.12	5	85	82	48-115	2.98	30
Bis (2-chloroethyl) Ether	4.24	4.04	5	85	81	51-105	4.69	30
Bis (2-chloroisopropyl) Ether	5.30	5.02	5	106	100	85-119	5.34	30
Bis (2-ethylhexyl) Adipate	5.66	4.95	5	113	99	46-117	13.2	30
Bis (2-ethylhexyl) Phthalate	5.73	5.16	5	115	103	50-124	10.5	30
4-Bromophenyl Phenyl Ether	4.22	4.13	5	84	83	70-112	2.22	30
Butylbenzyl Phthalate	5.74	5.18	5	115	104	55-127	10.1	30
4-Chloroaniline	2.76	2.78	5	55	56	18-77	0.563	30
4-Chloro-3-methylphenol	5.52	5.10	5	110	102	49-123	7.78	30
2-Chloronaphthalene	3.96	3.82	5	79	76	44-109	3.78	30
2-Chlorophenol	4.90	4.71	5	98	94	55-116	4.09	30
4-Chlorophenyl Phenyl Ether	4.68	4.55	5	94	91	45-122	2.87	30
Chrysene	4.44	4.24	5	89	85	54-116	4.67	30
Dibenzo (a,h) anthracene	4.20	4.03	5	84	81	52-141	4.18	30
Dibenzofuran	4.62	4.47	5	92	89	46-117	3.35	30
Di-n-butyl Phthalate	4.46	4.24	5	89	85	45-126	5.02	30
1,2-Dichlorobenzene	4.48	4.31	5	90	86	55-105	4.03	30
1,3-Dichlorobenzene	4.23	4.11	5	85	82	51-104	2.89	30
1,4-Dichlorobenzene	3.96	3.82	5	79	76	50-102	3.39	30
3,3-Dichlorobenzidine	2.93	2.79	5	59	56	20-84	4.92	30
2,4-Dichlorophenol	5.39	5.26	5	108	105	54-124	2.44	30
Diethyl Phthalate	4.64	4.38	5	93	88	42-118	5.85	30
2,4-Dimethylphenol	5.49	5.26	5	110	105	53-120	4.21	30
Dimethyl Phthalate	4.32	4.13	5	86	83	45-118	4.55	30
4,6-Dinitro-2-methylphenol	6.90	6.98	5	138, F7	140, F7	32-126	1.21	30
2,4-Dinitrophenol	8.16	8.18	5	163, F7	164, F7	20-130	0.271	30
2,4-Dinitrotoluene	5.31	5.15	5	106	103	47-117	3.09	30
2,6-Dinitrotoluene	5.32	5.12	5	106	102	48-121	3.86	30
Di-n-octyl Phthalate	6.07	5.43	5	121	109	40-150	11.1	30

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/12/18	**BatchID:**	154535
Date Analyzed:	3/12/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS/LCSD-154535

QC Summary Report for SW8270C

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,2-Diphenylhydrazine	4.71	4.50	5	94	90	88-117	4.40	30
Fluoranthene	4.72	4.66	5	94	93	45-126	1.12	30
Fluorene	4.62	4.46	5	92	89	43-118	3.37	30
Hexachlorobenzene	3.71	3.55	5	74	71	47-130	4.57	30
Hexachlorobutadiene	4.14	3.94	5	83	79	50-121	4.90	30
Hexachlorocyclopentadiene	3.68	3.51	5	74	70	30-89	4.72	30
Hexachloroethane	4.58	4.39	5	92	88	50-106	4.13	30
Indeno (1,2,3-cd) pyrene	4.31	4.12	5	86	82	51-138	4.59	30
Isophorone	3.89	3.67	5	78	73	38-92	5.71	30
2-Methylnaphthalene	4.64	4.47	5	93	89	51-121	3.71	30
2-Methylphenol (o-Cresol)	4.86	4.69	5	97	94	48-114	3.56	30
3 & 4-Methylphenol (m,p-Cresol)	4.71	4.53	5	94	91	30-130	3.89	30
Naphthalene	4.01	3.88	5	80	78	50-113	3.48	30
2-Nitroaniline	5.31	5.14	5	106	103	45-115	3.10	30
3-Nitroaniline	4.20	4.15	5	84	83	31-93	1.27	30
4-Nitroaniline	5.18	5.24	5	104	105	41-108	0.973	30
Nitrobenzene	5.38	5.19	5	108	104	49-122	3.62	30
2-Nitrophenol	4.84	4.73	5	97	95	54-121	2.26	30
4-Nitrophenol	3.76	3.73	5	75	75	40-102	0	30
N-Nitrosodi-n-propylamine	5.00	4.77	5	100	95	47-108	4.85	30
Pentachlorophenol	6.02	5.94	5	120	119	39-134	1.29	30
Phenanthrene	3.94	3.83	5	79	77	49-123	2.80	30
Phenol	4.47	4.27	5	89	85	49-107	4.67	30
Pyrene	4.66	4.25	5	93	85	55-124	9.28	30
Pyridine	6.51	6.24	5	130	125	70-130	4.25	30
1,2,4-Trichlorobenzene	4.53	4.40	5	91	88	51-121	2.79	30
2,4,5-Trichlorophenol	4.72	4.61	5	94	92	45-126	2.51	30
2,4,6-Trichlorophenol	4.60	4.46	5	92	89	46-128	3.05	30
Surrogate Recovery								
2-Fluorophenol	5.63	5.03	5	113	101	47-125	11.3	30
Phenol-d5	5.36	4.87	5	107	97	45-117	9.62	30
Nitrobenzene-d5	5.77	5.16	5	115	103	39-121	11.2	30
2-Fluorobiphenyl	4.59	4.14	5	92	83	35-120	10.3	30
2,4,6-Tribromophenol	5.87	5.27	5	117, F3	105	32-111	10.7	30
4-Terphenyl-d14	5.44	4.61	5	109	92	32-128	16.6	30

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/13/18	**BatchID:**	154636
Date Analyzed:	3/13/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154636 1803658-002AMS/MSD

QC Summary Report for SW8270C

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acenaphthene	ND	3.74	0.25	5	-	75	46-118
Acenaphthylene	ND	4.47	0.25	5	-	89	43-122
Acetochlor	ND	-	0.25	-	-	-	-
Anthracene	ND	3.94	0.25	5	-	79	47-125
Benzidine	ND	1.10	1.3	5	-	22	13-83
Benzo (a) anthracene	ND	3.89	0.25	5	-	78	53-117
Benzo (a) pyrene	ND	4.05	0.25	5	-	81	53-138
Benzo (b) fluoranthene	ND	3.66	0.25	5	-	73	48-125
Benzo (g,h,i) perylene	ND	4.50	0.25	5	-	90	51-146
Benzo (k) fluoranthene	ND	4.09	0.25	5	-	82	53-124
Benzyl Alcohol	ND	2.31	1.3	5	-	46, F2	51-105
1,1-Biphenyl	ND	-	0.25	-	-	-	-
Bis (2-chloroethoxy) Methane	ND	3.79	0.25	5	-	76	48-115
Bis (2-chloroethyl) Ether	ND	3.75	0.25	5	-	75	51-105
Bis (2-chloroisopropyl) Ether	ND	4.53	0.25	5	-	91	85-119
Bis (2-ethylhexyl) Adipate	ND	4.27	0.25	5	-	85	46-117
Bis (2-ethylhexyl) Phthalate	ND	4.32	0.25	5	-	86	50-124
4-Bromophenyl Phenyl Ether	ND	3.83	0.25	5	-	77	70-112
Butylbenzyl Phthalate	ND	4.58	0.25	5	-	92	55-127
4-Chloroaniline	ND	2.05	0.50	5	-	41	18-77
4-Chloro-3-methylphenol	ND	4.44	0.25	5	-	89	49-123
2-Chloronaphthalene	ND	3.66	0.25	5	-	73	44-109
2-Chlorophenol	ND	4.28	0.25	5	-	86	55-116
4-Chlorophenyl Phenyl Ether	ND	4.19	0.25	5	-	84	45-122
Chrysene	ND	3.95	0.25	5	-	79	54-116
Dibenzo (a,h) anthracene	ND	3.64	0.25	5	-	73	52-141
Dibenzofuran	ND	4.21	0.25	5	-	84	46-117
Di-n-butyl Phthalate	ND	3.71	0.25	5	-	74	45-126
1,2-Dichlorobenzene	ND	4.04	0.25	5	-	81	55-105
1,3-Dichlorobenzene	ND	3.88	0.25	5	-	78	51-104
1,4-Dichlorobenzene	ND	3.58	0.25	5	-	72	50-102
3,3-Dichlorobenzidine	ND	2.01	0.50	5	-	40	20-84
2,4-Dichlorophenol	ND	4.81	0.25	5	-	96	54-124
Diethyl Phthalate	ND	4.02	0.25	5	-	80	42-118
2,4-Dimethylphenol	ND	4.82	0.25	5	-	96	53-120
Dimethyl Phthalate	ND	3.87	0.25	5	-	77	45-118
4,6-Dinitro-2-methylphenol	ND	6.08	1.3	5	-	122	32-126

(Cont.)

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/13/18	**BatchID:**	154636
Date Analyzed:	3/13/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154636 1803658-002AMS/MSD

QC Summary Report for SW8270C

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
2,4-Dinitrophenol	ND	7.60	6.3	5	-	152, F2	20-130
2,4-Dinitrotoluene	ND	4.78	0.25	5	-	96	47-117
2,6-Dinitrotoluene	ND	4.81	0.25	5	-	96	48-121
Di-n-octyl Phthalate	ND	4.19	0.50	5	-	84	40-150
1,2-Diphenylhydrazine	ND	4.17	0.25	5	-	83, F2	88-117
Fluoranthene	ND	4.12	0.25	5	-	82	45-126
Fluorene	ND	4.13	0.25	5	-	83	43-118
Hexachlorobenzene	ND	3.43	0.25	5	-	69	47-130
Hexachlorobutadiene	ND	3.85	0.25	5	-	77	50-121
Hexachlorocyclopentadiene	ND	3.72	1.3	5	-	74	30-89
Hexachloroethane	ND	4.10	0.25	5	-	82	50-106
Indeno (1,2,3-cd) pyrene	ND	3.75	0.25	5	-	75	51-138
Isophorone	ND	3.37	0.25	5	-	67	38-92
2-Methylnaphthalene	ND	4.16	0.25	5	-	83	51-121
2-Methylphenol (o-Cresol)	ND	4.15	0.25	5	-	83	48-114
3 & 4-Methylphenol (m,p-Cresol)	ND	4.03	0.25	5	-	81	30-130
Naphthalene	ND	3.63	0.25	5	-	73	50-113
2-Nitroaniline	ND	4.60	1.3	5	-	92	45-115
3-Nitroaniline	ND	3.51	1.3	5	-	70	31-93
4-Nitroaniline	ND	4.53	1.3	5	-	91	41-108
Nitrobenzene	ND	4.67	0.25	5	-	93	49-122
2-Nitrophenol	ND	4.32	1.3	5	-	86	54-121
4-Nitrophenol	ND	2.44	1.3	5	-	49	40-102
N-Nitrosodiphenylamine	ND	-	0.25	-	-	-	-
N-Nitrosodi-n-propylamine	ND	4.21	0.25	5	-	84	47-108
Pentachlorophenol	ND	5.17	1.3	5	-	103	39-134
Phenanthrene	ND	3.52	0.25	5	-	70	49-123
Phenol	ND	3.79	0.25	5	-	76	49-107
Pyrene	ND	4.01	0.25	5	-	80	55-124
Pyridine	ND	5.81	0.25	5	-	116	70-130
1,2,4-Trichlorobenzene	ND	4.08	0.25	5	-	82	51-121
2,4,5-Trichlorophenol	ND	4.86	0.25	5	-	97	45-126
2,4,6-Trichlorophenol	ND	4.10	0.25	5	-	82	46-128

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/13/18	**BatchID:**	154636
Date Analyzed:	3/13/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154636 1803658-002AMS/MSD

QC Summary Report for SW8270C

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Surrogate Recovery							
2-Fluorophenol	4.58	5.04		5	92	101	47-125
Phenol-d5	4.17	4.78		5	83	96	45-117
Nitrobenzene-d5	4.44	5.16		5	89	103	39-121
2-Fluorobiphenyl	3.72	4.29		5	74	86	35-120
2,4,6-Tribromophenol	3.49	4.85		5	70	97	32-111
4-Terphenyl-d14	4.38	4.78		5	88	96	32-128

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/13/18	**BatchID:**	154636
Date Analyzed:	3/13/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154636 1803658-002AMS/MSD

QC Summary Report for SW8270C

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acenaphthene	NR	NR		ND<10	NR	NR	-	NR	-
Acenaphthylene	NR	NR		ND<10	NR	NR	-	NR	-
Anthracene	NR	NR		ND<10	NR	NR	-	NR	-
Benzidine	NR	NR		ND<52	NR	NR	-	NR	-
Benzo (a) anthracene	NR	NR		ND<10	NR	NR	-	NR	-
Benzo (a) pyrene	NR	NR		ND<10	NR	NR	-	NR	-
Benzo (b) fluoranthene	NR	NR		ND<10	NR	NR	-	NR	-
Benzo (g,h,i) perylene	NR	NR		ND<10	NR	NR	-	NR	-
Benzo (k) fluoranthene	NR	NR		ND<10	NR	NR	-	NR	-
Benzyl Alcohol	NR	NR		ND<52	NR	NR	-	NR	-
Bis (2-chloroethoxy) Methane	NR	NR		ND<10	NR	NR	-	NR	-
Bis (2-chloroethyl) Ether	NR	NR		ND<10	NR	NR	-	NR	-
Bis (2-chloroisopropyl) Ether	NR	NR		ND<10	NR	NR	-	NR	-
Bis (2-ethylhexyl) Adipate	NR	NR		ND<10	NR	NR	-	NR	-
Bis (2-ethylhexyl) Phthalate	NR	NR		ND<10	NR	NR	-	NR	-
4-Bromophenyl Phenyl Ether	NR	NR		ND<10	NR	NR	-	NR	-
Butylbenzyl Phthalate	NR	NR		ND<10	NR	NR	-	NR	-
4-Chloroaniline	NR	NR		ND<20	NR	NR	-	NR	-
4-Chloro-3-methylphenol	NR	NR		ND<10	NR	NR	-	NR	-
2-Chloronaphthalene	NR	NR		ND<10	NR	NR	-	NR	-
2-Chlorophenol	NR	NR		ND<10	NR	NR	-	NR	-
4-Chlorophenyl Phenyl Ether	NR	NR		ND<10	NR	NR	-	NR	-
Chrysene	NR	NR		ND<10	NR	NR	-	NR	-
Dibenzo (a,h) anthracene	NR	NR		ND<10	NR	NR	-	NR	-
Dibenzofuran	NR	NR		ND<10	NR	NR	-	NR	-
Di-n-butyl Phthalate	NR	NR		ND<10	NR	NR	-	NR	-
1,2-Dichlorobenzene	NR	NR		ND<10	NR	NR	-	NR	-
1,3-Dichlorobenzene	NR	NR		ND<10	NR	NR	-	NR	-
1,4-Dichlorobenzene	NR	NR		ND<10	NR	NR	-	NR	-
3,3-Dichlorobenzidine	NR	NR		ND<20	NR	NR	-	NR	-
2,4-Dichlorophenol	NR	NR		ND<10	NR	NR	-	NR	-
Diethyl Phthalate	NR	NR		ND<10	NR	NR	-	NR	-
2,4-Dimethylphenol	NR	NR		ND<10	NR	NR	-	NR	-
Dimethyl Phthalate	NR	NR		ND<10	NR	NR	-	NR	-
4,6-Dinitro-2-methylphenol	NR	NR		ND<52	NR	NR	-	NR	-
2,4-Dinitrophenol	NR	NR		ND<250	NR	NR	-	NR	-
2,4-Dinitrotoluene	NR	NR		ND<10	NR	NR	-	NR	-

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/13/18	**BatchID:**	154636
Date Analyzed:	3/13/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154636 1803658-002AMS/MSD

QC Summary Report for SW8270C

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
2,6-Dinitrotoluene	NR	NR		ND<10	NR	NR	-	NR	-
Di-n-octyl Phthalate	NR	NR		ND<20	NR	NR	-	NR	-
1,2-Diphenylhydrazine	NR	NR		ND<10	NR	NR	-	NR	-
Fluoranthene	NR	NR		ND<10	NR	NR	-	NR	-
Fluorene	NR	NR		ND<10	NR	NR	-	NR	-
Hexachlorobenzene	NR	NR		ND<10	NR	NR	-	NR	-
Hexachlorobutadiene	NR	NR		ND<10	NR	NR	-	NR	-
Hexachlorocyclopentadiene	NR	NR		ND<52	NR	NR	-	NR	-
Hexachloroethane	NR	NR		ND<10	NR	NR	-	NR	-
Indeno (1,2,3-cd) pyrene	NR	NR		ND<10	NR	NR	-	NR	-
Isophorone	NR	NR		ND<10	NR	NR	-	NR	-
2-Methylnaphthalene	NR	NR		ND<10	NR	NR	-	NR	-
2-Methylphenol (o-Cresol)	NR	NR		ND<10	NR	NR	-	NR	-
3 & 4-Methylphenol (m,p-Cresol)	NR	NR		ND<10	NR	NR	-	NR	-
Naphthalene	NR	NR		ND<10	NR	NR	-	NR	-
2-Nitroaniline	NR	NR		ND<52	NR	NR	-	NR	-
3-Nitroaniline	NR	NR		ND<52	NR	NR	-	NR	-
4-Nitroaniline	NR	NR		ND<52	NR	NR	-	NR	-
Nitrobenzene	NR	NR		ND<10	NR	NR	-	NR	-
2-Nitrophenol	NR	NR		ND<52	NR	NR	-	NR	-
4-Nitrophenol	NR	NR		ND<52	NR	NR	-	NR	-
N-Nitrosodi-n-propylamine	NR	NR		ND<10	NR	NR	-	NR	-
Pentachlorophenol	NR	NR		ND<52	NR	NR	-	NR	-
Phenanthrene	NR	NR		ND<10	NR	NR	-	NR	-
Phenol	NR	NR		ND<10	NR	NR	-	NR	-
Pyrene	NR	NR		ND<10	NR	NR	-	NR	-
Pyridine	NR	NR		ND<10	NR	NR	-	NR	-
1,2,4-Trichlorobenzene	NR	NR		ND<10	NR	NR	-	NR	-
2,4,5-Trichlorophenol	NR	NR		ND<10	NR	NR	-	NR	-
2,4,6-Trichlorophenol	NR	NR		ND<10	NR	NR	-	NR	-

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/9/18	**BatchID:**	154486
Date Analyzed:	3/12/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1, ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154486 1803568-001AMS/MSD 1803568-001APDS

QC Summary Report for Metals

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	55.4	0.50	50	-	111	75-125
Arsenic	ND	50.2	0.50	50	-	100	75-125
Barium	ND	526	5.0	500	-	105	75-125
Beryllium	ND	51.3	0.50	50	-	103	75-125
Cadmium	ND	49.8	0.25	50	-	100	75-125
Chromium	ND	50.5	0.50	50	-	101	75-125
Cobalt	ND	50.3	0.50	50	-	101	75-125
Copper	ND	51.2	0.50	50	-	102	75-125
Lead	ND	51.5	0.50	50	-	103	75-125
Mercury	ND	1.19	0.050	1.25	-	95	75-125
Molybdenum	ND	51.2	0.50	50	-	102	75-125
Nickel	ND	51.7	0.50	50	-	103	75-125
Selenium	ND	50.5	0.50	50	-	101	75-125
Silver	ND	51.4	0.50	50	-	103	75-125
Thallium	ND	48.7	0.50	50	-	97	75-125
Vanadium	ND	50.6	0.50	50	-	101	75-125
Zinc	ND	514	5.0	500	-	103	75-125
Surrogate Recovery							
Terbium	520	528		500	104	106	70-130

(Cont.)

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/9/18	**BatchID:**	154486
Date Analyzed:	3/12/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1, ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154486 1803568-001AMS/MSD 1803568-001APDS

QC Summary Report for Metals

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	53.5	53.3	50	3.590	100	99	75-125	0.393	20
Arsenic	50.6	49.5	50	2.775	96	93	75-125	2.12	20
Barium	648	624	500	122.2	105	100	75-125	3.92	20
Beryllium	42.7	41.4	50	ND	85	82	75-125	3.07	20
Cadmium	48.7	48.3	50	ND	97	96	75-125	0.845	20
Chromium	83.8	99.2	50	74.41	19,F10	50,F10	75-125	16.8	20
Cobalt	56.0	62.5	50	20.16	72,F10	85	75-125	11.0	20
Copper	74.1	87.3	50	42.55	63,F10	89	75-125	16.3	20
Lead	155	51.9	50	9.378	292,F10	85	75-125	99.8,F10	20
Mercury	1.28	1.16	1.25	ND	102	92	75-125	9.80	20
Molybdenum	48.9	49.5	50	ND	97	98	75-125	1.30	20
Nickel	81.3	89.6	50	71.77	19,F10	36,F10	75-125	9.78	20
Selenium	45.5	47.8	50	ND	91	95	75-125	4.76	20
Silver	48.0	48.7	50	ND	96	97	75-125	1.30	20
Thallium	45.8	46.8	50	ND	92	94	75-125	2.07	20
Vanadium	154	167	50	63.89	181,F10	206,F10	75-125	7.79	20
Zinc	691	541	500	678.7	3,F10	0,F10	75-125	NA	20

Analyte	PDS Result	SPK Val	SPKRef Val	PDS %REC	PDS Limits
Cobalt	67.2	50	20.16	94	75-125
Copper	94.2	50	42.55	103	75-125
Lead	63.4	50	9.378	108	75-125

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Antimony	2.80	3.590	22.0	-
Arsenic	ND<2.5	2.775	-	-
Barium	121	122.2	0.982	-
Beryllium	ND<2.5	ND	-	-
Cadmium	ND<1.2	ND	-	-
Chromium	81.8	74.41	9.93	20

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/9/18	**BatchID:**	154486
Date Analyzed:	3/12/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1, ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154486 1803568-001AMS/MSD 1803568-001APDS

QC Summary Report for Metals

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Cobalt	21.9	20.16	8.63	20
Copper	42.6	42.55	0.118	20
Lead	9.17	9.378	2.22	-
Mercury	ND<0.25	ND	-	-
Molybdenum	ND<2.5	ND	-	-
Nickel	71.9	71.77	0.181	20
Selenium	ND<2.5	ND	-	-
Silver	ND<2.5	ND	-	-
Thallium	ND<2.5	ND	-	-
Vanadium	69.4	63.89	8.62	20
Zinc	684	678.7	0.781	20

%D Control Limit applied to analytes with concentrations greater than 25 times the reporting limits.

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/9/18	**BatchID:**	154490
Date Analyzed:	3/12/18 - 3/13/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154490 1803578-018AMS/MSD

QC Summary Report for Metals

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	50.9	0.50	50	-	102	75-125
Arsenic	ND	47.2	0.50	50	-	94	75-125
Barium	ND	478	5.0	500	-	96	75-125
Beryllium	ND	44.9	0.50	50	-	90	75-125
Cadmium	ND	49.0	0.25	50	-	98	75-125
Chromium	ND	47.9	0.50	50	-	96	75-125
Cobalt	ND	48.5	0.50	50	-	97	75-125
Copper	ND	49.1	0.50	50	-	98	75-125
Lead	ND	48.2	0.50	50	-	96	75-125
Mercury	ND	1.13	0.050	1.25	-	90	75-125
Molybdenum	ND	46.4	0.50	50	-	93	75-125
Nickel	ND	48.0	0.50	50	-	96	75-125
Selenium	ND	46.7	0.50	50	-	93	75-125
Silver	ND	46.7	0.50	50	-	93	75-125
Thallium	ND	47.5	0.50	50	-	95	75-125
Vanadium	ND	48.1	0.50	50	-	96	75-125
Zinc	ND	477	5.0	500	-	95	75-125
Surrogate Recovery							
Terbium	498	504		500	100	101	70-130

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/9/18	**BatchID:**	154490
Date Analyzed:	3/12/18 - 3/13/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154490 1803578-018AMS/MSD

QC Summary Report for Metals

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	51.5	54.2	50	0.7289	102	107	75-125	5.00	20
Arsenic	51.2	56.0	50	7.345	88	97	75-125	8.81	20
Barium	622	666	500	152.6	94	103	75-125	6.93	20
Beryllium	44.1	44.9	50	ND	87	89	75-125	1.82	20
Cadmium	48.5	48.6	50	0.4011	96	96	75-125	0	20
Chromium	76.2	92.7	50	41.91	69,F10	102	75-125	19.6	20
Cobalt	52.7	54.8	50	9.834	86	90	75-125	3.95	20
Copper	76.9	96.7	50	35.00	84	123	75-125	22.8,F10	20
Lead	66.0	83.0	50	28.06	76	110	75-125	22.8,F10	20
Mercury	1.29	2.20	1.25	0.1592	91	163,F10	75-125	51.7,F10	20
Molybdenum	46.8	49.1	50	ND	93	98	75-125	4.96	20
Nickel	79.6	94.9	50	37.85	83	114	75-125	17.6	20
Selenium	45.0	47.8	50	ND	90	95	75-125	6.25	20
Silver	46.7	46.9	50	ND	93	93	75-125	0	20
Thallium	46.7	48.2	50	ND	93	96	75-125	2.97	20
Vanadium	88.3	100	50	44.32	88	112	75-125	12.8	20
Zinc	532	580	500	72.39	92	102	75-125	8.73	20

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Antimony	ND<2.5	0.7289	-	-
Arsenic	7.08	7.345	3.61	-
Barium	155	152.6	1.57	20
Beryllium	ND<2.5	ND	-	-
Cadmium	ND<1.2	0.4011	-	-
Chromium	44.0	41.91	4.99	20
Cobalt	10.8	9.834	9.82	-
Copper	34.6	35.00	1.14	20
Lead	27.9	28.06	0.570	20
Mercury	ND<0.25	0.1592	-	-
Molybdenum	ND<2.5	ND	-	-
Nickel	38.2	37.85	0.925	20
Selenium	ND<2.5	ND	-	-

(Cont.)

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/9/18	**BatchID:**	154490
Date Analyzed:	3/12/18 - 3/13/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS3	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154490 1803578-018AMS/MSD

QC Summary Report for Metals

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Silver	ND<2.5	ND	-	-
Thallium	ND<2.5	ND	-	-
Vanadium	46.0	44.32	3.79	20
Zinc	76.2	72.39	5.26	-

%D Control Limit applied to analytes with concentrations greater than 25 times the reporting limits.

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/8/18	**BatchID:**	154434
Date Analyzed:	3/10/18	**Extraction Method:**	SW3550B/3630C
Instrument:	GC11A, GC6A	**Analytical Method:**	SW8015B
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154434 1803520-052AMS/MSD

QC Report for SW8015B w/ Silica Gel Clean-Up

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH-Diesel (C10-C23)	ND	40.8	1.0	40	-	102	75-128
TPH-Motor Oil (C18-C36)	ND	-	5.0	-	-	-	-
Surrogate Recovery							
C9	23.9	23.4		25	96	94	72-122

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	38.9	40.1	40	5.354	84	87	71-134	2.90	30

(Cont.)

NELAP 4033ORELAP

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/9/18	**BatchID:**	154489
Date Analyzed:	3/12/18 - 3/14/18	**Extraction Method:**	SW3550B/3630C
Instrument:	GC9a	**Analytical Method:**	SW8015B
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154489 1803578-018AMS/MSD

QC Report for SW8015B w/ Silica Gel Clean-Up

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH-Diesel (C10-C23)	ND	37.2	1.0	40	-	93	75-128
TPH-Motor Oil (C18-C36)	ND	-	5.0	-	-	-	-
Surrogate Recovery							
C9	25.7	25.3		25	103	101	72-122

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	37.6	38.9	40	ND	94	97	71-134	3.34	30

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(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1803578 **ClientCode: ERAS**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ▣ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
▣ Detection Summary ▣ Dry-Weight

Report to:
Greg Munsell
ERAS Environmental, Inc.
1533 B Street
Hayward, CA 94541
(510) 247-9885 FAX: (510) 886-5399

Email: info@eras.biz; greg@eras.biz;andrew@era
cc/3rd Party:
PO:
Project: 17221; 1401 West Winton, Hayward

Bill to:
Kasey Cordoza
ERAS Environmental, Inc.
1533 B Street
Hayward, CA 94541

Requested TAT: **5 days;**

Date Received: **03/09/2018**
Date Logged: **03/09/2018**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1803578-001	B-1,1,2,2 COMP	Soil	3/9/2018 07:42	☐					A	A	A					
1803578-002	B-3,4,4,5 COMP	Soil	3/9/2018 08:23	☐					A	A	A					
1803578-003	B-1,1	Soil	3/9/2018 07:51	☑	A		A									
1803578-003	B-1,5	Soil	3/8/2018 07:57	☑	B		B									
1803578-003	B-2,1	Soil	3/8/2018 08:16	☑	C		C									
1803578-003	B-2,2	Soil	3/8/2018 08:20	☑	D		D									
1803578-004	B-3,11	Soil	3/8/2018 08:32	☑	A		A									
1803578-004	B-4,1	Soil	3/8/2018 08:32	☑	B		B									
1803578-004	B-4,2	Soil	3/8/2018 08:32	☑	C		C									
1803578-004	B-5,1	Soil	3/8/2018 08:32	☑	D		D									
1803578-005	B-6,7,8 COMP	Soil	3/8/2018 09:22	☐					A	A	A					
1803578-006	B-9,10,11,12 COMP	Soil	3/8/2018 08:45	☐					A	A	A					
1803578-007	B-6,1	Soil	3/8/2018 09:06	☑	A		A									
1803578-007	B-6,2	Soil	3/8/2018 09:10	☑	B		B									
1803578-007	B-7,1	Soil	3/8/2018 09:16	☑	C		C									

Test Legend:

1	8260B_E	2		3	8260GAS_E	4	
5	8270_S	6	CAM17MS_TTLC_S	7	TPH(DMO)WSG_S	8	
9		10		11		12	

Prepared by: Alexandra Iniguez

The following SampIDs: 003A, 003B, 003C, 003D, 004A, 004B, 004C, 004D, 007A, 007B, 007C, 007D, 008A, 008B, 008C, 008D, 011A, 011B, 011C, 011D, 012A, 012B, 012C, 012D, 015A, 015B, 015C, 015D, 016A, 016B, 016C, 016D, 019A, 019B, 019C, 019D, 020A, 020B, 020C, 020D, 021A contain testgroup Gas8260_E.; The following SampIDs: 001A, 002A, 005A, 006A, 009A, 010A, 013A, 014A,

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 1803578 **ClientCode: ERAS**

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▣ Detection Summary ▣ Dry-Weight

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Email: info@eras.biz; greg@eras.biz;andrew@era
cc/3rd Party:
PO:
Project: 17221; 1401 West Winton, Hayward

Bill to:
Kasey Cordoza
ERAS Environmental, Inc.
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Hayward, CA 94541

Requested TAT: **5 days;**

Date Received: **03/09/2018**
Date Logged: **03/09/2018**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1803578-007	B-8,1	Soil	3/8/2018 09:22	☑	D		D									
1803578-008	B-10,1	Soil	3/8/2018 10:04	☑	B		B									
1803578-008	B-11,1	Soil	3/8/2018 10:14	☑	C		C									
1803578-008	B-12,1	Soil	3/8/2018 08:45	☑	D		D									
1803578-008	B-9,11	Soil	3/8/2018 09:29	☑	A		A									
1803578-009	B-13,14,15 COMP	Soil	3/8/2018 09:26	☐					A	A	A					
1803578-010	B-16,17,18 COMP	Soil	3/8/2018 09:55	☐					A	A	A					
1803578-011	B-13,1	Soil	3/8/2018 08:50	☑	A		A									
1803578-011	B-14,1	Soil	3/8/2018 08:56	☑	B		B									
1803578-011	B-14,2	Soil	3/8/2018 09:17	☑	C		C									
1803578-011	B-15,1	Soil	3/8/2018 09:26	☑	D		D									
1803578-012	B-16,1	Soil	3/8/2018 09:35	☑	A		A									
1803578-012	B-17,1	Soil	3/8/2018 09:41	☑	B		B									
1803578-012	B-18,1	Soil	3/8/2018 09:46	☑	C		C									
1803578-012	B-18,2	Soil	3/8/2018 09:55	☑	D		D									

Test Legend:

1	8260B_E	2		3	8260GAS_E	4	
5	8270_S	6	CAM17MS_TTLC_S	7	TPH(DMO)WSG_S	8	
9		10		11		12	

Prepared by: Alexandra Iniguez

The following SampIDs: 003A, 003B, 003C, 003D, 004A, 004B, 004C, 004D, 007A, 007B, 007C, 007D, 008A, 008B, 008C, 008D, 011A, 011B, 011C, 011D, 012A, 012B, 012C, 012D, 015A, 015B, 015C, 015D, 016A, 016B, 016C, 016D, 019A, 019B, 019C, 019D, 020A, 020B, 020C, 020D, 021A contain testgroup Gas8260_E.; The following SampIDs: 001A, 002A, 005A, 006A, 009A, 010A, 013A, 014A,

Comments:

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 1803578 **ClientCode: ERAS**

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▣ Detection Summary ▣ Dry-Weight

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Email: info@eras.biz; greg@eras.biz;andrew@era
cc/3rd Party:
PO:
Project: 17221; 1401 West Winton, Hayward

Bill to:
Kasey Cordoza
ERAS Environmental, Inc.
1533 B Street
Hayward, CA 94541

Requested TAT: **5 days;**

Date Received: **03/09/2018**
Date Logged: **03/09/2018**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1803578-013	B-19,20,21,22 COMP	Soil	3/8/2018 10:59	☐					A	A	A					
1803578-014	B-22,23,24,25 COMP	Soil	3/9/2018 10:29	☐					A	A	A					
1803578-015	B-19,1	Soil	3/8/2018 10:16	☑	A		A									
1803578-015	B-20,1	Soil	3/8/2018 10:16	☑	B		B									
1803578-015	B-21,1	Soil	3/8/2018 10:16	☑	C		C									
1803578-015	B-22,1	Soil	3/8/2018 10:16	☑	D		D									
1803578-016	B-22,2	Soil	3/8/2018 11:10	☑	A		A									
1803578-016	B-23,1	Soil	3/8/2018 11:10	☑	B		B									
1803578-016	B-24,1	Soil	3/8/2018 11:10	☑	C		C									
1803578-016	B-25,1	Soil	3/8/2018 11:10	☑	D		D									
1803578-017	B-25,26,27,28 COMP	Soil	3/9/2018 07:42	☐					A	A	A					
1803578-018	B-28,29,30,31 COMP	Soil	3/9/2018 08:52	☐					A	A	A					
1803578-019	B-25,2	Soil	3/8/2018 07:42	☑	A		A									
1803578-019	B-26,1	Soil	3/8/2018 10:59	☑	B		B									
1803578-019	B-27,1	Soil	3/8/2018 11:21	☑	C		C									

Test Legend:

1	8260B_E	2		3	8260GAS_E	4	
5	8270_S	6	CAM17MS_TTLC_S	7	TPH(DMO)WSG_S	8	
9		10		11		12	

Prepared by: Alexandra Iniguez

The following SampIDs: 003A, 003B, 003C, 003D, 004A, 004B, 004C, 004D, 007A, 007B, 007C, 007D, 008A, 008B, 008C, 008D, 011A, 011B, 011C, 011D, 012A, 012B, 012C, 012D, 015A, 015B, 015C, 015D, 016A, 016B, 016C, 016D, 019A, 019B, 019C, 019D, 020A, 020B, 020C, 020D, 021A contain testgroup Gas8260_E.; The following SampIDs: 001A, 002A, 005A, 006A, 009A, 010A, 013A, 014A,

Comments:

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 1803578 **ClientCode: ERAS**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ▣ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
▣ Detection Summary ▣ Dry-Weight

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Email: info@eras.biz; greg@eras.biz;andrew@era
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Project: 17221; 1401 West Winton, Hayward

Bill to:
Kasey Cordoza
ERAS Environmental, Inc.
1533 B Street
Hayward, CA 94541

Requested TAT: **5 days;**

Date Received: **03/09/2018**
Date Logged: **03/09/2018**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1803578-019	B-28,1	Soil	3/8/2018 11:24	☑	D		D									
1803578-020	B-28,2	Soil	3/9/2018 07:52	☑	A		A									
1803578-020	B-29,1	Soil	3/9/2018 07:52	☑	B		B									
1803578-020	B-30,1	Soil	3/9/2018 07:52	☑	C		C									
1803578-020	B-31,6	Soil	3/9/2018 08:23	☑	D		D									
1803578-021	B-26,0.5-1	Soil	3/8/2018 11:18	☑	A		A									

Test Legend:

1	8260B_E	2		3	8260GAS_E	4	
5	8270_S	6	CAM17MS_TTLC_S	7	TPH(DMO)WSG_S	8	
9		10		11		12	

Prepared by: Alexandra Iniguez

The following SampIDs: 003A, 003B, 003C, 003D, 004A, 004B, 004C, 004D, 007A, 007B, 007C, 007D, 008A, 008B, 008C, 008D, 011A, 011B, 011C, 011D, 012A, 012B, 012C, 012D, 015A, 015B, 015C, 015D, 016A, 016B, 016C, 016D, 019A, 019B, 019C, 019D, 020A, 020B, 020C, 020D, 021A contain testgroup Gas8260_E.; The following SampIDs: 001A, 002A, 005A, 006A, 009A, 010A, 013A, 014A,

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
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WORK ORDER SUMMARY

Client Name: ERAS ENVIRONMENTAL, INC. **Project:** 17221; 1401 West Winton, Hayward **Work Order:** 1803578
Client Contact: Greg Munsell **QC Level:** LEVEL 2
Contact's Email: info@eras.biz; greg@eras.biz;andrew@eras.biz **Comments:** **Date Logged:** 3/9/2018

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1803578-001A	B-1,1,2,2 COMP	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Acetate Liner	☐	3/9/2018 7:42	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
1803578-002A	B-3,4,4,5 COMP	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Acetate Liner	☐	3/9/2018 8:23	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
1803578-003A	B-1,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/9/2018 7:51	5 days		☑	
1803578-003B	B-1,5	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 7:57	5 days		☑	
1803578-003C	B-2,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 8:16	5 days		☑	
1803578-003D	B-2,2	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 8:20	5 days		☑	
1803578-004A	B-3,11	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 8:32	5 days		☑	
1803578-004B	B-4,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 8:32	5 days		☑	
1803578-004C	B-4,2	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 8:32	5 days		☑	
1803578-004D	B-5,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 8:32	5 days		☑	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

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WORK ORDER SUMMARY

Client Name: ERAS ENVIRONMENTAL, INC. **Project:** 17221; 1401 West Winton, Hayward **Work Order:** 1803578
Client Contact: Greg Munsell **QC Level:** LEVEL 2
Contact's Email: info@eras.biz; greg@eras.biz;andrew@eras.biz **Comments:** **Date Logged:** 3/9/2018

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1803578-005A	B-6,7,8 COMP	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	1	Acetate Liner	☐	3/8/2018 9:22	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
1803578-006A	B-9,10,11,12 COMP	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Acetate Liner	☐	3/8/2018 8:45	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
1803578-007A	B-6,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1 / (1:1)	Encore Sampler	☐	3/8/2018 9:06	5 days		☑	
1803578-007B	B-6,2	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 9:10	5 days		☑	
1803578-007C	B-7,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 9:16	5 days		☑	
1803578-007D	B-8,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 9:22	5 days		☑	
1803578-008A	B-9,11	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 9:29	5 days		☑	
1803578-008B	B-10,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 10:04	5 days		☑	
1803578-008C	B-11,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 10:14	5 days		☑	
1803578-008D	B-12,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 8:45	5 days		☑	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

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McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

WORK ORDER SUMMARY

Client Name: ERAS ENVIRONMENTAL, INC. **Project:** 17221; 1401 West Winton, Hayward **Work Order:** 1803578
Client Contact: Greg Munsell **QC Level:** LEVEL 2
Contact's Email: info@eras.biz; greg@eras.biz;andrew@eras.biz **Comments:** **Date Logged:** 3/9/2018

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1803578-009A	B-13,14,15 COMP	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Acetate Liner	☐	3/8/2018 9:26	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
1803578-010A	B-16,17,18 COMP	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Acetate Liner	☐	3/8/2018 9:55	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
1803578-011A	B-13,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 8:50	5 days		☑	
1803578-011B	B-14,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 8:56	5 days		☑	
1803578-011C	B-14,2	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 9:17	5 days		☑	
1803578-011D	B-15,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 9:26	5 days		☑	
1803578-012A	B-16,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	4 / (4:1)	Encore Sampler	☐	3/8/2018 9:35	5 days		☑	
1803578-012B	B-17,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 9:41	5 days		☑	
1803578-012C	B-18,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 9:46	5 days		☑	
1803578-012D	B-18,2	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 9:55	5 days		☑	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

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WORK ORDER SUMMARY

Client Name: ERAS ENVIRONMENTAL, INC. **Project:** 17221; 1401 West Winton, Hayward **Work Order:** 1803578
Client Contact: Greg Munsell **QC Level:** LEVEL 2
Contact's Email: info@eras.biz; greg@eras.biz;andrew@eras.biz **Comments:** **Date Logged:** 3/9/2018

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1803578-013A	B-19,20,21,22 COMP	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Acetate Liner	☐	3/8/2018 10:59	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
1803578-014A	B-22,23,24,25 COMP	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Acetate Liner	☐	3/9/2018 10:29	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
1803578-015A	B-19,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 10:16	5 days		☑	
1803578-015B	B-20,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 10:16	5 days		☑	
1803578-015C	B-21,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 10:16	5 days		☑	
1803578-015D	B-22,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 10:16	5 days		☑	
1803578-016A	B-22,2	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 11:10	5 days		☑	
1803578-016B	B-23,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 11:10	5 days		☑	
1803578-016C	B-24,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 11:10	5 days		☑	
1803578-016D	B-25,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 11:10	5 days		☑	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

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WORK ORDER SUMMARY

Client Name: ERAS ENVIRONMENTAL, INC. **Project:** 17221; 1401 West Winton, Hayward **Work Order:** 1803578
Client Contact: Greg Munsell **QC Level:** LEVEL 2
Contact's Email: info@eras.biz; greg@eras.biz;andrew@eras.biz **Comments:** **Date Logged:** 3/9/2018

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1803578-017A	B-25,26,27,28 COMP	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Acetate Liner	☐	3/9/2018 7:42	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
1803578-018A	B-28,29,30,31 COMP	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Acetate Liner	☐	3/9/2018 8:52	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
1803578-019A	B-25,2	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	4 / (4:1)	Encore Sampler	☐	3/8/2018 7:42	5 days		☑	
1803578-019B	B-26,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 10:59	5 days		☑	
1803578-019C	B-27,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 11:21	5 days		☑	
1803578-019D	B-28,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 11:24	5 days		☑	
1803578-020A	B-28,2	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	4 / (4:1)	Encore Sampler	☐	3/9/2018 7:52	5 days		☑	
1803578-020B	B-29,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/9/2018 7:52	5 days		☑	
1803578-020C	B-30,1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/9/2018 7:52	5 days		☑	
1803578-020D	B-31,6	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/9/2018 8:23	5 days		☑	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

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WORK ORDER SUMMARY

Client Name: ERAS ENVIRONMENTAL, INC. **Project:** 17221; 1401 West Winton, Hayward **Work Order:** 1803578
Client Contact: Greg Munsell **QC Level:** LEVEL 2
Contact's Email: info@eras.biz; greg@eras.biz;andrew@eras.biz **Comments:** **Date Logged:** 3/9/2018

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1803578-021A	B-26,0.5-1	Soil	TPH(g) & 8260 by P&T GCMS [Encore]	1	Encore Sampler	☐	3/8/2018 11:18	5 days		☑	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

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CHAIN OF CUSTODY FORM

1803578

McCampbell Analytical, Inc
1534 Willow Pass Rd.
Pittsburg, CA 94565
877.252.9262
925.252.9269 - fax

Turnaround Time: Rush | 24Hr | 48 Hr | 72 Hr | X 5 Day

Geotracker: EDF | Excel | Write On (DW

Report To: ERAS **Bill To:** ERAS

Company: ERAS Environmental, Inc.

Email: info@eras.biz

Telephone: 510-247-9885 **Fax:** 510-886-5399

Project # 17221

Project location 1401 West Winton, Hayward

Sampler: Greg Munsell

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Water	Waste		Preservative: HCL	H2SO4	HNO3	ICE	None	Tph-gro and VOCs by EPA Method 8260 ★	TPH-dro and TPH-oro by EPA Method 8015 with silica gel cleanup	CAM 17 Metals	SVOC by EPA Method 8270	HOLD ★	Other	Comments
B-1, 0.5-1		3/8/2018	0810	1	Tube	X							X		X	X	X	X			COMPOSITE
B-1, 4.5-5		3/8/2018	0820	1	Tube	X							X		X	X	X	X			
B-2, 0.5-1		3/8/2018	0816	1	Tube	X							X		X	X	X	X			
B-2, 1.5-2		3/8/2018	0820	1	Tube	X							X		X	X	X	X			
B-3, 10.5-11		3/8/2018	0832	1	Tube	X							X		X	X	X	X			COMPOSITE
B-4, 0.5-1		3/8/2018	0843	1	Tube	X							X		X	X	X	X			
B-4, 1.5-2		3/8/2018	0847	1	Tube	X							X		X	X	X	X			
B-5, 0.5-1		3/8/2018	0856	1	Tube	X							X		X	X	X	X			
B-1, 1		3/8/2018	0751	1	Enc	X							X		X				X		COMPOSITE
B-1, 5		3/8/2018	0756	1	Enc	X							X		X				X		
B-2, 1		3/8/2018	0816	1	Enc	X							X		X				X		
B-2, 2		3/8/2018	0820	1	Enc	X							X		X				X		
B-3, 11		3/8/2018	0832	1	Enc	X							X		X				X		COMPOSITE
B-4, 1		3/8/2018	0843	1	Enc	X							X		X				X		
B-4, 2		3/8/2018	0847	1	Enc	X							X		X				X		
B-5, 1		3/8/2018	0856	1	Enc	X							X		X				X		

★ GCS and 8260 added to composite's 3/13/18
★ ENCORES placed on hold.

4.3 wt

RELINQUISHED BY: **RECEIVED BY:**

Relinquished by:	Date:	Time:	Recieved by:
[signature]	3/9/18	1430 2:30 p.m.	[signature]
[signature]	3/9/18	1555	[signature]
	Date:	Time:	Recieved by:

ICE/t° Condition	VOA's	O&G	Metals	Other
Head space absent				
Dechlorinated in lab				
Appropriate containers				
Preserved in Lab				
Preservation			pH<2	

Comments: Please PDF and **PROVIDE J FLAGS**

1 of 5

CHAIN OF CUSTODY FORM

McCampbell Analytical, Inc
1534 Willow Pass Rd.
Pittsburg, CA 94565
877.252.9262
925.252.9269 - fax

Turnaround Time: Rush | 24Hr | 48 Hr | 72 Hr | X 5 Day

Geotracker: EDF | Excel | Write On (DW

Report To: ERAS **Bill To:** ERAS

Company: ERAS Environmental, Inc.

Email: info@eras.biz

Telephone: 510-247-9885 **Fax:** 510-886-5399

Project # 17221

Project location 1401 West Winton, Hayward

Sampler: Greg Munsell

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Matrix: Water	Matrix: Waste	Preservative: HCL	Preservative: H2SO4	Preservative: HNO3	Preservative: ICE	Preservative: None	Analysis Requested: Tph-gro and VOCs by EPA Method 8260 ★	Analysis Requested: TPH-dro and TPH-oro by EPA Method 8015 with silica gel cleanup	Analysis Requested: CAM 17 Metals	Analysis Requested: SVOC by EPA Method 8270	Analysis Requested: HOLD ★	Other	Comments
B-6, 0.5-1		3/8/2018	0910	1	Tube	X						X		X	X	X	X			COMPOSITE
B-6, 1.5-2		3/8/2018	0912	1	Tube	X						X		X	X	X	X			
B-7, 0.5-1		3/8/2018	0916	1	Tube	X						X		X	X	X	X			
B-8, 0.5-1		3/8/2018	0922	1	Tube	X						X		X	X	X	X			
B-9, 10.5-11		3/8/2018	0929	1	Tube	X						X		X	X	X	X			COMPOSITE
B-10, 0.5-1		3/8/2018	1004	1	Tube	X						X		X	X	X	X			
B-11, 0.5-1		3/8/2018	1014	1	Tube	X						X		X	X	X	X			
B-12, 0.5-1		3/8/2018	0845	1	Tube	X						X		X	X	X	X			
B-6, 1		3/8/2018	0906	1	Enc	X						X		X				X		COMPOSITE
B-6, 2		3/8/2018	0900	1	Enc	X						X		X				X		
B-7, 1		3/8/2018	0916	1	Enc	X						X		X				X		
B-8, 1		3/8/2018	0922	1	Enc	X						X		X				X		
B-9, 11		3/8/2018	0929	1	Enc	X						X		X				X		COMPOSITE
B-10, 1		3/8/2018	1004	1	Enc	X						X		X				X		
B-11, 1		3/8/2018	1014	1	Enc	X						X		X				X		
B-12, 1		3/8/2018	0845	1	Enc	X						X		X				X		

★ GRO and 8260 added to composites 3/16/18
★ Encores placed on hold.

1430

RELINQUISHED BY: **RECEIVED BY:**

Relinquished by:	Date:	Time:	Recieved by:
[signature]	3/9/18	2:30 P.M.	[signature]
[signature]	3/9/18	1555	[signature]

ICE/t° Condition

Head space absent

Dechlorinated in lab

Appropriate containers

Preserved in Lab

Preservation: VOA's | O&G | Metals | Other; pH<2

Comments: Please PDF and **PROVIDE J FLAGS**

2 of 5

CHAIN OF CUSTODY FORM

McCampbell Analytical, Inc
1534 Willow Pass Rd.
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877.252.9262
925.252.9269 - fax

Turnaround Time: Rush | 24Hr | 48 Hr | 72 Hr | X 5 Day

Geotracker: EDF | Excel | Write On (DW

Report To: ERAS **Bill To:** ERAS

Company: ERAS Environmental, Inc.

Email: info@eras.biz

Telephone: 510-247-9885 **Fax:** 510-886-5399

Project # 17221

Project location 1401 West Winton, Hayward

Sampler: Greg Munsell

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Matrix: Water	Matrix: Waste	Preservative: HCL	Preservative: H2SO4	Preservative: HNO3	Preservative: ICE	Preservative: None	Analysis Requested: Tph-gro and VOCs by EPA Method 8260 ★	Analysis Requested: TPH-dro and TPH-oro by EPA Method 8015 with silica gel cleanup	Analysis Requested: CAM 17 Metals	Analysis Requested: SVOC by EPA Method 8270	Analysis Requested: HOLD ★	Other	Comments
B-13, 0.5-1		3/8/2018	0850	1	Tube	X						X		X	X	X				
B-14, 0.5-1		3/8/2018	0856	1	Tube	X						X		X	X	X				COMPOSITE
B-14, 1.5-2		3/8/2018	0917	1	Tube	X						X		X	X	X				
B-15, 0.5-1		3/8/2018	0926	1	Tube	X						X		X	X	X				
B-16, 0.5-1		3/8/2018	0935	1	Tube	X						X		X	X	X				
B-17, 0.5-1		3/8/2018	0941	1	Tube	X						X		X	X	X				COMPOSITE
B-18, 0.5-1		3/8/2018	0946	1	Tube	X						X		X	X	X				
B-18, 1.5-2		3/8/2018	0955	1	Tube	X						X		X	X	X				
B-13, 1		3/8/2018	0850	1	Enc	X						X		X						
B-14, 1		3/8/2018	0856	1	Enc	X						X		X						COMPOSITE
B-14, 2		3/8/2018	0917	1	Enc	X						X		X						
B-15, 1		3/8/2018	0926	1	Enc	X						X		X						
B-16, 1		3/8/2018	0935	1	Enc	X						X		X						
B-17, 1		3/8/2018	0941	1	Enc	X						X		X						COMPOSITE
B-18, 1		3/8/2018	0946	1	Enc	X						X		X						
B-18, 2		3/8/2018	0955	1	Enc	X						X		X						

★ Gas and 8260 added to composites 3/13/18
★ Encores placed on hold.

RELINQUISHED BY: **RECEIVED BY:**

Relinquished by:		Date: 3/9/18	Time: 1430	Recieved by:	
Relinquished by:		Date: 3/9/18	Time: 1555	Recieved by:	
Relinquished by:		Date:	Time:	Recieved by:	

ICE/t° Condition	
Head space absent	
Dechlorinated in lab	
Appropriate containers	
Preserved in Lab	
Preservation	VOA's O&G Metals Other pH<2

Comments: Please PDF and **PROVIDE J FLAGS**

3 of 5

CHAIN OF CUSTODY FORM

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877.252.9262
925.252.9269 - fax

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Geotracker: EDF | Excel | Write On (DW

Report To: ERAS **Bill To:** ERAS

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Email: info@eras.biz

Telephone: 510-247-9885 **Fax:** 510-886-5399

Project # 17221

Project location 1401 West Winton, Hayward

Sampler: Greg Munsell

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Matrix: Water	Matrix: Waste	Preservative: HCL	Preservative: H2SO4	Preservative: HNO3	Preservative: ICE	Preservative: None	Tph-gro and VOCs by EPA Method 8260 *	TPH-dro and TPH-oro by EPA Method 8015 with silica gel cleanup	CAM 17 Metals	SVOC by EPA Method 8270	HOLD *	Comments
B-19, 0.5-1		3/8/2018	1016	1	Tube	X						X		X	X	X			COMPOSITE
B-20, 0.5-1		3/8/2018	1019	1	Tube	X						X		X	X	X			
B-21, 0.5-1		3/8/2018	1023	1	Tube	X						X		X	X	X			
B-22, 0.5-1		3/8/2018	1059	1	Tube	X						X		X	X	X			
B-22, 1.5-2		3/9/2018	1029	1	Tube	X						X		X	X	X			COMPOSITE
B-23, 0.5-1		3/8/2018	1102	1	Tube	X						X		X	X	X			
B-24, 0.5-1		3/8/2018	1106	1	Tube	X						X		X	X	X			
B-25, 0.5-1		3/8/2018	1117	1	Tube	X						X		X	X	X			
B-19, 1		3/8/2018	1016	1	Enc	X						X		X			X		COMPOSITE
B-20, 1		3/8/2018	1019	1	Enc	X						X		X			X		
B-21, 1		3/8/2018	1023	1	Enc	X						X		X			X		
B-22, 1		3/8/2018	1029	1	Enc	X						X		X			X		
B-22, 2		3/9/2018	0731	1	Enc	X						X		X			X		COMPOSITE
B-23, 1		3/8/2018	1102	1	Enc	X						X		X			X		
B-24, 1		3/8/2018	1105	1	Enc	X						X		X			X		
B-25, 1		3/8/2018	1110	1	Enc	X						X		X			X		

*GC6 and 8260 added to composite's 3/13/18
*Encores placed on hold

RELINQUISHED BY: **RECEIVED BY:**

Relinquished by:	Date:	Time:	Recieved by:
[signature]	3/9/18	1430	C Moore
L Moore	3/9/18	1555	[signature]
Relinquished by:	Date:	Time:	Recieved by:

ICE/t° Condition
Head space absent
Dechlorinated in lab
Appropriate containers
Preserved in Lab
Preservation: VOA's | O&G | Metals | Other; pH<2

Comments: Please PDF and **PROVIDE J FLAGS**

4 of 5

CHAIN OF CUSTODY FORM

McCampbell Analytical, Inc
1534 Willow Pass Rd.
Pittsburg, CA 94565
877.252.9262
925.252.9269 - fax

Turnaround Time: Rush | 24Hr | 48 Hr | 72 Hr | X 5 Day

Geotracker: EDF | Excel | Write On (DW

Report To: ERAS **Bill To:** ERAS

Company: ERAS Environmental, Inc.

Email: info@eras.biz

Telephone: 510-247-9885 **Fax:** 510-886-5399

Project # 17221

Project location 1401 West Winton, Hayward

Sampler: Greg Munsell

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Matrix: Water	Matrix: Waste	Preservative: HCL	Preservative: H2SO4	Preservative: HNO3	Preservative: ICE	Preservative: None	Analysis Requested: Tph-gro and VOCs by EPA Method 8260	Analysis Requested: TPH-dro and TPH-oro by EPA Method 8015 with silica gel cleanup	Analysis Requested: CAM 17 Metals	Analysis Requested: SVOC by EPA Method 8270	Analysis Requested: HOLD ★	Other	Comments
B-25, 1.5-2		3/9/2018	0742	1	Tube	X						X		X	X	X				COMPOSITE
B-26, 0.5-1		3/8/2018	1118	1	Tube	X						X		X	X	X				
B-27, 0.5-1		3/8/2018	1121	1	Tube	X						X		X	X	X				
B-28, 0.5-1		3/8/2018	1124	1	Tube	X						X		X	X	X				
B-28, 1.5-2		3/9/2018	0752	1	Tube	X						X		X	X	X				COMPOSITE
B-29, 0.5-1		3/8/2018	1144	1	Tube	X						X		X	X	X				
B-30, 0.5-1		3/8/2018	1147	1	Tube	X						X		X	X	X				
B-31, 5.5-6		3/9/2018	0823	1	Tube	X						X		X	X	X				
B-25, 2		3/9/2018	0742	1	Enc	X						X		X						COMPOSITE
B-26, 1		3/8/2018	1059	1	Enc	X						X		X						
B-27, 1		3/8/2018	1121	1	Enc	X						X		X						
B-28, 1		3/8/2018	1124	1	Enc	X						X		X						
B-28, 2		3/9/2018	0752	1	Enc	X						X		X						COMPOSITE
B-29, 1		3/8/2018	1144	1	Enc	X						X		X						
B-30, 1		3/8/2018	1147	1	Enc	X						X		X						
B-31, 6		3/9/2018	0823	1	Enc	X						X		X						

★B-26,0.5-1 3/8/18 11:18 - hold ★Gas and 8260 added to composites 3/13/18 ★Encores placed on hold

RELINQUISHED BY:

Relinquished by:	Date: 3/9/18	Time: 1432	Recieved by: C Moore
Relinquished by: C Moore	Date: 3/9/18	Time: 1555	Recieved by:
Relinquished by:	Date:	Time:	Recieved by:

RECEIVED BY:

ICE/t° Condition

Head space absent

Dechlorinated in lab

Appropriate containers

Preserved in Lab

Preservation: VOA's | O&G | Metals | Other; pH<2

Comments: Please PDF and **PROVIDE J FLAGS**

★Extra encore received, Added to chain and placed on hold.

5.45

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Sample Receipt Checklist

Client Name: **ERAS Environmental, Inc.**
Project: **17221; 1401 West Winton, Hayward**

WorkOrder №: **1803578** Matrix: Soil
Carrier: Laurie Moore (MAI Courier)

Date and Time Received: **3/9/2018 15:55**
Date Logged: **3/9/2018**
Received by: Alexandra Iniguez
Logged by: Alexandra Iniguez

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Sample IDs noted by Client on COC?	Yes	☑	No	☐		
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐		
Sampler's name noted on COC?	Yes	☑	No	☐		
COC agrees with Quote?	Yes	☐	No	☐	NA	☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☑	No	☐	NA	☐
Shipping container/cooler in good condition?	Yes	☑	No	☐		
Samples in proper containers/bottles?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA	☐
Samples Received on Ice?	Yes	☑	No	☐		
(Ice Type: WET ICE)						
Sample/Temp Blank temperature	Temp: 4.7°C				NA	☐
Water - VOA vials have zero headspace / no bubbles?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes	☐	No	☐	NA	☑
UCMR Samples:						
pH tested and acceptable upon receipt (200.8: ≤2; 525.3: ≤4; 530: ≤7; 541: <3; 544: <6.5 & 7.5)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L)?	Yes	☐	No	☐	NA	☑

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1803578 A

Report Created for: ERAS Environmental, Inc.

1533 B Street
Hayward, CA 94541

Project Contact: Greg Munsell
Project P.O.:
Project: 17221; 1401 West Winton, Hayward

Project Received: 03/09/2018

Analytical Report reviewed & approved for release on 03/16/2018 by:

Christine Askari
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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CA ELAP 1644 ♦ NELAP 4033 ORELAP

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Glossary of Terms & Qualifier Definitions

Client: ERAS Environmental, Inc.
Project: 17221; 1401 West Winton, Hayward
WorkOrder: 1803578 A

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1 & 2 COMP	1803578-001A	Soil	03/09/2018 08:20	GC10 03141827.D	154563

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	03/15/2018 00:26
tert-Amyl methyl ether (TAME)	ND	0.0050	1	03/15/2018 00:26
Benzene	ND	0.0050	1	03/15/2018 00:26
Bromobenzene	ND	0.0050	1	03/15/2018 00:26
Bromochloromethane	ND	0.0050	1	03/15/2018 00:26
Bromodichloromethane	ND	0.0050	1	03/15/2018 00:26
Bromoform	ND	0.0050	1	03/15/2018 00:26
Bromomethane	ND	0.0050	1	03/15/2018 00:26
2-Butanone (MEK)	ND	0.020	1	03/15/2018 00:26
t-Butyl alcohol (TBA)	ND	0.050	1	03/15/2018 00:26
n-Butyl benzene	ND	0.0050	1	03/15/2018 00:26
sec-Butyl benzene	ND	0.0050	1	03/15/2018 00:26
tert-Butyl benzene	ND	0.0050	1	03/15/2018 00:26
Carbon Disulfide	ND	0.0050	1	03/15/2018 00:26
Carbon Tetrachloride	ND	0.0050	1	03/15/2018 00:26
Chlorobenzene	ND	0.0050	1	03/15/2018 00:26
Chloroethane	ND	0.0050	1	03/15/2018 00:26
Chloroform	ND	0.0050	1	03/15/2018 00:26
Chloromethane	ND	0.0050	1	03/15/2018 00:26
2-Chlorotoluene	ND	0.0050	1	03/15/2018 00:26
4-Chlorotoluene	ND	0.0050	1	03/15/2018 00:26
Dibromochloromethane	ND	0.0050	1	03/15/2018 00:26
1,2-Dibromo-3-chloropropane	ND	0.0040	1	03/15/2018 00:26
1,2-Dibromoethane (EDB)	ND	0.0040	1	03/15/2018 00:26
Dibromomethane	ND	0.0050	1	03/15/2018 00:26
1,2-Dichlorobenzene	ND	0.0050	1	03/15/2018 00:26
1,3-Dichlorobenzene	ND	0.0050	1	03/15/2018 00:26
1,4-Dichlorobenzene	ND	0.0050	1	03/15/2018 00:26
Dichlorodifluoromethane	ND	0.0050	1	03/15/2018 00:26
1,1-Dichloroethane	ND	0.0050	1	03/15/2018 00:26
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	03/15/2018 00:26
1,1-Dichloroethene	ND	0.0050	1	03/15/2018 00:26
cis-1,2-Dichloroethene	ND	0.0050	1	03/15/2018 00:26
trans-1,2-Dichloroethene	ND	0.0050	1	03/15/2018 00:26
1,2-Dichloropropane	ND	0.0050	1	03/15/2018 00:26
1,3-Dichloropropane	ND	0.0050	1	03/15/2018 00:26
2,2-Dichloropropane	ND	0.0050	1	03/15/2018 00:26

(Cont.)

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1 & 2 COMP	1803578-001A	Soil	03/09/2018 08:20	GC10 03141827.D	154563

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	03/15/2018 00:26
cis-1,3-Dichloropropene	ND	0.0050	1	03/15/2018 00:26
trans-1,3-Dichloropropene	ND	0.0050	1	03/15/2018 00:26
Diisopropyl ether (DIPE)	ND	0.0050	1	03/15/2018 00:26
Ethylbenzene	ND	0.0050	1	03/15/2018 00:26
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	03/15/2018 00:26
Freon 113	ND	0.0050	1	03/15/2018 00:26
Hexachlorobutadiene	ND	0.0050	1	03/15/2018 00:26
Hexachloroethane	ND	0.0050	1	03/15/2018 00:26
2-Hexanone	ND	0.0050	1	03/15/2018 00:26
Isopropylbenzene	ND	0.0050	1	03/15/2018 00:26
4-Isopropyl toluene	ND	0.0050	1	03/15/2018 00:26
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	03/15/2018 00:26
Methylene chloride	ND	0.0050	1	03/15/2018 00:26
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	03/15/2018 00:26
Naphthalene	ND	0.0050	1	03/15/2018 00:26
n-Propyl benzene	ND	0.0050	1	03/15/2018 00:26
Styrene	ND	0.0050	1	03/15/2018 00:26
1,1,1,2-Tetrachloroethane	ND	0.0050	1	03/15/2018 00:26
1,1,2,2-Tetrachloroethane	ND	0.0050	1	03/15/2018 00:26
Tetrachloroethene	ND	0.0050	1	03/15/2018 00:26
Toluene	ND	0.0050	1	03/15/2018 00:26
1,2,3-Trichlorobenzene	ND	0.0050	1	03/15/2018 00:26
1,2,4-Trichlorobenzene	ND	0.0050	1	03/15/2018 00:26
1,1,1-Trichloroethane	ND	0.0050	1	03/15/2018 00:26
1,1,2-Trichloroethane	ND	0.0050	1	03/15/2018 00:26
Trichloroethene	ND	0.0050	1	03/15/2018 00:26
Trichlorofluoromethane	ND	0.0050	1	03/15/2018 00:26
1,2,3-Trichloropropane	ND	0.0050	1	03/15/2018 00:26
1,2,4-Trimethylbenzene	ND	0.0050	1	03/15/2018 00:26
1,3,5-Trimethylbenzene	ND	0.0050	1	03/15/2018 00:26
Vinyl Chloride	ND	0.0050	1	03/15/2018 00:26
Xylenes, Total	ND	0.0050	1	03/15/2018 00:26

(Cont.)

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1 & 2 COMP	**1803578-001A**	**Soil**	**03/09/2018 08:20**	**GC10 03141827.D**	**154563**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	94	82-136		03/15/2018 00:26
Toluene-d8	124	92-139		03/15/2018 00:26
4-BFB	96	82-135		03/15/2018 00:26
Benzene-d6	88	55-122		03/15/2018 00:26
Ethylbenzene-d10	99	58-141		03/15/2018 00:26
1,2-DCB-d4	75	51-107		03/15/2018 00:26

Analyst(s): KF

(Cont.)

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-3,4 & 5 COMP	1803578-002A	Soil	03/09/2018 08:56	GC10 03141821.D	154563

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	03/14/2018 20:32
tert-Amyl methyl ether (TAME)	ND	0.0050	1	03/14/2018 20:32
Benzene	ND	0.0050	1	03/14/2018 20:32
Bromobenzene	ND	0.0050	1	03/14/2018 20:32
Bromochloromethane	ND	0.0050	1	03/14/2018 20:32
Bromodichloromethane	ND	0.0050	1	03/14/2018 20:32
Bromoform	ND	0.0050	1	03/14/2018 20:32
Bromomethane	ND	0.0050	1	03/14/2018 20:32
2-Butanone (MEK)	ND	0.020	1	03/14/2018 20:32
t-Butyl alcohol (TBA)	ND	0.050	1	03/14/2018 20:32
n-Butyl benzene	ND	0.0050	1	03/14/2018 20:32
sec-Butyl benzene	ND	0.0050	1	03/14/2018 20:32
tert-Butyl benzene	ND	0.0050	1	03/14/2018 20:32
Carbon Disulfide	ND	0.0050	1	03/14/2018 20:32
Carbon Tetrachloride	ND	0.0050	1	03/14/2018 20:32
Chlorobenzene	ND	0.0050	1	03/14/2018 20:32
Chloroethane	ND	0.0050	1	03/14/2018 20:32
Chloroform	ND	0.0050	1	03/14/2018 20:32
Chloromethane	ND	0.0050	1	03/14/2018 20:32
2-Chlorotoluene	ND	0.0050	1	03/14/2018 20:32
4-Chlorotoluene	ND	0.0050	1	03/14/2018 20:32
Dibromochloromethane	ND	0.0050	1	03/14/2018 20:32
1,2-Dibromo-3-chloropropane	ND	0.0040	1	03/14/2018 20:32
1,2-Dibromoethane (EDB)	ND	0.0040	1	03/14/2018 20:32
Dibromomethane	ND	0.0050	1	03/14/2018 20:32
1,2-Dichlorobenzene	ND	0.0050	1	03/14/2018 20:32
1,3-Dichlorobenzene	ND	0.0050	1	03/14/2018 20:32
1,4-Dichlorobenzene	ND	0.0050	1	03/14/2018 20:32
Dichlorodifluoromethane	ND	0.0050	1	03/14/2018 20:32
1,1-Dichloroethane	ND	0.0050	1	03/14/2018 20:32
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	03/14/2018 20:32
1,1-Dichloroethene	ND	0.0050	1	03/14/2018 20:32
cis-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 20:32
trans-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 20:32
1,2-Dichloropropane	ND	0.0050	1	03/14/2018 20:32
1,3-Dichloropropane	ND	0.0050	1	03/14/2018 20:32
2,2-Dichloropropane	ND	0.0050	1	03/14/2018 20:32

(Cont.)

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-3,4 & 5 COMP	1803578-002A	Soil	03/09/2018 08:56	GC10 03141821.D	154563

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	03/14/2018 20:32
cis-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 20:32
trans-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 20:32
Diisopropyl ether (DIPE)	ND	0.0050	1	03/14/2018 20:32
Ethylbenzene	ND	0.0050	1	03/14/2018 20:32
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	03/14/2018 20:32
Freon 113	ND	0.0050	1	03/14/2018 20:32
Hexachlorobutadiene	ND	0.0050	1	03/14/2018 20:32
Hexachloroethane	ND	0.0050	1	03/14/2018 20:32
2-Hexanone	ND	0.0050	1	03/14/2018 20:32
Isopropylbenzene	ND	0.0050	1	03/14/2018 20:32
4-Isopropyl toluene	ND	0.0050	1	03/14/2018 20:32
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	03/14/2018 20:32
Methylene chloride	ND	0.0050	1	03/14/2018 20:32
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	03/14/2018 20:32
Naphthalene	ND	0.0050	1	03/14/2018 20:32
n-Propyl benzene	ND	0.0050	1	03/14/2018 20:32
Styrene	ND	0.0050	1	03/14/2018 20:32
1,1,1,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 20:32
1,1,2,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 20:32
Tetrachloroethene	ND	0.0050	1	03/14/2018 20:32
Toluene	ND	0.0050	1	03/14/2018 20:32
1,2,3-Trichlorobenzene	ND	0.0050	1	03/14/2018 20:32
1,2,4-Trichlorobenzene	ND	0.0050	1	03/14/2018 20:32
1,1,1-Trichloroethane	ND	0.0050	1	03/14/2018 20:32
1,1,2-Trichloroethane	ND	0.0050	1	03/14/2018 20:32
Trichloroethene	ND	0.0050	1	03/14/2018 20:32
Trichlorofluoromethane	ND	0.0050	1	03/14/2018 20:32
1,2,3-Trichloropropane	ND	0.0050	1	03/14/2018 20:32
1,2,4-Trimethylbenzene	ND	0.0050	1	03/14/2018 20:32
1,3,5-Trimethylbenzene	ND	0.0050	1	03/14/2018 20:32
Vinyl Chloride	ND	0.0050	1	03/14/2018 20:32
Xylenes, Total	ND	0.0050	1	03/14/2018 20:32

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-3,4 & 5 COMP	1803578-002A	Soil	03/09/2018 08:56	GC10 03141821.D	154563

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	94	82-136		03/14/2018 20:32
Toluene-d8	124	92-139		03/14/2018 20:32
4-BFB	89	82-135		03/14/2018 20:32
Benzene-d6	94	55-122		03/14/2018 20:32
Ethylbenzene-d10	113	58-141		03/14/2018 20:32
1,2-DCB-d4	77	51-107		03/14/2018 20:32

Analyst(s): KF

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-6,7,8 COMP	1803578-005A	Soil	03/08/2018 09:22	GC10 03141822.D	154563

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	03/14/2018 21:11
tert-Amyl methyl ether (TAME)	ND	0.0050	1	03/14/2018 21:11
Benzene	ND	0.0050	1	03/14/2018 21:11
Bromobenzene	ND	0.0050	1	03/14/2018 21:11
Bromochloromethane	ND	0.0050	1	03/14/2018 21:11
Bromodichloromethane	ND	0.0050	1	03/14/2018 21:11
Bromoform	ND	0.0050	1	03/14/2018 21:11
Bromomethane	ND	0.0050	1	03/14/2018 21:11
2-Butanone (MEK)	ND	0.020	1	03/14/2018 21:11
t-Butyl alcohol (TBA)	ND	0.050	1	03/14/2018 21:11
n-Butyl benzene	ND	0.0050	1	03/14/2018 21:11
sec-Butyl benzene	ND	0.0050	1	03/14/2018 21:11
tert-Butyl benzene	ND	0.0050	1	03/14/2018 21:11
Carbon Disulfide	ND	0.0050	1	03/14/2018 21:11
Carbon Tetrachloride	ND	0.0050	1	03/14/2018 21:11
Chlorobenzene	ND	0.0050	1	03/14/2018 21:11
Chloroethane	ND	0.0050	1	03/14/2018 21:11
Chloroform	ND	0.0050	1	03/14/2018 21:11
Chloromethane	ND	0.0050	1	03/14/2018 21:11
2-Chlorotoluene	ND	0.0050	1	03/14/2018 21:11
4-Chlorotoluene	ND	0.0050	1	03/14/2018 21:11
Dibromochloromethane	ND	0.0050	1	03/14/2018 21:11
1,2-Dibromo-3-chloropropane	ND	0.0040	1	03/14/2018 21:11
1,2-Dibromoethane (EDB)	ND	0.0040	1	03/14/2018 21:11
Dibromomethane	ND	0.0050	1	03/14/2018 21:11
1,2-Dichlorobenzene	ND	0.0050	1	03/14/2018 21:11
1,3-Dichlorobenzene	ND	0.0050	1	03/14/2018 21:11
1,4-Dichlorobenzene	ND	0.0050	1	03/14/2018 21:11
Dichlorodifluoromethane	ND	0.0050	1	03/14/2018 21:11
1,1-Dichloroethane	ND	0.0050	1	03/14/2018 21:11
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	03/14/2018 21:11
1,1-Dichloroethene	ND	0.0050	1	03/14/2018 21:11
cis-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 21:11
trans-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 21:11
1,2-Dichloropropane	ND	0.0050	1	03/14/2018 21:11
1,3-Dichloropropane	ND	0.0050	1	03/14/2018 21:11
2,2-Dichloropropane	ND	0.0050	1	03/14/2018 21:11

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-6,7,8 COMP	1803578-005A	Soil	03/08/2018 09:22	GC10 03141822.D	154563

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	03/14/2018 21:11
cis-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 21:11
trans-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 21:11
Diisopropyl ether (DIPE)	ND	0.0050	1	03/14/2018 21:11
Ethylbenzene	ND	0.0050	1	03/14/2018 21:11
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	03/14/2018 21:11
Freon 113	ND	0.0050	1	03/14/2018 21:11
Hexachlorobutadiene	ND	0.0050	1	03/14/2018 21:11
Hexachloroethane	ND	0.0050	1	03/14/2018 21:11
2-Hexanone	ND	0.0050	1	03/14/2018 21:11
Isopropylbenzene	ND	0.0050	1	03/14/2018 21:11
4-Isopropyl toluene	ND	0.0050	1	03/14/2018 21:11
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	03/14/2018 21:11
Methylene chloride	ND	0.0050	1	03/14/2018 21:11
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	03/14/2018 21:11
Naphthalene	ND	0.0050	1	03/14/2018 21:11
n-Propyl benzene	ND	0.0050	1	03/14/2018 21:11
Styrene	ND	0.0050	1	03/14/2018 21:11
1,1,1,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 21:11
1,1,2,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 21:11
Tetrachloroethene	ND	0.0050	1	03/14/2018 21:11
Toluene	ND	0.0050	1	03/14/2018 21:11
1,2,3-Trichlorobenzene	ND	0.0050	1	03/14/2018 21:11
1,2,4-Trichlorobenzene	ND	0.0050	1	03/14/2018 21:11
1,1,1-Trichloroethane	ND	0.0050	1	03/14/2018 21:11
1,1,2-Trichloroethane	ND	0.0050	1	03/14/2018 21:11
Trichloroethene	ND	0.0050	1	03/14/2018 21:11
Trichlorofluoromethane	ND	0.0050	1	03/14/2018 21:11
1,2,3-Trichloropropane	ND	0.0050	1	03/14/2018 21:11
1,2,4-Trimethylbenzene	ND	0.0050	1	03/14/2018 21:11
1,3,5-Trimethylbenzene	ND	0.0050	1	03/14/2018 21:11
Vinyl Chloride	ND	0.0050	1	03/14/2018 21:11
Xylenes, Total	ND	0.0050	1	03/14/2018 21:11

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-6,7,8 COMP	**1803578-005A**	**Soil**	**03/08/2018 09:22**	**GC10 03141822.D**	**154563**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	94	82-136		03/14/2018 21:11
Toluene-d8	124	92-139		03/14/2018 21:11
4-BFB	93	82-135		03/14/2018 21:11
Benzene-d6	89	55-122		03/14/2018 21:11
Ethylbenzene-d10	105	58-141		03/14/2018 21:11
1,2-DCB-d4	75	51-107		03/14/2018 21:11

Analyst(s): KF

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9,10,11,12 COMP	1803578-006A	Soil	03/08/2018 10:14	GC10 03141823.D	154563

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	03/14/2018 21:50
tert-Amyl methyl ether (TAME)	ND	0.0050	1	03/14/2018 21:50
Benzene	ND	0.0050	1	03/14/2018 21:50
Bromobenzene	ND	0.0050	1	03/14/2018 21:50
Bromochloromethane	ND	0.0050	1	03/14/2018 21:50
Bromodichloromethane	ND	0.0050	1	03/14/2018 21:50
Bromoform	ND	0.0050	1	03/14/2018 21:50
Bromomethane	ND	0.0050	1	03/14/2018 21:50
2-Butanone (MEK)	ND	0.020	1	03/14/2018 21:50
t-Butyl alcohol (TBA)	ND	0.050	1	03/14/2018 21:50
n-Butyl benzene	ND	0.0050	1	03/14/2018 21:50
sec-Butyl benzene	ND	0.0050	1	03/14/2018 21:50
tert-Butyl benzene	ND	0.0050	1	03/14/2018 21:50
Carbon Disulfide	ND	0.0050	1	03/14/2018 21:50
Carbon Tetrachloride	ND	0.0050	1	03/14/2018 21:50
Chlorobenzene	ND	0.0050	1	03/14/2018 21:50
Chloroethane	ND	0.0050	1	03/14/2018 21:50
Chloroform	ND	0.0050	1	03/14/2018 21:50
Chloromethane	ND	0.0050	1	03/14/2018 21:50
2-Chlorotoluene	ND	0.0050	1	03/14/2018 21:50
4-Chlorotoluene	ND	0.0050	1	03/14/2018 21:50
Dibromochloromethane	ND	0.0050	1	03/14/2018 21:50
1,2-Dibromo-3-chloropropane	ND	0.0040	1	03/14/2018 21:50
1,2-Dibromoethane (EDB)	ND	0.0040	1	03/14/2018 21:50
Dibromomethane	ND	0.0050	1	03/14/2018 21:50
1,2-Dichlorobenzene	ND	0.0050	1	03/14/2018 21:50
1,3-Dichlorobenzene	ND	0.0050	1	03/14/2018 21:50
1,4-Dichlorobenzene	ND	0.0050	1	03/14/2018 21:50
Dichlorodifluoromethane	ND	0.0050	1	03/14/2018 21:50
1,1-Dichloroethane	ND	0.0050	1	03/14/2018 21:50
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	03/14/2018 21:50
1,1-Dichloroethene	ND	0.0050	1	03/14/2018 21:50
cis-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 21:50
trans-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 21:50
1,2-Dichloropropane	ND	0.0050	1	03/14/2018 21:50
1,3-Dichloropropane	ND	0.0050	1	03/14/2018 21:50
2,2-Dichloropropane	ND	0.0050	1	03/14/2018 21:50

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9,10,11,12 COMP	1803578-006A	Soil	03/08/2018 10:14	GC10 03141823.D	154563

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	03/14/2018 21:50
cis-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 21:50
trans-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 21:50
Diisopropyl ether (DIPE)	ND	0.0050	1	03/14/2018 21:50
Ethylbenzene	ND	0.0050	1	03/14/2018 21:50
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	03/14/2018 21:50
Freon 113	ND	0.0050	1	03/14/2018 21:50
Hexachlorobutadiene	ND	0.0050	1	03/14/2018 21:50
Hexachloroethane	ND	0.0050	1	03/14/2018 21:50
2-Hexanone	ND	0.0050	1	03/14/2018 21:50
Isopropylbenzene	ND	0.0050	1	03/14/2018 21:50
4-Isopropyl toluene	ND	0.0050	1	03/14/2018 21:50
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	03/14/2018 21:50
Methylene chloride	ND	0.0050	1	03/14/2018 21:50
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	03/14/2018 21:50
Naphthalene	ND	0.0050	1	03/14/2018 21:50
n-Propyl benzene	ND	0.0050	1	03/14/2018 21:50
Styrene	ND	0.0050	1	03/14/2018 21:50
1,1,1,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 21:50
1,1,2,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 21:50
Tetrachloroethene	ND	0.0050	1	03/14/2018 21:50
Toluene	ND	0.0050	1	03/14/2018 21:50
1,2,3-Trichlorobenzene	ND	0.0050	1	03/14/2018 21:50
1,2,4-Trichlorobenzene	ND	0.0050	1	03/14/2018 21:50
1,1,1-Trichloroethane	ND	0.0050	1	03/14/2018 21:50
1,1,2-Trichloroethane	ND	0.0050	1	03/14/2018 21:50
Trichloroethene	ND	0.0050	1	03/14/2018 21:50
Trichlorofluoromethane	ND	0.0050	1	03/14/2018 21:50
1,2,3-Trichloropropane	ND	0.0050	1	03/14/2018 21:50
1,2,4-Trimethylbenzene	ND	0.0050	1	03/14/2018 21:50
1,3,5-Trimethylbenzene	ND	0.0050	1	03/14/2018 21:50
Vinyl Chloride	ND	0.0050	1	03/14/2018 21:50
Xylenes, Total	ND	0.0050	1	03/14/2018 21:50

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9,10,11,12 COMP	1803578-006A	Soil	03/08/2018 10:14	GC10 03141823.D	154563

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	94	82-136		03/14/2018 21:50
Toluene-d8	123	92-139		03/14/2018 21:50
4-BFB	87	82-135		03/14/2018 21:50
Benzene-d6	92	55-122		03/14/2018 21:50
Ethylbenzene-d10	108	58-141		03/14/2018 21:50
1,2-DCB-d4	79	51-107		03/14/2018 21:50

Analyst(s): KF

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-13,14,15 COMP	1803578-009A	Soil	03/08/2018 09:26	GC10 03141809.D	154563

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	03/14/2018 12:32
tert-Amyl methyl ether (TAME)	ND	0.0050	1	03/14/2018 12:32
Benzene	ND	0.0050	1	03/14/2018 12:32
Bromobenzene	ND	0.0050	1	03/14/2018 12:32
Bromochloromethane	ND	0.0050	1	03/14/2018 12:32
Bromodichloromethane	ND	0.0050	1	03/14/2018 12:32
Bromoform	ND	0.0050	1	03/14/2018 12:32
Bromomethane	ND	0.0050	1	03/14/2018 12:32
2-Butanone (MEK)	ND	0.020	1	03/14/2018 12:32
t-Butyl alcohol (TBA)	ND	0.050	1	03/14/2018 12:32
n-Butyl benzene	ND	0.0050	1	03/14/2018 12:32
sec-Butyl benzene	ND	0.0050	1	03/14/2018 12:32
tert-Butyl benzene	ND	0.0050	1	03/14/2018 12:32
Carbon Disulfide	ND	0.0050	1	03/14/2018 12:32
Carbon Tetrachloride	ND	0.0050	1	03/14/2018 12:32
Chlorobenzene	ND	0.0050	1	03/14/2018 12:32
Chloroethane	ND	0.0050	1	03/14/2018 12:32
Chloroform	ND	0.0050	1	03/14/2018 12:32
Chloromethane	ND	0.0050	1	03/14/2018 12:32
2-Chlorotoluene	ND	0.0050	1	03/14/2018 12:32
4-Chlorotoluene	ND	0.0050	1	03/14/2018 12:32
Dibromochloromethane	ND	0.0050	1	03/14/2018 12:32
1,2-Dibromo-3-chloropropane	ND	0.0040	1	03/14/2018 12:32
1,2-Dibromoethane (EDB)	ND	0.0040	1	03/14/2018 12:32
Dibromomethane	ND	0.0050	1	03/14/2018 12:32
1,2-Dichlorobenzene	ND	0.0050	1	03/14/2018 12:32
1,3-Dichlorobenzene	ND	0.0050	1	03/14/2018 12:32
1,4-Dichlorobenzene	ND	0.0050	1	03/14/2018 12:32
Dichlorodifluoromethane	ND	0.0050	1	03/14/2018 12:32
1,1-Dichloroethane	ND	0.0050	1	03/14/2018 12:32
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	03/14/2018 12:32
1,1-Dichloroethene	ND	0.0050	1	03/14/2018 12:32
cis-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 12:32
trans-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 12:32
1,2-Dichloropropane	ND	0.0050	1	03/14/2018 12:32
1,3-Dichloropropane	ND	0.0050	1	03/14/2018 12:32
2,2-Dichloropropane	ND	0.0050	1	03/14/2018 12:32

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-13,14,15 COMP	1803578-009A	Soil	03/08/2018 09:26	GC10 03141809.D	154563

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	03/14/2018 12:32
cis-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 12:32
trans-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 12:32
Diisopropyl ether (DIPE)	ND	0.0050	1	03/14/2018 12:32
Ethylbenzene	ND	0.0050	1	03/14/2018 12:32
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	03/14/2018 12:32
Freon 113	ND	0.0050	1	03/14/2018 12:32
Hexachlorobutadiene	ND	0.0050	1	03/14/2018 12:32
Hexachloroethane	ND	0.0050	1	03/14/2018 12:32
2-Hexanone	ND	0.0050	1	03/14/2018 12:32
Isopropylbenzene	ND	0.0050	1	03/14/2018 12:32
4-Isopropyl toluene	ND	0.0050	1	03/14/2018 12:32
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	03/14/2018 12:32
Methylene chloride	ND	0.0050	1	03/14/2018 12:32
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	03/14/2018 12:32
Naphthalene	ND	0.0050	1	03/14/2018 12:32
n-Propyl benzene	ND	0.0050	1	03/14/2018 12:32
Styrene	ND	0.0050	1	03/14/2018 12:32
1,1,1,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 12:32
1,1,2,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 12:32
Tetrachloroethene	ND	0.0050	1	03/14/2018 12:32
Toluene	ND	0.0050	1	03/14/2018 12:32
1,2,3-Trichlorobenzene	ND	0.0050	1	03/14/2018 12:32
1,2,4-Trichlorobenzene	ND	0.0050	1	03/14/2018 12:32
1,1,1-Trichloroethane	ND	0.0050	1	03/14/2018 12:32
1,1,2-Trichloroethane	ND	0.0050	1	03/14/2018 12:32
Trichloroethene	ND	0.0050	1	03/14/2018 12:32
Trichlorofluoromethane	ND	0.0050	1	03/14/2018 12:32
1,2,3-Trichloropropane	ND	0.0050	1	03/14/2018 12:32
1,2,4-Trimethylbenzene	ND	0.0050	1	03/14/2018 12:32
1,3,5-Trimethylbenzene	ND	0.0050	1	03/14/2018 12:32
Vinyl Chloride	ND	0.0050	1	03/14/2018 12:32
Xylenes, Total	ND	0.0050	1	03/14/2018 12:32

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-13,14,15 COMP	**1803578-009A**	**Soil**	**03/08/2018 09:26**	**GC10 03141809.D**	**154563**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	96	82-136		03/14/2018 12:32
Toluene-d8	124	92-139		03/14/2018 12:32
4-BFB	96	82-135		03/14/2018 12:32
Benzene-d6	97	55-122		03/14/2018 12:32
Ethylbenzene-d10	114	58-141		03/14/2018 12:32
1,2-DCB-d4	82	51-107		03/14/2018 12:32

Analyst(s): KF

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-16,17,18 COMP	1803578-010A	Soil	03/08/2018 09:55	GC10 03141815.D	154563

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	03/14/2018 16:31
tert-Amyl methyl ether (TAME)	ND	0.0050	1	03/14/2018 16:31
Benzene	ND	0.0050	1	03/14/2018 16:31
Bromobenzene	ND	0.0050	1	03/14/2018 16:31
Bromochloromethane	ND	0.0050	1	03/14/2018 16:31
Bromodichloromethane	ND	0.0050	1	03/14/2018 16:31
Bromoform	ND	0.0050	1	03/14/2018 16:31
Bromomethane	ND	0.0050	1	03/14/2018 16:31
2-Butanone (MEK)	ND	0.020	1	03/14/2018 16:31
t-Butyl alcohol (TBA)	ND	0.050	1	03/14/2018 16:31
n-Butyl benzene	ND	0.0050	1	03/14/2018 16:31
sec-Butyl benzene	ND	0.0050	1	03/14/2018 16:31
tert-Butyl benzene	ND	0.0050	1	03/14/2018 16:31
Carbon Disulfide	ND	0.0050	1	03/14/2018 16:31
Carbon Tetrachloride	ND	0.0050	1	03/14/2018 16:31
Chlorobenzene	ND	0.0050	1	03/14/2018 16:31
Chloroethane	ND	0.0050	1	03/14/2018 16:31
Chloroform	ND	0.0050	1	03/14/2018 16:31
Chloromethane	ND	0.0050	1	03/14/2018 16:31
2-Chlorotoluene	ND	0.0050	1	03/14/2018 16:31
4-Chlorotoluene	ND	0.0050	1	03/14/2018 16:31
Dibromochloromethane	ND	0.0050	1	03/14/2018 16:31
1,2-Dibromo-3-chloropropane	ND	0.0040	1	03/14/2018 16:31
1,2-Dibromoethane (EDB)	ND	0.0040	1	03/14/2018 16:31
Dibromomethane	ND	0.0050	1	03/14/2018 16:31
1,2-Dichlorobenzene	ND	0.0050	1	03/14/2018 16:31
1,3-Dichlorobenzene	ND	0.0050	1	03/14/2018 16:31
1,4-Dichlorobenzene	ND	0.0050	1	03/14/2018 16:31
Dichlorodifluoromethane	ND	0.0050	1	03/14/2018 16:31
1,1-Dichloroethane	ND	0.0050	1	03/14/2018 16:31
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	03/14/2018 16:31
1,1-Dichloroethene	ND	0.0050	1	03/14/2018 16:31
cis-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 16:31
trans-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 16:31
1,2-Dichloropropane	ND	0.0050	1	03/14/2018 16:31
1,3-Dichloropropane	ND	0.0050	1	03/14/2018 16:31
2,2-Dichloropropane	ND	0.0050	1	03/14/2018 16:31

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-16,17,18 COMP	**1803578-010A**	**Soil**	**03/08/2018 09:55**	**GC10 03141815.D**	**154563**

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	03/14/2018 16:31
cis-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 16:31
trans-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 16:31
Diisopropyl ether (DIPE)	ND	0.0050	1	03/14/2018 16:31
Ethylbenzene	ND	0.0050	1	03/14/2018 16:31
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	03/14/2018 16:31
Freon 113	ND	0.0050	1	03/14/2018 16:31
Hexachlorobutadiene	ND	0.0050	1	03/14/2018 16:31
Hexachloroethane	ND	0.0050	1	03/14/2018 16:31
2-Hexanone	ND	0.0050	1	03/14/2018 16:31
Isopropylbenzene	ND	0.0050	1	03/14/2018 16:31
4-Isopropyl toluene	ND	0.0050	1	03/14/2018 16:31
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	03/14/2018 16:31
Methylene chloride	ND	0.0050	1	03/14/2018 16:31
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	03/14/2018 16:31
Naphthalene	ND	0.0050	1	03/14/2018 16:31
n-Propyl benzene	ND	0.0050	1	03/14/2018 16:31
Styrene	ND	0.0050	1	03/14/2018 16:31
1,1,1,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 16:31
1,1,2,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 16:31
Tetrachloroethene	ND	0.0050	1	03/14/2018 16:31
Toluene	ND	0.0050	1	03/14/2018 16:31
1,2,3-Trichlorobenzene	ND	0.0050	1	03/14/2018 16:31
1,2,4-Trichlorobenzene	ND	0.0050	1	03/14/2018 16:31
1,1,1-Trichloroethane	ND	0.0050	1	03/14/2018 16:31
1,1,2-Trichloroethane	ND	0.0050	1	03/14/2018 16:31
Trichloroethene	ND	0.0050	1	03/14/2018 16:31
Trichlorofluoromethane	ND	0.0050	1	03/14/2018 16:31
1,2,3-Trichloropropane	ND	0.0050	1	03/14/2018 16:31
1,2,4-Trimethylbenzene	ND	0.0050	1	03/14/2018 16:31
1,3,5-Trimethylbenzene	ND	0.0050	1	03/14/2018 16:31
Vinyl Chloride	ND	0.0050	1	03/14/2018 16:31
Xylenes, Total	ND	0.0050	1	03/14/2018 16:31

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-16,17,18 COMP	**1803578-010A**	**Soil**	**03/08/2018 09:55**	**GC10 03141815.D**	**154563**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	94	82-136		03/14/2018 16:31
Toluene-d8	124	92-139		03/14/2018 16:31
4-BFB	92	82-135		03/14/2018 16:31
Benzene-d6	95	55-122		03/14/2018 16:31
Ethylbenzene-d10	116	58-141		03/14/2018 16:31
1,2-DCB-d4	79	51-107		03/14/2018 16:31

Analyst(s): KF

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-19,20,21,22 COMP	1803578-013A	Soil	03/08/2018 10:59	GC10 03141824.D	154563

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	03/14/2018 22:29
tert-Amyl methyl ether (TAME)	ND	0.0050	1	03/14/2018 22:29
Benzene	ND	0.0050	1	03/14/2018 22:29
Bromobenzene	ND	0.0050	1	03/14/2018 22:29
Bromochloromethane	ND	0.0050	1	03/14/2018 22:29
Bromodichloromethane	ND	0.0050	1	03/14/2018 22:29
Bromoform	ND	0.0050	1	03/14/2018 22:29
Bromomethane	ND	0.0050	1	03/14/2018 22:29
2-Butanone (MEK)	ND	0.020	1	03/14/2018 22:29
t-Butyl alcohol (TBA)	ND	0.050	1	03/14/2018 22:29
n-Butyl benzene	ND	0.0050	1	03/14/2018 22:29
sec-Butyl benzene	ND	0.0050	1	03/14/2018 22:29
tert-Butyl benzene	ND	0.0050	1	03/14/2018 22:29
Carbon Disulfide	ND	0.0050	1	03/14/2018 22:29
Carbon Tetrachloride	ND	0.0050	1	03/14/2018 22:29
Chlorobenzene	ND	0.0050	1	03/14/2018 22:29
Chloroethane	ND	0.0050	1	03/14/2018 22:29
Chloroform	ND	0.0050	1	03/14/2018 22:29
Chloromethane	ND	0.0050	1	03/14/2018 22:29
2-Chlorotoluene	ND	0.0050	1	03/14/2018 22:29
4-Chlorotoluene	ND	0.0050	1	03/14/2018 22:29
Dibromochloromethane	ND	0.0050	1	03/14/2018 22:29
1,2-Dibromo-3-chloropropane	ND	0.0040	1	03/14/2018 22:29
1,2-Dibromoethane (EDB)	ND	0.0040	1	03/14/2018 22:29
Dibromomethane	ND	0.0050	1	03/14/2018 22:29
1,2-Dichlorobenzene	ND	0.0050	1	03/14/2018 22:29
1,3-Dichlorobenzene	ND	0.0050	1	03/14/2018 22:29
1,4-Dichlorobenzene	ND	0.0050	1	03/14/2018 22:29
Dichlorodifluoromethane	ND	0.0050	1	03/14/2018 22:29
1,1-Dichloroethane	ND	0.0050	1	03/14/2018 22:29
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	03/14/2018 22:29
1,1-Dichloroethene	ND	0.0050	1	03/14/2018 22:29
cis-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 22:29
trans-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 22:29
1,2-Dichloropropane	ND	0.0050	1	03/14/2018 22:29
1,3-Dichloropropane	ND	0.0050	1	03/14/2018 22:29
2,2-Dichloropropane	ND	0.0050	1	03/14/2018 22:29

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-19,20,21,22 COMP	1803578-013A	Soil	03/08/2018 10:59	GC10 03141824.D	154563

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	03/14/2018 22:29
cis-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 22:29
trans-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 22:29
Diisopropyl ether (DIPE)	ND	0.0050	1	03/14/2018 22:29
Ethylbenzene	ND	0.0050	1	03/14/2018 22:29
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	03/14/2018 22:29
Freon 113	ND	0.0050	1	03/14/2018 22:29
Hexachlorobutadiene	ND	0.0050	1	03/14/2018 22:29
Hexachloroethane	ND	0.0050	1	03/14/2018 22:29
2-Hexanone	ND	0.0050	1	03/14/2018 22:29
Isopropylbenzene	ND	0.0050	1	03/14/2018 22:29
4-Isopropyl toluene	ND	0.0050	1	03/14/2018 22:29
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	03/14/2018 22:29
Methylene chloride	ND	0.0050	1	03/14/2018 22:29
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	03/14/2018 22:29
Naphthalene	ND	0.0050	1	03/14/2018 22:29
n-Propyl benzene	ND	0.0050	1	03/14/2018 22:29
Styrene	ND	0.0050	1	03/14/2018 22:29
1,1,1,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 22:29
1,1,2,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 22:29
Tetrachloroethene	ND	0.0050	1	03/14/2018 22:29
Toluene	ND	0.0050	1	03/14/2018 22:29
1,2,3-Trichlorobenzene	ND	0.0050	1	03/14/2018 22:29
1,2,4-Trichlorobenzene	ND	0.0050	1	03/14/2018 22:29
1,1,1-Trichloroethane	ND	0.0050	1	03/14/2018 22:29
1,1,2-Trichloroethane	ND	0.0050	1	03/14/2018 22:29
Trichloroethene	ND	0.0050	1	03/14/2018 22:29
Trichlorofluoromethane	ND	0.0050	1	03/14/2018 22:29
1,2,3-Trichloropropane	ND	0.0050	1	03/14/2018 22:29
1,2,4-Trimethylbenzene	ND	0.0050	1	03/14/2018 22:29
1,3,5-Trimethylbenzene	ND	0.0050	1	03/14/2018 22:29
Vinyl Chloride	ND	0.0050	1	03/14/2018 22:29
Xylenes, Total	ND	0.0050	1	03/14/2018 22:29

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-19,20,21,22 COMP	**1803578-013A**	**Soil**	**03/08/2018 10:59**	**GC10 03141824.D**	**154563**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	95	82-136		03/14/2018 22:29
Toluene-d8	124	92-139		03/14/2018 22:29
4-BFB	88	82-135		03/14/2018 22:29
Benzene-d6	97	55-122		03/14/2018 22:29
Ethylbenzene-d10	117	58-141		03/14/2018 22:29
1,2-DCB-d4	83	51-107		03/14/2018 22:29

Analyst(s): KF

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-22,23,24,25 COMP	1803578-014A	Soil	03/09/2018 10:29	GC10 03141825.D	154563

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	03/14/2018 23:08
tert-Amyl methyl ether (TAME)	ND	0.0050	1	03/14/2018 23:08
Benzene	ND	0.0050	1	03/14/2018 23:08
Bromobenzene	ND	0.0050	1	03/14/2018 23:08
Bromochloromethane	ND	0.0050	1	03/14/2018 23:08
Bromodichloromethane	ND	0.0050	1	03/14/2018 23:08
Bromoform	ND	0.0050	1	03/14/2018 23:08
Bromomethane	ND	0.0050	1	03/14/2018 23:08
2-Butanone (MEK)	ND	0.020	1	03/14/2018 23:08
t-Butyl alcohol (TBA)	ND	0.050	1	03/14/2018 23:08
n-Butyl benzene	ND	0.0050	1	03/14/2018 23:08
sec-Butyl benzene	ND	0.0050	1	03/14/2018 23:08
tert-Butyl benzene	ND	0.0050	1	03/14/2018 23:08
Carbon Disulfide	ND	0.0050	1	03/14/2018 23:08
Carbon Tetrachloride	ND	0.0050	1	03/14/2018 23:08
Chlorobenzene	ND	0.0050	1	03/14/2018 23:08
Chloroethane	ND	0.0050	1	03/14/2018 23:08
Chloroform	ND	0.0050	1	03/14/2018 23:08
Chloromethane	ND	0.0050	1	03/14/2018 23:08
2-Chlorotoluene	ND	0.0050	1	03/14/2018 23:08
4-Chlorotoluene	ND	0.0050	1	03/14/2018 23:08
Dibromochloromethane	ND	0.0050	1	03/14/2018 23:08
1,2-Dibromo-3-chloropropane	ND	0.0040	1	03/14/2018 23:08
1,2-Dibromoethane (EDB)	ND	0.0040	1	03/14/2018 23:08
Dibromomethane	ND	0.0050	1	03/14/2018 23:08
1,2-Dichlorobenzene	ND	0.0050	1	03/14/2018 23:08
1,3-Dichlorobenzene	ND	0.0050	1	03/14/2018 23:08
1,4-Dichlorobenzene	ND	0.0050	1	03/14/2018 23:08
Dichlorodifluoromethane	ND	0.0050	1	03/14/2018 23:08
1,1-Dichloroethane	ND	0.0050	1	03/14/2018 23:08
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	03/14/2018 23:08
1,1-Dichloroethene	ND	0.0050	1	03/14/2018 23:08
cis-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 23:08
trans-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 23:08
1,2-Dichloropropane	ND	0.0050	1	03/14/2018 23:08
1,3-Dichloropropane	ND	0.0050	1	03/14/2018 23:08
2,2-Dichloropropane	ND	0.0050	1	03/14/2018 23:08

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-22,23,24,25 COMP	1803578-014A	Soil	03/09/2018 10:29	GC10 03141825.D	154563

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	03/14/2018 23:08
cis-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 23:08
trans-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 23:08
Diisopropyl ether (DIPE)	ND	0.0050	1	03/14/2018 23:08
Ethylbenzene	ND	0.0050	1	03/14/2018 23:08
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	03/14/2018 23:08
Freon 113	ND	0.0050	1	03/14/2018 23:08
Hexachlorobutadiene	ND	0.0050	1	03/14/2018 23:08
Hexachloroethane	ND	0.0050	1	03/14/2018 23:08
2-Hexanone	ND	0.0050	1	03/14/2018 23:08
Isopropylbenzene	ND	0.0050	1	03/14/2018 23:08
4-Isopropyl toluene	ND	0.0050	1	03/14/2018 23:08
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	03/14/2018 23:08
Methylene chloride	ND	0.0050	1	03/14/2018 23:08
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	03/14/2018 23:08
Naphthalene	ND	0.0050	1	03/14/2018 23:08
n-Propyl benzene	ND	0.0050	1	03/14/2018 23:08
Styrene	ND	0.0050	1	03/14/2018 23:08
1,1,1,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 23:08
1,1,2,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 23:08
Tetrachloroethene	ND	0.0050	1	03/14/2018 23:08
Toluene	ND	0.0050	1	03/14/2018 23:08
1,2,3-Trichlorobenzene	ND	0.0050	1	03/14/2018 23:08
1,2,4-Trichlorobenzene	ND	0.0050	1	03/14/2018 23:08
1,1,1-Trichloroethane	ND	0.0050	1	03/14/2018 23:08
1,1,2-Trichloroethane	ND	0.0050	1	03/14/2018 23:08
Trichloroethene	ND	0.0050	1	03/14/2018 23:08
Trichlorofluoromethane	ND	0.0050	1	03/14/2018 23:08
1,2,3-Trichloropropane	ND	0.0050	1	03/14/2018 23:08
1,2,4-Trimethylbenzene	ND	0.0050	1	03/14/2018 23:08
1,3,5-Trimethylbenzene	ND	0.0050	1	03/14/2018 23:08
Vinyl Chloride	ND	0.0050	1	03/14/2018 23:08
Xylenes, Total	ND	0.0050	1	03/14/2018 23:08

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-22,23,24,25 COMP	1803578-014A	Soil	03/09/2018 10:29	GC10 03141825.D	154563

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	94	82-136		03/14/2018 23:08
Toluene-d8	123	92-139		03/14/2018 23:08
4-BFB	90	82-135		03/14/2018 23:08
Benzene-d6	95	55-122		03/14/2018 23:08
Ethylbenzene-d10	114	58-141		03/14/2018 23:08
1,2-DCB-d4	81	51-107		03/14/2018 23:08

Analyst(s): KF

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-25,26,27,28 COMP	1803578-017A	Soil	03/09/2018 07:42	GC10 03141816.D	154563

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	03/14/2018 17:11
tert-Amyl methyl ether (TAME)	ND	0.0050	1	03/14/2018 17:11
Benzene	ND	0.0050	1	03/14/2018 17:11
Bromobenzene	ND	0.0050	1	03/14/2018 17:11
Bromochloromethane	ND	0.0050	1	03/14/2018 17:11
Bromodichloromethane	ND	0.0050	1	03/14/2018 17:11
Bromoform	ND	0.0050	1	03/14/2018 17:11
Bromomethane	ND	0.0050	1	03/14/2018 17:11
2-Butanone (MEK)	ND	0.020	1	03/14/2018 17:11
t-Butyl alcohol (TBA)	ND	0.050	1	03/14/2018 17:11
n-Butyl benzene	ND	0.0050	1	03/14/2018 17:11
sec-Butyl benzene	ND	0.0050	1	03/14/2018 17:11
tert-Butyl benzene	ND	0.0050	1	03/14/2018 17:11
Carbon Disulfide	ND	0.0050	1	03/14/2018 17:11
Carbon Tetrachloride	ND	0.0050	1	03/14/2018 17:11
Chlorobenzene	ND	0.0050	1	03/14/2018 17:11
Chloroethane	ND	0.0050	1	03/14/2018 17:11
Chloroform	ND	0.0050	1	03/14/2018 17:11
Chloromethane	ND	0.0050	1	03/14/2018 17:11
2-Chlorotoluene	ND	0.0050	1	03/14/2018 17:11
4-Chlorotoluene	ND	0.0050	1	03/14/2018 17:11
Dibromochloromethane	ND	0.0050	1	03/14/2018 17:11
1,2-Dibromo-3-chloropropane	ND	0.0040	1	03/14/2018 17:11
1,2-Dibromoethane (EDB)	ND	0.0040	1	03/14/2018 17:11
Dibromomethane	ND	0.0050	1	03/14/2018 17:11
1,2-Dichlorobenzene	ND	0.0050	1	03/14/2018 17:11
1,3-Dichlorobenzene	ND	0.0050	1	03/14/2018 17:11
1,4-Dichlorobenzene	ND	0.0050	1	03/14/2018 17:11
Dichlorodifluoromethane	ND	0.0050	1	03/14/2018 17:11
1,1-Dichloroethane	ND	0.0050	1	03/14/2018 17:11
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	03/14/2018 17:11
1,1-Dichloroethene	ND	0.0050	1	03/14/2018 17:11
cis-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 17:11
trans-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 17:11
1,2-Dichloropropane	ND	0.0050	1	03/14/2018 17:11
1,3-Dichloropropane	ND	0.0050	1	03/14/2018 17:11
2,2-Dichloropropane	ND	0.0050	1	03/14/2018 17:11

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-25,26,27,28 COMP	1803578-017A	Soil	03/09/2018 07:42	GC10 03141816.D	154563

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	03/14/2018 17:11
cis-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 17:11
trans-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 17:11
Diisopropyl ether (DIPE)	ND	0.0050	1	03/14/2018 17:11
Ethylbenzene	ND	0.0050	1	03/14/2018 17:11
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	03/14/2018 17:11
Freon 113	ND	0.0050	1	03/14/2018 17:11
Hexachlorobutadiene	ND	0.0050	1	03/14/2018 17:11
Hexachloroethane	ND	0.0050	1	03/14/2018 17:11
2-Hexanone	ND	0.0050	1	03/14/2018 17:11
Isopropylbenzene	ND	0.0050	1	03/14/2018 17:11
4-Isopropyl toluene	ND	0.0050	1	03/14/2018 17:11
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	03/14/2018 17:11
Methylene chloride	ND	0.0050	1	03/14/2018 17:11
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	03/14/2018 17:11
Naphthalene	ND	0.0050	1	03/14/2018 17:11
n-Propyl benzene	ND	0.0050	1	03/14/2018 17:11
Styrene	ND	0.0050	1	03/14/2018 17:11
1,1,1,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 17:11
1,1,2,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 17:11
Tetrachloroethene	ND	0.0050	1	03/14/2018 17:11
Toluene	ND	0.0050	1	03/14/2018 17:11
1,2,3-Trichlorobenzene	ND	0.0050	1	03/14/2018 17:11
1,2,4-Trichlorobenzene	ND	0.0050	1	03/14/2018 17:11
1,1,1-Trichloroethane	ND	0.0050	1	03/14/2018 17:11
1,1,2-Trichloroethane	ND	0.0050	1	03/14/2018 17:11
Trichloroethene	ND	0.0050	1	03/14/2018 17:11
Trichlorofluoromethane	ND	0.0050	1	03/14/2018 17:11
1,2,3-Trichloropropane	ND	0.0050	1	03/14/2018 17:11
1,2,4-Trimethylbenzene	ND	0.0050	1	03/14/2018 17:11
1,3,5-Trimethylbenzene	ND	0.0050	1	03/14/2018 17:11
Vinyl Chloride	ND	0.0050	1	03/14/2018 17:11
Xylenes, Total	ND	0.0050	1	03/14/2018 17:11

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-25,26,27,28 COMP	**1803578-017A**	**Soil**	**03/09/2018 07:42**	**GC10 03141816.D**	**154563**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	94	82-136		03/14/2018 17:11
Toluene-d8	121	92-139		03/14/2018 17:11
4-BFB	90	82-135		03/14/2018 17:11
Benzene-d6	90	55-122		03/14/2018 17:11
Ethylbenzene-d10	106	58-141		03/14/2018 17:11
1,2-DCB-d4	76	51-107		03/14/2018 17:11

Analyst(s): KF

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-28,29,30,31 COMP	1803578-018A	Soil	03/09/2018 07:52	GC10 03141826.D	154563

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	03/14/2018 23:47
tert-Amyl methyl ether (TAME)	ND	0.0050	1	03/14/2018 23:47
Benzene	ND	0.0050	1	03/14/2018 23:47
Bromobenzene	ND	0.0050	1	03/14/2018 23:47
Bromochloromethane	ND	0.0050	1	03/14/2018 23:47
Bromodichloromethane	ND	0.0050	1	03/14/2018 23:47
Bromoform	ND	0.0050	1	03/14/2018 23:47
Bromomethane	ND	0.0050	1	03/14/2018 23:47
2-Butanone (MEK)	ND	0.020	1	03/14/2018 23:47
t-Butyl alcohol (TBA)	ND	0.050	1	03/14/2018 23:47
n-Butyl benzene	ND	0.0050	1	03/14/2018 23:47
sec-Butyl benzene	ND	0.0050	1	03/14/2018 23:47
tert-Butyl benzene	ND	0.0050	1	03/14/2018 23:47
Carbon Disulfide	ND	0.0050	1	03/14/2018 23:47
Carbon Tetrachloride	ND	0.0050	1	03/14/2018 23:47
Chlorobenzene	ND	0.0050	1	03/14/2018 23:47
Chloroethane	ND	0.0050	1	03/14/2018 23:47
Chloroform	ND	0.0050	1	03/14/2018 23:47
Chloromethane	ND	0.0050	1	03/14/2018 23:47
2-Chlorotoluene	ND	0.0050	1	03/14/2018 23:47
4-Chlorotoluene	ND	0.0050	1	03/14/2018 23:47
Dibromochloromethane	ND	0.0050	1	03/14/2018 23:47
1,2-Dibromo-3-chloropropane	ND	0.0040	1	03/14/2018 23:47
1,2-Dibromoethane (EDB)	ND	0.0040	1	03/14/2018 23:47
Dibromomethane	ND	0.0050	1	03/14/2018 23:47
1,2-Dichlorobenzene	ND	0.0050	1	03/14/2018 23:47
1,3-Dichlorobenzene	ND	0.0050	1	03/14/2018 23:47
1,4-Dichlorobenzene	ND	0.0050	1	03/14/2018 23:47
Dichlorodifluoromethane	ND	0.0050	1	03/14/2018 23:47
1,1-Dichloroethane	ND	0.0050	1	03/14/2018 23:47
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	03/14/2018 23:47
1,1-Dichloroethene	ND	0.0050	1	03/14/2018 23:47
cis-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 23:47
trans-1,2-Dichloroethene	ND	0.0050	1	03/14/2018 23:47
1,2-Dichloropropane	ND	0.0050	1	03/14/2018 23:47
1,3-Dichloropropane	ND	0.0050	1	03/14/2018 23:47
2,2-Dichloropropane	ND	0.0050	1	03/14/2018 23:47

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-28,29,30,31 COMP	1803578-018A	Soil	03/09/2018 07:52	GC10 03141826.D	154563

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	03/14/2018 23:47
cis-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 23:47
trans-1,3-Dichloropropene	ND	0.0050	1	03/14/2018 23:47
Diisopropyl ether (DIPE)	ND	0.0050	1	03/14/2018 23:47
Ethylbenzene	ND	0.0050	1	03/14/2018 23:47
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	03/14/2018 23:47
Freon 113	ND	0.0050	1	03/14/2018 23:47
Hexachlorobutadiene	ND	0.0050	1	03/14/2018 23:47
Hexachloroethane	ND	0.0050	1	03/14/2018 23:47
2-Hexanone	ND	0.0050	1	03/14/2018 23:47
Isopropylbenzene	ND	0.0050	1	03/14/2018 23:47
4-Isopropyl toluene	ND	0.0050	1	03/14/2018 23:47
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	03/14/2018 23:47
Methylene chloride	ND	0.0050	1	03/14/2018 23:47
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	03/14/2018 23:47
Naphthalene	ND	0.0050	1	03/14/2018 23:47
n-Propyl benzene	ND	0.0050	1	03/14/2018 23:47
Styrene	ND	0.0050	1	03/14/2018 23:47
1,1,1,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 23:47
1,1,2,2-Tetrachloroethane	ND	0.0050	1	03/14/2018 23:47
Tetrachloroethene	ND	0.0050	1	03/14/2018 23:47
Toluene	ND	0.0050	1	03/14/2018 23:47
1,2,3-Trichlorobenzene	ND	0.0050	1	03/14/2018 23:47
1,2,4-Trichlorobenzene	ND	0.0050	1	03/14/2018 23:47
1,1,1-Trichloroethane	ND	0.0050	1	03/14/2018 23:47
1,1,2-Trichloroethane	ND	0.0050	1	03/14/2018 23:47
Trichloroethene	ND	0.0050	1	03/14/2018 23:47
Trichlorofluoromethane	ND	0.0050	1	03/14/2018 23:47
1,2,3-Trichloropropane	ND	0.0050	1	03/14/2018 23:47
1,2,4-Trimethylbenzene	ND	0.0050	1	03/14/2018 23:47
1,3,5-Trimethylbenzene	ND	0.0050	1	03/14/2018 23:47
Vinyl Chloride	ND	0.0050	1	03/14/2018 23:47
Xylenes, Total	ND	0.0050	1	03/14/2018 23:47

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-28,29,30,31 COMP	**1803578-018A**	**Soil**	**03/09/2018 07:52**	**GC10 03141826.D**	**154563**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
Dibromofluoromethane	96	82-136		03/14/2018 23:47
Toluene-d8	122	92-139		03/14/2018 23:47
4-BFB	89	82-135		03/14/2018 23:47
Benzene-d6	87	55-122		03/14/2018 23:47
Ethylbenzene-d10	102	58-141		03/14/2018 23:47
1,2-DCB-d4	77	51-107		03/14/2018 23:47

Analyst(s): KF

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

TPH(g)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-1 & 2 COMP	1803578-001A	Soil	03/09/2018 08:20	GC10 03141827.D	154563

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	03/15/2018 00:26

Surrogates	REC (%)	Limits	
Dibromofluoromethane	93	82-136	03/15/2018 00:26
Benzene-D6	89	55-122	03/15/2018 00:26

Analyst(s): KF

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-3,4 & 5 COMP	1803578-002A	Soil	03/09/2018 08:56	GC10 03141821.D	154563

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	03/14/2018 20:32

Surrogates	REC (%)	Limits	
Dibromofluoromethane	92	82-136	03/14/2018 20:32
Benzene-D6	95	55-122	03/14/2018 20:32

Analyst(s): KF

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-6,7,8 COMP	1803578-005A	Soil	03/08/2018 09:22	GC10 03141822.D	154563

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	03/14/2018 21:11

Surrogates	REC (%)	Limits	
Dibromofluoromethane	92	82-136	03/14/2018 21:11
Benzene-D6	91	55-122	03/14/2018 21:11

Analyst(s): KF

(Cont.)

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

TPH(g)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-9,10,11,12 COMP	1803578-006A	Soil	03/08/2018 10:14	GC10 03141823.D	154563

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	03/14/2018 21:50

Surrogates	REC (%)	Limits	
Dibromofluoromethane	93	82-136	03/14/2018 21:50
Benzene-D6	92	55-122	03/14/2018 21:50

Analyst(s): KF

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-13,14,15 COMP	1803578-009A	Soil	03/08/2018 09:26	GC10 03141809.D	154563

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	03/14/2018 12:32

Surrogates	REC (%)	Limits	
Dibromofluoromethane	94	82-136	03/14/2018 12:32
Benzene-D6	99	55-122	03/14/2018 12:32

Analyst(s): KF

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-16,17,18 COMP	1803578-010A	Soil	03/08/2018 09:55	GC10 03141815.D	154563

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	03/14/2018 16:31

Surrogates	REC (%)	Limits	
Dibromofluoromethane	93	82-136	03/14/2018 16:31
Benzene-D6	96	55-122	03/14/2018 16:31

Analyst(s): KF

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

TPH(g)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-19,20,21,22 COMP	1803578-013A	Soil	03/08/2018 10:59	GC10 03141824.D	154563

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	03/14/2018 22:29

Surrogates	REC (%)	Limits	
Dibromofluoromethane	94	82-136	03/14/2018 22:29
Benzene-D6	98	55-122	03/14/2018 22:29

Analyst(s): KF

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-22,23,24,25 COMP	1803578-014A	Soil	03/09/2018 10:29	GC10 03141825.D	154563

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	03/14/2018 23:08

Surrogates	REC (%)	Limits	
Dibromofluoromethane	93	82-136	03/14/2018 23:08
Benzene-D6	95	55-122	03/14/2018 23:08

Analyst(s): KF

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-25,26,27,28 COMP	1803578-017A	Soil	03/09/2018 07:42	GC10 03141816.D	154563

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	03/14/2018 17:11

Surrogates	REC (%)	Limits	
Dibromofluoromethane	93	82-136	03/14/2018 17:11
Benzene-D6	89	55-122	03/14/2018 17:11

Analyst(s): KF

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	SW5030B
Date Prepared:	3/13/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/kg

TPH(g)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-28,29,30,31 COMP	**1803578-018A**	**Soil**	**03/09/2018 07:52**	**GC10 03141826.D**	**154563**

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	03/14/2018 23:47

Surrogates	REC (%)	Limits	
Dibromofluoromethane	95	82-136	03/14/2018 23:47
Benzene-D6	87	55-122	03/14/2018 23:47

Analyst(s): KF

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/12/18	**BatchID:**	154563
Date Analyzed:	3/13/18 - 3/14/18	**Extraction Method:**	SW5030B
Instrument:	GC10, GC16	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154563 1803625-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acetone	ND	0.913	0.10	1	-	91	48-156
tert-Amyl methyl ether (TAME)	ND	0.0359	0.0050	0.050	-	72	56-115
Benzene	ND	0.0413	0.0050	0.050	-	83	63-131
Bromobenzene	ND	0.0431	0.0050	0.050	-	86	66-127
Bromochloromethane	ND	0.0391	0.0050	0.050	-	78	64-124
Bromodichloromethane	ND	0.0391	0.0050	0.050	-	78	64-120
Bromoform	ND	0.0353	0.0050	0.050	-	71	48-92
Bromomethane	ND	0.0379	0.0050	0.050	-	76	25-163
2-Butanone (MEK)	ND	0.174	0.020	0.20	-	87	51-133
t-Butyl alcohol (TBA)	ND	0.163	0.050	0.20	-	81	52-129
n-Butyl benzene	ND	0.0581	0.0050	0.050	-	116	83-200
sec-Butyl benzene	ND	0.0575	0.0050	0.050	-	115	81-199
tert-Butyl benzene	ND	0.0555	0.0050	0.050	-	111	79-178
Carbon Disulfide	ND	0.0391	0.0050	0.050	-	78	64-136
Carbon Tetrachloride	ND	0.0424	0.0050	0.050	-	85	66-140
Chlorobenzene	ND	0.0413	0.0050	0.050	-	83	73-116
Chloroethane	ND	0.0344	0.0050	0.050	-	69	35-147
Chloroform	ND	0.0407	0.0050	0.050	-	81	65-130
Chloromethane	ND	0.0293	0.0050	0.050	-	59	30-137
2-Chlorotoluene	ND	0.0516	0.0050	0.050	-	103	75-152
4-Chlorotoluene	ND	0.0493	0.0050	0.050	-	99	71-148
Dibromochloromethane	ND	0.0375	0.0050	0.050	-	75	61-106
1,2-Dibromo-3-chloropropane	ND	0.0116	0.0040	0.020	-	58	36-120
1,2-Dibromoethane (EDB)	ND	0.0391	0.0040	0.050	-	78	67-118
Dibromomethane	ND	0.0381	0.0050	0.050	-	76	61-116
1,2-Dichlorobenzene	ND	0.0357	0.0050	0.050	-	71	59-106
1,3-Dichlorobenzene	ND	0.0416	0.0050	0.050	-	83	75-129
1,4-Dichlorobenzene	ND	0.0398	0.0050	0.050	-	80	66-127
Dichlorodifluoromethane	ND	0.0132	0.0050	0.050	-	26	13-74
1,1-Dichloroethane	ND	0.0415	0.0050	0.050	-	83	65-134
1,2-Dichloroethane (1,2-DCA)	ND	0.0392	0.0040	0.050	-	78	57-131
1,1-Dichloroethene	ND	0.0410	0.0050	0.050	-	82	62-127
cis-1,2-Dichloroethene	ND	0.0416	0.0050	0.050	-	83	66-130
trans-1,2-Dichloroethene	ND	0.0417	0.0050	0.050	-	83	60-131
1,2-Dichloropropane	ND	0.0419	0.0050	0.050	-	84	63-127
1,3-Dichloropropane	ND	0.0402	0.0050	0.050	-	80	68-124
2,2-Dichloropropane	ND	0.0468	0.0050	0.050	-	94	63-150

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/12/18	**BatchID:**	154563
Date Analyzed:	3/13/18 - 3/14/18	**Extraction Method:**	SW5030B
Instrument:	GC10, GC16	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154563 1803625-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
1,1-Dichloropropene	ND	0.0431	0.0050	0.050	-	86	67-134
cis-1,3-Dichloropropene	ND	0.0444	0.0050	0.050	-	89	65-138
trans-1,3-Dichloropropene	ND	0.0444	0.0050	0.050	-	89	66-124
Diisopropyl ether (DIPE)	ND	0.0405	0.0050	0.050	-	81	58-129
Ethylbenzene	ND	0.0438	0.0050	0.050	-	88	73-145
Ethyl tert-butyl ether (ETBE)	ND	0.0396	0.0050	0.050	-	79	62-125
Freon 113	ND	0.0367	0.0050	0.050	-	73	55-116
Hexachlorobutadiene	ND	0.0517	0.0050	0.050	-	103	75-178
Hexachloroethane	ND	0.0535	0.0050	0.050	-	107	75-152
2-Hexanone	ND	0.0406	0.0050	0.050	-	81	41-113
Isopropylbenzene	ND	0.0475	0.0050	0.050	-	95	67-172
4-Isopropyl toluene	ND	0.0556	0.0050	0.050	-	111	88-171
Methyl-t-butyl ether (MTBE)	ND	0.0382	0.0050	0.050	-	76	58-122
Methylene chloride	ND	0.0408	0.0050	0.050	-	82	57-140
4-Methyl-2-pentanone (MIBK)	ND	0.0357	0.0050	0.050	-	71	42-117
Naphthalene	ND	0.0240	0.0050	0.050	-	48	29-65
n-Propyl benzene	ND	0.0583	0.0050	0.050	-	117	85-174
Styrene	ND	0.0417	0.0050	0.050	-	83	63-126
1,1,1,2-Tetrachloroethane	ND	0.0402	0.0050	0.050	-	80	68-131
1,1,2,2-Tetrachloroethane	ND	0.0387	0.0050	0.050	-	77	45-121
Tetrachloroethene	ND	0.0413	0.0050	0.050	-	83	65-150
Toluene	ND	0.0407	0.0050	0.050	-	81	72-135
1,2,3-Trichlorobenzene	ND	0.0280	0.0050	0.050	-	56	35-80
1,2,4-Trichlorobenzene	ND	0.0362	0.0050	0.050	-	72	45-103
1,1,1-Trichloroethane	ND	0.0419	0.0050	0.050	-	84	67-137
1,1,2-Trichloroethane	ND	0.0393	0.0050	0.050	-	79	67-117
Trichloroethene	ND	0.0424	0.0050	0.050	-	85	62-135
Trichlorofluoromethane	ND	0.0367	0.0050	0.050	-	73	56-124
1,2,3-Trichloropropane	ND	0.0472	0.0050	0.050	-	94	58-133
1,2,4-Trimethylbenzene	ND	0.0566	0.0050	0.050	-	113	78-161
1,3,5-Trimethylbenzene	ND	0.0613	0.0050	0.050	-	123	85-170
Vinyl Chloride	ND	0.0310	0.0050	0.050	-	62	32-142
Xylenes, Total	ND	0.131	0.0050	0.15	-	87	70-137

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/12/18	**BatchID:**	154563
Date Analyzed:	3/13/18 - 3/14/18	**Extraction Method:**	SW5030B
Instrument:	GC10, GC16	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154563 1803625-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Surrogate Recovery							
Dibromofluoromethane	0.113	0.114		0.12	90	91	87-127
Toluene-d8	0.130	0.131		0.12	104	105	93-141
4-BFB	0.0157	0.0158		0.012	125	126	84-137
Benzene-d6	0.104	0.0976		0.10	104	98	67-131
Ethylbenzene-d10	0.113	0.104		0.10	113	104	78-153
1,2-DCB-d4	0.0775	0.0767		0.10	77	77	63-109

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/12/18	**BatchID:**	154563
Date Analyzed:	3/13/18 - 3/14/18	**Extraction Method:**	SW5030B
Instrument:	GC10, GC16	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154563 1803625-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acetone	0.844	0.829	1	ND	84	83	36-141	1.79	20
tert-Amyl methyl ether (TAME)	0.0349	0.0344	0.050	ND	70	69	46-105	1.44	20
Benzene	0.0395	0.0394	0.050	ND	79	79	46-124	0	20
Bromobenzene	0.0412	0.0416	0.050	ND	82	83	50-119	0.938	20
Bromochloromethane	0.0375	0.0366	0.050	ND	75	73	42-122	2.52	20
Bromodichloromethane	0.0378	0.0377	0.050	ND	76	75	48-112	0.263	20
Bromoform	0.0352	0.0345	0.050	ND	70	69	36-90	1.91	20
Bromomethane	0.0382	0.0349	0.050	ND	76	70	10-149	8.98	20
2-Butanone (MEK)	0.171	0.148	0.20	ND	85	74	43-114	14.6	20
t-Butyl alcohol (TBA)	0.154	0.153	0.20	ND	77	76	33-123	0.572	20
n-Butyl benzene	0.0545	0.0536	0.050	ND	109	107	40-185	1.61	20
sec-Butyl benzene	0.0550	0.0542	0.050	ND	110	108	40-183	1.52	20
tert-Butyl benzene	0.0525	0.0521	0.050	ND	105	104	44-168	0.752	20
Carbon Disulfide	0.0372	0.0368	0.050	ND	74	74	23-139	0	20
Carbon Tetrachloride	0.0408	0.0406	0.050	ND	82	81	43-133	0.617	20
Chlorobenzene	0.0392	0.0390	0.050	ND	78	78	51-115	0	20
Chloroethane	0.0372	0.0348	0.050	ND	74	70	16-138	6.83	20
Chloroform	0.0390	0.0388	0.050	ND	78	77	54-117	0.743	20
Chloromethane	0.0266	0.0260	0.050	ND	53	52	14-128	2.33	20
2-Chlorotoluene	0.0489	0.0490	0.050	ND	98	98	54-141	0	20
4-Chlorotoluene	0.0467	0.0467	0.050	ND	93	93	52-134	0	20
Dibromochloromethane	0.0356	0.0349	0.050	ND	71	70	46-102	2.03	20
1,2-Dibromo-3-chloropropane	0.0130	0.0118	0.020	ND	65	59	16-120	9.68	20
1,2-Dibromoethane (EDB)	0.0365	0.0360	0.050	ND	73	72	48-113	1.26	20
Dibromomethane	0.0362	0.0359	0.050	ND	72	72	44-110	0	20
1,2-Dichlorobenzene	0.0333	0.0332	0.050	ND	67	66	43-106	0.471	20
1,3-Dichlorobenzene	0.0391	0.0389	0.050	ND	78	78	49-128	0	20
1,4-Dichlorobenzene	0.0373	0.0370	0.050	ND	75	74	48-120	0.837	20
Dichlorodifluoromethane	0.0118	0.0115	0.050	ND	24	23	8-63	2.16	20
1,1-Dichloroethane	0.0401	0.0394	0.050	ND	80	79	50-122	1.75	20
1,2-Dichloroethane (1,2-DCA)	0.0372	0.0368	0.050	ND	74	74	46-116	0	20
1,1-Dichloroethene	0.0389	0.0386	0.050	ND	78	77	37-124	0.917	20
cis-1,2-Dichloroethene	0.0399	0.0397	0.050	ND	80	79	47-123	0.507	20
trans-1,2-Dichloroethene	0.0393	0.0394	0.050	ND	79	79	31-131	0	20
1,2-Dichloropropane	0.0404	0.0394	0.050	ND	81	79	50-116	2.43	20
1,3-Dichloropropane	0.0377	0.0373	0.050	ND	75	75	52-115	0	20
2,2-Dichloropropane	0.0446	0.0441	0.050	ND	89	88	43-137	1.09	20

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/12/18	**BatchID:**	154563
Date Analyzed:	3/13/18 - 3/14/18	**Extraction Method:**	SW5030B
Instrument:	GC10, GC16	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154563 1803625-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
1,1-Dichloropropene	0.0411	0.0408	0.050	ND	82	82	43-126	0	20
cis-1,3-Dichloropropene	0.0412	0.0408	0.050	ND	82	82	35-134	0	20
trans-1,3-Dichloropropene	0.0411	0.0403	0.050	ND	82	81	35-124	1.98	20
Diisopropyl ether (DIPE)	0.0392	0.0387	0.050	ND	78	77	49-116	1.23	20
Ethylbenzene	0.0424	0.0418	0.050	ND	85	84	49-137	1.28	20
Ethyl tert-butyl ether (ETBE)	0.0380	0.0376	0.050	ND	76	75	50-113	1.08	20
Freon 113	0.0343	0.0339	0.050	ND	69	68	28-114	1.10	20
Hexachlorobutadiene	0.0478	0.0479	0.050	ND	96	96	22-180	0	20
Hexachloroethane	0.0502	0.0495	0.050	ND	100	99	28-158	1.38	20
2-Hexanone	0.0384	0.0385	0.050	ND	77	77	31-102	0	20
Isopropylbenzene	0.0455	0.0448	0.050	ND	91	90	50-153	1.42	20
4-Isopropyl toluene	0.0535	0.0536	0.050	ND	107	107	41-171	0	20
Methyl-t-butyl ether (MTBE)	0.0366	0.0361	0.050	ND	73	72	48-110	1.28	20
Methylene chloride	0.0386	0.0384	0.050	ND	77	77	42-127	0	20
4-Methyl-2-pentanone (MIBK)	0.0339	0.0334	0.050	ND	68	67	24-114	1.38	20
Naphthalene	0.0212	0.0208	0.050	ND	40	39	19-69	1.79	20
n-Propyl benzene	0.0548	0.0540	0.050	ND	110	108	46-168	1.48	20
Styrene	0.0401	0.0395	0.050	ND	80	79	42-122	1.37	20
1,1,1,2-Tetrachloroethane	0.0384	0.0382	0.050	ND	77	76	52-121	0.715	20
1,1,2,2-Tetrachloroethane	0.0396	0.0394	0.050	ND	79	79	27-116	0	20
Tetrachloroethene	0.0382	0.0379	0.050	ND	76	76	37-149	0	20
Toluene	0.0388	0.0383	0.050	ND	78	77	52-124	1.47	20
1,2,3-Trichlorobenzene	0.0261	0.0264	0.050	ND	52	53	20-86	1.21	20
1,2,4-Trichlorobenzene	0.0339	0.0335	0.050	ND	68	67	24-107	0.994	20
1,1,1-Trichloroethane	0.0401	0.0401	0.050	ND	80	80	48-128	0	20
1,1,2-Trichloroethane	0.0363	0.0358	0.050	ND	73	72	51-110	1.33	20
Trichloroethene	0.0394	0.0392	0.050	ND	79	78	42-128	0.507	20
Trichlorofluoromethane	0.0348	0.0348	0.050	ND	70	70	31-121	0	20
1,2,3-Trichloropropane	0.0465	0.0460	0.050	ND	93	92	50-115	1.27	20
1,2,4-Trimethylbenzene	0.0545	0.0540	0.050	ND	109	108	48-151	0.791	20
1,3,5-Trimethylbenzene	0.0584	0.0581	0.050	ND	117	116	51-159	0.586	20
Vinyl Chloride	0.0298	0.0293	0.050	ND	60	59	11-136	1.69	20
Xylenes, Total	0.128	0.127	0.15	ND	85	84	38-141	1.00	20

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/12/18	**BatchID:**	154563
Date Analyzed:	3/13/18 - 3/14/18	**Extraction Method:**	SW5030B
Instrument:	GC10, GC16	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS-154563 1803625-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Surrogate Recovery									
Dibromofluoromethane	0.114	0.114	0.12		91	91	82-136	0	20
Toluene-d8	0.128	0.128	0.12		103	102	92-139	0.564	20
4-BFB	0.0156	0.0159	0.012		125	127	82-135	1.78	20
Benzene-d6	0.0933	0.0927	0.10		93	93	55-122	0	20
Ethylbenzene-d10	0.0990	0.0983	0.10		99	98	58-141	0.747	20
1,2-DCB-d4	0.0734	0.0737	0.10		73	74	51-107	0.335	20

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/12/18	**BatchID:**	154563
Date Analyzed:	3/13/18 - 3/14/18	**Extraction Method:**	SW5030B
Instrument:	GC10, GC16	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB/LCS/LCSD-154563 1803625-001AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	0.25	-	-	-
Surrogate Recovery					
Dibromofluoromethane	0.117		0.12	94	70-130
Benzene-D6	0.109		0.10	109	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(g) (C6-C12)	0.895	0.892	1	89	89	67-117	0	20
Surrogate Recovery								
Dibromofluoromethane	0.119	0.118	0.12	95	94	87-127	0.693	20
Benzene-D6	0.111	0.108	0.10	111	108	67-131	2.36	20

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(g) (C6-C12)	N/A	N/A		N/A	N/A	N/A	-	N/A	-
Surrogate Recovery									
Dibromofluoromethane	N/A	N/A			N/A	N/A	-	N/A	-
Benzene-D6	N/A	N/A			N/A	N/A	-	N/A	-

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1803578 A **ClientCode: ERAS**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
☒ Detection Summary ☒ Dry-Weight

Report to:
Greg Munsell
ERAS Environmental, Inc.
1533 B Street
Hayward, CA 94541
(510) 247-9885 FAX: (510) 886-5399

Email: info@eras.biz; greg@eras.biz;andrew@era
cc/3rd Party:
PO:
Project: 17221; 1401 West Winton, Hayward

Bill to:
Kasey Cordoza
ERAS Environmental, Inc.
1533 B Street
Hayward, CA 94541

Requested TAT: 5 days;

Date Received: **03/09/2018**
Date Logged: **03/09/2018**
Date Add-On: **03/13/2018**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1803578-001	B-1,1,2,2 COMP	Soil	3/9/2018 07:42	☐	A	A										
1803578-002	B-3,4,4,5 COMP	Soil	3/9/2018 08:23	☐	A	A										
1803578-005	B-6,7,8 COMP	Soil	3/8/2018 09:22	☐	A	A										
1803578-006	B-9,10,11,12 COMP	Soil	3/8/2018 08:45	☐	A	A										
1803578-009	B-13,14,15 COMP	Soil	3/8/2018 09:26	☐	A	A										
1803578-010	B-16,17,18 COMP	Soil	3/8/2018 09:55	☐	A	A										
1803578-013	B-19,20,21,22 COMP	Soil	3/8/2018 10:59	☐	A	A										
1803578-014	B-22,23,24,25 COMP	Soil	3/9/2018 10:29	☐	A	A										
1803578-017	B-25,26,27,28 COMP	Soil	3/9/2018 07:42	☐	A	A										
1803578-018	B-28,29,30,31 COMP	Soil	3/9/2018 08:52	☐	A	A										

Test Legend:

1	8260B_S	2	8260GAS_S	3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Alexandra Iniguez

Add-On Prepared By: Alexandra Iniguez

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: ERAS ENVIRONMENTAL, INC. **Project:** 17221; 1401 West Winton, Hayward **Work Order:** 1803578

Client Contact: Greg Munsell **QC Level:** LEVEL 2

Contact's Email info@eras.biz; greg@eras.biz;andrew@eras.biz **Comments:** **Date Logged:** 3/9/2018

Date Add-On: 3/13/2018

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1803578-001A	B-1,1,2,2 COMP	Soil	TPH(g) & 8260 by P&T GCMS	4 / (4:1)	Acetate Liner	3/9/2018 7:42	5 days		☐	
1803578-002A	B-3,4,4,5 COMP	Soil	TPH(g) & 8260 by P&T GCMS	4 / (4:1)	Acetate Liner	3/9/2018 8:23	5 days		☐	
1803578-005A	B-6,7,8 COMP	Soil	TPH(g) & 8260 by P&T GCMS	1	Acetate Liner	3/8/2018 9:22	5 days		☐	
1803578-006A	B-9,10,11,12 COMP	Soil	TPH(g) & 8260 by P&T GCMS	4 / (4:1)	Acetate Liner	3/8/2018 8:45	5 days		☐	
1803578-009A	B-13,14,15 COMP	Soil	TPH(g) & 8260 by P&T GCMS	4 / (4:1)	Acetate Liner	3/8/2018 9:26	5 days		☐	
1803578-010A	B-16,17,18 COMP	Soil	TPH(g) & 8260 by P&T GCMS	4 / (4:1)	Acetate Liner	3/8/2018 9:55	5 days		☐	
1803578-013A	B-19,20,21,22 COMP	Soil	TPH(g) & 8260 by P&T GCMS	4 / (4:1)	Acetate Liner	3/8/2018 10:59	5 days		☐	
1803578-014A	B-22,23,24,25 COMP	Soil	TPH(g) & 8260 by P&T GCMS	4 / (4:1)	Acetate Liner	3/9/2018 10:29	5 days		☐	
1803578-017A	B-25,26,27,28 COMP	Soil	TPH(g) & 8260 by P&T GCMS	4 / (4:1)	Acetate Liner	3/9/2018 7:42	5 days		☐	
1803578-018A	B-28,29,30,31 COMP	Soil	TPH(g) & 8260 by P&T GCMS	4 / (4:1)	Acetate Liner	3/9/2018 8:52	5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

CHAIN OF CUSTODY FORM

1803578

McCampbell Analytical, Inc
1534 Willow Pass Rd.
Pittsburg, CA 94565
877.252.9262
925.252.9269 - fax

Turnaround Time: Rush | 24Hr | 48 Hr | 72 Hr | 5 Day (X)
Geotracker: EDF | Excel | Write On (DW

Report To: ERAS **Bill To:** ERAS
Company: ERAS Environmental, Inc.
Email: info@eras.biz
Telephone: 510-247-9885 **Fax:** 510-886-5399
Project # 17221
Project location 1401 West Winton, Hayward
Sampler: Greg Munsell

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Matrix: Water	Matrix: Waste	Preservative: HCL	Preservative: H2SO4	Preservative: HNO3	Preservative: ICE	Preservative: None	Tph-gro and VOCs by EPA Method 8260 ★2	TPH-dro and TPH-oro by EPA Method 8015 with silica gel cleanup	CAM 17 Metals	SVOC by EPA Method 8270	HOLD ★	Other	Comments
B-1, 0.5-1		3/8/2018	0810	1	Tube	X						X		X	X	X	X			COMPOSITE
B-1, 4.5-5		3/8/2018	0820	1	Tube	X						X		X	X	X	X			
B-2, 0.5-1		3/8/2018	0816	1	Tube	X						X		X	X	X	X			
B-2, 1.5-2		3/8/2018	0820	1	Tube	X						X		X	X	X	X			
B-3, 10.5-11		3/8/2018	0832	1	Tube	X						X		X	X	X	X			COMPOSITE
B-4, 0.5-1		3/8/2018	0843	1	Tube	X						X		X	X	X	X			
B-4, 1.5-2		3/8/2018	0847	1	Tube	X						X		X	X	X	X			
B-5, 0.5-1		3/8/2018	0856	1	Tube	X						X		X	X	X	X			
B-1, 1		3/8/2018	0751	1	Enc	X						X		X				X		COMPOSITE
B-1, 5		3/8/2018	0756	1	Enc	X						X		X				X		
B-2, 1		3/8/2018	0816	1	Enc	X						X		X				X		
B-2, 2		3/8/2018	0820	1	Enc	X						X		X				X		
B-3, 11		3/8/2018	0832	1	Enc	X						X		X				X		COMPOSITE
B-4, 1		3/8/2018	0843	1	Enc	X						X		X				X		
B-4, 2		3/8/2018	0847	1	Enc	X						X		X				X		
B-5, 1		3/8/2018	0856	1	Enc	X						X		X				X		

★ GCMS and 8260 added to composites 3/13/18
★ ENCORES placed on hold

4.7 wet

RELINQUISHED BY: **RECEIVED BY:**

Relinquished by:	Date: 3/9/18	Time: 1430	Recieved by:	
Relinquished by: L Moore	Date: 3/9/18	Time: 1555	Recieved by:	
Relinquished by:	Date:	Time:	Recieved by:	

ICE/t° Condition
Head space absent
Dechlorinated in lab
Appropriate containers
Preserved in Lab
Preservation: VOA's | O&G | Metals | Other; pH<2

Comments: Please PDF and **PROVIDE J FLAGS**

1 of 5

CHAIN OF CUSTODY FORM

McCampbell Analytical, Inc
1534 Willow Pass Rd.
Pittsburg, CA 94565
877.252.9262
925.252.9269 - fax

Turnaround Time: Rush | 24Hr | 48 Hr | 72 Hr | X 5 Day

Geotracker: EDF | Excel | Write On (DW

Report To: ERAS **Bill To:** ERAS

Company: ERAS Environmental, Inc.

Email: info@eras.biz

Telephone: 510-247-9885 **Fax:** 510-886-5399

Project # 17221

Project location 1401 West Winton, Hayward

Sampler: Greg Munsell

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Water	Waste	Preservative: HCL	H2SO4	HNO3	ICE	None	Analysis Requested: Tph-gro and VOCs by EPA Method 8260	TPH-dro and TPH-oro by EPA Method 8015 with silica gel cleanup	CAM 17 Metals	SVOC by EPA Method 8270	HOLD	Other	Comments
B-6, 0.5-1		3/8/2018	0910	1	Tube	X						X		X	X	X				COMPOSITE
B-6, 1.5-2		3/8/2018	0917	1	Tube	X						X		X	X	X				
B-7, 0.5-1		3/8/2018	0916	1	Tube	X						X		X	X	X				
B-8, 0.5-1		3/8/2018	0922	1	Tube	X						X		X	X	X				
B-9, 10.5-11		3/8/2018	0929	1	Tube	X						X		X	X	X				COMPOSITE
B-10, 0.5-1		3/8/2018	1004	1	Tube	X						X		X	X	X				
B-11, 0.5-1		3/8/2018	1014	1	Tube	X						X		X	X	X				
B-12, 0.5-1		3/8/2018	0845	1	Tube	X						X		X	X	X				
B-6, 1		3/8/2018	0906	1	Enc	X						X		X				XXXXXXXX		COMPOSITE
B-6, 2		3/8/2018	0908	1	Enc	X						X		X						
B-7, 1		3/8/2018	0916	1	Enc	X						X		X						
B-8, 1		3/8/2018	0922	1	Enc	X						X		X						
B-9, 11		3/8/2018	0929	1	Enc	X						X		X						COMPOSITE
B-10, 1		3/8/2018	1004	1	Enc	X						X		X						
B-11, 1		3/8/2018	1014	1	Enc	X						X		X						
B-12, 1		3/8/2018	0845	1	Enc	X						X		X						

* GCMS and 8260 added to composites 3/16/18
* ENCORES placed on hold.

1430

RELINQUISHED BY: **RECEIVED BY:**

Relinquished by:	Date:	Time:	Recieved by:
[signature]	3/9/18	2:30 p.m.	[signature]
[signature]	3/9/18	1555	[signature]
Relinquished by:	Date:	Time:	Recieved by:

ICE/t° Condition

Head space absent

Dechlorinated in lab

Appropriate containers

Preserved in Lab

Preservation: VOA's | O&G | Metals | Other pH<2

Comments: Please PDF and **PROVIDE J FLAGS**

2 of 5

CHAIN OF CUSTODY FORM

McCampbell Analytical, Inc
1534 Willow Pass Rd.
Pittsburg, CA 94565
877.252.9262
925.252.9269 - fax

Turnaround Time: Rush | 24Hr | 48 Hr | 72 Hr | X 5 Day
Geotracker: EDF | Excel | Write On (DW

Report To: ERAS **Bill To:** ERAS
Company: ERAS Environmental, Inc.
Email: info@eras.biz
Telephone: 510-247-9885 **Fax:** 510-886-5399
Project # 17221
Project location 1401 West Winton, Hayward
Sampler: Greg Munsell

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Water	Waste	Preservative: HCL	H2SO4	HNO3	ICE	None	Analysis Requested: Tph-gro and VOCs by EPA Method 8260	TPH-dro and TPH-oro by EPA Method 8015 with silica gel cleanup	CAM 17 Metals	SVOC by EPA Method 8270	HOLD	Other	Comments
B-13, 0.5-1		3/8/2018	0850	1	Tube	X						X		X	X	X	X			
B-14, 0.5-1		3/8/2018	0856	1	Tube	X						X		X	X	X	X			COMPOSITE
B-14, 1.5-2		3/8/2018	0917	1	Tube	X						X		X	X	X	X			
B-15, 0.5-1		3/8/2018	0926	1	Tube	X						X		X	X	X	X			
B-16, 0.5-1		3/8/2018	0935	1	Tube	X						X		X	X	X	X			
B-17, 0.5-1		3/8/2018	0941	1	Tube	X						X		X	X	X	X			COMPOSITE
B-18, 0.5-1		3/8/2018	0946	1	Tube	X						X		X	X	X	X			
B-18, 1.5-2		3/8/2018	0955	1	Tube	X						X		X	X	X	X			
B-13, 1		3/8/2018	0850	1	Enc	X						X		X				X		
B-14, 1		3/8/2018	0856	1	Enc	X						X		X				X		COMPOSITE
B-14, 2		3/8/2018	0917	1	Enc	X						X		X				X		
B-15, 1		3/8/2018	0926	1	Enc	X						X		X				X		
B-16, 1		3/8/2018	0935	1	Enc	X						X		X				X		
B-17, 1		3/8/2018	0941	1	Enc	X						X		X				X		COMPOSITE
B-18, 1		3/8/2018	0946	1	Enc	X						X		X				X		
B-18, 2		3/8/2018	0955	1	Enc	X						X		X				X		

Gas and 8260 added to composites 3/13/18
Encores placed on hold.

RELINQUISHED BY: **RECEIVED BY:**

Relinquished by:	Date:	Time:	Recieved by:
	3/9/18	1430	
	3/9/18	2:30	
Relinquished by:	Date:	Time:	Recieved by:
	3/9/18	1555	
Relinquished by:	Date:	Time:	Recieved by:

ICE/t° Condition
Head space absent
Dechlorinated in lab
Appropriate containers
Preserved in Lab
Preservation VOA's O&G Metals Other pH<2

Comments: Please PDF and **PROVIDE J FLAGS**

3 of 5

CHAIN OF CUSTODY FORM

McCampbell Analytical, Inc
1534 Willow Pass Rd.
Pittsburg, CA 94565
877.252.9262
925.252.9269 - fax

Turnaround Time: Rush | 24Hr | 48 Hr | 72 Hr | X 5 Day
Geotracker: EDF | Excel | Write On (DW

Report To: ERAS **Bill To:** ERAS
Company: ERAS Environmental, Inc.
Email: info@eras.biz
Telephone: 510-247-9885 **Fax:** 510-886-5399
Project # 17221
Project location 1401 West Winton, Hayward
Sampler: Greg Munsell

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Matrix: Water	Matrix: Waste	Preservative: HCL	Preservative: H2SO4	Preservative: HNO3	Preservative: ICE	Preservative: None	Tph-gro and VOCs by EPA Method 8260	TPH-dro and TPH-oro by EPA Method 8015 with silica gel cleanup	CAM 17 Metals	SVOC by EPA Method 8270	HOLD	Comments
B-19, 0.5-1		3/8/2018	1016	1	Tube	X						X		X	X	X			COMPOSITE
B-20, 0.5-1		3/8/2018	1019	1	Tube	X						X		X	X	X			
B-21, 0.5-1		3/8/2018	1023	1	Tube	X						X		X	X	X			
B-22, 0.5-1		3/8/2018	1059	1	Tube	X						X		X	X	X			
B-22, 1.5-2		3/9/2018	1029	1	Tube	X						X		X	X	X			COMPOSITE
B-23, 0.5-1		3/8/2018	1102	1	Tube	X						X		X	X	X			
B-24, 0.5-1		3/8/2018	1106	1	Tube	X						X		X	X	X			
B-25, 0.5-1		3/8/2018	1117	1	Tube	X						X		X	X	X			
B-19, 1		3/8/2018	1016	1	Enc	X						X		X					COMPOSITE
B-20, 1		3/8/2018	1019	1	Enc	X						X		X					
B-21, 1		3/8/2018	1023	1	Enc	X						X		X					
B-22, 1		3/8/2018	1029	1	Enc	X						X		X					
B-22, 2		3/9/2018	0731	1	Enc	X						X		X					COMPOSITE
B-23, 1		3/8/2018	1102	1	Enc	X						X		X					
B-24, 1		3/8/2018	1105	1	Enc	X						X		X					
B-25, 1		3/8/2018	1110	1	Enc	X						X		X					

*GCS and 8260 added to COMPOSITE's 3/13/18
*ENCORES placed ON hold

RELINQUISHED BY:

	Date:	Time:
Relinquished by:	3/9/18	1430
Relinquished by: L Moore	3/9/18	1555
Relinquished by:	Date:	Time:

RECEIVED BY:

Recieved by:
Recieved by:
Recieved by:

ICE/t° Condition
Head space absent
Dechlorinated in lab
Appropriate containers
Preserved in Lab
Preservation: VOA's | O&G | Metals | Other; pH<2

Comments: Please PDF and **PROVIDE J FLAGS**

4 of 5

CHAIN OF CUSTODY FORM

McCampbell Analytical, Inc
1534 Willow Pass Rd.
Pittsburg, CA 94565
877.252.9262
925.252.9269 - fax

Turnaround Time: Rush | 24Hr | 48 Hr | 72 Hr | X 5 Day

Geotracker: EDF | Excel | Write On (DW

Report To: ERAS **Bill To:** ERAS

Company: ERAS Environmental, Inc.

Email: info@eras.biz

Telephone: 510-247-9885 **Fax:** 510-886-5399

Project # 17221

Project location 1401 West Winton, Hayward

Sampler: Greg Munsell

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Matrix: Water	Matrix: Waste	Preservative: HCL	Preservative: H2SO4	Preservative: HNO3	Preservative: ICE	Preservative: None	Analysis Requested: Tph-gro and VOCs by EPA Method 8260	Analysis Requested: TPH-dro and TPH-oro by EPA Method 8015 with silica gel cleanup	Analysis Requested: CAM 17 Metals	Analysis Requested: SVOC by EPA Method 8270	Analysis Requested: HOLD	Other	Comments
B-25, 1.5-2		3/9/2018	0742	1	Tube	X						X		X	X	X				COMPOSITE
B-26, 0.5-1		3/8/2018	1118	1	Tube	X						X		X	X	X				
B-27, 0.5-1		3/8/2018	1121	1	Tube	X						X		X	X	X				
B-28, 0.5-1		3/8/2018	1124	1	Tube	X						X		X	X	X				
B-28, 1.5-2		3/9/2018	0752	1	Tube	X						X		X	X	X				COMPOSITE
B-29, 0.5-1		3/8/2018	1144	1	Tube	X						X		X	X	X				
B-30, 0.5-1		3/8/2018	1147	1	Tube	X						X		X	X	X				
B-31, 5.5-6		3/9/2018	0823	1	Tube	X						X		X	X	X				
B-25, 2		3/9/2018	0742	1	Enc	X						X		X						COMPOSITE
B-26, 1		3/8/2018	1059	1	Enc	X						X		X						
B-27, 1		3/8/2018	1121	1	Enc	X						X		X						
B-28, 1		3/8/2018	1124	1	Enc	X						X		X						
B-28, 2		3/9/2018	0752	1	Enc	X						X		X						COMPOSITE
B-29, 1		3/8/2018	1144	1	Enc	X						X		X						
B-30, 1		3/8/2018	1147	1	Enc	X						X		X						
B-31, 6		3/9/2018	0823	1	Enc	X						X		X						

*B-26,0.5-1 3/8/18 11:18 - hold

*Gas and 8260 added to composites 3/13/18

*Encores placed on hold

RELINQUISHED BY:

Relinquished by:	Date:	Time:	Recieved by:
[signature]	3/9/18	1432	Money
Moore	3/9/18	1555	[signature]

RECEIVED BY:

ICE/t° Condition	Comments: Please PDF and **PROVIDE J FLAGS**
Head space absent	
Dechlorinated in lab	
Appropriate containers	
Preserved in Lab	
Preservation: VOA's O&G Metals Other pH<2	

*Extra encore received, Added to chain and placed on hold.

5.15

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1803578 B

Report Created for: ERAS Environmental, Inc.

1533 B Street
Hayward, CA 94541

Project Contact: Greg Munsell
Project P.O.:
Project: 17221; 1401 West Winton, Hayward

Project Received: 03/09/2018

Analytical Report reviewed & approved for release on 03/23/2018 by:

Jennifer Lagerbom
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Glossary of Terms & Qualifier Definitions

Client: ERAS Environmental, Inc.
Project: 17221; 1401 West Winton, Hayward
WorkOrder: 1803578 B

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Quality Control Qualifiers

F2	LCS/LCSD recovery and/or RPD is out of acceptance criteria.

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Received:	3/9/18 15:55	**Extraction Method:**	CA Title 22
Date Prepared:	3/20/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward	**Unit:**	mg/L

Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-25,26,27,28 COMP	**1803578-017A**	**Soil**	**03/09/2018 07:42**	**ICP-MS2 148SMPL.D**	**155058**

Analytes	Result	RL	DF	Date Analyzed
Lead	**3.1**	0.10	1	03/22/2018 22:54

Analyst(s): ND

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1803578
Date Prepared:	3/20/18	**BatchID:**	155058
Date Analyzed:	3/22/18	**Extraction Method:**	CA Title 22
Instrument:	ICP-MS2	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/L
Project:	17221; 1401 West Winton, Hayward	**Sample ID:**	MB-155058 1802E10-001AMS/MSD

QC Summary Report for Metals (STLC)

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Lead	ND		0.10	0	-	F2	-

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Lead	10.2	10.4	10	0.18	100	102	75-125	2.62	20

McCampbell Analytical, Inc.
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Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1803578 B **ClientCode: ERAS**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
☐ Detection Summary ☐ Dry-Weight

Report to:
Greg Munsell
ERAS Environmental, Inc.
1533 B Street
Hayward, CA 94541
(510) 247-9885 FAX: (510) 886-5399

Email: info@eras.biz; greg@eras.biz;andrew@era
cc/3rd Party:
PO:
Project: 17221; 1401 West Winton, Hayward

Bill to:
Kasey Cordoza
ERAS Environmental, Inc.
1533 B Street
Hayward, CA 94541

Requested TAT: 5 days;

Date Received: **03/09/2018**
Date Logged: **03/09/2018**
Date Add-On: **03/20/2018**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1803578-017	B-25,26,27,28 COMP	Soil	3/9/2018 07:42	☐	A											

Test Legend:

1	PBMS_STLC_S	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Alexandra Iniguez

Add-On Prepared By: Maria Venegas

Comments: STLC Pb added to 017 3/20/18 STAT.

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: ERAS ENVIRONMENTAL, INC.
Client Contact: Greg Munsell
Contact's Email info@eras.biz; greg@eras.biz;andrew@eras.biz

Project: 17221; 1401 West Winton, Hayward
Comments: STLC Pb added to 017 3/20/18 STAT.

Work Order: 1803578
QC Level: LEVEL 2
Date Logged: 3/9/2018
Date Add-On: 3/20/2018

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1803578-017A	B-25,26,27,28 COMP	Soil	SW6020 (Lead) (STLC)	4 / (4:1)	Acetate Liner	3/9/2018 7:42	5 days*		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

1803578

CHAIN OF CUSTODY FORM

McCampbell Analytical, Inc
1534 Willow Pass Rd.
Pittsburg, CA 94565
877.252.9262
925.252.9269 - fax

Turnaround Time: Rush | 24Hr | 48 Hr | 72 Hr | X 5 Day

Geotracker: EDF | Excel | Write On (DW

Report To: ERAS **Bill To:** ERAS

Company: ERAS Environmental, Inc.

Email: info@eras.biz

Telephone: 510-247-9885 **Fax:** 510-886-5399

Project # 17221

Project location 1401 West Winton, Hayward

Sampler: Greg Munsell

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Matrix: Water	Matrix: Waste	Matrix:	Preservative: HCL	Preservative: H2SO4	Preservative: HNO3	Preservative: ICE	Preservative: None	Analysis Requested: Tph-gro and VOCs by EPA Method 8260	Analysis Requested: TPH-dro and TPH-oro by EPA Method 8015 with silica gel cleanup	Analysis Requested: CAM 17 Metals	Analysis Requested: SVOC by EPA Method 8270	Other	Comments
B-25, 1.5-2		3/9/2018	0742	1	Tube	X							X			X	X	X		
B-26, 0.5-1		3/8/2018	1118	1	Tube	X							X			X	X	X		COMPOSITE
B-27, 0.5-1		3/8/2018	1121	1	Tube	X							X			X	X	X		
B-28, 0.5-1		3/8/2018	1124	1	Tube	X							X			X	X	X		
B-28, 1.5-2		3/9/2018	0752	1	Tube	X							X			X	X	X		
B-29, 0.5-1		3/8/2018	1144	1	Tube	X							X			X	X	X		COMPOSITE
B-30, 0.5-1		3/8/2018	1147	1	Tube	X							X			X	X	X		
B-31, 5.5-6		3/9/2018	0823	1	Tube	X							X			X	X	X		
B-25, 2		3/9/2018	0742	1	Enc	X							X		X					
B-26, 1		3/8/2018	1059	1	Enc	X							X		X					COMPOSITE
B-27, 1		3/8/2018	1121	1	Enc	X							X		X					
B-28, 1		3/8/2018	1124	1	Enc	X							X		X					
B-28, 2		3/9/2018	0752	1	Enc	X							X		X					
B-29, 1		3/8/2018	1144	1	Enc	X							X		X					COMPOSITE
B-30, 1		3/8/2018	1147	1	Enc	X							X		X					
B-31, 6		3/9/2018	0823	1	Enc	X							X		X					

HOLD

STLC Pb 3/20/18 STAT

*B-26,0.5-1 3/8/18 11:18 - hold

*Gas and 8260 added to composites 3/13/18

*Encores placed on hold

RELINQUISHED BY:

Relinquished by:	Date: 3/9/18	Time: 1432	Recieved by:
Relinquished by: Moore	Date: 3/9/18	Time: 1555	Recieved by:
Relinquished by:	Date:	Time:	Recieved by:

RECEIVED BY:

ICE/t° Condition

Head space absent

Dechlorinated in lab

Appropriate containers

Preserved in Lab

Preservation: VOA's | O&G | Metals | Other; pH<2

Comments: Please PDF and **PROVIDE J FLAGS**

5.45

*Extra encore received, Added to chain and placed on hold.

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1805H38

Report Created for: ERAS Environmental, Inc.

1533 B Street
Hayward, CA 94541

Project Contact: Andrew Savage
Project P.O.:
Project: 17221; 1401 West Winton, Hayward, CA

Project Received: 05/31/2018

Analytical Report reviewed & approved for release on 06/08/2018 by:

Yen Cao

Project Manager

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Glossary of Terms & Qualifier Definitions

Client: ERAS Environmental, Inc.
Project: 17221; 1401 West Winton, Hayward, CA
WorkOrder: 1805H38

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Glossary of Terms & Qualifier Definitions

Client: ERAS Environmental, Inc.
Project: 17221; 1401 West Winton, Hayward, CA
WorkOrder: 1805H38

Analytical Qualifiers

S	Surrogate spike recovery outside accepted recovery limits.
a3	Sample diluted due to high organic content.
c11	The surrogate recovery is above the upper control limit. The target analyte(s) were Not Detected (ND); therefore, the data has been reported.
j1	See attached narrative.

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria; LCS validates the prep batch.
F2	LCS/LCSD recovery and/or RPD is out of acceptance criteria.
F3	The surrogate standard recovery and/or RPD is outside of acceptance limits.
F10	MS/MSD outside control limits. Physical or chemical interferences exist due to sample matrix.
F13	Indigenous sample results too high for a representative matrix spike analysis.

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Case Narrative

Client: ERAS Environmental, Inc. **Work Order:** 1805H38
Project: 17221; 1401 West Winton, Hayward, CA June 08, 2018

j1) The soil surrogates spiked in batches 159166 & 159173 for 8260 was spiked 10 times lower in the extraction solvent. Therefore, the recoveries for the following surrogates should be considered out to 10% versus 100%:
Benzene-d6
Ethylbenzene-d10
1,2-DCB-d4

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(32,33,34,35) 1-1.5	1805H38-001A	Soil	05/30/2018 09:00	GC18 06051827.D	159166

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	06/06/2018 00:56
tert-Amyl methyl ether (TAME)	ND	0.0050	1	06/06/2018 00:56
Benzene	ND	0.0050	1	06/06/2018 00:56
Bromobenzene	ND	0.0050	1	06/06/2018 00:56
Bromochloromethane	ND	0.0050	1	06/06/2018 00:56
Bromodichloromethane	ND	0.0050	1	06/06/2018 00:56
Bromoform	ND	0.0050	1	06/06/2018 00:56
Bromomethane	ND	0.0050	1	06/06/2018 00:56
2-Butanone (MEK)	ND	0.020	1	06/06/2018 00:56
t-Butyl alcohol (TBA)	ND	0.050	1	06/06/2018 00:56
n-Butyl benzene	ND	0.0050	1	06/06/2018 00:56
sec-Butyl benzene	ND	0.0050	1	06/06/2018 00:56
tert-Butyl benzene	ND	0.0050	1	06/06/2018 00:56
Carbon Disulfide	ND	0.0050	1	06/06/2018 00:56
Carbon Tetrachloride	ND	0.0050	1	06/06/2018 00:56
Chlorobenzene	ND	0.0050	1	06/06/2018 00:56
Chloroethane	ND	0.0050	1	06/06/2018 00:56
Chloroform	ND	0.0050	1	06/06/2018 00:56
Chloromethane	ND	0.0050	1	06/06/2018 00:56
2-Chlorotoluene	ND	0.0050	1	06/06/2018 00:56
4-Chlorotoluene	ND	0.0050	1	06/06/2018 00:56
Dibromochloromethane	ND	0.0050	1	06/06/2018 00:56
1,2-Dibromo-3-chloropropane	ND	0.0040	1	06/06/2018 00:56
1,2-Dibromoethane (EDB)	ND	0.0040	1	06/06/2018 00:56
Dibromomethane	ND	0.0050	1	06/06/2018 00:56
1,2-Dichlorobenzene	ND	0.0050	1	06/06/2018 00:56
1,3-Dichlorobenzene	ND	0.0050	1	06/06/2018 00:56
1,4-Dichlorobenzene	ND	0.0050	1	06/06/2018 00:56
Dichlorodifluoromethane	ND	0.0050	1	06/06/2018 00:56
1,1-Dichloroethane	ND	0.0050	1	06/06/2018 00:56
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	06/06/2018 00:56
1,1-Dichloroethene	ND	0.0050	1	06/06/2018 00:56
cis-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 00:56
trans-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 00:56
1,2-Dichloropropane	ND	0.0050	1	06/06/2018 00:56
1,3-Dichloropropane	ND	0.0050	1	06/06/2018 00:56
2,2-Dichloropropane	ND	0.0050	1	06/06/2018 00:56

(Cont.)

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(32,33,34,35) 1-1.5	1805H38-001A	Soil	05/30/2018 09:00	GC18 06051827.D	159166

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	06/06/2018 00:56
cis-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 00:56
trans-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 00:56
Diisopropyl ether (DIPE)	ND	0.0050	1	06/06/2018 00:56
Ethylbenzene	ND	0.0050	1	06/06/2018 00:56
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	06/06/2018 00:56
Freon 113	ND	0.0050	1	06/06/2018 00:56
Hexachlorobutadiene	ND	0.0050	1	06/06/2018 00:56
Hexachloroethane	ND	0.0050	1	06/06/2018 00:56
2-Hexanone	ND	0.0050	1	06/06/2018 00:56
Isopropylbenzene	ND	0.0050	1	06/06/2018 00:56
4-Isopropyl toluene	ND	0.0050	1	06/06/2018 00:56
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	06/06/2018 00:56
Methylene chloride	ND	0.0050	1	06/06/2018 00:56
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	06/06/2018 00:56
Naphthalene	ND	0.0050	1	06/06/2018 00:56
n-Propyl benzene	ND	0.0050	1	06/06/2018 00:56
Styrene	ND	0.0050	1	06/06/2018 00:56
1,1,1,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 00:56
1,1,2,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 00:56
Tetrachloroethene	ND	0.0050	1	06/06/2018 00:56
Toluene	ND	0.0050	1	06/06/2018 00:56
1,2,3-Trichlorobenzene	ND	0.0050	1	06/06/2018 00:56
1,2,4-Trichlorobenzene	ND	0.0050	1	06/06/2018 00:56
1,1,1-Trichloroethane	ND	0.0050	1	06/06/2018 00:56
1,1,2-Trichloroethane	ND	0.0050	1	06/06/2018 00:56
Trichloroethene	ND	0.0050	1	06/06/2018 00:56
Trichlorofluoromethane	ND	0.0050	1	06/06/2018 00:56
1,2,3-Trichloropropane	ND	0.0050	1	06/06/2018 00:56
1,2,4-Trimethylbenzene	ND	0.0050	1	06/06/2018 00:56
1,3,5-Trimethylbenzene	ND	0.0050	1	06/06/2018 00:56
Vinyl Chloride	ND	0.0050	1	06/06/2018 00:56
Xylenes, Total	ND	0.0050	1	06/06/2018 00:56

(Cont.)

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1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(32,33,34,35) 1-1.5	**1805H38-001A**	**Soil**	**05/30/2018 09:00**	**GC18 06051827.D**	**159166**

Analytes	Result		RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	111		82-136		06/06/2018 00:56
Toluene-d8	117		92-139		06/06/2018 00:56
4-BFB	108		82-135		06/06/2018 00:56
Benzene-d6	9	S	55-122		06/06/2018 00:56
Ethylbenzene-d10	9	S	58-141		06/06/2018 00:56
1,2-DCB-d4	7	S	51-107		06/06/2018 00:56

Analyst(s): AK Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(36,37,38,39) 1-1.5	1805H38-002A	Soil	05/30/2018 09:25	GC18 06061821.D	159166

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	06/06/2018 20:47
tert-Amyl methyl ether (TAME)	ND	0.0050	1	06/06/2018 20:47
Benzene	ND	0.0050	1	06/06/2018 20:47
Bromobenzene	ND	0.0050	1	06/06/2018 20:47
Bromochloromethane	ND	0.0050	1	06/06/2018 20:47
Bromodichloromethane	ND	0.0050	1	06/06/2018 20:47
Bromoform	ND	0.0050	1	06/06/2018 20:47
Bromomethane	ND	0.0050	1	06/06/2018 20:47
2-Butanone (MEK)	ND	0.020	1	06/06/2018 20:47
t-Butyl alcohol (TBA)	ND	0.050	1	06/06/2018 20:47
n-Butyl benzene	ND	0.0050	1	06/06/2018 20:47
sec-Butyl benzene	ND	0.0050	1	06/06/2018 20:47
tert-Butyl benzene	ND	0.0050	1	06/06/2018 20:47
Carbon Disulfide	ND	0.0050	1	06/06/2018 20:47
Carbon Tetrachloride	ND	0.0050	1	06/06/2018 20:47
Chlorobenzene	ND	0.0050	1	06/06/2018 20:47
Chloroethane	ND	0.0050	1	06/06/2018 20:47
Chloroform	ND	0.0050	1	06/06/2018 20:47
Chloromethane	ND	0.0050	1	06/06/2018 20:47
2-Chlorotoluene	ND	0.0050	1	06/06/2018 20:47
4-Chlorotoluene	ND	0.0050	1	06/06/2018 20:47
Dibromochloromethane	ND	0.0050	1	06/06/2018 20:47
1,2-Dibromo-3-chloropropane	ND	0.0040	1	06/06/2018 20:47
1,2-Dibromoethane (EDB)	ND	0.0040	1	06/06/2018 20:47
Dibromomethane	ND	0.0050	1	06/06/2018 20:47
1,2-Dichlorobenzene	ND	0.0050	1	06/06/2018 20:47
1,3-Dichlorobenzene	ND	0.0050	1	06/06/2018 20:47
1,4-Dichlorobenzene	ND	0.0050	1	06/06/2018 20:47
Dichlorodifluoromethane	ND	0.0050	1	06/06/2018 20:47
1,1-Dichloroethane	ND	0.0050	1	06/06/2018 20:47
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	06/06/2018 20:47
1,1-Dichloroethene	ND	0.0050	1	06/06/2018 20:47
cis-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 20:47
trans-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 20:47
1,2-Dichloropropane	ND	0.0050	1	06/06/2018 20:47
1,3-Dichloropropane	ND	0.0050	1	06/06/2018 20:47
2,2-Dichloropropane	ND	0.0050	1	06/06/2018 20:47

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(36,37,38,39) 1-1.5	1805H38-002A	Soil	05/30/2018 09:25	GC18 06061821.D	159166

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	06/06/2018 20:47
cis-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 20:47
trans-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 20:47
Diisopropyl ether (DIPE)	ND	0.0050	1	06/06/2018 20:47
Ethylbenzene	ND	0.0050	1	06/06/2018 20:47
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	06/06/2018 20:47
Freon 113	ND	0.0050	1	06/06/2018 20:47
Hexachlorobutadiene	ND	0.0050	1	06/06/2018 20:47
Hexachloroethane	ND	0.0050	1	06/06/2018 20:47
2-Hexanone	ND	0.0050	1	06/06/2018 20:47
Isopropylbenzene	ND	0.0050	1	06/06/2018 20:47
4-Isopropyl toluene	ND	0.0050	1	06/06/2018 20:47
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	06/06/2018 20:47
Methylene chloride	ND	0.0050	1	06/06/2018 20:47
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	06/06/2018 20:47
Naphthalene	ND	0.0050	1	06/06/2018 20:47
n-Propyl benzene	ND	0.0050	1	06/06/2018 20:47
Styrene	ND	0.0050	1	06/06/2018 20:47
1,1,1,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 20:47
1,1,2,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 20:47
Tetrachloroethene	ND	0.0050	1	06/06/2018 20:47
Toluene	ND	0.0050	1	06/06/2018 20:47
1,2,3-Trichlorobenzene	ND	0.0050	1	06/06/2018 20:47
1,2,4-Trichlorobenzene	ND	0.0050	1	06/06/2018 20:47
1,1,1-Trichloroethane	ND	0.0050	1	06/06/2018 20:47
1,1,2-Trichloroethane	ND	0.0050	1	06/06/2018 20:47
Trichloroethene	ND	0.0050	1	06/06/2018 20:47
Trichlorofluoromethane	ND	0.0050	1	06/06/2018 20:47
1,2,3-Trichloropropane	ND	0.0050	1	06/06/2018 20:47
1,2,4-Trimethylbenzene	ND	0.0050	1	06/06/2018 20:47
1,3,5-Trimethylbenzene	ND	0.0050	1	06/06/2018 20:47
Vinyl Chloride	ND	0.0050	1	06/06/2018 20:47
Xylenes, Total	ND	0.0050	1	06/06/2018 20:47

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(36,37,38,39) 1-1.5	**1805H38-002A**	**Soil**	**05/30/2018 09:25**	**GC18 06061821.D**	**159166**

Analytes	Result		RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	110		82-136		06/06/2018 20:47
Toluene-d8	122		92-139		06/06/2018 20:47
4-BFB	102		82-135		06/06/2018 20:47
Benzene-d6	10	S	55-122		06/06/2018 20:47
Ethylbenzene-d10	10	S	58-141		06/06/2018 20:47
1,2-DCB-d4	7	S	51-107		06/06/2018 20:47

Analyst(s): KF Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(40,41,42,43) 1-1.5	1805H38-003A	Soil	05/30/2018 10:05	GC18 06051828.D	159166

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	06/06/2018 01:35
tert-Amyl methyl ether (TAME)	ND	0.0050	1	06/06/2018 01:35
Benzene	ND	0.0050	1	06/06/2018 01:35
Bromobenzene	ND	0.0050	1	06/06/2018 01:35
Bromochloromethane	ND	0.0050	1	06/06/2018 01:35
Bromodichloromethane	ND	0.0050	1	06/06/2018 01:35
Bromoform	ND	0.0050	1	06/06/2018 01:35
Bromomethane	ND	0.0050	1	06/06/2018 01:35
2-Butanone (MEK)	ND	0.020	1	06/06/2018 01:35
t-Butyl alcohol (TBA)	ND	0.050	1	06/06/2018 01:35
n-Butyl benzene	ND	0.0050	1	06/06/2018 01:35
sec-Butyl benzene	ND	0.0050	1	06/06/2018 01:35
tert-Butyl benzene	ND	0.0050	1	06/06/2018 01:35
Carbon Disulfide	ND	0.0050	1	06/06/2018 01:35
Carbon Tetrachloride	ND	0.0050	1	06/06/2018 01:35
Chlorobenzene	ND	0.0050	1	06/06/2018 01:35
Chloroethane	ND	0.0050	1	06/06/2018 01:35
Chloroform	ND	0.0050	1	06/06/2018 01:35
Chloromethane	ND	0.0050	1	06/06/2018 01:35
2-Chlorotoluene	ND	0.0050	1	06/06/2018 01:35
4-Chlorotoluene	ND	0.0050	1	06/06/2018 01:35
Dibromochloromethane	ND	0.0050	1	06/06/2018 01:35
1,2-Dibromo-3-chloropropane	ND	0.0040	1	06/06/2018 01:35
1,2-Dibromoethane (EDB)	ND	0.0040	1	06/06/2018 01:35
Dibromomethane	ND	0.0050	1	06/06/2018 01:35
1,2-Dichlorobenzene	ND	0.0050	1	06/06/2018 01:35
1,3-Dichlorobenzene	ND	0.0050	1	06/06/2018 01:35
1,4-Dichlorobenzene	ND	0.0050	1	06/06/2018 01:35
Dichlorodifluoromethane	ND	0.0050	1	06/06/2018 01:35
1,1-Dichloroethane	ND	0.0050	1	06/06/2018 01:35
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	06/06/2018 01:35
1,1-Dichloroethene	ND	0.0050	1	06/06/2018 01:35
cis-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 01:35
trans-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 01:35
1,2-Dichloropropane	ND	0.0050	1	06/06/2018 01:35
1,3-Dichloropropane	ND	0.0050	1	06/06/2018 01:35
2,2-Dichloropropane	ND	0.0050	1	06/06/2018 01:35

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Analytical Report

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Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(40,41,42,43) 1-1.5	**1805H38-003A**	**Soil**	**05/30/2018 10:05**	**GC18 06051828.D**	**159166**

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	06/06/2018 01:35
cis-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 01:35
trans-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 01:35
Diisopropyl ether (DIPE)	ND	0.0050	1	06/06/2018 01:35
Ethylbenzene	ND	0.0050	1	06/06/2018 01:35
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	06/06/2018 01:35
Freon 113	ND	0.0050	1	06/06/2018 01:35
Hexachlorobutadiene	ND	0.0050	1	06/06/2018 01:35
Hexachloroethane	ND	0.0050	1	06/06/2018 01:35
2-Hexanone	ND	0.0050	1	06/06/2018 01:35
Isopropylbenzene	ND	0.0050	1	06/06/2018 01:35
4-Isopropyl toluene	ND	0.0050	1	06/06/2018 01:35
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	06/06/2018 01:35
Methylene chloride	ND	0.0050	1	06/06/2018 01:35
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	06/06/2018 01:35
Naphthalene	ND	0.0050	1	06/06/2018 01:35
n-Propyl benzene	ND	0.0050	1	06/06/2018 01:35
Styrene	ND	0.0050	1	06/06/2018 01:35
1,1,1,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 01:35
1,1,2,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 01:35
Tetrachloroethene	ND	0.0050	1	06/06/2018 01:35
Toluene	ND	0.0050	1	06/06/2018 01:35
1,2,3-Trichlorobenzene	ND	0.0050	1	06/06/2018 01:35
1,2,4-Trichlorobenzene	ND	0.0050	1	06/06/2018 01:35
1,1,1-Trichloroethane	ND	0.0050	1	06/06/2018 01:35
1,1,2-Trichloroethane	ND	0.0050	1	06/06/2018 01:35
Trichloroethene	ND	0.0050	1	06/06/2018 01:35
Trichlorofluoromethane	ND	0.0050	1	06/06/2018 01:35
1,2,3-Trichloropropane	ND	0.0050	1	06/06/2018 01:35
1,2,4-Trimethylbenzene	ND	0.0050	1	06/06/2018 01:35
1,3,5-Trimethylbenzene	ND	0.0050	1	06/06/2018 01:35
Vinyl Chloride	ND	0.0050	1	06/06/2018 01:35
Xylenes, Total	ND	0.0050	1	06/06/2018 01:35

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(40,41,42,43) 1-1.5	**1805H38-003A**	**Soil**	**05/30/2018 10:05**	**GC18 06051828.D**	**159166**

Analytes	Result		RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	112		82-136		06/06/2018 01:35
Toluene-d8	119		92-139		06/06/2018 01:35
4-BFB	105		82-135		06/06/2018 01:35
Benzene-d6	9	S	55-122		06/06/2018 01:35
Ethylbenzene-d10	9	S	58-141		06/06/2018 01:35
1,2-DCB-d4	7	S	51-107		06/06/2018 01:35

Analyst(s): AK Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(44,45,46,47) 1-1.5	1805H38-004A	Soil	05/30/2018 10:44	GC18 06051829.D	159166

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	06/06/2018 02:14
tert-Amyl methyl ether (TAME)	ND	0.0050	1	06/06/2018 02:14
Benzene	ND	0.0050	1	06/06/2018 02:14
Bromobenzene	ND	0.0050	1	06/06/2018 02:14
Bromochloromethane	ND	0.0050	1	06/06/2018 02:14
Bromodichloromethane	ND	0.0050	1	06/06/2018 02:14
Bromoform	ND	0.0050	1	06/06/2018 02:14
Bromomethane	ND	0.0050	1	06/06/2018 02:14
2-Butanone (MEK)	ND	0.020	1	06/06/2018 02:14
t-Butyl alcohol (TBA)	ND	0.050	1	06/06/2018 02:14
n-Butyl benzene	ND	0.0050	1	06/06/2018 02:14
sec-Butyl benzene	ND	0.0050	1	06/06/2018 02:14
tert-Butyl benzene	ND	0.0050	1	06/06/2018 02:14
Carbon Disulfide	ND	0.0050	1	06/06/2018 02:14
Carbon Tetrachloride	ND	0.0050	1	06/06/2018 02:14
Chlorobenzene	ND	0.0050	1	06/06/2018 02:14
Chloroethane	ND	0.0050	1	06/06/2018 02:14
Chloroform	ND	0.0050	1	06/06/2018 02:14
Chloromethane	ND	0.0050	1	06/06/2018 02:14
2-Chlorotoluene	ND	0.0050	1	06/06/2018 02:14
4-Chlorotoluene	ND	0.0050	1	06/06/2018 02:14
Dibromochloromethane	ND	0.0050	1	06/06/2018 02:14
1,2-Dibromo-3-chloropropane	ND	0.0040	1	06/06/2018 02:14
1,2-Dibromoethane (EDB)	ND	0.0040	1	06/06/2018 02:14
Dibromomethane	ND	0.0050	1	06/06/2018 02:14
1,2-Dichlorobenzene	ND	0.0050	1	06/06/2018 02:14
1,3-Dichlorobenzene	ND	0.0050	1	06/06/2018 02:14
1,4-Dichlorobenzene	ND	0.0050	1	06/06/2018 02:14
Dichlorodifluoromethane	ND	0.0050	1	06/06/2018 02:14
1,1-Dichloroethane	ND	0.0050	1	06/06/2018 02:14
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	06/06/2018 02:14
1,1-Dichloroethene	ND	0.0050	1	06/06/2018 02:14
cis-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 02:14
trans-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 02:14
1,2-Dichloropropane	ND	0.0050	1	06/06/2018 02:14
1,3-Dichloropropane	ND	0.0050	1	06/06/2018 02:14
2,2-Dichloropropane	ND	0.0050	1	06/06/2018 02:14

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(44,45,46,47) 1-1.5	1805H38-004A	Soil	05/30/2018 10:44	GC18 06051829.D	159166

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	06/06/2018 02:14
cis-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 02:14
trans-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 02:14
Diisopropyl ether (DIPE)	ND	0.0050	1	06/06/2018 02:14
Ethylbenzene	ND	0.0050	1	06/06/2018 02:14
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	06/06/2018 02:14
Freon 113	ND	0.0050	1	06/06/2018 02:14
Hexachlorobutadiene	ND	0.0050	1	06/06/2018 02:14
Hexachloroethane	ND	0.0050	1	06/06/2018 02:14
2-Hexanone	ND	0.0050	1	06/06/2018 02:14
Isopropylbenzene	ND	0.0050	1	06/06/2018 02:14
4-Isopropyl toluene	ND	0.0050	1	06/06/2018 02:14
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	06/06/2018 02:14
Methylene chloride	ND	0.0050	1	06/06/2018 02:14
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	06/06/2018 02:14
Naphthalene	ND	0.0050	1	06/06/2018 02:14
n-Propyl benzene	ND	0.0050	1	06/06/2018 02:14
Styrene	ND	0.0050	1	06/06/2018 02:14
1,1,1,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 02:14
1,1,2,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 02:14
Tetrachloroethene	ND	0.0050	1	06/06/2018 02:14
Toluene	ND	0.0050	1	06/06/2018 02:14
1,2,3-Trichlorobenzene	ND	0.0050	1	06/06/2018 02:14
1,2,4-Trichlorobenzene	ND	0.0050	1	06/06/2018 02:14
1,1,1-Trichloroethane	ND	0.0050	1	06/06/2018 02:14
1,1,2-Trichloroethane	ND	0.0050	1	06/06/2018 02:14
Trichloroethene	ND	0.0050	1	06/06/2018 02:14
Trichlorofluoromethane	ND	0.0050	1	06/06/2018 02:14
1,2,3-Trichloropropane	ND	0.0050	1	06/06/2018 02:14
1,2,4-Trimethylbenzene	ND	0.0050	1	06/06/2018 02:14
1,3,5-Trimethylbenzene	ND	0.0050	1	06/06/2018 02:14
Vinyl Chloride	ND	0.0050	1	06/06/2018 02:14
Xylenes, Total	ND	0.0050	1	06/06/2018 02:14

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(44,45,46,47) 1-1.5	**1805H38-004A**	**Soil**	**05/30/2018 10:44**	**GC18 06051829.D**	**159166**

Analytes	Result		RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	111		82-136		06/06/2018 02:14
Toluene-d8	118		92-139		06/06/2018 02:14
4-BFB	104		82-135		06/06/2018 02:14
Benzene-d6	9	S	55-122		06/06/2018 02:14
Ethylbenzene-d10	9	S	58-141		06/06/2018 02:14
1,2-DCB-d4	7	S	51-107		06/06/2018 02:14

Analyst(s): AK Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(48,49,50,51) 1-1.5	1805H38-005A	Soil	05/30/2018 11:17	GC18 06051830.D	159166

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	06/06/2018 02:54
tert-Amyl methyl ether (TAME)	ND	0.0050	1	06/06/2018 02:54
Benzene	ND	0.0050	1	06/06/2018 02:54
Bromobenzene	ND	0.0050	1	06/06/2018 02:54
Bromochloromethane	ND	0.0050	1	06/06/2018 02:54
Bromodichloromethane	ND	0.0050	1	06/06/2018 02:54
Bromoform	ND	0.0050	1	06/06/2018 02:54
Bromomethane	ND	0.0050	1	06/06/2018 02:54
2-Butanone (MEK)	ND	0.020	1	06/06/2018 02:54
t-Butyl alcohol (TBA)	ND	0.050	1	06/06/2018 02:54
n-Butyl benzene	ND	0.0050	1	06/06/2018 02:54
sec-Butyl benzene	ND	0.0050	1	06/06/2018 02:54
tert-Butyl benzene	ND	0.0050	1	06/06/2018 02:54
Carbon Disulfide	ND	0.0050	1	06/06/2018 02:54
Carbon Tetrachloride	ND	0.0050	1	06/06/2018 02:54
Chlorobenzene	ND	0.0050	1	06/06/2018 02:54
Chloroethane	ND	0.0050	1	06/06/2018 02:54
Chloroform	ND	0.0050	1	06/06/2018 02:54
Chloromethane	ND	0.0050	1	06/06/2018 02:54
2-Chlorotoluene	ND	0.0050	1	06/06/2018 02:54
4-Chlorotoluene	ND	0.0050	1	06/06/2018 02:54
Dibromochloromethane	ND	0.0050	1	06/06/2018 02:54
1,2-Dibromo-3-chloropropane	ND	0.0040	1	06/06/2018 02:54
1,2-Dibromoethane (EDB)	ND	0.0040	1	06/06/2018 02:54
Dibromomethane	ND	0.0050	1	06/06/2018 02:54
1,2-Dichlorobenzene	ND	0.0050	1	06/06/2018 02:54
1,3-Dichlorobenzene	ND	0.0050	1	06/06/2018 02:54
1,4-Dichlorobenzene	ND	0.0050	1	06/06/2018 02:54
Dichlorodifluoromethane	ND	0.0050	1	06/06/2018 02:54
1,1-Dichloroethane	ND	0.0050	1	06/06/2018 02:54
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	06/06/2018 02:54
1,1-Dichloroethene	ND	0.0050	1	06/06/2018 02:54
cis-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 02:54
trans-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 02:54
1,2-Dichloropropane	ND	0.0050	1	06/06/2018 02:54
1,3-Dichloropropane	ND	0.0050	1	06/06/2018 02:54
2,2-Dichloropropane	ND	0.0050	1	06/06/2018 02:54

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(48,49,50,51) 1-1.5	1805H38-005A	Soil	05/30/2018 11:17	GC18 06051830.D	159166

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	06/06/2018 02:54
cis-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 02:54
trans-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 02:54
Diisopropyl ether (DIPE)	ND	0.0050	1	06/06/2018 02:54
Ethylbenzene	ND	0.0050	1	06/06/2018 02:54
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	06/06/2018 02:54
Freon 113	ND	0.0050	1	06/06/2018 02:54
Hexachlorobutadiene	ND	0.0050	1	06/06/2018 02:54
Hexachloroethane	ND	0.0050	1	06/06/2018 02:54
2-Hexanone	ND	0.0050	1	06/06/2018 02:54
Isopropylbenzene	ND	0.0050	1	06/06/2018 02:54
4-Isopropyl toluene	ND	0.0050	1	06/06/2018 02:54
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	06/06/2018 02:54
Methylene chloride	ND	0.0050	1	06/06/2018 02:54
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	06/06/2018 02:54
Naphthalene	ND	0.0050	1	06/06/2018 02:54
n-Propyl benzene	ND	0.0050	1	06/06/2018 02:54
Styrene	ND	0.0050	1	06/06/2018 02:54
1,1,1,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 02:54
1,1,2,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 02:54
Tetrachloroethene	ND	0.0050	1	06/06/2018 02:54
Toluene	ND	0.0050	1	06/06/2018 02:54
1,2,3-Trichlorobenzene	ND	0.0050	1	06/06/2018 02:54
1,2,4-Trichlorobenzene	ND	0.0050	1	06/06/2018 02:54
1,1,1-Trichloroethane	ND	0.0050	1	06/06/2018 02:54
1,1,2-Trichloroethane	ND	0.0050	1	06/06/2018 02:54
Trichloroethene	ND	0.0050	1	06/06/2018 02:54
Trichlorofluoromethane	ND	0.0050	1	06/06/2018 02:54
1,2,3-Trichloropropane	ND	0.0050	1	06/06/2018 02:54
1,2,4-Trimethylbenzene	ND	0.0050	1	06/06/2018 02:54
1,3,5-Trimethylbenzene	ND	0.0050	1	06/06/2018 02:54
Vinyl Chloride	ND	0.0050	1	06/06/2018 02:54
Xylenes, Total	ND	0.0050	1	06/06/2018 02:54

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(48,49,50,51) 1-1.5	**1805H38-005A**	**Soil**	**05/30/2018 11:17**	**GC18 06051830.D**	**159166**

Analytes	Result		RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	112		82-136		06/06/2018 02:54
Toluene-d8	117		92-139		06/06/2018 02:54
4-BFB	109		82-135		06/06/2018 02:54
Benzene-d6	10	S	55-122		06/06/2018 02:54
Ethylbenzene-d10	9	S	58-141		06/06/2018 02:54
1,2-DCB-d4	7	S	51-107		06/06/2018 02:54

Analyst(s): AK Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(52,53,54,55) 1-1.5	1805H38-006A	Soil	05/30/2018 11:44	GC18 06051831.D	159166

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	06/06/2018 03:33
tert-Amyl methyl ether (TAME)	ND	0.0050	1	06/06/2018 03:33
Benzene	ND	0.0050	1	06/06/2018 03:33
Bromobenzene	ND	0.0050	1	06/06/2018 03:33
Bromochloromethane	ND	0.0050	1	06/06/2018 03:33
Bromodichloromethane	ND	0.0050	1	06/06/2018 03:33
Bromoform	ND	0.0050	1	06/06/2018 03:33
Bromomethane	ND	0.0050	1	06/06/2018 03:33
2-Butanone (MEK)	ND	0.020	1	06/06/2018 03:33
t-Butyl alcohol (TBA)	ND	0.050	1	06/06/2018 03:33
n-Butyl benzene	ND	0.0050	1	06/06/2018 03:33
sec-Butyl benzene	ND	0.0050	1	06/06/2018 03:33
tert-Butyl benzene	ND	0.0050	1	06/06/2018 03:33
Carbon Disulfide	ND	0.0050	1	06/06/2018 03:33
Carbon Tetrachloride	ND	0.0050	1	06/06/2018 03:33
Chlorobenzene	ND	0.0050	1	06/06/2018 03:33
Chloroethane	ND	0.0050	1	06/06/2018 03:33
Chloroform	ND	0.0050	1	06/06/2018 03:33
Chloromethane	ND	0.0050	1	06/06/2018 03:33
2-Chlorotoluene	ND	0.0050	1	06/06/2018 03:33
4-Chlorotoluene	ND	0.0050	1	06/06/2018 03:33
Dibromochloromethane	ND	0.0050	1	06/06/2018 03:33
1,2-Dibromo-3-chloropropane	ND	0.0040	1	06/06/2018 03:33
1,2-Dibromoethane (EDB)	ND	0.0040	1	06/06/2018 03:33
Dibromomethane	ND	0.0050	1	06/06/2018 03:33
1,2-Dichlorobenzene	ND	0.0050	1	06/06/2018 03:33
1,3-Dichlorobenzene	ND	0.0050	1	06/06/2018 03:33
1,4-Dichlorobenzene	ND	0.0050	1	06/06/2018 03:33
Dichlorodifluoromethane	ND	0.0050	1	06/06/2018 03:33
1,1-Dichloroethane	ND	0.0050	1	06/06/2018 03:33
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	06/06/2018 03:33
1,1-Dichloroethene	ND	0.0050	1	06/06/2018 03:33
cis-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 03:33
trans-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 03:33
1,2-Dichloropropane	ND	0.0050	1	06/06/2018 03:33
1,3-Dichloropropane	ND	0.0050	1	06/06/2018 03:33
2,2-Dichloropropane	ND	0.0050	1	06/06/2018 03:33

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(52,53,54,55) 1-1.5	1805H38-006A	Soil	05/30/2018 11:44	GC18 06051831.D	159166

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	06/06/2018 03:33
cis-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 03:33
trans-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 03:33
Diisopropyl ether (DIPE)	ND	0.0050	1	06/06/2018 03:33
Ethylbenzene	ND	0.0050	1	06/06/2018 03:33
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	06/06/2018 03:33
Freon 113	ND	0.0050	1	06/06/2018 03:33
Hexachlorobutadiene	ND	0.0050	1	06/06/2018 03:33
Hexachloroethane	ND	0.0050	1	06/06/2018 03:33
2-Hexanone	ND	0.0050	1	06/06/2018 03:33
Isopropylbenzene	ND	0.0050	1	06/06/2018 03:33
4-Isopropyl toluene	ND	0.0050	1	06/06/2018 03:33
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	06/06/2018 03:33
Methylene chloride	ND	0.0050	1	06/06/2018 03:33
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	06/06/2018 03:33
Naphthalene	ND	0.0050	1	06/06/2018 03:33
n-Propyl benzene	ND	0.0050	1	06/06/2018 03:33
Styrene	ND	0.0050	1	06/06/2018 03:33
1,1,1,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 03:33
1,1,2,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 03:33
Tetrachloroethene	ND	0.0050	1	06/06/2018 03:33
Toluene	ND	0.0050	1	06/06/2018 03:33
1,2,3-Trichlorobenzene	ND	0.0050	1	06/06/2018 03:33
1,2,4-Trichlorobenzene	ND	0.0050	1	06/06/2018 03:33
1,1,1-Trichloroethane	ND	0.0050	1	06/06/2018 03:33
1,1,2-Trichloroethane	ND	0.0050	1	06/06/2018 03:33
Trichloroethene	ND	0.0050	1	06/06/2018 03:33
Trichlorofluoromethane	ND	0.0050	1	06/06/2018 03:33
1,2,3-Trichloropropane	ND	0.0050	1	06/06/2018 03:33
1,2,4-Trimethylbenzene	ND	0.0050	1	06/06/2018 03:33
1,3,5-Trimethylbenzene	ND	0.0050	1	06/06/2018 03:33
Vinyl Chloride	ND	0.0050	1	06/06/2018 03:33
Xylenes, Total	ND	0.0050	1	06/06/2018 03:33

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(52,53,54,55) 1-1.5	**1805H38-006A**	**Soil**	**05/30/2018 11:44**	**GC18 06051831.D**	**159166**

Analytes	Result		RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	104		82-136		06/06/2018 03:33
Toluene-d8	123		92-139		06/06/2018 03:33
4-BFB	104		82-135		06/06/2018 03:33
Benzene-d6	9	S	55-122		06/06/2018 03:33
Ethylbenzene-d10	10	S	58-141		06/06/2018 03:33
1,2-DCB-d4	7	S	51-107		06/06/2018 03:33

Analyst(s): AK Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(56,57,58,59) 1-1.5	1805H38-007A	Soil	05/30/2018 12:40	GC18 06051832.D	159166

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	06/06/2018 04:13
tert-Amyl methyl ether (TAME)	ND	0.0050	1	06/06/2018 04:13
Benzene	ND	0.0050	1	06/06/2018 04:13
Bromobenzene	ND	0.0050	1	06/06/2018 04:13
Bromochloromethane	ND	0.0050	1	06/06/2018 04:13
Bromodichloromethane	ND	0.0050	1	06/06/2018 04:13
Bromoform	ND	0.0050	1	06/06/2018 04:13
Bromomethane	ND	0.0050	1	06/06/2018 04:13
2-Butanone (MEK)	ND	0.020	1	06/06/2018 04:13
t-Butyl alcohol (TBA)	ND	0.050	1	06/06/2018 04:13
n-Butyl benzene	ND	0.0050	1	06/06/2018 04:13
sec-Butyl benzene	ND	0.0050	1	06/06/2018 04:13
tert-Butyl benzene	ND	0.0050	1	06/06/2018 04:13
Carbon Disulfide	ND	0.0050	1	06/06/2018 04:13
Carbon Tetrachloride	ND	0.0050	1	06/06/2018 04:13
Chlorobenzene	ND	0.0050	1	06/06/2018 04:13
Chloroethane	ND	0.0050	1	06/06/2018 04:13
Chloroform	ND	0.0050	1	06/06/2018 04:13
Chloromethane	ND	0.0050	1	06/06/2018 04:13
2-Chlorotoluene	ND	0.0050	1	06/06/2018 04:13
4-Chlorotoluene	ND	0.0050	1	06/06/2018 04:13
Dibromochloromethane	ND	0.0050	1	06/06/2018 04:13
1,2-Dibromo-3-chloropropane	ND	0.0040	1	06/06/2018 04:13
1,2-Dibromoethane (EDB)	ND	0.0040	1	06/06/2018 04:13
Dibromomethane	ND	0.0050	1	06/06/2018 04:13
1,2-Dichlorobenzene	ND	0.0050	1	06/06/2018 04:13
1,3-Dichlorobenzene	ND	0.0050	1	06/06/2018 04:13
1,4-Dichlorobenzene	ND	0.0050	1	06/06/2018 04:13
Dichlorodifluoromethane	ND	0.0050	1	06/06/2018 04:13
1,1-Dichloroethane	ND	0.0050	1	06/06/2018 04:13
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	06/06/2018 04:13
1,1-Dichloroethene	ND	0.0050	1	06/06/2018 04:13
cis-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 04:13
trans-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 04:13
1,2-Dichloropropane	ND	0.0050	1	06/06/2018 04:13
1,3-Dichloropropane	ND	0.0050	1	06/06/2018 04:13
2,2-Dichloropropane	ND	0.0050	1	06/06/2018 04:13

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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(56,57,58,59) 1-1.5	1805H38-007A	Soil	05/30/2018 12:40	GC18 06051832.D	159166

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	06/06/2018 04:13
cis-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 04:13
trans-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 04:13
Diisopropyl ether (DIPE)	ND	0.0050	1	06/06/2018 04:13
Ethylbenzene	ND	0.0050	1	06/06/2018 04:13
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	06/06/2018 04:13
Freon 113	ND	0.0050	1	06/06/2018 04:13
Hexachlorobutadiene	ND	0.0050	1	06/06/2018 04:13
Hexachloroethane	ND	0.0050	1	06/06/2018 04:13
2-Hexanone	ND	0.0050	1	06/06/2018 04:13
Isopropylbenzene	ND	0.0050	1	06/06/2018 04:13
4-Isopropyl toluene	ND	0.0050	1	06/06/2018 04:13
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	06/06/2018 04:13
Methylene chloride	ND	0.0050	1	06/06/2018 04:13
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	06/06/2018 04:13
Naphthalene	ND	0.0050	1	06/06/2018 04:13
n-Propyl benzene	ND	0.0050	1	06/06/2018 04:13
Styrene	ND	0.0050	1	06/06/2018 04:13
1,1,1,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 04:13
1,1,2,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 04:13
Tetrachloroethene	ND	0.0050	1	06/06/2018 04:13
Toluene	ND	0.0050	1	06/06/2018 04:13
1,2,3-Trichlorobenzene	ND	0.0050	1	06/06/2018 04:13
1,2,4-Trichlorobenzene	ND	0.0050	1	06/06/2018 04:13
1,1,1-Trichloroethane	ND	0.0050	1	06/06/2018 04:13
1,1,2-Trichloroethane	ND	0.0050	1	06/06/2018 04:13
Trichloroethene	ND	0.0050	1	06/06/2018 04:13
Trichlorofluoromethane	ND	0.0050	1	06/06/2018 04:13
1,2,3-Trichloropropane	ND	0.0050	1	06/06/2018 04:13
1,2,4-Trimethylbenzene	ND	0.0050	1	06/06/2018 04:13
1,3,5-Trimethylbenzene	ND	0.0050	1	06/06/2018 04:13
Vinyl Chloride	ND	0.0050	1	06/06/2018 04:13
Xylenes, Total	ND	0.0050	1	06/06/2018 04:13

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(56,57,58,59) 1-1.5	**1805H38-007A**	**Soil**	**05/30/2018 12:40**	**GC18 06051832.D**	**159166**

Analytes	Result		RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	99		82-136		06/06/2018 04:13
Toluene-d8	122		92-139		06/06/2018 04:13
4-BFB	104		82-135		06/06/2018 04:13
Benzene-d6	9	S	55-122		06/06/2018 04:13
Ethylbenzene-d10	10	S	58-141		06/06/2018 04:13
1,2-DCB-d4	7	S	51-107		06/06/2018 04:13

Analyst(s): AK Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(60,61,62,63) 1-1.5	1805H38-008A	Soil	05/30/2018 12:51	GC18 06051833.D	159166

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	06/06/2018 04:52
tert-Amyl methyl ether (TAME)	ND	0.0050	1	06/06/2018 04:52
Benzene	ND	0.0050	1	06/06/2018 04:52
Bromobenzene	ND	0.0050	1	06/06/2018 04:52
Bromochloromethane	ND	0.0050	1	06/06/2018 04:52
Bromodichloromethane	ND	0.0050	1	06/06/2018 04:52
Bromoform	ND	0.0050	1	06/06/2018 04:52
Bromomethane	ND	0.0050	1	06/06/2018 04:52
2-Butanone (MEK)	ND	0.020	1	06/06/2018 04:52
t-Butyl alcohol (TBA)	ND	0.050	1	06/06/2018 04:52
n-Butyl benzene	ND	0.0050	1	06/06/2018 04:52
sec-Butyl benzene	ND	0.0050	1	06/06/2018 04:52
tert-Butyl benzene	ND	0.0050	1	06/06/2018 04:52
Carbon Disulfide	ND	0.0050	1	06/06/2018 04:52
Carbon Tetrachloride	ND	0.0050	1	06/06/2018 04:52
Chlorobenzene	ND	0.0050	1	06/06/2018 04:52
Chloroethane	ND	0.0050	1	06/06/2018 04:52
Chloroform	ND	0.0050	1	06/06/2018 04:52
Chloromethane	ND	0.0050	1	06/06/2018 04:52
2-Chlorotoluene	ND	0.0050	1	06/06/2018 04:52
4-Chlorotoluene	ND	0.0050	1	06/06/2018 04:52
Dibromochloromethane	ND	0.0050	1	06/06/2018 04:52
1,2-Dibromo-3-chloropropane	ND	0.0040	1	06/06/2018 04:52
1,2-Dibromoethane (EDB)	ND	0.0040	1	06/06/2018 04:52
Dibromomethane	ND	0.0050	1	06/06/2018 04:52
1,2-Dichlorobenzene	ND	0.0050	1	06/06/2018 04:52
1,3-Dichlorobenzene	ND	0.0050	1	06/06/2018 04:52
1,4-Dichlorobenzene	ND	0.0050	1	06/06/2018 04:52
Dichlorodifluoromethane	ND	0.0050	1	06/06/2018 04:52
1,1-Dichloroethane	ND	0.0050	1	06/06/2018 04:52
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	06/06/2018 04:52
1,1-Dichloroethene	ND	0.0050	1	06/06/2018 04:52
cis-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 04:52
trans-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 04:52
1,2-Dichloropropane	ND	0.0050	1	06/06/2018 04:52
1,3-Dichloropropane	ND	0.0050	1	06/06/2018 04:52
2,2-Dichloropropane	ND	0.0050	1	06/06/2018 04:52

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(60,61,62,63) 1-1.5	**1805H38-008A**	**Soil**	**05/30/2018 12:51**	**GC18 06051833.D**	**159166**

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	06/06/2018 04:52
cis-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 04:52
trans-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 04:52
Diisopropyl ether (DIPE)	ND	0.0050	1	06/06/2018 04:52
Ethylbenzene	ND	0.0050	1	06/06/2018 04:52
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	06/06/2018 04:52
Freon 113	ND	0.0050	1	06/06/2018 04:52
Hexachlorobutadiene	ND	0.0050	1	06/06/2018 04:52
Hexachloroethane	ND	0.0050	1	06/06/2018 04:52
2-Hexanone	ND	0.0050	1	06/06/2018 04:52
Isopropylbenzene	ND	0.0050	1	06/06/2018 04:52
4-Isopropyl toluene	ND	0.0050	1	06/06/2018 04:52
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	06/06/2018 04:52
Methylene chloride	ND	0.0050	1	06/06/2018 04:52
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	06/06/2018 04:52
Naphthalene	ND	0.0050	1	06/06/2018 04:52
n-Propyl benzene	ND	0.0050	1	06/06/2018 04:52
Styrene	ND	0.0050	1	06/06/2018 04:52
1,1,1,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 04:52
1,1,2,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 04:52
Tetrachloroethene	ND	0.0050	1	06/06/2018 04:52
Toluene	ND	0.0050	1	06/06/2018 04:52
1,2,3-Trichlorobenzene	ND	0.0050	1	06/06/2018 04:52
1,2,4-Trichlorobenzene	ND	0.0050	1	06/06/2018 04:52
1,1,1-Trichloroethane	ND	0.0050	1	06/06/2018 04:52
1,1,2-Trichloroethane	ND	0.0050	1	06/06/2018 04:52
Trichloroethene	ND	0.0050	1	06/06/2018 04:52
Trichlorofluoromethane	ND	0.0050	1	06/06/2018 04:52
1,2,3-Trichloropropane	ND	0.0050	1	06/06/2018 04:52
1,2,4-Trimethylbenzene	ND	0.0050	1	06/06/2018 04:52
1,3,5-Trimethylbenzene	ND	0.0050	1	06/06/2018 04:52
Vinyl Chloride	ND	0.0050	1	06/06/2018 04:52
Xylenes, Total	ND	0.0050	1	06/06/2018 04:52

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Analytical Report

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Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(60,61,62,63) 1-1.5	**1805H38-008A**	**Soil**	**05/30/2018 12:51**	**GC18 06051833.D**	**159166**

Analytes	Result		RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	105		82-136		06/06/2018 04:52
Toluene-d8	123		92-139		06/06/2018 04:52
4-BFB	103		82-135		06/06/2018 04:52
Benzene-d6	9	S	55-122		06/06/2018 04:52
Ethylbenzene-d10	10	S	58-141		06/06/2018 04:52
1,2-DCB-d4	7	S	51-107		06/06/2018 04:52

Analyst(s): AK Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(64,65,66,67) 1-1.5	1805H38-009A	Soil	05/30/2018 13:06	GC18 06051834.D	159166

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	06/06/2018 05:32
tert-Amyl methyl ether (TAME)	ND	0.0050	1	06/06/2018 05:32
Benzene	ND	0.0050	1	06/06/2018 05:32
Bromobenzene	ND	0.0050	1	06/06/2018 05:32
Bromochloromethane	ND	0.0050	1	06/06/2018 05:32
Bromodichloromethane	ND	0.0050	1	06/06/2018 05:32
Bromoform	ND	0.0050	1	06/06/2018 05:32
Bromomethane	ND	0.0050	1	06/06/2018 05:32
2-Butanone (MEK)	ND	0.020	1	06/06/2018 05:32
t-Butyl alcohol (TBA)	ND	0.050	1	06/06/2018 05:32
n-Butyl benzene	ND	0.0050	1	06/06/2018 05:32
sec-Butyl benzene	ND	0.0050	1	06/06/2018 05:32
tert-Butyl benzene	ND	0.0050	1	06/06/2018 05:32
Carbon Disulfide	ND	0.0050	1	06/06/2018 05:32
Carbon Tetrachloride	ND	0.0050	1	06/06/2018 05:32
Chlorobenzene	ND	0.0050	1	06/06/2018 05:32
Chloroethane	ND	0.0050	1	06/06/2018 05:32
Chloroform	ND	0.0050	1	06/06/2018 05:32
Chloromethane	ND	0.0050	1	06/06/2018 05:32
2-Chlorotoluene	ND	0.0050	1	06/06/2018 05:32
4-Chlorotoluene	ND	0.0050	1	06/06/2018 05:32
Dibromochloromethane	ND	0.0050	1	06/06/2018 05:32
1,2-Dibromo-3-chloropropane	ND	0.0040	1	06/06/2018 05:32
1,2-Dibromoethane (EDB)	ND	0.0040	1	06/06/2018 05:32
Dibromomethane	ND	0.0050	1	06/06/2018 05:32
1,2-Dichlorobenzene	ND	0.0050	1	06/06/2018 05:32
1,3-Dichlorobenzene	ND	0.0050	1	06/06/2018 05:32
1,4-Dichlorobenzene	ND	0.0050	1	06/06/2018 05:32
Dichlorodifluoromethane	ND	0.0050	1	06/06/2018 05:32
1,1-Dichloroethane	ND	0.0050	1	06/06/2018 05:32
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	06/06/2018 05:32
1,1-Dichloroethene	ND	0.0050	1	06/06/2018 05:32
cis-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 05:32
trans-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 05:32
1,2-Dichloropropane	ND	0.0050	1	06/06/2018 05:32
1,3-Dichloropropane	ND	0.0050	1	06/06/2018 05:32
2,2-Dichloropropane	ND	0.0050	1	06/06/2018 05:32

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(64,65,66,67) 1-1.5	1805H38-009A	Soil	05/30/2018 13:06	GC18 06051834.D	159166

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	06/06/2018 05:32
cis-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 05:32
trans-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 05:32
Diisopropyl ether (DIPE)	ND	0.0050	1	06/06/2018 05:32
Ethylbenzene	ND	0.0050	1	06/06/2018 05:32
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	06/06/2018 05:32
Freon 113	ND	0.0050	1	06/06/2018 05:32
Hexachlorobutadiene	ND	0.0050	1	06/06/2018 05:32
Hexachloroethane	ND	0.0050	1	06/06/2018 05:32
2-Hexanone	ND	0.0050	1	06/06/2018 05:32
Isopropylbenzene	ND	0.0050	1	06/06/2018 05:32
4-Isopropyl toluene	ND	0.0050	1	06/06/2018 05:32
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	06/06/2018 05:32
Methylene chloride	ND	0.0050	1	06/06/2018 05:32
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	06/06/2018 05:32
Naphthalene	ND	0.0050	1	06/06/2018 05:32
n-Propyl benzene	ND	0.0050	1	06/06/2018 05:32
Styrene	ND	0.0050	1	06/06/2018 05:32
1,1,1,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 05:32
1,1,2,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 05:32
Tetrachloroethene	ND	0.0050	1	06/06/2018 05:32
Toluene	ND	0.0050	1	06/06/2018 05:32
1,2,3-Trichlorobenzene	ND	0.0050	1	06/06/2018 05:32
1,2,4-Trichlorobenzene	ND	0.0050	1	06/06/2018 05:32
1,1,1-Trichloroethane	ND	0.0050	1	06/06/2018 05:32
1,1,2-Trichloroethane	ND	0.0050	1	06/06/2018 05:32
Trichloroethene	ND	0.0050	1	06/06/2018 05:32
Trichlorofluoromethane	ND	0.0050	1	06/06/2018 05:32
1,2,3-Trichloropropane	ND	0.0050	1	06/06/2018 05:32
1,2,4-Trimethylbenzene	ND	0.0050	1	06/06/2018 05:32
1,3,5-Trimethylbenzene	ND	0.0050	1	06/06/2018 05:32
Vinyl Chloride	ND	0.0050	1	06/06/2018 05:32
Xylenes, Total	ND	0.0050	1	06/06/2018 05:32

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(64,65,66,67) 1-1.5	**1805H38-009A**	**Soil**	**05/30/2018 13:06**	**GC18 06051834.D**	**159166**

Analytes	Result		RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	106		82-136		06/06/2018 05:32
Toluene-d8	124		92-139		06/06/2018 05:32
4-BFB	102		82-135		06/06/2018 05:32
Benzene-d6	9	S	55-122		06/06/2018 05:32
Ethylbenzene-d10	10	S	58-141		06/06/2018 05:32
1,2-DCB-d4	7	S	51-107		06/06/2018 05:32

Analyst(s): AK Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(68,69,70,71) 1-1.5	1805H38-010A	Soil	05/30/2018 13:22	GC18 06061810.D	159166

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	06/06/2018 13:22
tert-Amyl methyl ether (TAME)	ND	0.0050	1	06/06/2018 13:22
Benzene	ND	0.0050	1	06/06/2018 13:22
Bromobenzene	ND	0.0050	1	06/06/2018 13:22
Bromochloromethane	ND	0.0050	1	06/06/2018 13:22
Bromodichloromethane	ND	0.0050	1	06/06/2018 13:22
Bromoform	ND	0.0050	1	06/06/2018 13:22
Bromomethane	ND	0.0050	1	06/06/2018 13:22
2-Butanone (MEK)	ND	0.020	1	06/06/2018 13:22
t-Butyl alcohol (TBA)	ND	0.050	1	06/06/2018 13:22
n-Butyl benzene	ND	0.0050	1	06/06/2018 13:22
sec-Butyl benzene	ND	0.0050	1	06/06/2018 13:22
tert-Butyl benzene	ND	0.0050	1	06/06/2018 13:22
Carbon Disulfide	ND	0.0050	1	06/06/2018 13:22
Carbon Tetrachloride	ND	0.0050	1	06/06/2018 13:22
Chlorobenzene	ND	0.0050	1	06/06/2018 13:22
Chloroethane	ND	0.0050	1	06/06/2018 13:22
Chloroform	ND	0.0050	1	06/06/2018 13:22
Chloromethane	ND	0.0050	1	06/06/2018 13:22
2-Chlorotoluene	ND	0.0050	1	06/06/2018 13:22
4-Chlorotoluene	ND	0.0050	1	06/06/2018 13:22
Dibromochloromethane	ND	0.0050	1	06/06/2018 13:22
1,2-Dibromo-3-chloropropane	ND	0.0040	1	06/06/2018 13:22
1,2-Dibromoethane (EDB)	ND	0.0040	1	06/06/2018 13:22
Dibromomethane	ND	0.0050	1	06/06/2018 13:22
1,2-Dichlorobenzene	ND	0.0050	1	06/06/2018 13:22
1,3-Dichlorobenzene	ND	0.0050	1	06/06/2018 13:22
1,4-Dichlorobenzene	ND	0.0050	1	06/06/2018 13:22
Dichlorodifluoromethane	ND	0.0050	1	06/06/2018 13:22
1,1-Dichloroethane	ND	0.0050	1	06/06/2018 13:22
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	06/06/2018 13:22
1,1-Dichloroethene	ND	0.0050	1	06/06/2018 13:22
cis-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 13:22
trans-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 13:22
1,2-Dichloropropane	ND	0.0050	1	06/06/2018 13:22
1,3-Dichloropropane	ND	0.0050	1	06/06/2018 13:22
2,2-Dichloropropane	ND	0.0050	1	06/06/2018 13:22

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(68,69,70,71) 1-1.5	1805H38-010A	Soil	05/30/2018 13:22	GC18 06061810.D	159166

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	06/06/2018 13:22
cis-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 13:22
trans-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 13:22
Diisopropyl ether (DIPE)	ND	0.0050	1	06/06/2018 13:22
Ethylbenzene	ND	0.0050	1	06/06/2018 13:22
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	06/06/2018 13:22
Freon 113	ND	0.0050	1	06/06/2018 13:22
Hexachlorobutadiene	ND	0.0050	1	06/06/2018 13:22
Hexachloroethane	ND	0.0050	1	06/06/2018 13:22
2-Hexanone	ND	0.0050	1	06/06/2018 13:22
Isopropylbenzene	ND	0.0050	1	06/06/2018 13:22
4-Isopropyl toluene	ND	0.0050	1	06/06/2018 13:22
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	06/06/2018 13:22
Methylene chloride	ND	0.0050	1	06/06/2018 13:22
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	06/06/2018 13:22
Naphthalene	ND	0.0050	1	06/06/2018 13:22
n-Propyl benzene	ND	0.0050	1	06/06/2018 13:22
Styrene	ND	0.0050	1	06/06/2018 13:22
1,1,1,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 13:22
1,1,2,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 13:22
Tetrachloroethene	ND	0.0050	1	06/06/2018 13:22
Toluene	ND	0.0050	1	06/06/2018 13:22
1,2,3-Trichlorobenzene	ND	0.0050	1	06/06/2018 13:22
1,2,4-Trichlorobenzene	ND	0.0050	1	06/06/2018 13:22
1,1,1-Trichloroethane	ND	0.0050	1	06/06/2018 13:22
1,1,2-Trichloroethane	ND	0.0050	1	06/06/2018 13:22
Trichloroethene	ND	0.0050	1	06/06/2018 13:22
Trichlorofluoromethane	ND	0.0050	1	06/06/2018 13:22
1,2,3-Trichloropropane	ND	0.0050	1	06/06/2018 13:22
1,2,4-Trimethylbenzene	ND	0.0050	1	06/06/2018 13:22
1,3,5-Trimethylbenzene	ND	0.0050	1	06/06/2018 13:22
Vinyl Chloride	ND	0.0050	1	06/06/2018 13:22
Xylenes, Total	ND	0.0050	1	06/06/2018 13:22

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(68,69,70,71) 1-1.5	**1805H38-010A**	**Soil**	**05/30/2018 13:22**	**GC18 06061810.D**	**159166**

Analytes	Result		RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	108		82-136		06/06/2018 13:22
Toluene-d8	122		92-139		06/06/2018 13:22
4-BFB	105		82-135		06/06/2018 13:22
Benzene-d6	9	S	55-122		06/06/2018 13:22
Ethylbenzene-d10	10	S	58-141		06/06/2018 13:22
1,2-DCB-d4	7	S	51-107		06/06/2018 13:22

Analyst(s): KF Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(72,73,74,75) 1-1.5	1805H38-011A	Soil	05/30/2018 13:35	GC18 06061811.D	159166

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	06/06/2018 14:02
tert-Amyl methyl ether (TAME)	ND	0.0050	1	06/06/2018 14:02
Benzene	ND	0.0050	1	06/06/2018 14:02
Bromobenzene	ND	0.0050	1	06/06/2018 14:02
Bromochloromethane	ND	0.0050	1	06/06/2018 14:02
Bromodichloromethane	ND	0.0050	1	06/06/2018 14:02
Bromoform	ND	0.0050	1	06/06/2018 14:02
Bromomethane	ND	0.0050	1	06/06/2018 14:02
2-Butanone (MEK)	ND	0.020	1	06/06/2018 14:02
t-Butyl alcohol (TBA)	ND	0.050	1	06/06/2018 14:02
n-Butyl benzene	ND	0.0050	1	06/06/2018 14:02
sec-Butyl benzene	ND	0.0050	1	06/06/2018 14:02
tert-Butyl benzene	ND	0.0050	1	06/06/2018 14:02
Carbon Disulfide	ND	0.0050	1	06/06/2018 14:02
Carbon Tetrachloride	ND	0.0050	1	06/06/2018 14:02
Chlorobenzene	ND	0.0050	1	06/06/2018 14:02
Chloroethane	ND	0.0050	1	06/06/2018 14:02
Chloroform	ND	0.0050	1	06/06/2018 14:02
Chloromethane	ND	0.0050	1	06/06/2018 14:02
2-Chlorotoluene	ND	0.0050	1	06/06/2018 14:02
4-Chlorotoluene	ND	0.0050	1	06/06/2018 14:02
Dibromochloromethane	ND	0.0050	1	06/06/2018 14:02
1,2-Dibromo-3-chloropropane	ND	0.0040	1	06/06/2018 14:02
1,2-Dibromoethane (EDB)	ND	0.0040	1	06/06/2018 14:02
Dibromomethane	ND	0.0050	1	06/06/2018 14:02
1,2-Dichlorobenzene	ND	0.0050	1	06/06/2018 14:02
1,3-Dichlorobenzene	ND	0.0050	1	06/06/2018 14:02
1,4-Dichlorobenzene	ND	0.0050	1	06/06/2018 14:02
Dichlorodifluoromethane	ND	0.0050	1	06/06/2018 14:02
1,1-Dichloroethane	ND	0.0050	1	06/06/2018 14:02
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	06/06/2018 14:02
1,1-Dichloroethene	ND	0.0050	1	06/06/2018 14:02
cis-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 14:02
trans-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 14:02
1,2-Dichloropropane	ND	0.0050	1	06/06/2018 14:02
1,3-Dichloropropane	ND	0.0050	1	06/06/2018 14:02
2,2-Dichloropropane	ND	0.0050	1	06/06/2018 14:02

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(72,73,74,75) 1-1.5	1805H38-011A	Soil	05/30/2018 13:35	GC18 06061811.D	159166

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	06/06/2018 14:02
cis-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 14:02
trans-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 14:02
Diisopropyl ether (DIPE)	ND	0.0050	1	06/06/2018 14:02
Ethylbenzene	ND	0.0050	1	06/06/2018 14:02
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	06/06/2018 14:02
Freon 113	ND	0.0050	1	06/06/2018 14:02
Hexachlorobutadiene	ND	0.0050	1	06/06/2018 14:02
Hexachloroethane	ND	0.0050	1	06/06/2018 14:02
2-Hexanone	ND	0.0050	1	06/06/2018 14:02
Isopropylbenzene	ND	0.0050	1	06/06/2018 14:02
4-Isopropyl toluene	ND	0.0050	1	06/06/2018 14:02
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	06/06/2018 14:02
Methylene chloride	ND	0.0071	1	06/06/2018 14:02
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	06/06/2018 14:02
Naphthalene	ND	0.0050	1	06/06/2018 14:02
n-Propyl benzene	ND	0.0050	1	06/06/2018 14:02
Styrene	ND	0.0050	1	06/06/2018 14:02
1,1,1,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 14:02
1,1,2,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 14:02
Tetrachloroethene	ND	0.0050	1	06/06/2018 14:02
Toluene	ND	0.0050	1	06/06/2018 14:02
1,2,3-Trichlorobenzene	ND	0.0050	1	06/06/2018 14:02
1,2,4-Trichlorobenzene	ND	0.0050	1	06/06/2018 14:02
1,1,1-Trichloroethane	ND	0.0050	1	06/06/2018 14:02
1,1,2-Trichloroethane	ND	0.0050	1	06/06/2018 14:02
Trichloroethene	ND	0.0050	1	06/06/2018 14:02
Trichlorofluoromethane	ND	0.0050	1	06/06/2018 14:02
1,2,3-Trichloropropane	ND	0.0050	1	06/06/2018 14:02
1,2,4-Trimethylbenzene	ND	0.0050	1	06/06/2018 14:02
1,3,5-Trimethylbenzene	ND	0.0050	1	06/06/2018 14:02
Vinyl Chloride	ND	0.0050	1	06/06/2018 14:02
Xylenes, Total	ND	0.0050	1	06/06/2018 14:02

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(72,73,74,75) 1-1.5	**1805H38-011A**	**Soil**	**05/30/2018 13:35**	**GC18 06061811.D**	**159166**

Analytes	Result		RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	112		82-136		06/06/2018 14:02
Toluene-d8	123		92-139		06/06/2018 14:02
4-BFB	102		82-135		06/06/2018 14:02
Benzene-d6	9	S	55-122		06/06/2018 14:02
Ethylbenzene-d10	9	S	58-141		06/06/2018 14:02
1,2-DCB-d4	7	S	51-107		06/06/2018 14:02

Analyst(s): KF Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(76,77,78,79) 1-1.5	1805H38-012A	Soil	05/30/2018 13:50	GC18 06061809.D	159173

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.10	1	06/06/2018 12:42
tert-Amyl methyl ether (TAME)	ND	0.0050	1	06/06/2018 12:42
Benzene	ND	0.0050	1	06/06/2018 12:42
Bromobenzene	ND	0.0050	1	06/06/2018 12:42
Bromochloromethane	ND	0.0050	1	06/06/2018 12:42
Bromodichloromethane	ND	0.0050	1	06/06/2018 12:42
Bromoform	ND	0.0050	1	06/06/2018 12:42
Bromomethane	ND	0.0050	1	06/06/2018 12:42
2-Butanone (MEK)	ND	0.020	1	06/06/2018 12:42
t-Butyl alcohol (TBA)	ND	0.050	1	06/06/2018 12:42
n-Butyl benzene	ND	0.0050	1	06/06/2018 12:42
sec-Butyl benzene	ND	0.0050	1	06/06/2018 12:42
tert-Butyl benzene	ND	0.0050	1	06/06/2018 12:42
Carbon Disulfide	ND	0.0050	1	06/06/2018 12:42
Carbon Tetrachloride	ND	0.0050	1	06/06/2018 12:42
Chlorobenzene	ND	0.0050	1	06/06/2018 12:42
Chloroethane	ND	0.0050	1	06/06/2018 12:42
Chloroform	ND	0.0050	1	06/06/2018 12:42
Chloromethane	ND	0.0050	1	06/06/2018 12:42
2-Chlorotoluene	ND	0.0050	1	06/06/2018 12:42
4-Chlorotoluene	ND	0.0050	1	06/06/2018 12:42
Dibromochloromethane	ND	0.0050	1	06/06/2018 12:42
1,2-Dibromo-3-chloropropane	ND	0.0040	1	06/06/2018 12:42
1,2-Dibromoethane (EDB)	ND	0.0040	1	06/06/2018 12:42
Dibromomethane	ND	0.0050	1	06/06/2018 12:42
1,2-Dichlorobenzene	ND	0.0050	1	06/06/2018 12:42
1,3-Dichlorobenzene	ND	0.0050	1	06/06/2018 12:42
1,4-Dichlorobenzene	ND	0.0050	1	06/06/2018 12:42
Dichlorodifluoromethane	ND	0.0050	1	06/06/2018 12:42
1,1-Dichloroethane	ND	0.0050	1	06/06/2018 12:42
1,2-Dichloroethane (1,2-DCA)	ND	0.0040	1	06/06/2018 12:42
1,1-Dichloroethene	ND	0.0050	1	06/06/2018 12:42
cis-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 12:42
trans-1,2-Dichloroethene	ND	0.0050	1	06/06/2018 12:42
1,2-Dichloropropane	ND	0.0050	1	06/06/2018 12:42
1,3-Dichloropropane	ND	0.0050	1	06/06/2018 12:42
2,2-Dichloropropane	ND	0.0050	1	06/06/2018 12:42

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(76,77,78,79) 1-1.5	1805H38-012A	Soil	05/30/2018 13:50	GC18 06061809.D	159173

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	06/06/2018 12:42
cis-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 12:42
trans-1,3-Dichloropropene	ND	0.0050	1	06/06/2018 12:42
Diisopropyl ether (DIPE)	ND	0.0050	1	06/06/2018 12:42
Ethylbenzene	ND	0.0050	1	06/06/2018 12:42
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	06/06/2018 12:42
Freon 113	ND	0.0050	1	06/06/2018 12:42
Hexachlorobutadiene	ND	0.0050	1	06/06/2018 12:42
Hexachloroethane	ND	0.0050	1	06/06/2018 12:42
2-Hexanone	ND	0.0050	1	06/06/2018 12:42
Isopropylbenzene	ND	0.0050	1	06/06/2018 12:42
4-Isopropyl toluene	ND	0.0050	1	06/06/2018 12:42
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	06/06/2018 12:42
Methylene chloride	ND	0.0050	1	06/06/2018 12:42
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	06/06/2018 12:42
Naphthalene	ND	0.0050	1	06/06/2018 12:42
n-Propyl benzene	ND	0.0050	1	06/06/2018 12:42
Styrene	ND	0.0050	1	06/06/2018 12:42
1,1,1,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 12:42
1,1,2,2-Tetrachloroethane	ND	0.0050	1	06/06/2018 12:42
Tetrachloroethene	ND	0.0050	1	06/06/2018 12:42
Toluene	ND	0.0050	1	06/06/2018 12:42
1,2,3-Trichlorobenzene	ND	0.0050	1	06/06/2018 12:42
1,2,4-Trichlorobenzene	ND	0.0050	1	06/06/2018 12:42
1,1,1-Trichloroethane	ND	0.0050	1	06/06/2018 12:42
1,1,2-Trichloroethane	ND	0.0050	1	06/06/2018 12:42
Trichloroethene	ND	0.0050	1	06/06/2018 12:42
Trichlorofluoromethane	ND	0.0050	1	06/06/2018 12:42
1,2,3-Trichloropropane	ND	0.0050	1	06/06/2018 12:42
1,2,4-Trimethylbenzene	ND	0.0050	1	06/06/2018 12:42
1,3,5-Trimethylbenzene	ND	0.0050	1	06/06/2018 12:42
Vinyl Chloride	ND	0.0050	1	06/06/2018 12:42
Xylenes, Total	ND	0.0050	1	06/06/2018 12:42

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(76,77,78,79) 1-1.5	**1805H38-012A**	**Soil**	**05/30/2018 13:50**	**GC18 06061809.D**	**159173**

Analytes	Result		RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
Dibromofluoromethane	109		82-136		06/06/2018 12:42
Toluene-d8	123		92-139		06/06/2018 12:42
4-BFB	103		82-135		06/06/2018 12:42
Benzene-d6	10	S	55-122		06/06/2018 12:42
Ethylbenzene-d10	10	S	58-141		06/06/2018 12:42
1,2-DCB-d4	8	S	51-107		06/06/2018 12:42

Analyst(s): KF Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

TPH(g)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(32,33,34,35) 1-1.5	1805H38-001A	Soil	05/30/2018 09:00	GC18 06051827.D	159166

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	06/06/2018 00:56

Surrogates	REC (%)	Qualifiers	Limits	
Dibromofluoromethane	118		82-136	06/06/2018 00:56
Benzene-D6	9	S	55-122	06/06/2018 00:56

Analyst(s): AK Analytical Comments: j1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(36,37,38,39) 1-1.5	1805H38-002A	Soil	05/30/2018 09:25	GC10 06041815.D	159166

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	06/04/2018 17:05

Surrogates	REC (%)	Qualifiers	Limits	
Dibromofluoromethane	99		82-136	06/04/2018 17:05
Benzene-D6	9	S	55-122	06/04/2018 17:05

Analyst(s): KF Analytical Comments: j1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(40,41,42,43) 1-1.5	1805H38-003A	Soil	05/30/2018 10:05	GC18 06051828.D	159166

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	06/06/2018 01:35

Surrogates	REC (%)	Qualifiers	Limits	
Dibromofluoromethane	119		82-136	06/06/2018 01:35
Benzene-D6	9	S	55-122	06/06/2018 01:35

Analyst(s): AK Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

TPH(g)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(44,45,46,47) 1-1.5	1805H38-004A	Soil	05/30/2018 10:44	GC18 06051829.D	159166

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	06/06/2018 02:14

Surrogates	REC (%)	Qualifiers	Limits	
Dibromofluoromethane	118		82-136	06/06/2018 02:14
Benzene-D6	9	S	55-122	06/06/2018 02:14

Analyst(s): AK Analytical Comments: j1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(48,49,50,51) 1-1.5	1805H38-005A	Soil	05/30/2018 11:17	GC18 06051830.D	159166

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	06/06/2018 02:54

Surrogates	REC (%)	Qualifiers	Limits	
Dibromofluoromethane	119		82-136	06/06/2018 02:54
Benzene-D6	10	S	55-122	06/06/2018 02:54

Analyst(s): AK Analytical Comments: j1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(52,53,54,55) 1-1.5	1805H38-006A	Soil	05/30/2018 11:44	GC18 06051831.D	159166

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	06/06/2018 03:33

Surrogates	REC (%)	Qualifiers	Limits	
Dibromofluoromethane	112		82-136	06/06/2018 03:33
Benzene-D6	9	S	55-122	06/06/2018 03:33

Analyst(s): AK Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

TPH(g)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(56,57,58,59) 1-1.5	1805H38-007A	Soil	05/30/2018 12:40	GC18 06051832.D	159166

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	06/06/2018 04:13

Surrogates	REC (%)	Qualifiers	Limits	
Dibromofluoromethane	107		82-136	06/06/2018 04:13
Benzene-D6	9	S	55-122	06/06/2018 04:13

Analyst(s): AK Analytical Comments: j1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(60,61,62,63) 1-1.5	1805H38-008A	Soil	05/30/2018 12:51	GC18 06051833.D	159166

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	06/06/2018 04:52

Surrogates	REC (%)	Qualifiers	Limits	
Dibromofluoromethane	112		82-136	06/06/2018 04:52
Benzene-D6	9	S	55-122	06/06/2018 04:52

Analyst(s): AK Analytical Comments: j1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(64,65,66,67) 1-1.5	1805H38-009A	Soil	05/30/2018 13:06	GC18 06051834.D	159166

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	06/06/2018 05:32

Surrogates	REC (%)	Qualifiers	Limits	
Dibromofluoromethane	113		82-136	06/06/2018 05:32
Benzene-D6	9	S	55-122	06/06/2018 05:32

Analyst(s): AK Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW5030B
Date Prepared:	5/31/18	**Analytical Method:**	SW8260B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/kg

TPH(g)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(68,69,70,71) 1-1.5	1805H38-010A	Soil	05/30/2018 13:22	GC18 06061810.D	159166

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	06/06/2018 13:22

Surrogates	REC (%)	Qualifiers	Limits	
Dibromofluoromethane	114		82-136	06/06/2018 13:22
Benzene-D6	9	S	55-122	06/06/2018 13:22

Analyst(s): KF Analytical Comments: j1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(72,73,74,75) 1-1.5	1805H38-011A	Soil	05/30/2018 13:35	GC18 06061811.D	159166

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	06/06/2018 14:02

Surrogates	REC (%)	Qualifiers	Limits	
Dibromofluoromethane	116		82-136	06/06/2018 14:02
Benzene-D6	9	S	55-122	06/06/2018 14:02

Analyst(s): KF Analytical Comments: j1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(76,77,78,79) 1-1.5	1805H38-012A	Soil	05/30/2018 13:50	GC18 06061809.D	159173

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	0.25	1	06/06/2018 12:42

Surrogates	REC (%)	Qualifiers	Limits	
Dibromofluoromethane	116		82-136	06/06/2018 12:42
Benzene-D6	10	S	55-122	06/06/2018 12:42

Analyst(s): KF Analytical Comments: j1

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(32,33,34,35) 1-1.5	1805H38-001A	Soil	05/30/2018 09:00	GC17 06041809.D	159267

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.50	2	06/04/2018 13:07
Acenaphthylene	ND	0.50	2	06/04/2018 13:07
Acetochlor	ND	0.50	2	06/04/2018 13:07
Anthracene	ND	0.50	2	06/04/2018 13:07
Benzidine	ND	2.6	2	06/04/2018 13:07
Benzo (a) anthracene	ND	0.50	2	06/04/2018 13:07
Benzo (a) pyrene	ND	0.50	2	06/04/2018 13:07
Benzo (b) fluoranthene	ND	0.50	2	06/04/2018 13:07
Benzo (g,h,i) perylene	ND	0.50	2	06/04/2018 13:07
Benzo (k) fluoranthene	ND	0.50	2	06/04/2018 13:07
Benzyl Alcohol	ND	2.6	2	06/04/2018 13:07
1,1-Biphenyl	ND	0.50	2	06/04/2018 13:07
Bis (2-chloroethoxy) Methane	ND	0.50	2	06/04/2018 13:07
Bis (2-chloroethyl) Ether	ND	0.50	2	06/04/2018 13:07
Bis (2-chloroisopropyl) Ether	ND	0.50	2	06/04/2018 13:07
Bis (2-ethylhexyl) Adipate	ND	0.50	2	06/04/2018 13:07
Bis (2-ethylhexyl) Phthalate	ND	0.50	2	06/04/2018 13:07
4-Bromophenyl Phenyl Ether	ND	0.50	2	06/04/2018 13:07
Butylbenzyl Phthalate	ND	0.50	2	06/04/2018 13:07
4-Chloroaniline	ND	1.0	2	06/04/2018 13:07
4-Chloro-3-methylphenol	ND	0.50	2	06/04/2018 13:07
2-Chloronaphthalene	ND	0.50	2	06/04/2018 13:07
2-Chlorophenol	ND	0.50	2	06/04/2018 13:07
4-Chlorophenyl Phenyl Ether	ND	0.50	2	06/04/2018 13:07
Chrysene	ND	0.50	2	06/04/2018 13:07
Dibenzo (a,h) anthracene	ND	0.50	2	06/04/2018 13:07
Dibenzofuran	ND	0.50	2	06/04/2018 13:07
Di-n-butyl Phthalate	ND	0.50	2	06/04/2018 13:07
1,2-Dichlorobenzene	ND	0.50	2	06/04/2018 13:07
1,3-Dichlorobenzene	ND	0.50	2	06/04/2018 13:07
1,4-Dichlorobenzene	ND	0.50	2	06/04/2018 13:07
3,3-Dichlorobenzidine	ND	1.0	2	06/04/2018 13:07
2,4-Dichlorophenol	ND	0.50	2	06/04/2018 13:07
Diethyl Phthalate	ND	0.50	2	06/04/2018 13:07
2,4-Dimethylphenol	ND	0.50	2	06/04/2018 13:07
Dimethyl Phthalate	ND	0.50	2	06/04/2018 13:07
4,6-Dinitro-2-methylphenol	ND	2.6	2	06/04/2018 13:07

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(32,33,34,35) 1-1.5	1805H38-001A	Soil	05/30/2018 09:00	GC17 06041809.D	159267

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	13	2	06/04/2018 13:07
2,4-Dinitrotoluene	ND	0.50	2	06/04/2018 13:07
2,6-Dinitrotoluene	ND	0.50	2	06/04/2018 13:07
Di-n-octyl Phthalate	ND	1.0	2	06/04/2018 13:07
1,2-Diphenylhydrazine	ND	0.50	2	06/04/2018 13:07
Fluoranthene	ND	0.50	2	06/04/2018 13:07
Fluorene	ND	0.50	2	06/04/2018 13:07
Hexachlorobenzene	ND	0.50	2	06/04/2018 13:07
Hexachlorobutadiene	ND	0.50	2	06/04/2018 13:07
Hexachlorocyclopentadiene	ND	2.6	2	06/04/2018 13:07
Hexachloroethane	ND	0.50	2	06/04/2018 13:07
Indeno (1,2,3-cd) pyrene	ND	0.50	2	06/04/2018 13:07
Isophorone	ND	0.50	2	06/04/2018 13:07
2-Methylnaphthalene	ND	0.50	2	06/04/2018 13:07
2-Methylphenol (o-Cresol)	ND	0.50	2	06/04/2018 13:07
3 & 4-Methylphenol (m,p-Cresol)	ND	0.50	2	06/04/2018 13:07
Naphthalene	ND	0.50	2	06/04/2018 13:07
2-Nitroaniline	ND	2.6	2	06/04/2018 13:07
3-Nitroaniline	ND	2.6	2	06/04/2018 13:07
4-Nitroaniline	ND	2.6	2	06/04/2018 13:07
Nitrobenzene	ND	0.50	2	06/04/2018 13:07
2-Nitrophenol	ND	2.6	2	06/04/2018 13:07
4-Nitrophenol	ND	2.6	2	06/04/2018 13:07
N-Nitrosodiphenylamine	ND	0.50	2	06/04/2018 13:07
N-Nitrosodi-n-propylamine	ND	0.50	2	06/04/2018 13:07
Pentachlorophenol	ND	2.6	2	06/04/2018 13:07
Phenanthrene	ND	0.50	2	06/04/2018 13:07
Phenol	ND	0.50	2	06/04/2018 13:07
Pyrene	ND	0.50	2	06/04/2018 13:07
Pyridine	ND	0.50	2	06/04/2018 13:07
1,2,4-Trichlorobenzene	ND	0.50	2	06/04/2018 13:07
2,4,5-Trichlorophenol	ND	0.50	2	06/04/2018 13:07
2,4,6-Trichlorophenol	ND	0.50	2	06/04/2018 13:07

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(32,33,34,35) 1-1.5	**1805H38-001A**	**Soil**	**05/30/2018 09:00**	**GC17 06041809.D**	**159267**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	125	30-130		06/04/2018 13:07
Phenol-d5	110	30-130		06/04/2018 13:07
Nitrobenzene-d5	107	30-130		06/04/2018 13:07
2-Fluorobiphenyl	96	30-130		06/04/2018 13:07
2,4,6-Tribromophenol	72	16-130		06/04/2018 13:07
4-Terphenyl-d14	102	30-130		06/04/2018 13:07

Analyst(s): REB Analytical Comments: a3

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(36,37,38,39) 1-1.5	1805H38-002A	Soil	05/30/2018 09:25	GC17 06041810.D	159267

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.25	1	06/04/2018 13:35
Acenaphthylene	ND	0.25	1	06/04/2018 13:35
Acetochlor	ND	0.25	1	06/04/2018 13:35
Anthracene	ND	0.25	1	06/04/2018 13:35
Benzidine	ND	1.3	1	06/04/2018 13:35
Benzo (a) anthracene	ND	0.25	1	06/04/2018 13:35
Benzo (a) pyrene	ND	0.25	1	06/04/2018 13:35
Benzo (b) fluoranthene	ND	0.25	1	06/04/2018 13:35
Benzo (g,h,i) perylene	ND	0.25	1	06/04/2018 13:35
Benzo (k) fluoranthene	ND	0.25	1	06/04/2018 13:35
Benzyl Alcohol	ND	1.3	1	06/04/2018 13:35
1,1-Biphenyl	ND	0.25	1	06/04/2018 13:35
Bis (2-chloroethoxy) Methane	ND	0.25	1	06/04/2018 13:35
Bis (2-chloroethyl) Ether	ND	0.25	1	06/04/2018 13:35
Bis (2-chloroisopropyl) Ether	ND	0.25	1	06/04/2018 13:35
Bis (2-ethylhexyl) Adipate	ND	0.25	1	06/04/2018 13:35
Bis (2-ethylhexyl) Phthalate	ND	0.25	1	06/04/2018 13:35
4-Bromophenyl Phenyl Ether	ND	0.25	1	06/04/2018 13:35
Butylbenzyl Phthalate	ND	0.25	1	06/04/2018 13:35
4-Chloroaniline	ND	0.50	1	06/04/2018 13:35
4-Chloro-3-methylphenol	ND	0.25	1	06/04/2018 13:35
2-Chloronaphthalene	ND	0.25	1	06/04/2018 13:35
2-Chlorophenol	ND	0.25	1	06/04/2018 13:35
4-Chlorophenyl Phenyl Ether	ND	0.25	1	06/04/2018 13:35
Chrysene	ND	0.25	1	06/04/2018 13:35
Dibenzo (a,h) anthracene	ND	0.25	1	06/04/2018 13:35
Dibenzofuran	ND	0.25	1	06/04/2018 13:35
Di-n-butyl Phthalate	ND	0.25	1	06/04/2018 13:35
1,2-Dichlorobenzene	ND	0.25	1	06/04/2018 13:35
1,3-Dichlorobenzene	ND	0.25	1	06/04/2018 13:35
1,4-Dichlorobenzene	ND	0.25	1	06/04/2018 13:35
3,3-Dichlorobenzidine	ND	0.50	1	06/04/2018 13:35
2,4-Dichlorophenol	ND	0.25	1	06/04/2018 13:35
Diethyl Phthalate	ND	0.25	1	06/04/2018 13:35
2,4-Dimethylphenol	ND	0.25	1	06/04/2018 13:35
Dimethyl Phthalate	ND	0.25	1	06/04/2018 13:35
4,6-Dinitro-2-methylphenol	ND	1.3	1	06/04/2018 13:35

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(36,37,38,39) 1-1.5	1805H38-002A	Soil	05/30/2018 09:25	GC17 06041810.D	159267

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	6.3	1	06/04/2018 13:35
2,4-Dinitrotoluene	ND	0.25	1	06/04/2018 13:35
2,6-Dinitrotoluene	ND	0.25	1	06/04/2018 13:35
Di-n-octyl Phthalate	ND	0.50	1	06/04/2018 13:35
1,2-Diphenylhydrazine	ND	0.25	1	06/04/2018 13:35
Fluoranthene	ND	0.25	1	06/04/2018 13:35
Fluorene	ND	0.25	1	06/04/2018 13:35
Hexachlorobenzene	ND	0.25	1	06/04/2018 13:35
Hexachlorobutadiene	ND	0.25	1	06/04/2018 13:35
Hexachlorocyclopentadiene	ND	1.3	1	06/04/2018 13:35
Hexachloroethane	ND	0.25	1	06/04/2018 13:35
Indeno (1,2,3-cd) pyrene	ND	0.25	1	06/04/2018 13:35
Isophorone	ND	0.25	1	06/04/2018 13:35
2-Methylnaphthalene	ND	0.25	1	06/04/2018 13:35
2-Methylphenol (o-Cresol)	ND	0.25	1	06/04/2018 13:35
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	06/04/2018 13:35
Naphthalene	ND	0.25	1	06/04/2018 13:35
2-Nitroaniline	ND	1.3	1	06/04/2018 13:35
3-Nitroaniline	ND	1.3	1	06/04/2018 13:35
4-Nitroaniline	ND	1.3	1	06/04/2018 13:35
Nitrobenzene	ND	0.25	1	06/04/2018 13:35
2-Nitrophenol	ND	1.3	1	06/04/2018 13:35
4-Nitrophenol	ND	1.3	1	06/04/2018 13:35
N-Nitrosodiphenylamine	ND	0.25	1	06/04/2018 13:35
N-Nitrosodi-n-propylamine	ND	0.25	1	06/04/2018 13:35
Pentachlorophenol	ND	1.3	1	06/04/2018 13:35
Phenanthrene	ND	0.25	1	06/04/2018 13:35
Phenol	ND	0.25	1	06/04/2018 13:35
Pyrene	ND	0.25	1	06/04/2018 13:35
Pyridine	ND	0.25	1	06/04/2018 13:35
1,2,4-Trichlorobenzene	ND	0.25	1	06/04/2018 13:35
2,4,5-Trichlorophenol	ND	0.25	1	06/04/2018 13:35
2,4,6-Trichlorophenol	ND	0.25	1	06/04/2018 13:35

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(36,37,38,39) 1-1.5	**1805H38-002A**	**Soil**	**05/30/2018 09:25**	**GC17 06041810.D**	**159267**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	117	30-130		06/04/2018 13:35
Phenol-d5	106	30-130		06/04/2018 13:35
Nitrobenzene-d5	105	30-130		06/04/2018 13:35
2-Fluorobiphenyl	99	30-130		06/04/2018 13:35
2,4,6-Tribromophenol	78	16-130		06/04/2018 13:35
4-Terphenyl-d14	112	30-130		06/04/2018 13:35

Analyst(s): REB

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(40,41,42,43) 1-1.5	1805H38-003A	Soil	05/30/2018 10:05	GC17 06041811.D	159267

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.25	1	06/04/2018 14:02
Acenaphthylene	ND	0.25	1	06/04/2018 14:02
Acetochlor	ND	0.25	1	06/04/2018 14:02
Anthracene	ND	0.25	1	06/04/2018 14:02
Benzidine	ND	1.3	1	06/04/2018 14:02
Benzo (a) anthracene	ND	0.25	1	06/04/2018 14:02
Benzo (a) pyrene	ND	0.25	1	06/04/2018 14:02
Benzo (b) fluoranthene	ND	0.25	1	06/04/2018 14:02
Benzo (g,h,i) perylene	ND	0.25	1	06/04/2018 14:02
Benzo (k) fluoranthene	ND	0.25	1	06/04/2018 14:02
Benzyl Alcohol	ND	1.3	1	06/04/2018 14:02
1,1-Biphenyl	ND	0.25	1	06/04/2018 14:02
Bis (2-chloroethoxy) Methane	ND	0.25	1	06/04/2018 14:02
Bis (2-chloroethyl) Ether	ND	0.25	1	06/04/2018 14:02
Bis (2-chloroisopropyl) Ether	ND	0.25	1	06/04/2018 14:02
Bis (2-ethylhexyl) Adipate	ND	0.25	1	06/04/2018 14:02
Bis (2-ethylhexyl) Phthalate	ND	0.25	1	06/04/2018 14:02
4-Bromophenyl Phenyl Ether	ND	0.25	1	06/04/2018 14:02
Butylbenzyl Phthalate	ND	0.25	1	06/04/2018 14:02
4-Chloroaniline	ND	0.50	1	06/04/2018 14:02
4-Chloro-3-methylphenol	ND	0.25	1	06/04/2018 14:02
2-Chloronaphthalene	ND	0.25	1	06/04/2018 14:02
2-Chlorophenol	ND	0.25	1	06/04/2018 14:02
4-Chlorophenyl Phenyl Ether	ND	0.25	1	06/04/2018 14:02
Chrysene	ND	0.25	1	06/04/2018 14:02
Dibenzo (a,h) anthracene	ND	0.25	1	06/04/2018 14:02
Dibenzofuran	ND	0.25	1	06/04/2018 14:02
Di-n-butyl Phthalate	ND	0.25	1	06/04/2018 14:02
1,2-Dichlorobenzene	ND	0.25	1	06/04/2018 14:02
1,3-Dichlorobenzene	ND	0.25	1	06/04/2018 14:02
1,4-Dichlorobenzene	ND	0.25	1	06/04/2018 14:02
3,3-Dichlorobenzidine	ND	0.50	1	06/04/2018 14:02
2,4-Dichlorophenol	ND	0.25	1	06/04/2018 14:02
Diethyl Phthalate	ND	0.25	1	06/04/2018 14:02
2,4-Dimethylphenol	ND	0.25	1	06/04/2018 14:02
Dimethyl Phthalate	ND	0.25	1	06/04/2018 14:02
4,6-Dinitro-2-methylphenol	ND	1.3	1	06/04/2018 14:02

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(40,41,42,43) 1-1.5	1805H38-003A	Soil	05/30/2018 10:05	GC17 06041811.D	159267

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	6.3	1	06/04/2018 14:02
2,4-Dinitrotoluene	ND	0.25	1	06/04/2018 14:02
2,6-Dinitrotoluene	ND	0.25	1	06/04/2018 14:02
Di-n-octyl Phthalate	ND	0.50	1	06/04/2018 14:02
1,2-Diphenylhydrazine	ND	0.25	1	06/04/2018 14:02
Fluoranthene	ND	0.25	1	06/04/2018 14:02
Fluorene	ND	0.25	1	06/04/2018 14:02
Hexachlorobenzene	ND	0.25	1	06/04/2018 14:02
Hexachlorobutadiene	ND	0.25	1	06/04/2018 14:02
Hexachlorocyclopentadiene	ND	1.3	1	06/04/2018 14:02
Hexachloroethane	ND	0.25	1	06/04/2018 14:02
Indeno (1,2,3-cd) pyrene	ND	0.25	1	06/04/2018 14:02
Isophorone	ND	0.25	1	06/04/2018 14:02
2-Methylnaphthalene	ND	0.25	1	06/04/2018 14:02
2-Methylphenol (o-Cresol)	ND	0.25	1	06/04/2018 14:02
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	06/04/2018 14:02
Naphthalene	ND	0.25	1	06/04/2018 14:02
2-Nitroaniline	ND	1.3	1	06/04/2018 14:02
3-Nitroaniline	ND	1.3	1	06/04/2018 14:02
4-Nitroaniline	ND	1.3	1	06/04/2018 14:02
Nitrobenzene	ND	0.25	1	06/04/2018 14:02
2-Nitrophenol	ND	1.3	1	06/04/2018 14:02
4-Nitrophenol	ND	1.3	1	06/04/2018 14:02
N-Nitrosodiphenylamine	ND	0.25	1	06/04/2018 14:02
N-Nitrosodi-n-propylamine	ND	0.25	1	06/04/2018 14:02
Pentachlorophenol	ND	1.3	1	06/04/2018 14:02
Phenanthrene	ND	0.25	1	06/04/2018 14:02
Phenol	ND	0.25	1	06/04/2018 14:02
Pyrene	ND	0.25	1	06/04/2018 14:02
Pyridine	ND	0.25	1	06/04/2018 14:02
1,2,4-Trichlorobenzene	ND	0.25	1	06/04/2018 14:02
2,4,5-Trichlorophenol	ND	0.25	1	06/04/2018 14:02
2,4,6-Trichlorophenol	ND	0.25	1	06/04/2018 14:02

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(40,41,42,43) 1-1.5	**1805H38-003A**	**Soil**	**05/30/2018 10:05**	**GC17 06041811.D**	**159267**

Analytes	Result	RL	DF	Date Analyzed

Surrogates	REC (%)	Qualifiers	Limits	Date Analyzed
2-Fluorophenol	140	S	30-130	06/04/2018 14:02
Phenol-d5	130		30-130	06/04/2018 14:02
Nitrobenzene-d5	126		30-130	06/04/2018 14:02
2-Fluorobiphenyl	120		30-130	06/04/2018 14:02
2,4,6-Tribromophenol	95		16-130	06/04/2018 14:02
4-Terphenyl-d14	141	S	30-130	06/04/2018 14:02

Analyst(s): REB Analytical Comments: c11

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(44,45,46,47) 1-1.5	1805H38-004A	Soil	05/30/2018 10:44	GC17 06041812.D	159267

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.50	2	06/04/2018 14:30
Acenaphthylene	ND	0.50	2	06/04/2018 14:30
Acetochlor	ND	0.50	2	06/04/2018 14:30
Anthracene	ND	0.50	2	06/04/2018 14:30
Benzidine	ND	2.6	2	06/04/2018 14:30
Benzo (a) anthracene	ND	0.50	2	06/04/2018 14:30
Benzo (a) pyrene	ND	0.50	2	06/04/2018 14:30
Benzo (b) fluoranthene	ND	0.50	2	06/04/2018 14:30
Benzo (g,h,i) perylene	ND	0.50	2	06/04/2018 14:30
Benzo (k) fluoranthene	ND	0.50	2	06/04/2018 14:30
Benzyl Alcohol	ND	2.6	2	06/04/2018 14:30
1,1-Biphenyl	ND	0.50	2	06/04/2018 14:30
Bis (2-chloroethoxy) Methane	ND	0.50	2	06/04/2018 14:30
Bis (2-chloroethyl) Ether	ND	0.50	2	06/04/2018 14:30
Bis (2-chloroisopropyl) Ether	ND	0.50	2	06/04/2018 14:30
Bis (2-ethylhexyl) Adipate	ND	0.50	2	06/04/2018 14:30
Bis (2-ethylhexyl) Phthalate	ND	0.50	2	06/04/2018 14:30
4-Bromophenyl Phenyl Ether	ND	0.50	2	06/04/2018 14:30
Butylbenzyl Phthalate	ND	0.50	2	06/04/2018 14:30
4-Chloroaniline	ND	1.0	2	06/04/2018 14:30
4-Chloro-3-methylphenol	ND	0.50	2	06/04/2018 14:30
2-Chloronaphthalene	ND	0.50	2	06/04/2018 14:30
2-Chlorophenol	ND	0.50	2	06/04/2018 14:30
4-Chlorophenyl Phenyl Ether	ND	0.50	2	06/04/2018 14:30
Chrysene	ND	0.50	2	06/04/2018 14:30
Dibenzo (a,h) anthracene	ND	0.50	2	06/04/2018 14:30
Dibenzofuran	ND	0.50	2	06/04/2018 14:30
Di-n-butyl Phthalate	ND	0.50	2	06/04/2018 14:30
1,2-Dichlorobenzene	ND	0.50	2	06/04/2018 14:30
1,3-Dichlorobenzene	ND	0.50	2	06/04/2018 14:30
1,4-Dichlorobenzene	ND	0.50	2	06/04/2018 14:30
3,3-Dichlorobenzidine	ND	1.0	2	06/04/2018 14:30
2,4-Dichlorophenol	ND	0.50	2	06/04/2018 14:30
Diethyl Phthalate	ND	0.50	2	06/04/2018 14:30
2,4-Dimethylphenol	ND	0.50	2	06/04/2018 14:30
Dimethyl Phthalate	ND	0.50	2	06/04/2018 14:30
4,6-Dinitro-2-methylphenol	ND	2.6	2	06/04/2018 14:30

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(44,45,46,47) 1-1.5	1805H38-004A	Soil	05/30/2018 10:44	GC17 06041812.D	159267

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	13	2	06/04/2018 14:30
2,4-Dinitrotoluene	ND	0.50	2	06/04/2018 14:30
2,6-Dinitrotoluene	ND	0.50	2	06/04/2018 14:30
Di-n-octyl Phthalate	ND	1.0	2	06/04/2018 14:30
1,2-Diphenylhydrazine	ND	0.50	2	06/04/2018 14:30
Fluoranthene	ND	0.50	2	06/04/2018 14:30
Fluorene	ND	0.50	2	06/04/2018 14:30
Hexachlorobenzene	ND	0.50	2	06/04/2018 14:30
Hexachlorobutadiene	ND	0.50	2	06/04/2018 14:30
Hexachlorocyclopentadiene	ND	2.6	2	06/04/2018 14:30
Hexachloroethane	ND	0.50	2	06/04/2018 14:30
Indeno (1,2,3-cd) pyrene	ND	0.50	2	06/04/2018 14:30
Isophorone	ND	0.50	2	06/04/2018 14:30
2-Methylnaphthalene	ND	0.50	2	06/04/2018 14:30
2-Methylphenol (o-Cresol)	ND	0.50	2	06/04/2018 14:30
3 & 4-Methylphenol (m,p-Cresol)	ND	0.50	2	06/04/2018 14:30
Naphthalene	ND	0.50	2	06/04/2018 14:30
2-Nitroaniline	ND	2.6	2	06/04/2018 14:30
3-Nitroaniline	ND	2.6	2	06/04/2018 14:30
4-Nitroaniline	ND	2.6	2	06/04/2018 14:30
Nitrobenzene	ND	0.50	2	06/04/2018 14:30
2-Nitrophenol	ND	2.6	2	06/04/2018 14:30
4-Nitrophenol	ND	2.6	2	06/04/2018 14:30
N-Nitrosodiphenylamine	ND	0.50	2	06/04/2018 14:30
N-Nitrosodi-n-propylamine	ND	0.50	2	06/04/2018 14:30
Pentachlorophenol	ND	2.6	2	06/04/2018 14:30
Phenanthrene	ND	0.50	2	06/04/2018 14:30
Phenol	ND	0.50	2	06/04/2018 14:30
Pyrene	ND	0.50	2	06/04/2018 14:30
Pyridine	ND	0.50	2	06/04/2018 14:30
1,2,4-Trichlorobenzene	ND	0.50	2	06/04/2018 14:30
2,4,5-Trichlorophenol	ND	0.50	2	06/04/2018 14:30
2,4,6-Trichlorophenol	ND	0.50	2	06/04/2018 14:30

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(44,45,46,47) 1-1.5	**1805H38-004A**	**Soil**	**05/30/2018 10:44**	**GC17 06041812.D**	**159267**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	111	30-130		06/04/2018 14:30
Phenol-d5	97	30-130		06/04/2018 14:30
Nitrobenzene-d5	100	30-130		06/04/2018 14:30
2-Fluorobiphenyl	89	30-130		06/04/2018 14:30
2,4,6-Tribromophenol	64	16-130		06/04/2018 14:30
4-Terphenyl-d14	97	30-130		06/04/2018 14:30

Analyst(s): REB Analytical Comments: a3

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(48,49,50,51) 1-1.5	1805H38-005A	Soil	05/30/2018 11:17	GC17 06041813.D	159267

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.25	1	06/04/2018 14:57
Acenaphthylene	ND	0.25	1	06/04/2018 14:57
Acetochlor	ND	0.25	1	06/04/2018 14:57
Anthracene	ND	0.25	1	06/04/2018 14:57
Benzidine	ND	1.3	1	06/04/2018 14:57
Benzo (a) anthracene	ND	0.25	1	06/04/2018 14:57
Benzo (a) pyrene	ND	0.25	1	06/04/2018 14:57
Benzo (b) fluoranthene	ND	0.25	1	06/04/2018 14:57
Benzo (g,h,i) perylene	ND	0.25	1	06/04/2018 14:57
Benzo (k) fluoranthene	ND	0.25	1	06/04/2018 14:57
Benzyl Alcohol	ND	1.3	1	06/04/2018 14:57
1,1-Biphenyl	ND	0.25	1	06/04/2018 14:57
Bis (2-chloroethoxy) Methane	ND	0.25	1	06/04/2018 14:57
Bis (2-chloroethyl) Ether	ND	0.25	1	06/04/2018 14:57
Bis (2-chloroisopropyl) Ether	ND	0.25	1	06/04/2018 14:57
Bis (2-ethylhexyl) Adipate	ND	0.25	1	06/04/2018 14:57
Bis (2-ethylhexyl) Phthalate	ND	0.25	1	06/04/2018 14:57
4-Bromophenyl Phenyl Ether	ND	0.25	1	06/04/2018 14:57
Butylbenzyl Phthalate	ND	0.25	1	06/04/2018 14:57
4-Chloroaniline	ND	0.50	1	06/04/2018 14:57
4-Chloro-3-methylphenol	ND	0.25	1	06/04/2018 14:57
2-Chloronaphthalene	ND	0.25	1	06/04/2018 14:57
2-Chlorophenol	ND	0.25	1	06/04/2018 14:57
4-Chlorophenyl Phenyl Ether	ND	0.25	1	06/04/2018 14:57
Chrysene	ND	0.25	1	06/04/2018 14:57
Dibenzo (a,h) anthracene	ND	0.25	1	06/04/2018 14:57
Dibenzofuran	ND	0.25	1	06/04/2018 14:57
Di-n-butyl Phthalate	ND	0.25	1	06/04/2018 14:57
1,2-Dichlorobenzene	ND	0.25	1	06/04/2018 14:57
1,3-Dichlorobenzene	ND	0.25	1	06/04/2018 14:57
1,4-Dichlorobenzene	ND	0.25	1	06/04/2018 14:57
3,3-Dichlorobenzidine	ND	0.50	1	06/04/2018 14:57
2,4-Dichlorophenol	ND	0.25	1	06/04/2018 14:57
Diethyl Phthalate	ND	0.25	1	06/04/2018 14:57
2,4-Dimethylphenol	ND	0.25	1	06/04/2018 14:57
Dimethyl Phthalate	ND	0.25	1	06/04/2018 14:57
4,6-Dinitro-2-methylphenol	ND	1.3	1	06/04/2018 14:57

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(48,49,50,51) 1-1.5	1805H38-005A	Soil	05/30/2018 11:17	GC17 06041813.D	159267

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	6.3	1	06/04/2018 14:57
2,4-Dinitrotoluene	ND	0.25	1	06/04/2018 14:57
2,6-Dinitrotoluene	ND	0.25	1	06/04/2018 14:57
Di-n-octyl Phthalate	ND	0.50	1	06/04/2018 14:57
1,2-Diphenylhydrazine	ND	0.25	1	06/04/2018 14:57
Fluoranthene	ND	0.25	1	06/04/2018 14:57
Fluorene	ND	0.25	1	06/04/2018 14:57
Hexachlorobenzene	ND	0.25	1	06/04/2018 14:57
Hexachlorobutadiene	ND	0.25	1	06/04/2018 14:57
Hexachlorocyclopentadiene	ND	1.3	1	06/04/2018 14:57
Hexachloroethane	ND	0.25	1	06/04/2018 14:57
Indeno (1,2,3-cd) pyrene	ND	0.25	1	06/04/2018 14:57
Isophorone	ND	0.25	1	06/04/2018 14:57
2-Methylnaphthalene	ND	0.25	1	06/04/2018 14:57
2-Methylphenol (o-Cresol)	ND	0.25	1	06/04/2018 14:57
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	06/04/2018 14:57
Naphthalene	ND	0.25	1	06/04/2018 14:57
2-Nitroaniline	ND	1.3	1	06/04/2018 14:57
3-Nitroaniline	ND	1.3	1	06/04/2018 14:57
4-Nitroaniline	ND	1.3	1	06/04/2018 14:57
Nitrobenzene	ND	0.25	1	06/04/2018 14:57
2-Nitrophenol	ND	1.3	1	06/04/2018 14:57
4-Nitrophenol	ND	1.3	1	06/04/2018 14:57
N-Nitrosodiphenylamine	ND	0.25	1	06/04/2018 14:57
N-Nitrosodi-n-propylamine	ND	0.25	1	06/04/2018 14:57
Pentachlorophenol	ND	1.3	1	06/04/2018 14:57
Phenanthrene	ND	0.25	1	06/04/2018 14:57
Phenol	ND	0.25	1	06/04/2018 14:57
Pyrene	ND	0.25	1	06/04/2018 14:57
Pyridine	ND	0.25	1	06/04/2018 14:57
1,2,4-Trichlorobenzene	ND	0.25	1	06/04/2018 14:57
2,4,5-Trichlorophenol	ND	0.25	1	06/04/2018 14:57
2,4,6-Trichlorophenol	ND	0.25	1	06/04/2018 14:57

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(48,49,50,51) 1-1.5	**1805H38-005A**	**Soil**	**05/30/2018 11:17**	**GC17 06041813.D**	**159267**

Analytes	Result		RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Qualifiers**	**Limits**		
2-Fluorophenol	140	S	30-130		06/04/2018 14:57
Phenol-d5	130		30-130		06/04/2018 14:57
Nitrobenzene-d5	130		30-130		06/04/2018 14:57
2-Fluorobiphenyl	123		30-130		06/04/2018 14:57
2,4,6-Tribromophenol	88		16-130		06/04/2018 14:57
4-Terphenyl-d14	138	S	30-130		06/04/2018 14:57

Analyst(s): REB Analytical Comments: c11

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(52,53,54,55) 1-1.5	1805H38-006A	Soil	05/30/2018 11:44	GC17 06041814.D	159267

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.50	2	06/04/2018 15:24
Acenaphthylene	ND	0.50	2	06/04/2018 15:24
Acetochlor	ND	0.50	2	06/04/2018 15:24
Anthracene	ND	0.50	2	06/04/2018 15:24
Benzidine	ND	2.6	2	06/04/2018 15:24
Benzo (a) anthracene	ND	0.50	2	06/04/2018 15:24
Benzo (a) pyrene	ND	0.50	2	06/04/2018 15:24
Benzo (b) fluoranthene	ND	0.50	2	06/04/2018 15:24
Benzo (g,h,i) perylene	ND	0.50	2	06/04/2018 15:24
Benzo (k) fluoranthene	ND	0.50	2	06/04/2018 15:24
Benzyl Alcohol	ND	2.6	2	06/04/2018 15:24
1,1-Biphenyl	ND	0.50	2	06/04/2018 15:24
Bis (2-chloroethoxy) Methane	ND	0.50	2	06/04/2018 15:24
Bis (2-chloroethyl) Ether	ND	0.50	2	06/04/2018 15:24
Bis (2-chloroisopropyl) Ether	ND	0.50	2	06/04/2018 15:24
Bis (2-ethylhexyl) Adipate	ND	0.50	2	06/04/2018 15:24
Bis (2-ethylhexyl) Phthalate	ND	0.50	2	06/04/2018 15:24
4-Bromophenyl Phenyl Ether	ND	0.50	2	06/04/2018 15:24
Butylbenzyl Phthalate	ND	0.50	2	06/04/2018 15:24
4-Chloroaniline	ND	1.0	2	06/04/2018 15:24
4-Chloro-3-methylphenol	ND	0.50	2	06/04/2018 15:24
2-Chloronaphthalene	ND	0.50	2	06/04/2018 15:24
2-Chlorophenol	ND	0.50	2	06/04/2018 15:24
4-Chlorophenyl Phenyl Ether	ND	0.50	2	06/04/2018 15:24
Chrysene	ND	0.50	2	06/04/2018 15:24
Dibenzo (a,h) anthracene	ND	0.50	2	06/04/2018 15:24
Dibenzofuran	ND	0.50	2	06/04/2018 15:24
Di-n-butyl Phthalate	ND	0.50	2	06/04/2018 15:24
1,2-Dichlorobenzene	ND	0.50	2	06/04/2018 15:24
1,3-Dichlorobenzene	ND	0.50	2	06/04/2018 15:24
1,4-Dichlorobenzene	ND	0.50	2	06/04/2018 15:24
3,3-Dichlorobenzidine	ND	1.0	2	06/04/2018 15:24
2,4-Dichlorophenol	ND	0.50	2	06/04/2018 15:24
Diethyl Phthalate	ND	0.50	2	06/04/2018 15:24
2,4-Dimethylphenol	ND	0.50	2	06/04/2018 15:24
Dimethyl Phthalate	ND	0.50	2	06/04/2018 15:24
4,6-Dinitro-2-methylphenol	ND	2.6	2	06/04/2018 15:24

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(52,53,54,55) 1-1.5	1805H38-006A	Soil	05/30/2018 11:44	GC17 06041814.D	159267

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	13	2	06/04/2018 15:24
2,4-Dinitrotoluene	ND	0.50	2	06/04/2018 15:24
2,6-Dinitrotoluene	ND	0.50	2	06/04/2018 15:24
Di-n-octyl Phthalate	ND	1.0	2	06/04/2018 15:24
1,2-Diphenylhydrazine	ND	0.50	2	06/04/2018 15:24
Fluoranthene	ND	0.50	2	06/04/2018 15:24
Fluorene	ND	0.50	2	06/04/2018 15:24
Hexachlorobenzene	ND	0.50	2	06/04/2018 15:24
Hexachlorobutadiene	ND	0.50	2	06/04/2018 15:24
Hexachlorocyclopentadiene	ND	2.6	2	06/04/2018 15:24
Hexachloroethane	ND	0.50	2	06/04/2018 15:24
Indeno (1,2,3-cd) pyrene	ND	0.50	2	06/04/2018 15:24
Isophorone	ND	0.50	2	06/04/2018 15:24
2-Methylnaphthalene	ND	0.50	2	06/04/2018 15:24
2-Methylphenol (o-Cresol)	ND	0.50	2	06/04/2018 15:24
3 & 4-Methylphenol (m,p-Cresol)	ND	0.50	2	06/04/2018 15:24
Naphthalene	ND	0.50	2	06/04/2018 15:24
2-Nitroaniline	ND	2.6	2	06/04/2018 15:24
3-Nitroaniline	ND	2.6	2	06/04/2018 15:24
4-Nitroaniline	ND	2.6	2	06/04/2018 15:24
Nitrobenzene	ND	0.50	2	06/04/2018 15:24
2-Nitrophenol	ND	2.6	2	06/04/2018 15:24
4-Nitrophenol	ND	2.6	2	06/04/2018 15:24
N-Nitrosodiphenylamine	ND	0.50	2	06/04/2018 15:24
N-Nitrosodi-n-propylamine	ND	0.50	2	06/04/2018 15:24
Pentachlorophenol	ND	2.6	2	06/04/2018 15:24
Phenanthrene	ND	0.50	2	06/04/2018 15:24
Phenol	ND	0.50	2	06/04/2018 15:24
Pyrene	ND	0.50	2	06/04/2018 15:24
Pyridine	ND	0.50	2	06/04/2018 15:24
1,2,4-Trichlorobenzene	ND	0.50	2	06/04/2018 15:24
2,4,5-Trichlorophenol	ND	0.50	2	06/04/2018 15:24
2,4,6-Trichlorophenol	ND	0.50	2	06/04/2018 15:24

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(52,53,54,55) 1-1.5	**1805H38-006A**	**Soil**	**05/30/2018 11:44**	**GC17 06041814.D**	**159267**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	107	30-130		06/04/2018 15:24
Phenol-d5	94	30-130		06/04/2018 15:24
Nitrobenzene-d5	97	30-130		06/04/2018 15:24
2-Fluorobiphenyl	91	30-130		06/04/2018 15:24
2,4,6-Tribromophenol	67	16-130		06/04/2018 15:24
4-Terphenyl-d14	93	30-130		06/04/2018 15:24

Analyst(s): REB Analytical Comments: a3

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(56,57,58,59) 1-1.5	1805H38-007A	Soil	05/30/2018 12:40	GC21 06041821.D	159267

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.25	1	06/04/2018 18:33
Acenaphthylene	ND	0.25	1	06/04/2018 18:33
Acetochlor	ND	0.25	1	06/04/2018 18:33
Anthracene	ND	0.25	1	06/04/2018 18:33
Benzidine	ND	1.3	1	06/04/2018 18:33
Benzo (a) anthracene	ND	0.25	1	06/04/2018 18:33
Benzo (a) pyrene	ND	0.25	1	06/04/2018 18:33
Benzo (b) fluoranthene	ND	0.25	1	06/04/2018 18:33
Benzo (g,h,i) perylene	ND	0.25	1	06/04/2018 18:33
Benzo (k) fluoranthene	ND	0.25	1	06/04/2018 18:33
Benzyl Alcohol	ND	1.3	1	06/04/2018 18:33
1,1-Biphenyl	ND	0.25	1	06/04/2018 18:33
Bis (2-chloroethoxy) Methane	ND	0.25	1	06/04/2018 18:33
Bis (2-chloroethyl) Ether	ND	0.25	1	06/04/2018 18:33
Bis (2-chloroisopropyl) Ether	ND	0.25	1	06/04/2018 18:33
Bis (2-ethylhexyl) Adipate	ND	0.25	1	06/04/2018 18:33
Bis (2-ethylhexyl) Phthalate	ND	0.25	1	06/04/2018 18:33
4-Bromophenyl Phenyl Ether	ND	0.25	1	06/04/2018 18:33
Butylbenzyl Phthalate	ND	0.25	1	06/04/2018 18:33
4-Chloroaniline	ND	0.50	1	06/04/2018 18:33
4-Chloro-3-methylphenol	ND	0.25	1	06/04/2018 18:33
2-Chloronaphthalene	ND	0.25	1	06/04/2018 18:33
2-Chlorophenol	ND	0.25	1	06/04/2018 18:33
4-Chlorophenyl Phenyl Ether	ND	0.25	1	06/04/2018 18:33
Chrysene	ND	0.25	1	06/04/2018 18:33
Dibenzo (a,h) anthracene	ND	0.25	1	06/04/2018 18:33
Dibenzofuran	ND	0.25	1	06/04/2018 18:33
Di-n-butyl Phthalate	ND	0.25	1	06/04/2018 18:33
1,2-Dichlorobenzene	ND	0.25	1	06/04/2018 18:33
1,3-Dichlorobenzene	ND	0.25	1	06/04/2018 18:33
1,4-Dichlorobenzene	ND	0.25	1	06/04/2018 18:33
3,3-Dichlorobenzidine	ND	0.50	1	06/04/2018 18:33
2,4-Dichlorophenol	ND	0.25	1	06/04/2018 18:33
Diethyl Phthalate	ND	0.25	1	06/04/2018 18:33
2,4-Dimethylphenol	ND	0.25	1	06/04/2018 18:33
Dimethyl Phthalate	ND	0.25	1	06/04/2018 18:33
4,6-Dinitro-2-methylphenol	ND	1.3	1	06/04/2018 18:33

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(56,57,58,59) 1-1.5	1805H38-007A	Soil	05/30/2018 12:40	GC21 06041821.D	159267

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	6.3	1	06/04/2018 18:33
2,4-Dinitrotoluene	ND	0.25	1	06/04/2018 18:33
2,6-Dinitrotoluene	ND	0.25	1	06/04/2018 18:33
Di-n-octyl Phthalate	ND	0.50	1	06/04/2018 18:33
1,2-Diphenylhydrazine	ND	0.25	1	06/04/2018 18:33
Fluoranthene	ND	0.25	1	06/04/2018 18:33
Fluorene	ND	0.25	1	06/04/2018 18:33
Hexachlorobenzene	ND	0.25	1	06/04/2018 18:33
Hexachlorobutadiene	ND	0.25	1	06/04/2018 18:33
Hexachlorocyclopentadiene	ND	1.3	1	06/04/2018 18:33
Hexachloroethane	ND	0.25	1	06/04/2018 18:33
Indeno (1,2,3-cd) pyrene	ND	0.25	1	06/04/2018 18:33
Isophorone	ND	0.25	1	06/04/2018 18:33
2-Methylnaphthalene	ND	0.25	1	06/04/2018 18:33
2-Methylphenol (o-Cresol)	ND	0.25	1	06/04/2018 18:33
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	06/04/2018 18:33
Naphthalene	ND	0.25	1	06/04/2018 18:33
2-Nitroaniline	ND	1.3	1	06/04/2018 18:33
3-Nitroaniline	ND	1.3	1	06/04/2018 18:33
4-Nitroaniline	ND	1.3	1	06/04/2018 18:33
Nitrobenzene	ND	0.25	1	06/04/2018 18:33
2-Nitrophenol	ND	1.3	1	06/04/2018 18:33
4-Nitrophenol	ND	1.3	1	06/04/2018 18:33
N-Nitrosodiphenylamine	ND	0.25	1	06/04/2018 18:33
N-Nitrosodi-n-propylamine	ND	0.25	1	06/04/2018 18:33
Pentachlorophenol	ND	1.3	1	06/04/2018 18:33
Phenanthrene	ND	0.25	1	06/04/2018 18:33
Phenol	ND	0.25	1	06/04/2018 18:33
Pyrene	ND	0.25	1	06/04/2018 18:33
Pyridine	ND	0.25	1	06/04/2018 18:33
1,2,4-Trichlorobenzene	ND	0.25	1	06/04/2018 18:33
2,4,5-Trichlorophenol	ND	0.25	1	06/04/2018 18:33
2,4,6-Trichlorophenol	ND	0.25	1	06/04/2018 18:33

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(56,57,58,59) 1-1.5	**1805H38-007A**	**Soil**	**05/30/2018 12:40**	**GC21 06041821.D**	**159267**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	109	30-130		06/04/2018 18:33
Phenol-d5	118	30-130		06/04/2018 18:33
Nitrobenzene-d5	97	30-130		06/04/2018 18:33
2-Fluorobiphenyl	86	30-130		06/04/2018 18:33
2,4,6-Tribromophenol	61	16-130		06/04/2018 18:33
4-Terphenyl-d14	82	30-130		06/04/2018 18:33

Analyst(s): REB

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(60,61,62,63) 1-1.5	1805H38-008A	Soil	05/30/2018 12:51	GC21 06041822.D	159267

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.25	1	06/04/2018 19:00
Acenaphthylene	ND	0.25	1	06/04/2018 19:00
Acetochlor	ND	0.25	1	06/04/2018 19:00
Anthracene	ND	0.25	1	06/04/2018 19:00
Benzidine	ND	1.3	1	06/04/2018 19:00
Benzo (a) anthracene	ND	0.25	1	06/04/2018 19:00
Benzo (a) pyrene	ND	0.25	1	06/04/2018 19:00
Benzo (b) fluoranthene	ND	0.25	1	06/04/2018 19:00
Benzo (g,h,i) perylene	ND	0.25	1	06/04/2018 19:00
Benzo (k) fluoranthene	ND	0.25	1	06/04/2018 19:00
Benzyl Alcohol	ND	1.3	1	06/04/2018 19:00
1,1-Biphenyl	ND	0.25	1	06/04/2018 19:00
Bis (2-chloroethoxy) Methane	ND	0.25	1	06/04/2018 19:00
Bis (2-chloroethyl) Ether	ND	0.25	1	06/04/2018 19:00
Bis (2-chloroisopropyl) Ether	ND	0.25	1	06/04/2018 19:00
Bis (2-ethylhexyl) Adipate	ND	0.25	1	06/04/2018 19:00
Bis (2-ethylhexyl) Phthalate	ND	0.25	1	06/04/2018 19:00
4-Bromophenyl Phenyl Ether	ND	0.25	1	06/04/2018 19:00
Butylbenzyl Phthalate	ND	0.25	1	06/04/2018 19:00
4-Chloroaniline	ND	0.50	1	06/04/2018 19:00
4-Chloro-3-methylphenol	ND	0.25	1	06/04/2018 19:00
2-Chloronaphthalene	ND	0.25	1	06/04/2018 19:00
2-Chlorophenol	ND	0.25	1	06/04/2018 19:00
4-Chlorophenyl Phenyl Ether	ND	0.25	1	06/04/2018 19:00
Chrysene	ND	0.25	1	06/04/2018 19:00
Dibenzo (a,h) anthracene	ND	0.25	1	06/04/2018 19:00
Dibenzofuran	ND	0.25	1	06/04/2018 19:00
Di-n-butyl Phthalate	ND	0.25	1	06/04/2018 19:00
1,2-Dichlorobenzene	ND	0.25	1	06/04/2018 19:00
1,3-Dichlorobenzene	ND	0.25	1	06/04/2018 19:00
1,4-Dichlorobenzene	ND	0.25	1	06/04/2018 19:00
3,3-Dichlorobenzidine	ND	0.50	1	06/04/2018 19:00
2,4-Dichlorophenol	ND	0.25	1	06/04/2018 19:00
Diethyl Phthalate	ND	0.25	1	06/04/2018 19:00
2,4-Dimethylphenol	ND	0.25	1	06/04/2018 19:00
Dimethyl Phthalate	ND	0.25	1	06/04/2018 19:00
4,6-Dinitro-2-methylphenol	ND	1.3	1	06/04/2018 19:00

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(60,61,62,63) 1-1.5	1805H38-008A	Soil	05/30/2018 12:51	GC21 06041822.D	159267

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	6.3	1	06/04/2018 19:00
2,4-Dinitrotoluene	ND	0.25	1	06/04/2018 19:00
2,6-Dinitrotoluene	ND	0.25	1	06/04/2018 19:00
Di-n-octyl Phthalate	ND	0.50	1	06/04/2018 19:00
1,2-Diphenylhydrazine	ND	0.25	1	06/04/2018 19:00
Fluoranthene	ND	0.25	1	06/04/2018 19:00
Fluorene	ND	0.25	1	06/04/2018 19:00
Hexachlorobenzene	ND	0.25	1	06/04/2018 19:00
Hexachlorobutadiene	ND	0.25	1	06/04/2018 19:00
Hexachlorocyclopentadiene	ND	1.3	1	06/04/2018 19:00
Hexachloroethane	ND	0.25	1	06/04/2018 19:00
Indeno (1,2,3-cd) pyrene	ND	0.25	1	06/04/2018 19:00
Isophorone	ND	0.25	1	06/04/2018 19:00
2-Methylnaphthalene	ND	0.25	1	06/04/2018 19:00
2-Methylphenol (o-Cresol)	ND	0.25	1	06/04/2018 19:00
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	06/04/2018 19:00
Naphthalene	ND	0.25	1	06/04/2018 19:00
2-Nitroaniline	ND	1.3	1	06/04/2018 19:00
3-Nitroaniline	ND	1.3	1	06/04/2018 19:00
4-Nitroaniline	ND	1.3	1	06/04/2018 19:00
Nitrobenzene	ND	0.25	1	06/04/2018 19:00
2-Nitrophenol	ND	1.3	1	06/04/2018 19:00
4-Nitrophenol	ND	1.3	1	06/04/2018 19:00
N-Nitrosodiphenylamine	ND	0.25	1	06/04/2018 19:00
N-Nitrosodi-n-propylamine	ND	0.25	1	06/04/2018 19:00
Pentachlorophenol	ND	1.3	1	06/04/2018 19:00
Phenanthrene	ND	0.25	1	06/04/2018 19:00
Phenol	ND	0.25	1	06/04/2018 19:00
Pyrene	ND	0.25	1	06/04/2018 19:00
Pyridine	ND	0.25	1	06/04/2018 19:00
1,2,4-Trichlorobenzene	ND	0.25	1	06/04/2018 19:00
2,4,5-Trichlorophenol	ND	0.25	1	06/04/2018 19:00
2,4,6-Trichlorophenol	ND	0.25	1	06/04/2018 19:00

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(60,61,62,63) 1-1.5	**1805H38-008A**	**Soil**	**05/30/2018 12:51**	**GC21 06041822.D**	**159267**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	114	30-130		06/04/2018 19:00
Phenol-d5	122	30-130		06/04/2018 19:00
Nitrobenzene-d5	106	30-130		06/04/2018 19:00
2-Fluorobiphenyl	93	30-130		06/04/2018 19:00
2,4,6-Tribromophenol	68	16-130		06/04/2018 19:00
4-Terphenyl-d14	89	30-130		06/04/2018 19:00

Analyst(s): REB

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(64,65,66,67) 1-1.5	1805H38-009A	Soil	05/30/2018 13:06	GC21 06041823.D	159267

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.25	1	06/04/2018 19:27
Acenaphthylene	ND	0.25	1	06/04/2018 19:27
Acetochlor	ND	0.25	1	06/04/2018 19:27
Anthracene	ND	0.25	1	06/04/2018 19:27
Benzidine	ND	1.3	1	06/04/2018 19:27
Benzo (a) anthracene	ND	0.25	1	06/04/2018 19:27
Benzo (a) pyrene	ND	0.25	1	06/04/2018 19:27
Benzo (b) fluoranthene	ND	0.25	1	06/04/2018 19:27
Benzo (g,h,i) perylene	ND	0.25	1	06/04/2018 19:27
Benzo (k) fluoranthene	ND	0.25	1	06/04/2018 19:27
Benzyl Alcohol	ND	1.3	1	06/04/2018 19:27
1,1-Biphenyl	ND	0.25	1	06/04/2018 19:27
Bis (2-chloroethoxy) Methane	ND	0.25	1	06/04/2018 19:27
Bis (2-chloroethyl) Ether	ND	0.25	1	06/04/2018 19:27
Bis (2-chloroisopropyl) Ether	ND	0.25	1	06/04/2018 19:27
Bis (2-ethylhexyl) Adipate	ND	0.25	1	06/04/2018 19:27
Bis (2-ethylhexyl) Phthalate	ND	0.25	1	06/04/2018 19:27
4-Bromophenyl Phenyl Ether	ND	0.25	1	06/04/2018 19:27
Butylbenzyl Phthalate	ND	0.25	1	06/04/2018 19:27
4-Chloroaniline	ND	0.50	1	06/04/2018 19:27
4-Chloro-3-methylphenol	ND	0.25	1	06/04/2018 19:27
2-Chloronaphthalene	ND	0.25	1	06/04/2018 19:27
2-Chlorophenol	ND	0.25	1	06/04/2018 19:27
4-Chlorophenyl Phenyl Ether	ND	0.25	1	06/04/2018 19:27
Chrysene	ND	0.25	1	06/04/2018 19:27
Dibenzo (a,h) anthracene	ND	0.25	1	06/04/2018 19:27
Dibenzofuran	ND	0.25	1	06/04/2018 19:27
Di-n-butyl Phthalate	ND	0.25	1	06/04/2018 19:27
1,2-Dichlorobenzene	ND	0.25	1	06/04/2018 19:27
1,3-Dichlorobenzene	ND	0.25	1	06/04/2018 19:27
1,4-Dichlorobenzene	ND	0.25	1	06/04/2018 19:27
3,3-Dichlorobenzidine	ND	0.50	1	06/04/2018 19:27
2,4-Dichlorophenol	ND	0.25	1	06/04/2018 19:27
Diethyl Phthalate	ND	0.25	1	06/04/2018 19:27
2,4-Dimethylphenol	ND	0.25	1	06/04/2018 19:27
Dimethyl Phthalate	ND	0.25	1	06/04/2018 19:27
4,6-Dinitro-2-methylphenol	ND	1.3	1	06/04/2018 19:27

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(64,65,66,67) 1-1.5	1805H38-009A	Soil	05/30/2018 13:06	GC21 06041823.D	159267

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	6.3	1	06/04/2018 19:27
2,4-Dinitrotoluene	ND	0.25	1	06/04/2018 19:27
2,6-Dinitrotoluene	ND	0.25	1	06/04/2018 19:27
Di-n-octyl Phthalate	ND	0.50	1	06/04/2018 19:27
1,2-Diphenylhydrazine	ND	0.25	1	06/04/2018 19:27
Fluoranthene	ND	0.25	1	06/04/2018 19:27
Fluorene	ND	0.25	1	06/04/2018 19:27
Hexachlorobenzene	ND	0.25	1	06/04/2018 19:27
Hexachlorobutadiene	ND	0.25	1	06/04/2018 19:27
Hexachlorocyclopentadiene	ND	1.3	1	06/04/2018 19:27
Hexachloroethane	ND	0.25	1	06/04/2018 19:27
Indeno (1,2,3-cd) pyrene	ND	0.25	1	06/04/2018 19:27
Isophorone	ND	0.25	1	06/04/2018 19:27
2-Methylnaphthalene	ND	0.25	1	06/04/2018 19:27
2-Methylphenol (o-Cresol)	ND	0.25	1	06/04/2018 19:27
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	06/04/2018 19:27
Naphthalene	ND	0.25	1	06/04/2018 19:27
2-Nitroaniline	ND	1.3	1	06/04/2018 19:27
3-Nitroaniline	ND	1.3	1	06/04/2018 19:27
4-Nitroaniline	ND	1.3	1	06/04/2018 19:27
Nitrobenzene	ND	0.25	1	06/04/2018 19:27
2-Nitrophenol	ND	1.3	1	06/04/2018 19:27
4-Nitrophenol	ND	1.3	1	06/04/2018 19:27
N-Nitrosodiphenylamine	ND	0.25	1	06/04/2018 19:27
N-Nitrosodi-n-propylamine	ND	0.25	1	06/04/2018 19:27
Pentachlorophenol	ND	1.3	1	06/04/2018 19:27
Phenanthrene	ND	0.25	1	06/04/2018 19:27
Phenol	ND	0.25	1	06/04/2018 19:27
Pyrene	ND	0.25	1	06/04/2018 19:27
Pyridine	ND	0.25	1	06/04/2018 19:27
1,2,4-Trichlorobenzene	ND	0.25	1	06/04/2018 19:27
2,4,5-Trichlorophenol	ND	0.25	1	06/04/2018 19:27
2,4,6-Trichlorophenol	ND	0.25	1	06/04/2018 19:27

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(64,65,66,67) 1-1.5	1805H38-009A	Soil	05/30/2018 13:06	GC21 06041823.D	159267

Analytes	Result	RL	DF	Date Analyzed

Surrogates	REC (%)	Qualifiers	Limits	
2-Fluorophenol	144	S	30-130	06/04/2018 19:27
Phenol-d5	157	S	30-130	06/04/2018 19:27
Nitrobenzene-d5	126		30-130	06/04/2018 19:27
2-Fluorobiphenyl	109		30-130	06/04/2018 19:27
2,4,6-Tribromophenol	86		16-130	06/04/2018 19:27
4-Terphenyl-d14	108		30-130	06/04/2018 19:27

Analyst(s): REB Analytical Comments: c11

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(68,69,70,71) 1-1.5	1805H38-010A	Soil	05/30/2018 13:22	GC17 06051808.D	159267

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.25	1	06/05/2018 12:33
Acenaphthylene	ND	0.25	1	06/05/2018 12:33
Acetochlor	ND	0.25	1	06/05/2018 12:33
Anthracene	ND	0.25	1	06/05/2018 12:33
Benzidine	ND	1.3	1	06/05/2018 12:33
Benzo (a) anthracene	ND	0.25	1	06/05/2018 12:33
Benzo (a) pyrene	ND	0.25	1	06/05/2018 12:33
Benzo (b) fluoranthene	ND	0.25	1	06/05/2018 12:33
Benzo (g,h,i) perylene	ND	0.25	1	06/05/2018 12:33
Benzo (k) fluoranthene	ND	0.25	1	06/05/2018 12:33
Benzyl Alcohol	ND	1.3	1	06/05/2018 12:33
1,1-Biphenyl	ND	0.25	1	06/05/2018 12:33
Bis (2-chloroethoxy) Methane	ND	0.25	1	06/05/2018 12:33
Bis (2-chloroethyl) Ether	ND	0.25	1	06/05/2018 12:33
Bis (2-chloroisopropyl) Ether	ND	0.25	1	06/05/2018 12:33
Bis (2-ethylhexyl) Adipate	ND	0.25	1	06/05/2018 12:33
Bis (2-ethylhexyl) Phthalate	ND	0.25	1	06/05/2018 12:33
4-Bromophenyl Phenyl Ether	ND	0.25	1	06/05/2018 12:33
Butylbenzyl Phthalate	ND	0.25	1	06/05/2018 12:33
4-Chloroaniline	ND	0.50	1	06/05/2018 12:33
4-Chloro-3-methylphenol	ND	0.25	1	06/05/2018 12:33
2-Chloronaphthalene	ND	0.25	1	06/05/2018 12:33
2-Chlorophenol	ND	0.25	1	06/05/2018 12:33
4-Chlorophenyl Phenyl Ether	ND	0.25	1	06/05/2018 12:33
Chrysene	ND	0.25	1	06/05/2018 12:33
Dibenzo (a,h) anthracene	ND	0.25	1	06/05/2018 12:33
Dibenzofuran	ND	0.25	1	06/05/2018 12:33
Di-n-butyl Phthalate	ND	0.25	1	06/05/2018 12:33
1,2-Dichlorobenzene	ND	0.25	1	06/05/2018 12:33
1,3-Dichlorobenzene	ND	0.25	1	06/05/2018 12:33
1,4-Dichlorobenzene	ND	0.25	1	06/05/2018 12:33
3,3-Dichlorobenzidine	ND	0.50	1	06/05/2018 12:33
2,4-Dichlorophenol	ND	0.25	1	06/05/2018 12:33
Diethyl Phthalate	ND	0.25	1	06/05/2018 12:33
2,4-Dimethylphenol	ND	0.25	1	06/05/2018 12:33
Dimethyl Phthalate	ND	0.25	1	06/05/2018 12:33
4,6-Dinitro-2-methylphenol	ND	1.3	1	06/05/2018 12:33

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(68,69,70,71) 1-1.5	1805H38-010A	Soil	05/30/2018 13:22	GC17 06051808.D	159267

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	6.3	1	06/05/2018 12:33
2,4-Dinitrotoluene	ND	0.25	1	06/05/2018 12:33
2,6-Dinitrotoluene	ND	0.25	1	06/05/2018 12:33
Di-n-octyl Phthalate	ND	0.50	1	06/05/2018 12:33
1,2-Diphenylhydrazine	ND	0.25	1	06/05/2018 12:33
Fluoranthene	ND	0.25	1	06/05/2018 12:33
Fluorene	ND	0.25	1	06/05/2018 12:33
Hexachlorobenzene	ND	0.25	1	06/05/2018 12:33
Hexachlorobutadiene	ND	0.25	1	06/05/2018 12:33
Hexachlorocyclopentadiene	ND	1.3	1	06/05/2018 12:33
Hexachloroethane	ND	0.25	1	06/05/2018 12:33
Indeno (1,2,3-cd) pyrene	ND	0.25	1	06/05/2018 12:33
Isophorone	ND	0.25	1	06/05/2018 12:33
2-Methylnaphthalene	ND	0.25	1	06/05/2018 12:33
2-Methylphenol (o-Cresol)	ND	0.25	1	06/05/2018 12:33
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	06/05/2018 12:33
Naphthalene	ND	0.25	1	06/05/2018 12:33
2-Nitroaniline	ND	1.3	1	06/05/2018 12:33
3-Nitroaniline	ND	1.3	1	06/05/2018 12:33
4-Nitroaniline	ND	1.3	1	06/05/2018 12:33
Nitrobenzene	ND	0.25	1	06/05/2018 12:33
2-Nitrophenol	ND	1.3	1	06/05/2018 12:33
4-Nitrophenol	ND	1.3	1	06/05/2018 12:33
N-Nitrosodiphenylamine	ND	0.25	1	06/05/2018 12:33
N-Nitrosodi-n-propylamine	ND	0.25	1	06/05/2018 12:33
Pentachlorophenol	ND	1.3	1	06/05/2018 12:33
Phenanthrene	ND	0.25	1	06/05/2018 12:33
Phenol	ND	0.25	1	06/05/2018 12:33
Pyrene	ND	0.25	1	06/05/2018 12:33
Pyridine	ND	0.25	1	06/05/2018 12:33
1,2,4-Trichlorobenzene	ND	0.25	1	06/05/2018 12:33
2,4,5-Trichlorophenol	ND	0.25	1	06/05/2018 12:33
2,4,6-Trichlorophenol	ND	0.25	1	06/05/2018 12:33

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(68,69,70,71) 1-1.5	**1805H38-010A**	**Soil**	**05/30/2018 13:22**	**GC17 06051808.D**	**159267**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	114	30-130		06/05/2018 12:33
Phenol-d5	104	30-130		06/05/2018 12:33
Nitrobenzene-d5	105	30-130		06/05/2018 12:33
2-Fluorobiphenyl	102	30-130		06/05/2018 12:33
2,4,6-Tribromophenol	47	16-130		06/05/2018 12:33
4-Terphenyl-d14	110	30-130		06/05/2018 12:33

Analyst(s): REB

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(72,73,74,75) 1-1.5	1805H38-011A	Soil	05/30/2018 13:35	GC17 06051809.D	159267

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.50	2	06/05/2018 13:00
Acenaphthylene	ND	0.50	2	06/05/2018 13:00
Acetochlor	ND	0.50	2	06/05/2018 13:00
Anthracene	ND	0.50	2	06/05/2018 13:00
Benzidine	ND	2.6	2	06/05/2018 13:00
Benzo (a) anthracene	ND	0.50	2	06/05/2018 13:00
Benzo (a) pyrene	ND	0.50	2	06/05/2018 13:00
Benzo (b) fluoranthene	ND	0.50	2	06/05/2018 13:00
Benzo (g,h,i) perylene	ND	0.50	2	06/05/2018 13:00
Benzo (k) fluoranthene	ND	0.50	2	06/05/2018 13:00
Benzyl Alcohol	ND	2.6	2	06/05/2018 13:00
1,1-Biphenyl	ND	0.50	2	06/05/2018 13:00
Bis (2-chloroethoxy) Methane	ND	0.50	2	06/05/2018 13:00
Bis (2-chloroethyl) Ether	ND	0.50	2	06/05/2018 13:00
Bis (2-chloroisopropyl) Ether	ND	0.50	2	06/05/2018 13:00
Bis (2-ethylhexyl) Adipate	ND	0.50	2	06/05/2018 13:00
Bis (2-ethylhexyl) Phthalate	ND	0.50	2	06/05/2018 13:00
4-Bromophenyl Phenyl Ether	ND	0.50	2	06/05/2018 13:00
Butylbenzyl Phthalate	ND	0.50	2	06/05/2018 13:00
4-Chloroaniline	ND	1.0	2	06/05/2018 13:00
4-Chloro-3-methylphenol	ND	0.50	2	06/05/2018 13:00
2-Chloronaphthalene	ND	0.50	2	06/05/2018 13:00
2-Chlorophenol	ND	0.50	2	06/05/2018 13:00
4-Chlorophenyl Phenyl Ether	ND	0.50	2	06/05/2018 13:00
Chrysene	ND	0.50	2	06/05/2018 13:00
Dibenzo (a,h) anthracene	ND	0.50	2	06/05/2018 13:00
Dibenzofuran	ND	0.50	2	06/05/2018 13:00
Di-n-butyl Phthalate	ND	0.50	2	06/05/2018 13:00
1,2-Dichlorobenzene	ND	0.50	2	06/05/2018 13:00
1,3-Dichlorobenzene	ND	0.50	2	06/05/2018 13:00
1,4-Dichlorobenzene	ND	0.50	2	06/05/2018 13:00
3,3-Dichlorobenzidine	ND	1.0	2	06/05/2018 13:00
2,4-Dichlorophenol	ND	0.50	2	06/05/2018 13:00
Diethyl Phthalate	ND	0.50	2	06/05/2018 13:00
2,4-Dimethylphenol	ND	0.50	2	06/05/2018 13:00
Dimethyl Phthalate	ND	0.50	2	06/05/2018 13:00
4,6-Dinitro-2-methylphenol	ND	2.6	2	06/05/2018 13:00

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(72,73,74,75) 1-1.5	1805H38-011A	Soil	05/30/2018 13:35	GC17 06051809.D	159267

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	13	2	06/05/2018 13:00
2,4-Dinitrotoluene	ND	0.50	2	06/05/2018 13:00
2,6-Dinitrotoluene	ND	0.50	2	06/05/2018 13:00
Di-n-octyl Phthalate	ND	1.0	2	06/05/2018 13:00
1,2-Diphenylhydrazine	ND	0.50	2	06/05/2018 13:00
Fluoranthene	ND	0.50	2	06/05/2018 13:00
Fluorene	ND	0.50	2	06/05/2018 13:00
Hexachlorobenzene	ND	0.50	2	06/05/2018 13:00
Hexachlorobutadiene	ND	0.50	2	06/05/2018 13:00
Hexachlorocyclopentadiene	ND	2.6	2	06/05/2018 13:00
Hexachloroethane	ND	0.50	2	06/05/2018 13:00
Indeno (1,2,3-cd) pyrene	ND	0.50	2	06/05/2018 13:00
Isophorone	ND	0.50	2	06/05/2018 13:00
2-Methylnaphthalene	ND	0.50	2	06/05/2018 13:00
2-Methylphenol (o-Cresol)	ND	0.50	2	06/05/2018 13:00
3 & 4-Methylphenol (m,p-Cresol)	ND	0.50	2	06/05/2018 13:00
Naphthalene	ND	0.50	2	06/05/2018 13:00
2-Nitroaniline	ND	2.6	2	06/05/2018 13:00
3-Nitroaniline	ND	2.6	2	06/05/2018 13:00
4-Nitroaniline	ND	2.6	2	06/05/2018 13:00
Nitrobenzene	ND	0.50	2	06/05/2018 13:00
2-Nitrophenol	ND	2.6	2	06/05/2018 13:00
4-Nitrophenol	ND	2.6	2	06/05/2018 13:00
N-Nitrosodiphenylamine	ND	0.50	2	06/05/2018 13:00
N-Nitrosodi-n-propylamine	ND	0.50	2	06/05/2018 13:00
Pentachlorophenol	ND	2.6	2	06/05/2018 13:00
Phenanthrene	ND	0.50	2	06/05/2018 13:00
Phenol	ND	0.50	2	06/05/2018 13:00
Pyrene	ND	0.50	2	06/05/2018 13:00
Pyridine	ND	0.50	2	06/05/2018 13:00
1,2,4-Trichlorobenzene	ND	0.50	2	06/05/2018 13:00
2,4,5-Trichlorophenol	ND	0.50	2	06/05/2018 13:00
2,4,6-Trichlorophenol	ND	0.50	2	06/05/2018 13:00

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(72,73,74,75) 1-1.5	**1805H38-011A**	**Soil**	**05/30/2018 13:35**	**GC17 06051809.D**	**159267**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	99	30-130		06/05/2018 13:00
Phenol-d5	89	30-130		06/05/2018 13:00
Nitrobenzene-d5	88	30-130		06/05/2018 13:00
2-Fluorobiphenyl	81	30-130		06/05/2018 13:00
2,4,6-Tribromophenol	46	16-130		06/05/2018 13:00
4-Terphenyl-d14	83	30-130		06/05/2018 13:00

Analyst(s): REB Analytical Comments: a3

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(76,77,78,79) 1-1.5	1805H38-012A	Soil	05/30/2018 13:50	GC17 06051810.D	159267

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.25	1	06/05/2018 13:27
Acenaphthylene	ND	0.25	1	06/05/2018 13:27
Acetochlor	ND	0.25	1	06/05/2018 13:27
Anthracene	ND	0.25	1	06/05/2018 13:27
Benzidine	ND	1.3	1	06/05/2018 13:27
Benzo (a) anthracene	ND	0.25	1	06/05/2018 13:27
Benzo (a) pyrene	ND	0.25	1	06/05/2018 13:27
Benzo (b) fluoranthene	ND	0.25	1	06/05/2018 13:27
Benzo (g,h,i) perylene	ND	0.25	1	06/05/2018 13:27
Benzo (k) fluoranthene	ND	0.25	1	06/05/2018 13:27
Benzyl Alcohol	ND	1.3	1	06/05/2018 13:27
1,1-Biphenyl	ND	0.25	1	06/05/2018 13:27
Bis (2-chloroethoxy) Methane	ND	0.25	1	06/05/2018 13:27
Bis (2-chloroethyl) Ether	ND	0.25	1	06/05/2018 13:27
Bis (2-chloroisopropyl) Ether	ND	0.25	1	06/05/2018 13:27
Bis (2-ethylhexyl) Adipate	ND	0.25	1	06/05/2018 13:27
Bis (2-ethylhexyl) Phthalate	ND	0.25	1	06/05/2018 13:27
4-Bromophenyl Phenyl Ether	ND	0.25	1	06/05/2018 13:27
Butylbenzyl Phthalate	ND	0.25	1	06/05/2018 13:27
4-Chloroaniline	ND	0.50	1	06/05/2018 13:27
4-Chloro-3-methylphenol	ND	0.25	1	06/05/2018 13:27
2-Chloronaphthalene	ND	0.25	1	06/05/2018 13:27
2-Chlorophenol	ND	0.25	1	06/05/2018 13:27
4-Chlorophenyl Phenyl Ether	ND	0.25	1	06/05/2018 13:27
Chrysene	ND	0.25	1	06/05/2018 13:27
Dibenzo (a,h) anthracene	ND	0.25	1	06/05/2018 13:27
Dibenzofuran	ND	0.25	1	06/05/2018 13:27
Di-n-butyl Phthalate	ND	0.25	1	06/05/2018 13:27
1,2-Dichlorobenzene	ND	0.25	1	06/05/2018 13:27
1,3-Dichlorobenzene	ND	0.25	1	06/05/2018 13:27
1,4-Dichlorobenzene	ND	0.25	1	06/05/2018 13:27
3,3-Dichlorobenzidine	ND	0.50	1	06/05/2018 13:27
2,4-Dichlorophenol	ND	0.25	1	06/05/2018 13:27
Diethyl Phthalate	ND	0.25	1	06/05/2018 13:27
2,4-Dimethylphenol	ND	0.25	1	06/05/2018 13:27
Dimethyl Phthalate	ND	0.25	1	06/05/2018 13:27
4,6-Dinitro-2-methylphenol	ND	1.3	1	06/05/2018 13:27

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(76,77,78,79) 1-1.5	1805H38-012A	Soil	05/30/2018 13:50	GC17 06051810.D	159267

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	6.3	1	06/05/2018 13:27
2,4-Dinitrotoluene	ND	0.25	1	06/05/2018 13:27
2,6-Dinitrotoluene	ND	0.25	1	06/05/2018 13:27
Di-n-octyl Phthalate	ND	0.50	1	06/05/2018 13:27
1,2-Diphenylhydrazine	ND	0.25	1	06/05/2018 13:27
Fluoranthene	ND	0.25	1	06/05/2018 13:27
Fluorene	ND	0.25	1	06/05/2018 13:27
Hexachlorobenzene	ND	0.25	1	06/05/2018 13:27
Hexachlorobutadiene	ND	0.25	1	06/05/2018 13:27
Hexachlorocyclopentadiene	ND	1.3	1	06/05/2018 13:27
Hexachloroethane	ND	0.25	1	06/05/2018 13:27
Indeno (1,2,3-cd) pyrene	ND	0.25	1	06/05/2018 13:27
Isophorone	ND	0.25	1	06/05/2018 13:27
2-Methylnaphthalene	ND	0.25	1	06/05/2018 13:27
2-Methylphenol (o-Cresol)	ND	0.25	1	06/05/2018 13:27
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	06/05/2018 13:27
Naphthalene	ND	0.25	1	06/05/2018 13:27
2-Nitroaniline	ND	1.3	1	06/05/2018 13:27
3-Nitroaniline	ND	1.3	1	06/05/2018 13:27
4-Nitroaniline	ND	1.3	1	06/05/2018 13:27
Nitrobenzene	ND	0.25	1	06/05/2018 13:27
2-Nitrophenol	ND	1.3	1	06/05/2018 13:27
4-Nitrophenol	ND	1.3	1	06/05/2018 13:27
N-Nitrosodiphenylamine	ND	0.25	1	06/05/2018 13:27
N-Nitrosodi-n-propylamine	ND	0.25	1	06/05/2018 13:27
Pentachlorophenol	ND	1.3	1	06/05/2018 13:27
Phenanthrene	ND	0.25	1	06/05/2018 13:27
Phenol	ND	0.25	1	06/05/2018 13:27
Pyrene	ND	0.25	1	06/05/2018 13:27
Pyridine	ND	0.25	1	06/05/2018 13:27
1,2,4-Trichlorobenzene	ND	0.25	1	06/05/2018 13:27
2,4,5-Trichlorophenol	ND	0.25	1	06/05/2018 13:27
2,4,6-Trichlorophenol	ND	0.25	1	06/05/2018 13:27

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B
Date Prepared:	6/4/18	**Analytical Method:**	SW8270C
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Semi-Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(76,77,78,79) 1-1.5	**1805H38-012A**	**Soil**	**05/30/2018 13:50**	**GC17 06051810.D**	**159267**

Analytes	Result	RL	DF	Date Analyzed
Surrogates	**REC (%)**	**Limits**		
2-Fluorophenol	117	30-130		06/05/2018 13:27
Phenol-d5	105	30-130		06/05/2018 13:27
Nitrobenzene-d5	105	30-130		06/05/2018 13:27
2-Fluorobiphenyl	100	30-130		06/05/2018 13:27
2,4,6-Tribromophenol	57	16-130		06/05/2018 13:27
4-Terphenyl-d14	105	30-130		06/05/2018 13:27

Analyst(s): REB

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3050B
Date Prepared:	5/31/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(32,33,34,35) 1-1.5	1805H38-001A	Soil	05/30/2018 09:00	ICP-MS1 100SMPL.D	159168

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	06/04/2018 19:12
Arsenic	**5.4**	0.50	1	06/04/2018 19:12
Barium	**140**	5.0	1	06/04/2018 19:12
Beryllium	ND	0.50	1	06/04/2018 19:12
Cadmium	ND	0.25	1	06/04/2018 19:12
Chromium	**44**	0.50	1	06/04/2018 19:12
Cobalt	**9.2**	0.50	1	06/04/2018 19:12
Copper	**30**	0.50	1	06/04/2018 19:12
Lead	**11**	0.50	1	06/04/2018 19:12
Mercury	ND	0.050	1	06/04/2018 19:12
Molybdenum	ND	0.50	1	06/04/2018 19:12
Nickel	**42**	0.50	1	06/04/2018 19:12
Selenium	ND	0.50	1	06/04/2018 19:12
Silver	ND	0.50	1	06/04/2018 19:12
Thallium	ND	0.50	1	06/04/2018 19:12
Vanadium	**39**	0.50	1	06/04/2018 19:12
Zinc	**46**	5.0	1	06/04/2018 19:12

Surrogates	REC (%)	Limits	
Terbium	101	70-130	06/04/2018 19:12

Analyst(s): ND

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3050B
Date Prepared:	5/31/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(36,37,38,39) 1-1.5	1805H38-002A	Soil	05/30/2018 09:25	ICP-MS1 101SMPL.D	159168

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.50**	0.50	1	06/04/2018 19:18
Arsenic	**6.0**	0.50	1	06/04/2018 19:18
Barium	**200**	5.0	1	06/04/2018 19:18
Beryllium	**0.53**	0.50	1	06/04/2018 19:18
Cadmium	ND	0.25	1	06/04/2018 19:18
Chromium	**43**	0.50	1	06/04/2018 19:18
Cobalt	**8.8**	0.50	1	06/04/2018 19:18
Copper	**22**	0.50	1	06/04/2018 19:18
Lead	**11**	0.50	1	06/04/2018 19:18
Mercury	ND	0.050	1	06/04/2018 19:18
Molybdenum	ND	0.50	1	06/04/2018 19:18
Nickel	**46**	0.50	1	06/04/2018 19:18
Selenium	ND	0.50	1	06/04/2018 19:18
Silver	ND	0.50	1	06/04/2018 19:18
Thallium	ND	0.50	1	06/04/2018 19:18
Vanadium	**37**	0.50	1	06/04/2018 19:18
Zinc	**52**	5.0	1	06/04/2018 19:18

Surrogates	REC (%)	Limits	
Terbium	103	70-130	06/04/2018 19:18

Analyst(s): ND

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3050B
Date Prepared:	5/31/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(40,41,42,43) 1-1.5	1805H38-003A	Soil	05/30/2018 10:05	ICP-MS1 102SMPL.D	159168

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.52**	0.50	1	06/04/2018 19:24
Arsenic	**6.2**	0.50	1	06/04/2018 19:24
Barium	**210**	5.0	1	06/04/2018 19:24
Beryllium	**0.60**	0.50	1	06/04/2018 19:24
Cadmium	ND	0.25	1	06/04/2018 19:24
Chromium	**61**	0.50	1	06/04/2018 19:24
Cobalt	**11**	0.50	1	06/04/2018 19:24
Copper	**22**	0.50	1	06/04/2018 19:24
Lead	**10**	0.50	1	06/04/2018 19:24
Mercury	ND	0.050	1	06/04/2018 19:24
Molybdenum	**0.50**	0.50	1	06/04/2018 19:24
Nickel	**54**	0.50	1	06/04/2018 19:24
Selenium	ND	0.50	1	06/04/2018 19:24
Silver	ND	0.50	1	06/04/2018 19:24
Thallium	ND	0.50	1	06/04/2018 19:24
Vanadium	**41**	0.50	1	06/04/2018 19:24
Zinc	**50**	5.0	1	06/04/2018 19:24

Surrogates	REC (%)	Limits	
Terbium	100	70-130	06/04/2018 19:24

Analyst(s): ND

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3050B
Date Prepared:	5/31/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(44,45,46,47) 1-1.5	1805H38-004A	Soil	05/30/2018 10:44	ICP-MS1 029SMPL.D	159168

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	06/05/2018 11:06
Arsenic	**6.6**	0.50	1	06/05/2018 11:06
Barium	**190**	5.0	1	06/05/2018 11:06
Beryllium	**0.51**	0.50	1	06/05/2018 11:06
Cadmium	ND	0.25	1	06/05/2018 11:06
Chromium	**45**	0.50	1	06/05/2018 11:06
Cobalt	**9.6**	0.50	1	06/05/2018 11:06
Copper	**26**	0.50	1	06/05/2018 11:06
Lead	**10**	0.50	1	06/05/2018 11:06
Mercury	ND	0.050	1	06/05/2018 11:06
Molybdenum	ND	0.50	1	06/05/2018 11:06
Nickel	**48**	0.50	1	06/05/2018 11:06
Selenium	ND	0.50	1	06/05/2018 11:06
Silver	ND	0.50	1	06/05/2018 11:06
Thallium	ND	0.50	1	06/05/2018 11:06
Vanadium	**43**	0.50	1	06/05/2018 11:06
Zinc	**52**	5.0	1	06/05/2018 11:06

Surrogates	REC (%)	Limits	
Terbium	96	70-130	06/05/2018 11:06

Analyst(s): ND

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1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3050B
Date Prepared:	5/31/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(48,49,50,51) 1-1.5	1805H38-005A	Soil	05/30/2018 11:17	ICP-MS1 030SMPL.D	159168

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	06/05/2018 11:12
Arsenic	**4.8**	0.50	1	06/05/2018 11:12
Barium	**140**	5.0	1	06/05/2018 11:12
Beryllium	ND	0.50	1	06/05/2018 11:12
Cadmium	ND	0.25	1	06/05/2018 11:12
Chromium	**43**	0.50	1	06/05/2018 11:12
Cobalt	**8.7**	0.50	1	06/05/2018 11:12
Copper	**24**	0.50	1	06/05/2018 11:12
Lead	**9.2**	0.50	1	06/05/2018 11:12
Mercury	ND	0.050	1	06/05/2018 11:12
Molybdenum	ND	0.50	1	06/05/2018 11:12
Nickel	**38**	0.50	1	06/05/2018 11:12
Selenium	ND	0.50	1	06/05/2018 11:12
Silver	ND	0.50	1	06/05/2018 11:12
Thallium	ND	0.50	1	06/05/2018 11:12
Vanadium	**46**	0.50	1	06/05/2018 11:12
Zinc	**47**	5.0	1	06/05/2018 11:12

Surrogates	REC (%)	Limits	
Terbium	93	70-130	06/05/2018 11:12

Analyst(s): ND

(Cont.)

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3050B
Date Prepared:	5/31/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(52,53,54,55) 1-1.5	1805H38-006A	Soil	05/30/2018 11:44	ICP-MS1 031SMPL.D	159168

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.51**	0.50	1	06/05/2018 11:18
Arsenic	**6.6**	0.50	1	06/05/2018 11:18
Barium	**220**	5.0	1	06/05/2018 11:18
Beryllium	**0.60**	0.50	1	06/05/2018 11:18
Cadmium	ND	0.25	1	06/05/2018 11:18
Chromium	**50**	0.50	1	06/05/2018 11:18
Cobalt	**11**	0.50	1	06/05/2018 11:18
Copper	**24**	0.50	1	06/05/2018 11:18
Lead	**13**	0.50	1	06/05/2018 11:18
Mercury	ND	0.050	1	06/05/2018 11:18
Molybdenum	ND	0.50	1	06/05/2018 11:18
Nickel	**57**	0.50	1	06/05/2018 11:18
Selenium	ND	0.50	1	06/05/2018 11:18
Silver	ND	0.50	1	06/05/2018 11:18
Thallium	ND	0.50	1	06/05/2018 11:18
Vanadium	**43**	0.50	1	06/05/2018 11:18
Zinc	**60**	5.0	1	06/05/2018 11:18

Surrogates	REC (%)	Limits	
Terbium	92	70-130	06/05/2018 11:18

Analyst(s): ND

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3050B
Date Prepared:	5/31/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(56,57,58,59) 1-1.5	1805H38-007A	Soil	05/30/2018 12:40	ICP-MS1 032SMPL.D	159168

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	06/05/2018 11:24
Arsenic	**5.9**	0.50	1	06/05/2018 11:24
Barium	**190**	5.0	1	06/05/2018 11:24
Beryllium	**0.52**	0.50	1	06/05/2018 11:24
Cadmium	ND	0.25	1	06/05/2018 11:24
Chromium	**43**	0.50	1	06/05/2018 11:24
Cobalt	**9.5**	0.50	1	06/05/2018 11:24
Copper	**20**	0.50	1	06/05/2018 11:24
Lead	**7.9**	0.50	1	06/05/2018 11:24
Mercury	ND	0.050	1	06/05/2018 11:24
Molybdenum	ND	0.50	1	06/05/2018 11:24
Nickel	**46**	0.50	1	06/05/2018 11:24
Selenium	ND	0.50	1	06/05/2018 11:24
Silver	ND	0.50	1	06/05/2018 11:24
Thallium	ND	0.50	1	06/05/2018 11:24
Vanadium	**38**	0.50	1	06/05/2018 11:24
Zinc	**45**	5.0	1	06/05/2018 11:24

Surrogates	REC (%)	Limits	
Terbium	94	70-130	06/05/2018 11:24

Analyst(s): ND

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3050B
Date Prepared:	5/31/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(60,61,62,63) 1-1.5	1805H38-008A	Soil	05/30/2018 12:51	ICP-MS1 033SMPL.D	159168

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	06/05/2018 11:30
Arsenic	**6.3**	0.50	1	06/05/2018 11:30
Barium	**190**	5.0	1	06/05/2018 11:30
Beryllium	**0.53**	0.50	1	06/05/2018 11:30
Cadmium	ND	0.25	1	06/05/2018 11:30
Chromium	**45**	0.50	1	06/05/2018 11:30
Cobalt	**8.7**	0.50	1	06/05/2018 11:30
Copper	**23**	0.50	1	06/05/2018 11:30
Lead	**11**	0.50	1	06/05/2018 11:30
Mercury	ND	0.050	1	06/05/2018 11:30
Molybdenum	ND	0.50	1	06/05/2018 11:30
Nickel	**47**	0.50	1	06/05/2018 11:30
Selenium	ND	0.50	1	06/05/2018 11:30
Silver	ND	0.50	1	06/05/2018 11:30
Thallium	ND	0.50	1	06/05/2018 11:30
Vanadium	**40**	0.50	1	06/05/2018 11:30
Zinc	**51**	5.0	1	06/05/2018 11:30

Surrogates	REC (%)	Limits	
Terbium	89	70-130	06/05/2018 11:30

Analyst(s): ND

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3050B
Date Prepared:	5/31/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(64,65,66,67) 1-1.5	1805H38-009A	Soil	05/30/2018 13:06	ICP-MS1 085SMPL.D	159168

Analytes	Result	RL	DF	Date Analyzed
Antimony	**0.57**	0.50	1	06/04/2018 17:40
Arsenic	**7.8**	0.50	1	06/04/2018 17:40
Barium	**220**	5.0	1	06/04/2018 17:40
Beryllium	**0.61**	0.50	1	06/04/2018 17:40
Cadmium	ND	0.25	1	06/04/2018 17:40
Chromium	**47**	0.50	1	06/04/2018 17:40
Cobalt	**14**	0.50	1	06/04/2018 17:40
Copper	**27**	0.50	1	06/04/2018 17:40
Lead	**14**	0.50	1	06/04/2018 17:40
Mercury	**0.076**	0.050	1	06/04/2018 17:40
Molybdenum	ND	0.50	1	06/04/2018 17:40
Nickel	**56**	0.50	1	06/04/2018 17:40
Selenium	ND	0.50	1	06/04/2018 17:40
Silver	ND	0.50	1	06/04/2018 17:40
Thallium	ND	0.50	1	06/04/2018 17:40
Vanadium	**51**	0.50	1	06/04/2018 17:40
Zinc	**59**	5.0	1	06/04/2018 17:40

Surrogates	REC (%)	Limits	
Terbium	102	70-130	06/04/2018 17:40

Analyst(s): ND

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3050B
Date Prepared:	5/31/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(68,69,70,71) 1-1.5	1805H38-010A	Soil	05/30/2018 13:22	ICP-MS1 146SMPL.D	159176

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	06/01/2018 22:55
Arsenic	**5.9**	0.50	1	06/01/2018 22:55
Barium	**170**	5.0	1	06/01/2018 22:55
Beryllium	**0.52**	0.50	1	06/01/2018 22:55
Cadmium	ND	0.25	1	06/01/2018 22:55
Chromium	**41**	0.50	1	06/01/2018 22:55
Cobalt	**8.3**	0.50	1	06/01/2018 22:55
Copper	**19**	0.50	1	06/01/2018 22:55
Lead	**11**	0.50	1	06/01/2018 22:55
Mercury	**0.089**	0.050	1	06/01/2018 22:55
Molybdenum	ND	0.50	1	06/01/2018 22:55
Nickel	**42**	0.50	1	06/01/2018 22:55
Selenium	ND	0.50	1	06/01/2018 22:55
Silver	ND	0.50	1	06/01/2018 22:55
Thallium	ND	0.50	1	06/01/2018 22:55
Vanadium	**36**	0.50	1	06/01/2018 22:55
Zinc	**47**	5.0	1	06/01/2018 22:55

Surrogates	REC (%)	Limits	
Terbium	98	70-130	06/01/2018 22:55

Analyst(s): DB

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3050B
Date Prepared:	5/31/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(72,73,74,75) 1-1.5	1805H38-011A	Soil	05/30/2018 13:35	ICP-MS1 034SMPL.D	159176

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	06/05/2018 11:37
Arsenic	**5.9**	0.50	1	06/05/2018 11:37
Barium	**210**	5.0	1	06/05/2018 11:37
Beryllium	**0.52**	0.50	1	06/05/2018 11:37
Cadmium	ND	0.25	1	06/05/2018 11:37
Chromium	**45**	0.50	1	06/05/2018 11:37
Cobalt	**9.3**	0.50	1	06/05/2018 11:37
Copper	**23**	0.50	1	06/05/2018 11:37
Lead	**15**	0.50	1	06/05/2018 11:37
Mercury	ND	0.050	1	06/05/2018 11:37
Molybdenum	ND	0.50	1	06/05/2018 11:37
Nickel	**48**	0.50	1	06/05/2018 11:37
Selenium	ND	0.50	1	06/05/2018 11:37
Silver	ND	0.50	1	06/05/2018 11:37
Thallium	ND	0.50	1	06/05/2018 11:37
Vanadium	**39**	0.50	1	06/05/2018 11:37
Zinc	**56**	5.0	1	06/05/2018 11:37

Surrogates	REC (%)	Limits	
Terbium	104	70-130	06/05/2018 11:37

Analyst(s): ND

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3050B
Date Prepared:	5/31/18	**Analytical Method:**	SW6020
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(76,77,78,79) 1-1.5	1805H38-012A	Soil	05/30/2018 13:50	ICP-MS1 035SMPL.D	159176

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	06/05/2018 11:43
Arsenic	**6.4**	0.50	1	06/05/2018 11:43
Barium	**190**	5.0	1	06/05/2018 11:43
Beryllium	**0.53**	0.50	1	06/05/2018 11:43
Cadmium	ND	0.25	1	06/05/2018 11:43
Chromium	**44**	0.50	1	06/05/2018 11:43
Cobalt	**9.7**	0.50	1	06/05/2018 11:43
Copper	**23**	0.50	1	06/05/2018 11:43
Lead	**12**	0.50	1	06/05/2018 11:43
Mercury	ND	0.050	1	06/05/2018 11:43
Molybdenum	ND	0.50	1	06/05/2018 11:43
Nickel	**49**	0.50	1	06/05/2018 11:43
Selenium	ND	0.50	1	06/05/2018 11:43
Silver	ND	0.50	1	06/05/2018 11:43
Thallium	ND	0.50	1	06/05/2018 11:43
Vanadium	**39**	0.50	1	06/05/2018 11:43
Zinc	**55**	5.0	1	06/05/2018 11:43

Surrogates	REC (%)	Limits	
Terbium	100	70-130	06/05/2018 11:43

Analyst(s): ND

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B/3630C
Date Prepared:	5/31/18	**Analytical Method:**	SW8015B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(32,33,34,35) 1-1.5	1805H38-001A	Soil	05/30/2018 09:00	GC9a 06041810.D	159114

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	06/04/2018 12:10
TPH-Motor Oil (C18-C36)	ND	5.0	1	06/04/2018 12:10

Surrogates	REC (%)	Limits	
C9	86	74-123	06/04/2018 12:10

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(36,37,38,39) 1-1.5	1805H38-002A	Soil	05/30/2018 09:25	GC9a 06041812.D	159114

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	06/04/2018 12:48
TPH-Motor Oil (C18-C36)	ND	5.0	1	06/04/2018 12:48

Surrogates	REC (%)	Limits	
C9	87	74-123	06/04/2018 12:48

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(40,41,42,43) 1-1.5	1805H38-003A	Soil	05/30/2018 10:05	GC39B 06011873.D	159114

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	06/02/2018 11:51
TPH-Motor Oil (C18-C36)	ND	5.0	1	06/02/2018 11:51

Surrogates	REC (%)	Limits	
C9	90	74-123	06/02/2018 11:51

Analyst(s): JIS

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B/3630C
Date Prepared:	5/31/18	**Analytical Method:**	SW8015B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(44,45,46,47) 1-1.5	1805H38-004A	Soil	05/30/2018 10:44	GC6B 06031831.D	159114

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	06/03/2018 21:02
TPH-Motor Oil (C18-C36)	ND	5.0	1	06/03/2018 21:02

Surrogates	REC (%)	Limits	
C9	87	74-123	06/03/2018 21:02

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(48,49,50,51) 1-1.5	1805H38-005A	Soil	05/30/2018 11:17	GC6B 06031833.D	159114

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	06/03/2018 21:41
TPH-Motor Oil (C18-C36)	ND	5.0	1	06/03/2018 21:41

Surrogates	REC (%)	Limits	
C9	88	74-123	06/03/2018 21:41

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(52,53,54,55) 1-1.5	1805H38-006A	Soil	05/30/2018 11:44	GC6B 06031835.D	159114

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	06/03/2018 22:20
TPH-Motor Oil (C18-C36)	ND	5.0	1	06/03/2018 22:20

Surrogates	REC (%)	Limits	
C9	87	74-123	06/03/2018 22:20

Analyst(s): JIS

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Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B/3630C
Date Prepared:	5/31/18	**Analytical Method:**	SW8015B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(56,57,58,59) 1-1.5	1805H38-007A	Soil	05/30/2018 12:40	GC9a 06031828.D	159114

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	06/03/2018 21:50
TPH-Motor Oil (C18-C36)	ND	5.0	1	06/03/2018 21:50

Surrogates	REC (%)	Limits	
C9	83	74-123	06/03/2018 21:50

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(60,61,62,63) 1-1.5	1805H38-008A	Soil	05/30/2018 12:51	GC9a 06031832.D	159114

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	06/03/2018 23:08
TPH-Motor Oil (C18-C36)	ND	5.0	1	06/03/2018 23:08

Surrogates	REC (%)	Limits	
C9	84	74-123	06/03/2018 23:08

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(64,65,66,67) 1-1.5	1805H38-009A	Soil	05/30/2018 13:06	GC6A 06011850.D	159114

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	06/02/2018 01:37
TPH-Motor Oil (C18-C36)	ND	5.0	1	06/02/2018 01:37

Surrogates	REC (%)	Limits	
C9	95	74-123	06/02/2018 01:37

Analyst(s): JIS

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Received:	5/31/18 18:00	**Extraction Method:**	SW3550B/3630C
Date Prepared:	5/31/18	**Analytical Method:**	SW8015B
Project:	17221; 1401 West Winton, Hayward, CA	**Unit:**	mg/Kg

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(68,69,70,71) 1-1.5	1805H38-010A	Soil	05/30/2018 13:22	GC6A 06011852.D	159114

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	06/02/2018 02:16
TPH-Motor Oil (C18-C36)	ND	5.0	1	06/02/2018 02:16

Surrogates	REC (%)	Limits	
C9	90	74-123	06/02/2018 02:16

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(72,73,74,75) 1-1.5	1805H38-011A	Soil	05/30/2018 13:35	GC6A 06011856.D	159114

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	06/02/2018 03:34
TPH-Motor Oil (C18-C36)	ND	5.0	1	06/02/2018 03:34

Surrogates	REC (%)	Limits	
C9	91	74-123	06/02/2018 03:34

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B-(76,77,78,79) 1-1.5	1805H38-012A	Soil	05/30/2018 13:50	GC6A 06011858.D	159114

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	1.0	1	06/02/2018 04:13
TPH-Motor Oil (C18-C36)	ND	5.0	1	06/02/2018 04:13

Surrogates	REC (%)	Limits	
C9	98	74-123	06/02/2018 04:13

Analyst(s): JIS

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159166
Date Analyzed:	6/1/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159166 1805H36-002AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acetone	ND	1.05	0.10	1	-	105	48-156
tert-Amyl methyl ether (TAME)	ND	0.0411	0.0050	0.050	-	82	56-115
Benzene	ND	0.0449	0.0050	0.050	-	90	63-131
Bromobenzene	ND	0.0426	0.0050	0.050	-	85	66-127
Bromochloromethane	ND	0.0476	0.0050	0.050	-	95	64-124
Bromodichloromethane	ND	0.0439	0.0050	0.050	-	88	64-120
Bromoform	ND	0.0388	0.0050	0.050	-	77	48-92
Bromomethane	ND	0.0211	0.0050	0.050	-	42	25-163
2-Butanone (MEK)	ND	0.194	0.020	0.20	-	97	51-133
t-Butyl alcohol (TBA)	ND	0.173	0.050	0.20	-	86	52-129
n-Butyl benzene	ND	0.0650	0.0050	0.050	-	130	83-200
sec-Butyl benzene	ND	0.0483	0.0050	0.050	-	97	81-199
tert-Butyl benzene	ND	0.0455	0.0050	0.050	-	91	79-178
Carbon Disulfide	ND	0.0454	0.0050	0.050	-	91	64-136
Carbon Tetrachloride	ND	0.0478	0.0050	0.050	-	96	66-140
Chlorobenzene	ND	0.0456	0.0050	0.050	-	91	73-116
Chloroethane	ND	0.0451	0.0050	0.050	-	90	35-147
Chloroform	ND	0.0464	0.0050	0.050	-	93	65-130
Chloromethane	ND	0.0298	0.0050	0.050	-	60	30-137
2-Chlorotoluene	ND	0.0471	0.0050	0.050	-	94	75-152
4-Chlorotoluene	ND	0.0462	0.0050	0.050	-	93	71-148
Dibromochloromethane	ND	0.0441	0.0050	0.050	-	88	61-106
1,2-Dibromo-3-chloropropane	ND	0.0119	0.0040	0.020	-	60	36-120
1,2-Dibromoethane (EDB)	ND	0.0438	0.0040	0.050	-	88	67-118
Dibromomethane	ND	0.0435	0.0050	0.050	-	87	61-116
1,2-Dichlorobenzene	ND	0.0398	0.0050	0.050	-	80	59-106
1,3-Dichlorobenzene	ND	0.0476	0.0050	0.050	-	95	75-129
1,4-Dichlorobenzene	ND	0.0451	0.0050	0.050	-	90	66-127
Dichlorodifluoromethane	ND	0.0226	0.0050	0.050	-	45	13-74
1,1-Dichloroethane	ND	0.0466	0.0050	0.050	-	93	65-134
1,2-Dichloroethane (1,2-DCA)	ND	0.0492	0.0040	0.050	-	98	57-131
1,1-Dichloroethene	ND	0.0457	0.0050	0.050	-	91	62-127
cis-1,2-Dichloroethene	ND	0.0453	0.0050	0.050	-	91	66-130
trans-1,2-Dichloroethene	ND	0.0478	0.0050	0.050	-	96	60-131
1,2-Dichloropropane	ND	0.0448	0.0050	0.050	-	90	63-127
1,3-Dichloropropane	ND	0.0450	0.0050	0.050	-	90	68-124
2,2-Dichloropropane	ND	0.0494	0.0050	0.050	-	99	63-150

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159166
Date Analyzed:	6/1/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159166 1805H36-002AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
1,1-Dichloropropene	ND	0.0466	0.0050	0.050	-	93	67-134
cis-1,3-Dichloropropene	ND	0.0486	0.0050	0.050	-	97	65-138
trans-1,3-Dichloropropene	ND	0.0483	0.0050	0.050	-	97	66-124
Diisopropyl ether (DIPE)	ND	0.0443	0.0050	0.050	-	89	58-129
Ethylbenzene	ND	0.0457	0.0050	0.050	-	91	73-145
Ethyl tert-butyl ether (ETBE)	ND	0.0448	0.0050	0.050	-	90	62-125
Freon 113	ND	0.0417	0.0050	0.050	-	83	55-116
Hexachlorobutadiene	ND	0.0468	0.0050	0.050	-	94	75-178
Hexachloroethane	ND	0.0540	0.0050	0.050	-	108	75-152
2-Hexanone	ND	0.0351	0.0050	0.050	-	70	41-113
Isopropylbenzene	ND	0.0442	0.0050	0.050	-	88	67-172
4-Isopropyl toluene	ND	0.0546	0.0050	0.050	-	109	88-171
Methyl-t-butyl ether (MTBE)	ND	0.0446	0.0050	0.050	-	89	58-122
Methylene chloride	0.00562	0.0533	0.0050	0.050	-	107	57-140
4-Methyl-2-pentanone (MIBK)	ND	0.0368	0.0050	0.050	-	74	42-117
Naphthalene	ND	0.0191	0.0050	0.050	-	38	29-65
n-Propyl benzene	ND	0.0460	0.0050	0.050	-	92	85-174
Styrene	ND	0.0399	0.0050	0.050	-	80	63-126
1,1,1,2-Tetrachloroethane	ND	0.0478	0.0050	0.050	-	95	68-131
1,1,2,2-Tetrachloroethane	ND	0.0396	0.0050	0.050	-	79	45-121
Tetrachloroethene	ND	0.0503	0.0050	0.050	-	101	65-150
Toluene	ND	0.0491	0.0050	0.050	-	98	72-135
1,2,3-Trichlorobenzene	ND	0.0277	0.0050	0.050	-	55	35-80
1,2,4-Trichlorobenzene	ND	0.0362	0.0050	0.050	-	72	45-103
1,1,1-Trichloroethane	ND	0.0472	0.0050	0.050	-	95	67-137
1,1,2-Trichloroethane	ND	0.0409	0.0050	0.050	-	82	67-117
Trichloroethene	ND	0.0469	0.0050	0.050	-	94	62-135
Trichlorofluoromethane	ND	0.0444	0.0050	0.050	-	89	56-124
1,2,3-Trichloropropane	ND	0.0429	0.0050	0.050	-	86	58-133
1,2,4-Trimethylbenzene	ND	0.0551	0.0050	0.050	-	110	78-161
1,3,5-Trimethylbenzene	ND	0.0551	0.0050	0.050	-	110	85-170
Vinyl Chloride	ND	0.0374	0.0050	0.050	-	75	32-142
Xylenes, Total	ND	0.128	0.0050	0.15	-	85	70-137

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159166
Date Analyzed:	6/1/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159166 1805H36-002AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Surrogate Recovery							
Dibromofluoromethane	0.145	0.154		0.12	116	123	87-127
Toluene-d8	0.151	0.153		0.12	121	122	93-141
4-BFB	0.0148	0.0134		0.012	119	107	84-137
Benzene-d6	0.0872	0.0951		0.10	87	95	67-131
Ethylbenzene-d10	0.102	0.105		0.10	102	105	78-153
1,2-DCB-d4	0.0772	0.0921		0.10	77	92	63-109

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159166
Date Analyzed:	6/1/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159166 1805H36-002AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acetone	NR	NR		ND<10	NR	NR	-	NR	-
tert-Amyl methyl ether (TAME)	NR	NR		ND<0.5	NR	NR	-	NR	-
Benzene	NR	NR		ND<0.5	NR	NR	-	NR	-
Bromobenzene	NR	NR		ND<0.5	NR	NR	-	NR	-
Bromochloromethane	NR	NR		ND<0.5	NR	NR	-	NR	-
Bromodichloromethane	NR	NR		ND<0.5	NR	NR	-	NR	-
Bromoform	NR	NR		ND<0.5	NR	NR	-	NR	-
Bromomethane	NR	NR		ND<0.5	NR	NR	-	NR	-
2-Butanone (MEK)	NR	NR		ND<2	NR	NR	-	NR	-
t-Butyl alcohol (TBA)	NR	NR		ND<5	NR	NR	-	NR	-
n-Butyl benzene	NR	NR		5.6	NR	NR	-	NR	-
sec-Butyl benzene	NR	NR		6.9	NR	NR	-	NR	-
tert-Butyl benzene	NR	NR		ND<0.5	NR	NR	-	NR	-
Carbon Disulfide	NR	NR		ND<0.5	NR	NR	-	NR	-
Carbon Tetrachloride	NR	NR		ND<0.5	NR	NR	-	NR	-
Chlorobenzene	NR	NR		ND<0.5	NR	NR	-	NR	-
Chloroethane	NR	NR		ND<0.5	NR	NR	-	NR	-
Chloroform	NR	NR		ND<0.5	NR	NR	-	NR	-
Chloromethane	NR	NR		ND<0.5	NR	NR	-	NR	-
2-Chlorotoluene	NR	NR		ND<0.5	NR	NR	-	NR	-
4-Chlorotoluene	NR	NR		ND<0.5	NR	NR	-	NR	-
Dibromochloromethane	NR	NR		ND<0.5	NR	NR	-	NR	-
1,2-Dibromo-3-chloropropane	NR	NR		ND<0.4	NR	NR	-	NR	-
1,2-Dibromoethane (EDB)	NR	NR		ND<0.4	NR	NR	-	NR	-
Dibromomethane	NR	NR		ND<0.5	NR	NR	-	NR	-
1,2-Dichlorobenzene	NR	NR		ND<0.5	NR	NR	-	NR	-
1,3-Dichlorobenzene	NR	NR		ND<0.5	NR	NR	-	NR	-
1,4-Dichlorobenzene	NR	NR		ND<0.5	NR	NR	-	NR	-
Dichlorodifluoromethane	NR	NR		ND<0.5	NR	NR	-	NR	-
1,1-Dichloroethane	NR	NR		ND<0.5	NR	NR	-	NR	-
1,2-Dichloroethane (1,2-DCA)	NR	NR		ND<0.4	NR	NR	-	NR	-
1,1-Dichloroethene	NR	NR		ND<0.5	NR	NR	-	NR	-
cis-1,2-Dichloroethene	NR	NR		ND<0.5	NR	NR	-	NR	-
trans-1,2-Dichloroethene	NR	NR		ND<0.5	NR	NR	-	NR	-
1,2-Dichloropropane	NR	NR		ND<0.5	NR	NR	-	NR	-
1,3-Dichloropropane	NR	NR		ND<0.5	NR	NR	-	NR	-
2,2-Dichloropropane	NR	NR		ND<0.5	NR	NR	-	NR	-

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159166
Date Analyzed:	6/1/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159166 1805H36-002AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
1,1-Dichloropropene	NR	NR		ND<0.5	NR	NR	-	NR	-
cis-1,3-Dichloropropene	NR	NR		ND<0.5	NR	NR	-	NR	-
trans-1,3-Dichloropropene	NR	NR		ND<0.5	NR	NR	-	NR	-
Diisopropyl ether (DIPE)	NR	NR		ND<0.5	NR	NR	-	NR	-
Ethylbenzene	NR	NR		0.74	NR	NR	-	NR	-
Ethyl tert-butyl ether (ETBE)	NR	NR		ND<0.5	NR	NR	-	NR	-
Freon 113	NR	NR		ND<0.5	NR	NR	-	NR	-
Hexachlorobutadiene	NR	NR		ND<0.5	NR	NR	-	NR	-
Hexachloroethane	NR	NR		ND<0.5	NR	NR	-	NR	-
2-Hexanone	NR	NR		ND<0.5	NR	NR	-	NR	-
Isopropylbenzene	NR	NR		1.7	NR	NR	-	NR	-
4-Isopropyl toluene	NR	NR		1.2	NR	NR	-	NR	-
Methyl-t-butyl ether (MTBE)	NR	NR		ND<0.5	NR	NR	-	NR	-
Methylene chloride	NR	NR		ND	NR	NR	-	NR	-
4-Methyl-2-pentanone (MIBK)	NR	NR		ND<0.5	NR	NR	-	NR	-
Naphthalene	NR	NR		2.3	NR	NR	-	NR	-
n-Propyl benzene	NR	NR		4.6	NR	NR	-	NR	-
Styrene	NR	NR		ND<0.5	NR	NR	-	NR	-
1,1,1,2-Tetrachloroethane	NR	NR		ND<0.5	NR	NR	-	NR	-
1,1,2,2-Tetrachloroethane	NR	NR		ND<0.5	NR	NR	-	NR	-
Tetrachloroethene	NR	NR		ND<0.5	NR	NR	-	NR	-
Toluene	NR	NR		ND<0.5	NR	NR	-	NR	-
1,2,3-Trichlorobenzene	NR	NR		ND<0.5	NR	NR	-	NR	-
1,2,4-Trichlorobenzene	NR	NR		ND<0.5	NR	NR	-	NR	-
1,1,1-Trichloroethane	NR	NR		ND<0.5	NR	NR	-	NR	-
1,1,2-Trichloroethane	NR	NR		ND<0.5	NR	NR	-	NR	-
Trichloroethene	NR	NR		ND<0.5	NR	NR	-	NR	-
Trichlorofluoromethane	NR	NR		ND<0.5	NR	NR	-	NR	-
1,2,3-Trichloropropane	NR	NR		ND<0.5	NR	NR	-	NR	-
1,2,4-Trimethylbenzene	NR	NR		1.2	NR	NR	-	NR	-
1,3,5-Trimethylbenzene	NR	NR		ND<0.5	NR	NR	-	NR	-
Vinyl Chloride	NR	NR		ND<0.5	NR	NR	-	NR	-
Xylenes, Total	NR	NR		ND<0.5	NR	NR	-	NR	-

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159166
Date Analyzed:	6/1/18	**Extraction Method:**	SW5030B
Instrument:	GC16	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159166 1805H36-002AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Surrogate Recovery									
Dibromofluoromethane	NR	NR			NR	NR	-	NR	-
Toluene-d8	NR	NR			NR	NR	-	NR	-
4-BFB	NR	NR			NR	NR	-	NR	-
Benzene-d6	NR	NR			NR	NR	-	NR	-
Ethylbenzene-d10	NR	NR			NR	NR	-	NR	-
1,2-DCB-d4	NR	NR			NR	NR	-	NR	-

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159173
Date Analyzed:	6/2/18 - 6/6/18	**Extraction Method:**	SW5030B
Instrument:	GC10, GC18	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159173 1805H38-012AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Acetone	ND	1.61	0.10	1	-	161, F2	48-156
tert-Amyl methyl ether (TAME)	ND	0.0387	0.0050	0.050	-	77	56-115
Benzene	ND	0.0458	0.0050	0.050	-	92	63-131
Bromobenzene	ND	0.0442	0.0050	0.050	-	88	66-127
Bromochloromethane	ND	0.0433	0.0050	0.050	-	87	64-124
Bromodichloromethane	ND	0.0385	0.0050	0.050	-	77	64-120
Bromoform	ND	0.0306	0.0050	0.050	-	61	48-92
Bromomethane	ND	0.0524	0.0050	0.050	-	105	25-163
2-Butanone (MEK)	ND	0.186	0.020	0.20	-	93	51-133
t-Butyl alcohol (TBA)	ND	0.195	0.050	0.20	-	98	52-129
n-Butyl benzene	ND	0.0752	0.0050	0.050	-	150	83-200
sec-Butyl benzene	ND	0.0702	0.0050	0.050	-	140	81-199
tert-Butyl benzene	ND	0.0593	0.0050	0.050	-	119	79-178
Carbon Disulfide	ND	0.0437	0.0050	0.050	-	87	64-136
Carbon Tetrachloride	ND	0.0450	0.0050	0.050	-	90	66-140
Chlorobenzene	ND	0.0449	0.0050	0.050	-	90	73-116
Chloroethane	ND	0.0491	0.0050	0.050	-	98	35-147
Chloroform	ND	0.0444	0.0050	0.050	-	89	65-130
Chloromethane	ND	0.0411	0.0050	0.050	-	82	30-137
2-Chlorotoluene	ND	0.0533	0.0050	0.050	-	107	75-152
4-Chlorotoluene	ND	0.0499	0.0050	0.050	-	100	71-148
Dibromochloromethane	ND	0.0382	0.0050	0.050	-	76	61-106
1,2-Dibromo-3-chloropropane	ND	0.0147	0.0040	0.020	-	73	36-120
1,2-Dibromoethane (EDB)	ND	0.0416	0.0040	0.050	-	83	67-118
Dibromomethane	ND	0.0402	0.0050	0.050	-	80	61-116
1,2-Dichlorobenzene	ND	0.0365	0.0050	0.050	-	73	59-106
1,3-Dichlorobenzene	ND	0.0477	0.0050	0.050	-	95	75-129
1,4-Dichlorobenzene	ND	0.0424	0.0050	0.050	-	85	66-127
Dichlorodifluoromethane	ND	0.0214	0.0050	0.050	-	43	13-74
1,1-Dichloroethane	ND	0.0474	0.0050	0.050	-	95	65-134
1,2-Dichloroethane (1,2-DCA)	ND	0.0443	0.0040	0.050	-	89	57-131
1,1-Dichloroethene	ND	0.0431	0.0050	0.050	-	86	62-127
cis-1,2-Dichloroethene	ND	0.0446	0.0050	0.050	-	89	66-130
trans-1,2-Dichloroethene	ND	0.0450	0.0050	0.050	-	90	60-131
1,2-Dichloropropane	ND	0.0451	0.0050	0.050	-	90	63-127
1,3-Dichloropropane	ND	0.0446	0.0050	0.050	-	89	68-124
2,2-Dichloropropane	ND	0.0481	0.0050	0.050	-	96	63-150

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159173
Date Analyzed:	6/2/18 - 6/6/18	**Extraction Method:**	SW5030B
Instrument:	GC10, GC18	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159173 1805H38-012AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
1,1-Dichloropropene	ND	0.0464	0.0050	0.050	-	93	67-134
cis-1,3-Dichloropropene	ND	0.0468	0.0050	0.050	-	94	65-138
trans-1,3-Dichloropropene	ND	0.0449	0.0050	0.050	-	90	66-124
Diisopropyl ether (DIPE)	ND	0.0445	0.0050	0.050	-	89	58-129
Ethylbenzene	ND	0.0500	0.0050	0.050	-	100	73-145
Ethyl tert-butyl ether (ETBE)	ND	0.0436	0.0050	0.050	-	87	62-125
Freon 113	ND	0.0406	0.0050	0.050	-	81	55-116
Hexachlorobutadiene	ND	0.0530	0.0050	0.050	-	106	75-178
Hexachloroethane	ND	0.0593	0.0050	0.050	-	119	75-152
2-Hexanone	ND	0.0402	0.0050	0.050	-	80	41-113
Isopropylbenzene	ND	0.0506	0.0050	0.050	-	101	67-172
4-Isopropyl toluene	ND	0.0661	0.0050	0.050	-	132	88-171
Methyl-t-butyl ether (MTBE)	ND	0.0431	0.0050	0.050	-	86	58-122
Methylene chloride	ND	0.0475	0.0050	0.050	-	95	57-140
4-Methyl-2-pentanone (MIBK)	ND	0.0359	0.0050	0.050	-	72	42-117
Naphthalene	ND	0.0204	0.0050	0.050	-	41	29-65
n-Propyl benzene	ND	0.0624	0.0050	0.050	-	125	85-174
Styrene	ND	0.0364	0.0050	0.050	-	73	63-126
1,1,1,2-Tetrachloroethane	ND	0.0438	0.0050	0.050	-	88	68-131
1,1,2,2-Tetrachloroethane	ND	0.0398	0.0050	0.050	-	80	45-121
Tetrachloroethene	ND	0.0515	0.0050	0.050	-	103	65-150
Toluene	ND	0.0494	0.0050	0.050	-	99	72-135
1,2,3-Trichlorobenzene	ND	0.0240	0.0050	0.050	-	48	35-80
1,2,4-Trichlorobenzene	ND	0.0318	0.0050	0.050	-	64	45-103
1,1,1-Trichloroethane	ND	0.0441	0.0050	0.050	-	88	67-137
1,1,2-Trichloroethane	ND	0.0392	0.0050	0.050	-	78	67-117
Trichloroethene	ND	0.0472	0.0050	0.050	-	94	62-135
Trichlorofluoromethane	ND	0.0410	0.0050	0.050	-	82	56-124
1,2,3-Trichloropropane	ND	0.0436	0.0050	0.050	-	87	58-133
1,2,4-Trimethylbenzene	ND	0.0576	0.0050	0.050	-	115	78-161
1,3,5-Trimethylbenzene	ND	0.0607	0.0050	0.050	-	121	85-170
Vinyl Chloride	ND	0.0430	0.0050	0.050	-	86	32-142
Xylenes, Total	ND	0.131	0.0050	0.15	-	87	70-137

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159173
Date Analyzed:	6/2/18 - 6/6/18	**Extraction Method:**	SW5030B
Instrument:	GC10, GC18	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159173 1805H38-012AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Surrogate Recovery							
Dibromofluoromethane	0.139	0.138		0.12	111	110	87-127
Toluene-d8	0.163	0.166		0.12	130	133	93-141
4-BFB	0.0134	0.0138		0.012	107	110	84-137
Benzene-d6	0.0123	0.00764		0.10	12,F3	8, F3	67-131
Ethylbenzene-d10	0.0154	0.00916		0.10	15,F3	9, F3	78-153
1,2-DCB-d4	0.0121	0.00817		0.10	12,F3	8, F3	63-109

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159173
Date Analyzed:	6/2/18 - 6/6/18	**Extraction Method:**	SW5030B
Instrument:	GC10, GC18	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159173 1805H38-012AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Acetone	0.891	0.918	1	ND	89	92	36-141	3.09	20
tert-Amyl methyl ether (TAME)	0.0367	0.0383	0.050	ND	73	77	46-105	4.40	20
Benzene	0.0402	0.0418	0.050	ND	80	84	46-124	3.97	20
Bromobenzene	0.0399	0.0413	0.050	ND	80	83	50-119	3.44	20
Bromochloromethane	0.0414	0.0450	0.050	ND	83	90	42-122	8.39	20
Bromodichloromethane	0.0410	0.0439	0.050	ND	82	88	48-112	7.03	20
Bromoform	0.0301	0.0321	0.050	ND	60	64	36-90	6.48	20
Bromomethane	0.0353	0.0418	0.050	ND	71	83	10-149	16.7	20
2-Butanone (MEK)	0.169	0.227	0.20	ND	78	106	43-114	29,F1	20
t-Butyl alcohol (TBA)	0.186	0.198	0.20	ND	90	96	33-123	6.19	20
n-Butyl benzene	0.0599	0.0605	0.050	ND	120	121	40-185	1.07	20
sec-Butyl benzene	0.0560	0.0574	0.050	ND	112	115	40-183	2.39	20
tert-Butyl benzene	0.0512	0.0532	0.050	ND	102	106	44-168	3.88	20
Carbon Disulfide	0.0397	0.0442	0.050	ND	79	88	23-139	10.7	20
Carbon Tetrachloride	0.0416	0.0460	0.050	ND	83	92	43-133	10.1	20
Chlorobenzene	0.0416	0.0426	0.050	ND	83	85	51-115	2.20	20
Chloroethane	0.0430	0.0465	0.050	ND	86	93	16-138	7.76	20
Chloroform	0.0407	0.0433	0.050	ND	81	87	54-117	6.21	20
Chloromethane	0.0316	0.0328	0.050	ND	63	66	14-128	3.72	20
2-Chlorotoluene	0.0483	0.0492	0.050	ND	97	98	54-141	1.80	20
4-Chlorotoluene	0.0468	0.0477	0.050	ND	94	95	52-134	2.04	20
Dibromochloromethane	0.0389	0.0426	0.050	ND	78	85	46-102	9.28	20
1,2-Dibromo-3-chloropropane	0.0130	0.0135	0.020	ND	65	68	16-120	3.85	20
1,2-Dibromoethane (EDB)	0.0398	0.0421	0.050	ND	80	84	48-113	5.45	20
Dibromomethane	0.0397	0.0424	0.050	ND	79	85	44-110	6.46	20
1,2-Dichlorobenzene	0.0370	0.0370	0.050	ND	74	74	43-106	0	20
1,3-Dichlorobenzene	0.0457	0.0460	0.050	ND	91	92	49-128	0.546	20
1,4-Dichlorobenzene	0.0457	0.0460	0.050	ND	91	92	48-120	0.546	20
Dichlorodifluoromethane	0.0125	0.0134	0.050	ND	25	27	8-63	7.40	20
1,1-Dichloroethane	0.0411	0.0446	0.050	ND	82	89	50-122	8.08	20
1,2-Dichloroethane (1,2-DCA)	0.0402	0.0433	0.050	ND	80	87	46-116	7.55	20
1,1-Dichloroethene	0.0462	0.0511	0.050	ND	92	102	37-124	10.1	20
cis-1,2-Dichloroethene	0.0419	0.0452	0.050	ND	84	90	47-123	7.65	20
trans-1,2-Dichloroethene	0.0421	0.0460	0.050	ND	84	92	31-131	8.90	20
1,2-Dichloropropane	0.0417	0.0439	0.050	ND	83	88	50-116	5.26	20
1,3-Dichloropropane	0.0409	0.0436	0.050	ND	82	87	52-115	6.27	20
2,2-Dichloropropane	0.0416	0.0451	0.050	ND	83	90	43-137	7.92	20

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159173
Date Analyzed:	6/2/18 - 6/6/18	**Extraction Method:**	SW5030B
Instrument:	GC10, GC18	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159173 1805H38-012AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
1,1-Dichloropropene	0.0418	0.0444	0.050	ND	84	89	43-126	6.08	20
cis-1,3-Dichloropropene	0.0414	0.0460	0.050	ND	83	92	35-134	10.7	20
trans-1,3-Dichloropropene	0.0410	0.0456	0.050	ND	82	91	35-124	10.6	20
Diisopropyl ether (DIPE)	0.0400	0.0419	0.050	ND	80	84	49-116	4.60	20
Ethylbenzene	0.0451	0.0457	0.050	ND	90	91	49-137	1.41	20
Ethyl tert-butyl ether (ETBE)	0.0389	0.0413	0.050	ND	78	83	50-113	6.02	20
Freon 113	0.0322	0.0360	0.050	ND	64	72	28-114	11.1	20
Hexachlorobutadiene	0.0531	0.0545	0.050	ND	106	109	22-180	2.61	20
Hexachloroethane	0.0497	0.0519	0.050	ND	99	104	28-158	4.30	20
2-Hexanone	0.0318	0.0333	0.050	ND	64	67	31-102	4.62	20
Isopropylbenzene	0.0529	0.0550	0.050	ND	106	110	50-153	3.82	20
4-Isopropyl toluene	0.0555	ND	0.050	ND	111	0,F1	41-171	0	20
Methyl-t-butyl ether (MTBE)	0.0420	0.0443	0.050	ND	84	89	48-110	5.45	20
Methylene chloride	0.0399	0.0430	0.050	ND	80	86	42-127	7.33	20
4-Methyl-2-pentanone (MIBK)	0.0307	0.0331	0.050	ND	61	66	24-114	7.73	20
Naphthalene	0.0214	0.0206	0.050	ND	43	41	19-69	3.78	20
n-Propyl benzene	0.0538	0.0554	0.050	ND	108	111	46-168	2.83	20
Styrene	0.0385	0.0387	0.050	ND	77	77	42-122	0	20
1,1,1,2-Tetrachloroethane	0.0413	0.0428	0.050	ND	83	86	52-121	3.52	20
1,1,2,2-Tetrachloroethane	0.0238	0.0365	0.050	ND	48	73	27-116	42,F1	20
Tetrachloroethene	0.0416	0.0427	0.050	ND	83	85	37-149	2.71	20
Toluene	0.0438	0.0453	0.050	ND	88	91	52-124	3.47	20
1,2,3-Trichlorobenzene	0.0262	0.0262	0.050	ND	52	52	20-86	0	20
1,2,4-Trichlorobenzene	0.0336	0.0327	0.050	ND	67	65	24-107	2.63	20
1,1,1-Trichloroethane	0.0428	0.0462	0.050	ND	86	92	48-128	7.69	20
1,1,2-Trichloroethane	0.0409	0.0433	0.050	ND	82	87	51-110	5.78	20
Trichloroethene	0.0522	0.0441	0.050	ND	104	88	42-128	16.9	20
Trichlorofluoromethane	0.0349	0.0396	0.050	ND	70	79	31-121	12.6	20
1,2,3-Trichloropropane	0.0402	0.0429	0.050	ND	80	86	50-115	6.43	20
1,2,4-Trimethylbenzene	0.0504	0.0514	0.050	ND	101	103	48-151	1.99	20
1,3,5-Trimethylbenzene	0.0526	0.0537	0.050	ND	105	107	51-159	1.96	20
Vinyl Chloride	0.0363	0.0380	0.050	ND	73	76	11-136	4.75	20
Xylenes, Total	0.128	0.128	0.15	ND	85	86	38-141	0.452	20

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159173
Date Analyzed:	6/2/18 - 6/6/18	**Extraction Method:**	SW5030B
Instrument:	GC10, GC18	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159173 1805H38-012AMS/MSD

QC Summary Report for SW8260B

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Surrogate Recovery									
Dibromofluoromethane	0.141	0.146	0.12		113	117	82-136	3.25	20
Toluene-d8	0.152	0.154	0.12		122	123	92-139	0.904	20
4-BFB	0.0137	0.0136	0.012		110	109	82-135	0.824	20
Benzene-d6	0.0101	0.00989	0.10		10,F3	10,F3	55-122	0	20
Ethylbenzene-d10	0.0103	0.0102	0.10		10,F3	10,F3	58-141	0	20
1,2-DCB-d4	0.0128	0.0124	0.10		13,F3	12,F3	51-107	2.76	20

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159166
Date Analyzed:	6/1/18 - 6/4/18	**Extraction Method:**	SW5030B
Instrument:	GC16, GC38	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS/LCSD-159166

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	0.25	-	-	-
Surrogate Recovery					
Dibromofluoromethane	0.139		0.12	111	70-130
Benzene-D6	0.0841		0.10	84	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(g) (C6-C12)	0.902	0.995	1	90	100	67-117	9.89	20
Surrogate Recovery								
Dibromofluoromethane	0.138	0.136	0.12	110	109	87-127	1.20	20
Benzene-D6	0.00959	0.0104	0.10	10, F3	10, F3	67-131	0	20

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159173
Date Analyzed:	6/2/18 - 6/6/18	**Extraction Method:**	SW5030B
Instrument:	GC10, GC18	**Analytical Method:**	SW8260B
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS/LCSD-159173 1805H38-012AMS/MSD

QC Summary Report for SW8260B

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	0.25	-	-	-
Surrogate Recovery					
Dibromofluoromethane	0.124		0.12	99	70-130
Benzene-D6	0.0159		0.10	16,F3	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(g) (C6-C12)	1.06	1.01	1	106	101	67-117	5.38	20
Surrogate Recovery								
Dibromofluoromethane	0.121	0.120	0.12	97	96	87-127	0.685	20
Benzene-D6	0.0107	0.0110	0.10	11, F3	11, F3	67-131	0	20

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(g) (C6-C12)	N/A	N/A		N/A	N/A	N/A	-	N/A	-
Surrogate Recovery									
Dibromofluoromethane	N/A	N/A			N/A	N/A	-	N/A	-
Benzene-D6	N/A	N/A			N/A	N/A	-	N/A	-

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	6/4/18	**BatchID:**	159267
Date Analyzed:	6/4/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS/LCSD-159267

QC Summary Report for SW8270C

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Acenaphthene	ND	0.25	-	-	-
Acenaphthylene	ND	0.25	-	-	-
Acetochlor	ND	0.25	-	-	-
Anthracene	ND	0.25	-	-	-
Benzidine	ND	1.3	-	-	-
Benzo (a) anthracene	ND	0.25	-	-	-
Benzo (a) pyrene	ND	0.25	-	-	-
Benzo (b) fluoranthene	ND	0.25	-	-	-
Benzo (g,h,i) perylene	ND	0.25	-	-	-
Benzo (k) fluoranthene	ND	0.25	-	-	-
Benzyl Alcohol	ND	1.3	-	-	-
1,1-Biphenyl	ND	0.25	-	-	-
Bis (2-chloroethoxy) Methane	ND	0.25	-	-	-
Bis (2-chloroethyl) Ether	ND	0.25	-	-	-
Bis (2-chloroisopropyl) Ether	ND	0.25	-	-	-
Bis (2-ethylhexyl) Adipate	ND	0.25	-	-	-
Bis (2-ethylhexyl) Phthalate	ND	0.25	-	-	-
4-Bromophenyl Phenyl Ether	ND	0.25	-	-	-
Butylbenzyl Phthalate	ND	0.25	-	-	-
4-Chloroaniline	ND	0.50	-	-	-
4-Chloro-3-methylphenol	ND	0.25	-	-	-
2-Chloronaphthalene	ND	0.25	-	-	-
2-Chlorophenol	ND	0.25	-	-	-
4-Chlorophenyl Phenyl Ether	ND	0.25	-	-	-
Chrysene	ND	0.25	-	-	-
Dibenzo (a,h) anthracene	ND	0.25	-	-	-
Dibenzofuran	ND	0.25	-	-	-
Di-n-butyl Phthalate	ND	0.25	-	-	-
1,2-Dichlorobenzene	ND	0.25	-	-	-
1,3-Dichlorobenzene	ND	0.25	-	-	-
1,4-Dichlorobenzene	ND	0.25	-	-	-
3,3-Dichlorobenzidine	ND	0.50	-	-	-
2,4-Dichlorophenol	ND	0.25	-	-	-
Diethyl Phthalate	ND	0.25	-	-	-
2,4-Dimethylphenol	ND	0.25	-	-	-
Dimethyl Phthalate	ND	0.25	-	-	-
4,6-Dinitro-2-methylphenol	ND	1.3	-	-	-
2,4-Dinitrophenol	ND	6.3	-	-	-
2,4-Dinitrotoluene	ND	0.25	-	-	-

(Cont.)

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	6/4/18	**BatchID:**	159267
Date Analyzed:	6/4/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS/LCSD-159267

QC Summary Report for SW8270C

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
2,6-Dinitrotoluene	ND	0.25	-	-	-
Di-n-octyl Phthalate	ND	0.50	-	-	-
1,2-Diphenylhydrazine	ND	0.25	-	-	-
Fluoranthene	ND	0.25	-	-	-
Fluorene	ND	0.25	-	-	-
Hexachlorobenzene	ND	0.25	-	-	-
Hexachlorobutadiene	ND	0.25	-	-	-
Hexachlorocyclopentadiene	ND	1.3	-	-	-
Hexachloroethane	ND	0.25	-	-	-
Indeno (1,2,3-cd) pyrene	ND	0.25	-	-	-
Isophorone	ND	0.25	-	-	-
2-Methylnaphthalene	ND	0.25	-	-	-
2-Methylphenol (o-Cresol)	ND	0.25	-	-	-
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	-	-	-
Naphthalene	ND	0.25	-	-	-
2-Nitroaniline	ND	1.3	-	-	-
3-Nitroaniline	ND	1.3	-	-	-
4-Nitroaniline	ND	1.3	-	-	-
Nitrobenzene	ND	0.25	-	-	-
2-Nitrophenol	ND	1.3	-	-	-
4-Nitrophenol	ND	1.3	-	-	-
N-Nitrosodiphenylamine	ND	0.25	-	-	-
N-Nitrosodi-n-propylamine	ND	0.25	-	-	-
Pentachlorophenol	ND	1.3	-	-	-
Phenanthrene	ND	0.25	-	-	-
Phenol	ND	0.25	-	-	-
Pyrene	ND	0.25	-	-	-
Pyridine	ND	0.25	-	-	-
1,2,4-Trichlorobenzene	ND	0.25	-	-	-
2,4,5-Trichlorophenol	ND	0.25	-	-	-
2,4,6-Trichlorophenol	ND	0.25	-	-	-

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	6/4/18	**BatchID:**	159267
Date Analyzed:	6/4/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS/LCSD-159267

QC Summary Report for SW8270C

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
Surrogate Recovery					
2-Fluorophenol	5.29		5	106	30-130
Phenol-d5	4.68		5	94	30-130
Nitrobenzene-d5	4.68		5	94	30-130
2-Fluorobiphenyl	4.15		5	83	30-130
2,4,6-Tribromophenol	4.44		5	89	16-130
4-Terphenyl-d14	4.45		5	89	30-130

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	6/4/18	**BatchID:**	159267
Date Analyzed:	6/4/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS/LCSD-159267

QC Summary Report for SW8270C

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acenaphthene	3.04	3.84	5	61	77	46-118	23.3	30
Acenaphthylene	3.64	4.58	5	73	92	43-122	22.9	30
Anthracene	3.54	4.50	5	71	90	47-125	24.0	30
Benzidine	0.698	0.663	5	14	13	13-83	5.06	30
Benzo (a) anthracene	2.93	3.82	5	59	76	53-117	26.6	30
Benzo (a) pyrene	3.33	4.27	5	67	85	53-138	24.8	30
Benzo (b) fluoranthene	3.05	3.91	5	61	78	48-125	24.7	30
Benzo (g,h,i) perylene	3.53	4.49	5	71	90	51-146	24.0	30
Benzo (k) fluoranthene	3.10	3.99	5	62	80	53-124	25.0	30
Benzyl Alcohol	3.57	3.39	5	71	68	51-105	5.22	30
Bis (2-chloroethoxy) Methane	3.09	3.51	5	62	70	48-115	12.9	30
Bis (2-chloroethyl) Ether	3.06	3.26	5	61	65	51-105	6.34	30
Bis (2-chloroisopropyl) Ether	3.32	3.49	5	66, F2	70, F2	85-119	4.90	30
Bis (2-ethylhexyl) Adipate	2.86	3.50	5	57	70	46-117	20.3	30
Bis (2-ethylhexyl) Phthalate	3.02	3.78	5	60	76	50-124	22.2	30
4-Bromophenyl Phenyl Ether	3.32	4.32	5	66, F2	86	70-112	26.3	30
Butylbenzyl Phthalate	3.09	3.80	5	62	76	55-127	20.6	30
4-Chloroaniline	2.38	2.52	5	48	50	18-77	5.79	30
4-Chloro-3-methylphenol	3.73	4.08	5	75	82	49-123	9.10	30
2-Chloronaphthalene	2.92	3.77	5	58	75	44-109	25.5	30
2-Chlorophenol	3.90	4.07	5	78	81	55-116	4.15	30
4-Chlorophenyl Phenyl Ether	3.73	4.59	5	75	92	45-122	20.7	30
Chrysene	3.20	4.18	5	64	84	54-116	26.4	30
Dibenzo (a,h) anthracene	2.99	3.77	5	60	75	52-141	23.2	30
Dibenzofuran	3.28	4.02	5	66	80	46-117	20.3	30
Di-n-butyl Phthalate	3.02	3.67	5	60	73	45-126	19.4	30
1,2-Dichlorobenzene	3.25	3.77	5	65	75	55-105	14.7	30
1,3-Dichlorobenzene	3.10	3.65	5	62	73	51-104	16.2	30
1,4-Dichlorobenzene	2.89	3.36	5	58	67	50-102	15.1	30
3,3-Dichlorobenzidine	1.63	2.22	5	33	44	20-84	30.5,F2	30
2,4-Dichlorophenol	3.52	4.02	5	70	80	54-124	13.3	30
Diethyl Phthalate	3.62	4.27	5	72	85	42-118	16.6	30
2,4-Dimethylphenol	3.44	3.95	5	69	79	53-120	13.9	30
Dimethyl Phthalate	3.48	4.22	5	70	84	45-118	19.1	30
4,6-Dinitro-2-methylphenol	3.40	4.57	5	68	91	32-126	29.4	30
2,4-Dinitrophenol	3.83	5.50	5	77	110	20-130	35.9,F2	30
2,4-Dinitrotoluene	3.48	4.10	5	70	82	47-117	16.3	30
2,6-Dinitrotoluene	3.58	4.30	5	72	86	48-121	18.4	30
Di-n-octyl Phthalate	3.22	3.98	5	64	80	40-150	21.1	30

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	6/4/18	**BatchID:**	159267
Date Analyzed:	6/4/18	**Extraction Method:**	SW3550B
Instrument:	GC17	**Analytical Method:**	SW8270C
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS/LCSD-159267

QC Summary Report for SW8270C

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
1,2-Diphenylhydrazine	3.19	4.00	5	64, F2	80, F2	88-117	22.4	30
Fluoranthene	3.85	4.76	5	77	95	45-126	21.1	30
Fluorene	3.48	4.28	5	70	86	43-118	20.5	30
Hexachlorobenzene	2.94	3.69	5	59	74	47-130	22.8	30
Hexachlorobutadiene	3.15	4.09	5	63	82	50-121	25.9	30
Hexachlorocyclopentadiene	2.07	3.17	5	41	63	30-89	42.1,F2	30
Hexachloroethane	2.92	3.44	5	58	69	50-106	16.4	30
Indeno (1,2,3-cd) pyrene	3.10	3.91	5	62	78	51-138	23.1	30
Isophorone	2.51	2.90	5	50	58	38-92	14.6	30
2-Methylnaphthalene	3.56	4.14	5	71	83	51-121	15.1	30
2-Methylphenol (o-Cresol)	3.35	3.22	5	67	64	48-114	3.82	30
3 & 4-Methylphenol (m,p-Cresol)	3.29	3.22	5	66	64	30-130	2.14	30
Naphthalene	3.06	3.73	5	61	75	50-113	19.8	30
2-Nitroaniline	3.17	3.86	5	63	77	45-115	19.5	30
3-Nitroaniline	2.62	2.68	5	52	54	31-93	2.05	30
4-Nitroaniline	3.73	4.12	5	75	82	41-108	9.85	30
Nitrobenzene	3.45	4.24	5	69	85	49-122	20.6	30
2-Nitrophenol	3.81	4.69	5	76	94	54-121	20.7	30
4-Nitrophenol	3.42	3.84	5	68	77	40-102	11.6	30
N-Nitrosodi-n-propylamine	3.38	3.41	5	68	68	47-108	0	30
Pentachlorophenol	3.42	4.39	5	68	88	39-134	24.9	30
Phenanthrene	3.08	3.90	5	62	78	49-123	23.7	30
Phenol	3.85	3.82	5	77	76	49-107	0.804	30
Pyrene	3.15	3.96	5	63	79	55-124	22.6	30
Pyridine	5.63	6.86	5	113	137, F2	70-130	19.6	30
1,2,4-Trichlorobenzene	3.60	4.48	5	72	90	51-121	21.6	30
2,4,5-Trichlorophenol	3.53	4.38	5	71	88	45-126	21.4	30
2,4,6-Trichlorophenol	3.44	4.38	5	69	88	46-128	23.8	30
Surrogate Recovery								
2-Fluorophenol	4.11	4.30	5	82	86	47-125	4.41	30
Phenol-d5	3.92	3.87	5	78	77	45-117	1.39	30
Nitrobenzene-d5	3.83	4.62	5	77	92	39-121	18.7	30
2-Fluorobiphenyl	3.34	4.28	5	67	86	35-120	24.8	30
2,4,6-Tribromophenol	3.63	4.62	5	73	92	32-111	24.0	30
4-Terphenyl-d14	3.34	4.03	5	67	81	32-128	18.9	30

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159168
Date Analyzed:	6/1/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159168 1805H42-001AMS/MSD 1805H42-001APDS

QC Summary Report for Metals

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	48.0	0.50	50	-	96	75-125
Arsenic	ND	46.2	0.50	50	-	92	75-125
Barium	ND	485	5.0	500	-	97	75-125
Beryllium	ND	46.7	0.50	50	-	93	75-125
Cadmium	ND	46.9	0.25	50	-	94	75-125
Chromium	ND	44.6	0.50	50	-	89	75-125
Cobalt	ND	46.0	0.50	50	-	92	75-125
Copper	ND	45.5	0.50	50	-	91	75-125
Lead	ND	44.5	0.50	50	-	89	75-125
Mercury	ND	1.06	0.050	1.25	-	85	75-125
Molybdenum	ND	44.4	0.50	50	-	89	75-125
Nickel	ND	45.2	0.50	50	-	90	75-125
Selenium	ND	47.6	0.50	50	-	95	75-125
Silver	ND	45.0	0.50	50	-	90	75-125
Thallium	ND	42.5	0.50	50	-	85	75-125
Vanadium	ND	43.9	0.50	50	-	88	75-125
Zinc	ND	461	5.0	500	-	92	75-125
Surrogate Recovery							
Terbium	503	497		500	101	99	70-130

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159168
Date Analyzed:	6/1/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159168 1805H42-001AMS/MSD 1805H42-001APDS

QC Summary Report for Metals

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	48.6	47.7	50	ND	97	95	75-125	1.89	20
Arsenic	51.4	51.0	50	ND	102	101	75-125	0.801	20
Barium	602	559	500	29.76	114	106	75-125	7.37	20
Beryllium	47.7	46.8	50	ND	95	93	75-125	1.99	20
Cadmium	50.8	49.9	50	1.072	99	98	75-125	1.71	20
Chromium	99.1	74.5	50	11.43	175,F10	126,F10	75-125	28.3,F10	20
Cobalt	52.4	52.2	50	2.068	101	100	75-125	0.497	20
Copper	71.4	65.3	50	20.41	102	90	75-125	9.00	20
Lead	721	249	50	340.5	762,F13	0,F13	75-125	NA	20
Mercury	1.22	1.18	1.25	ND	96	93	75-125	3.08	20
Molybdenum	47.2	45.6	50	ND	94	91	75-125	3.62	20
Nickel	140	99.9	50	21.76	235,F10	156,F10	75-125	33.1,F10	20
Selenium	50.4	48.6	50	ND	101	97	75-125	3.53	20
Silver	47.2	46.1	50	ND	94	92	75-125	2.44	20
Thallium	42.0	41.9	50	ND	84	84	75-125	0	20
Vanadium	62.8	67.5	50	5.151	115	125	75-125	7.29	20
Zinc	501	500	500	12.58	98	97	75-125	0.200	20
Surrogate Recovery									
Terbium	529	513	500		106	103	70-130	3.13	20

Analyte	PDS Result	SPK Val	SPKRef Val	PDS %REC	PDS Limits
Chromium	55.5	50	11.43	88	75-125
Nickel	66.8	50	21.76	90	75-125

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Antimony	ND<2.5	ND	-	-
Arsenic	ND<2.5	ND	-	-
Barium	30.1	29.76	1.14	-
Beryllium	ND<2.5	ND	-	-
Cadmium	1.30	1.072	21.3	-
Chromium	10.9	11.43	4.64	-
Cobalt	ND<2.5	2.068	-	-

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159168
Date Analyzed:	6/1/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159168 1805H42-001AMS/MSD 1805H42-001APDS

QC Summary Report for Metals

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Copper	20.1	20.41	1.52	20
Lead	307	340.5	9.84	20
Mercury	ND<0.25	ND	-	-
Molybdenum	ND<2.5	ND	-	-
Nickel	21.7	21.76	0.276	20
Selenium	ND<2.5	ND	-	-
Silver	ND<2.5	ND	-	-
Thallium	ND<2.5	ND	-	-
Vanadium	5.02	5.151	2.54	-
Zinc	ND<25	12.58	-	-

%D Control Limit applied to analytes with concentrations greater than 25 times the reporting limits.

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159176
Date Analyzed:	6/1/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159176 1805H38-010AMS/MSD

QC Summary Report for Metals

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
Antimony	ND	45.0	0.50	50	-	90	75-125
Arsenic	ND	46.3	0.50	50	-	93	75-125
Barium	ND	453	5.0	500	-	91	75-125
Beryllium	ND	44.5	0.50	50	-	89	75-125
Cadmium	ND	45.6	0.25	50	-	91	75-125
Chromium	ND	43.5	0.50	50	-	87	75-125
Cobalt	ND	44.0	0.50	50	-	88	75-125
Copper	ND	43.6	0.50	50	-	87	75-125
Lead	ND	42.4	0.50	50	-	85	75-125
Mercury	ND	1.07	0.050	1.25	-	86	75-125
Molybdenum	ND	42.0	0.50	50	-	84	75-125
Nickel	ND	43.8	0.50	50	-	88	75-125
Selenium	ND	46.0	0.50	50	-	92	75-125
Silver	ND	42.3	0.50	50	-	85	75-125
Thallium	ND	40.3	0.50	50	-	81	75-125
Vanadium	ND	42.3	0.50	50	-	85	75-125
Zinc	ND	453	5.0	500	-	91	75-125
Surrogate Recovery							
Terbium	492	464		500	98	93	70-130

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159176
Date Analyzed:	6/1/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159176 1805H38-010AMS/MSD

QC Summary Report for Metals

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	43.7	47.7	50	ND	86	95	75-125	8.80	20
Arsenic	47.7	51.8	50	5.898	84	92	75-125	8.16	20
Barium	644	697	500	174.0	94	105	75-125	7.86	20
Beryllium	40.4	44.0	50	0.5199	80	87	75-125	8.44	20
Cadmium	43.3	45.6	50	ND	86	91	75-125	5.33	20
Chromium	84.7	87.3	50	41.22	87	92	75-125	3.05	20
Cobalt	47.6	50.6	50	8.304	79	85	75-125	6.25	20
Copper	59.1	62.3	50	19.09	80	86	75-125	5.30	20
Lead	49.9	53.9	50	11.23	77	85	75-125	7.57	20
Mercury	1.04	1.12	1.25	0.08880	76	83	75-125	7.56	20
Molybdenum	40.5	44.3	50	ND	80	88	75-125	8.95	20
Nickel	84.4	87.2	50	42.19	84	90	75-125	3.23	20
Selenium	42.9	45.4	50	ND	85	90	75-125	5.66	20
Silver	40.4	44.0	50	ND	81	88	75-125	8.46	20
Thallium	39.4	42.4	50	ND	79	84	75-125	7.19	20
Vanadium	78.9	81.3	50	35.90	86	91	75-125	3.01	20
Zinc	466	491	500	46.56	84	89	75-125	5.37	20
Surrogate Recovery									
Terbium	454	491	500		91	98	70-130	7.87	20

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Antimony	ND<2.5	ND	-	-
Arsenic	6.18	5.898	4.78	-
Barium	162	174.0	6.90	20
Beryllium	ND<2.5	0.5199	-	-
Cadmium	ND<1.2	ND	-	-
Chromium	40.9	41.22	0.776	20
Cobalt	8.22	8.304	1.01	-
Copper	18.2	19.09	4.66	20
Lead	10.6	11.23	5.61	-
Mercury	ND<0.25	0.08880	-	-
Molybdenum	ND<2.5	ND	-	-
Nickel	41.2	42.19	2.35	20
Selenium	ND<2.5	ND	-	-

(Cont.)

McCampbell Analytical, Inc.
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Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159176
Date Analyzed:	6/1/18	**Extraction Method:**	SW3050B
Instrument:	ICP-MS1	**Analytical Method:**	SW6020
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159176 1805H38-010AMS/MSD

QC Summary Report for Metals

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Silver	ND<2.5	ND	-	-
Thallium	ND<2.5	ND	-	-
Vanadium	35.2	35.90	1.95	20
Zinc	45.3	46.56	2.71	-

%D Control Limit applied to analytes with concentrations greater than 25 times the reporting limits.

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1805H38
Date Prepared:	5/31/18	**BatchID:**	159114
Date Analyzed:	6/1/18	**Extraction Method:**	SW3550B/3630C
Instrument:	GC6A	**Analytical Method:**	SW8015B
Matrix:	Soil	**Unit:**	mg/Kg
Project:	17221; 1401 West Winton, Hayward, CA	**Sample ID:**	MB/LCS-159114 1805G82-001AMS/MSD

QC Report for SW8015B w/ Silica Gel Clean-Up

Analyte	MB Result	LCS Result	RL	SPK Val	MB SS %REC	LCS %REC	LCS Limits
TPH-Diesel (C10-C23)	ND	38.3	1.0	40	-	96	75-128
TPH-Motor Oil (C18-C36)	ND	-	5.0	-	-	-	-
Surrogate Recovery							
C9	24.1	21.9		25	96	88	72-122

Analyte	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	38.7	38.6	40	ND	97	97	71-134	0	30
Surrogate Recovery									
C9	22.0	22.6	25		88	90	78-126	2.92	30

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1805H38 **ClientCode: ERAS**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
☐ Detection Summary ☐ Dry-Weight

Report to:
Andrew Savage
ERAS Environmental, Inc.
1533 B Street
Hayward, CA 94541
(510) 247-9885 FAX: (510) 886-5399

Email: info@eras.biz; andrew@eras.biz
cc/3rd Party:
PO:
Project: 17221; 1401 West Winton, Hayward, CA

Bill to:
Kasey Cordoza
ERAS Environmental, Inc.
1533 B Street
Hayward, CA 94541

Requested TAT: 5 days;

Date Received: 05/31/2018
Date Logged: 05/31/2018

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1805H38-001	B-(32,33,34,35) 1-1.5	Soil	5/30/2018 09:00	☐	A	A	A	A	A							
1805H38-002	B-(36,37,38,39) 1-1.5	Soil	5/30/2018 09:25	☐	A	A	A	A	A							
1805H38-003	B-(40,41,42,43) 1-1.5	Soil	5/30/2018 10:05	☐	A	A	A	A	A							
1805H38-004	B-(44,45,46,47) 1-1.5	Soil	5/30/2018 10:44	☐	A	A	A	A	A							
1805H38-005	B-(48,49,50,51) 1-1.5	Soil	5/30/2018 11:17	☐	A	A	A	A	A							
1805H38-006	B-(52,53,54,55) 1-1.5	Soil	5/30/2018 11:44	☐	A	A	A	A	A							
1805H38-007	B-(56,57,58,59) 1-1.5	Soil	5/30/2018 12:40	☐	A	A	A	A	A							
1805H38-008	B-(60,61,62,63) 1-1.5	Soil	5/30/2018 12:51	☐	A	A	A	A	A							
1805H38-009	B-(64,65,66,67) 1-1.5	Soil	5/30/2018 13:06	☐	A	A	A	A	A							
1805H38-010	B-(68,69,70,71) 1-1.5	Soil	5/30/2018 13:22	☐	A	A	A	A	A							
1805H38-011	B-(72,73,74,75) 1-1.5	Soil	5/30/2018 13:35	☐	A	A	A	A	A							
1805H38-012	B-(76,77,78,79) 1-1.5	Soil	5/30/2018 13:50	☐	A	A	A	A	A							

Test Legend:

1	8260B_S	2	8260GAS_S	3	8270_S	4	CAM17MS_TTLC_S
5	TPH(DMO)WSG_S	6		7		8	
9		10		11		12	

Prepared by: Keylen Juarez

The following SampIDs: 001A, 002A, 003A, 004A, 005A, 006A, 007A, 008A, 009A, 010A, 011A, 012A contain testgroup Gas8260_S.

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: ERAS ENVIRONMENTAL, INC. **Project:** 17221; 1401 West Winton, Hayward, CA **Work Order:** 1805H38
Client Contact: Andrew Savage **QC Level:** LEVEL 2
Contact's Email: info@eras.biz; andrew@eras.biz **Comments:** **Date Logged:** 5/31/2018

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1805H38-001A	B-(32,33,34,35) 1-1.5	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Stainless Steel tube 2"x6"	☐	5/30/2018 9:00	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
			TPH(g) & 8260 by P&T GCMS			☐		5 days		☐	
1805H38-002A	B-(36,37,38,39) 1-1.5	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Stainless Steel tube 2"x6"	☐	5/30/2018 9:25	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
			TPH(g) & 8260 by P&T GCMS			☐		5 days		☐	
1805H38-003A	B-(40,41,42,43) 1-1.5	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Stainless Steel tube 2"x6"	☐	5/30/2018 10:05	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
			TPH(g) & 8260 by P&T GCMS			☐		5 days		☐	
1805H38-004A	B-(44,45,46,47) 1-1.5	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Stainless Steel tube 2"x6"	☐	5/30/2018 10:44	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
			TPH(g) & 8260 by P&T GCMS			☐		5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

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WORK ORDER SUMMARY

Client Name: ERAS ENVIRONMENTAL, INC. **Project:** 17221; 1401 West Winton, Hayward, CA **Work Order:** 1805H38
Client Contact: Andrew Savage **QC Level:** LEVEL 2
Contact's Email: info@eras.biz; andrew@eras.biz **Comments:** **Date Logged:** 5/31/2018

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1805H38-005A	B-(48,49,50,51) 1-1.5	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Stainless Steel tube 2"x6"	☐	5/30/2018 11:17	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
			TPH(g) & 8260 by P&T GCMS			☐		5 days		☐	
1805H38-006A	B-(52,53,54,55) 1-1.5	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Stainless Steel tube 2"x6"	☐	5/30/2018 11:44	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
			TPH(g) & 8260 by P&T GCMS			☐		5 days		☐	
1805H38-007A	B-(56,57,58,59) 1-1.5	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Stainless Steel tube 2"x6"	☐	5/30/2018 12:40	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
			TPH(g) & 8260 by P&T GCMS			☐		5 days		☐	
1805H38-008A	B-(60,61,62,63) 1-1.5	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Stainless Steel tube 2"x6"	☐	5/30/2018 12:51	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
			TPH(g) & 8260 by P&T GCMS			☐		5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

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http://www.mccampbell.com / E-mail: main@mccampbell.com

WORK ORDER SUMMARY

Client Name: ERAS ENVIRONMENTAL, INC. **Project:** 17221; 1401 West Winton, Hayward, CA **Work Order:** 1805H38
Client Contact: Andrew Savage **QC Level:** LEVEL 2
Contact's Email: info@eras.biz; andrew@eras.biz **Comments:** **Date Logged:** 5/31/2018

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1805H38-009A	B-(64,65,66,67) 1-1.5	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Stainless Steel tube 2"x6"	☐	5/30/2018 13:06	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
			TPH(g) & 8260 by P&T GCMS			☐		5 days		☐	
1805H38-010A	B-(68,69,70,71) 1-1.5	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Stainless Steel tube 2"x6"	☐	5/30/2018 13:22	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
			TPH(g) & 8260 by P&T GCMS			☐		5 days		☐	
1805H38-011A	B-(72,73,74,75) 1-1.5	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Stainless Steel tube 2"x6"	☐	5/30/2018 13:35	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
			TPH(g) & 8260 by P&T GCMS			☐		5 days		☐	
1805H38-012A	B-(76,77,78,79) 1-1.5	Soil	SW8015B (TPH-d,mo w/ S.G. Clean-Up)	4 / (4:1)	Stainless Steel tube 2"x6"	☐	5/30/2018 13:50	5 days		☐	
			SW6020 (CAM 17)			☐		5 days		☐	
			SW8270C (SVOCs)			☐		5 days		☐	
			TPH(g) & 8260 by P&T GCMS			☐		5 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

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#1805H38

CHAIN OF CUSTODY FORM

#1 of 3

McCampbell Analytical, Inc
1534 Willow Pass Rd.
Pittsburg, CA 94565
877.252.9262
925.252.9269 - fax

Turnaround Time:	Rush	24Hr	48 Hr	72 Hr	5 Day
					X

Geotracker: EDF Excel Write On (DW

Report To: ERAS **Bill To:** ERAS
Company: ERAS Environmental, Inc.
Email: info@eras.biz
Telephone: 510-247-9885 **Fax:** 510-886-5399
Project # 17221
Project location 1401 West Winton, Hayward
Sampler: Andrew Savage

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Matrix: Water	Matrix: Waste	Preservative: HCL	Preservative: H2SO4	Preservative: HNO3	Preservative: ICE	Preservative: None	Tph-gro and VOCs by EPA Method 8260	TPH-dro and TPH-oro by EPA Method 8015 with silica gel cleanup	CAM 17 Metals	SVOC by EPA Method 8270	Other	Comments
B-32, 1-1.5		5/30/2018	8:44	1	Tube							X		X	X	X	X		
B-33, 1-1.5		5/30/2018	8:46	1	Tube							X		X	X	X	X		COMPOSITE
B-34, 1-1.5		5/30/2018	8:54	1	Tube							X		X	X	X	X		
B-35, 1-1.5		5/30/2018	9:00	1	Tube							X		X	X	X	X		
B-36, 1-1.5		5/30/2018	9:07	1	Tube							X		X	X	X	X		
B-37, 1-1.5		5/30/2018	9:13	1	Tube							X		X	X	X	X		COMPOSITE
B-38, 1-1.5		5/30/2018	9:20	1	Tube							X		X	X	X	X		
B-39, 1-1.5		5/30/2018	9:25	1	Tube							X		X	X	X	X		
B-40, 1-1.5		5/30/2018	9:41	1	Tube							X		X	X	X	X		
B-41, 1-1.5		5/30/2018	9:45	1	Tube							X		X	X	X	X		COMPOSITE
B-42, 1-1.5		5/30/2018	9:58	1	Tube							X		X	X	X	X		
B-43, 1-1.5		5/30/2018	10:05	1	Tube							X		X	X	X	X		
B-44, 1-1.5		5/30/2018	10:17	1	Tube							X		X	X	X	X		
B-45, 1-1.5		5/30/2018	10:21	1	Tube							X		X	X	X	X		COMPOSITE
B-46, 1-1.5		5/30/2018	10:39	1	Tube							X		X	X	X	X		
B-47, 1-1.5		5/30/2018	10:44	1	Tube							X		X	X	X	X		

RELINQUISHED BY: **RECEIVED BY:**

Relinquished by:	Date: 5/31/18	Time: 1030AM	Recieved by:	
Relinquished by:	Date: 5/31/18	Time: 1800	Recieved by:	
Relinquished by:	Date:	Time:	Recieved by:	

ICE/t° Condition	2.4° wet
Head space absent	
Dechlorinated in lab	
Appropriate containers	
Preserved in Lab	
Preservation	VOA's O&G Metals Other pH<2

Comments: Please PDF and **PROVIDE J FLAGS**

#1805H38

CHAIN OF CUSTODY FORM

#2 of 3

McCampbell Analytical, Inc
1534 Willow Pass Rd.
Pittsburg, CA 94565
877.252.9262
925.252.9269 - fax

Turnaround Time:	Rush	24Hr	48 Hr	72 Hr	5 Day
					X

Geotracker: EDF Excel Write On (DW

Report To: ERAS **Bill To:** ERAS
Company: ERAS Environmental, Inc.
Email: info@eras.biz
Telephone: 510-247-9885 **Fax:** 510-886-5399
Project # 17221
Project location 1401 West Winton, Hayward
Sampler: Andrew Savage

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Matrix: Water	Matrix: Waste	Preservative: HCL	Preservative: H2SO4	Preservative: HNO3	Preservative: ICE	Preservative: None	Tph-gro and VOCs by EPA Method 8260	TPH-dro and TPH-oro by EPA Method 8015 with silica gel cleanup	CAM 17 Metals	SVOC by EPA Method 8270	Other	Comments
B-48, 1-1.5		5/30/2018	10:50	1	Tube							X		X	X	X	X		COMPOSITE
B-49, 1-1.5		5/30/2018	10:54	1	Tube							X		X	X	X	X		
B-50, 1-1.5		5/30/2018	11:13	1	Tube							X		X	X	X	X		
B-51, 1-1.5		5/30/2018	11:17	1	Tube							X		X	X	X	X		
B-52, 1-1.5		5/30/2018	11:25	1	Tube							X		X	X	X	X		COMPOSITE
B-53, 1-1.5		5/30/2018	11:30	1	Tube							X		X	X	X	X		
B-54, 1-1.5		5/30/2018	11:38	1	Tube							X		X	X	X	X		
B-55, 1-1.5		5/30/2018	11:44	1	Tube							X		X	X	X	X		
B-56, 1-1.5		5/30/2018	12:25	1	Tube							X		X	X	X	X		COMPOSITE
B-57, 1-1.5		5/30/2018	12:30	1	Tube							X		X	X	X	X		
B-58, 1-1.5		5/30/2018	12:35	1	Tube							X		X	X	X	X		
B-59, 1-1.5		5/30/2018	12:40	1	Tube							X		X	X	X	X		
B-60, 1-1.5		5/30/2018	12:43	1	Tube							X		X	X	X	X		COMPOSITE
B-61, 1-1.5		5/30/2018	12:46	1	Tube							X		X	X	X	X		
B-62, 1-1.5		5/30/2018	12:49	1	Tube							X		X	X	X	X		
B-63, 1-1.5		5/30/2018	12:51	1	Tube							X		X	X	X	X		

RELINQUISHED BY: **RECEIVED BY:**

Relinquished by:	Date: 5/31/18	Time: 10A	Recieved by:	
Relinquished by:	Date: 5/31/18	Time: 1800	Recieved by:	
Relinquished by:	Date:	Time:	Recieved by:	

ICE/t°	2.4°wet
Condition	
Head space absent	
Dechlorinated in lab	
Appropriate containers	
Preserved in Lab	
Preservation	VOA's O&G Metals Other pH<2

Comments: Please PDF and **PROVIDE J FLAGS**

#1805H38

CHAIN OF CUSTODY FORM

#3of3

McCampbell Analytical, Inc
1534 Willow Pass Rd.
Pittsburg, CA 94565
877.252.9262
925.252.9269 - fax

Report To: ERAS **Bill To:** ERAS
Company: ERAS Environmental, Inc.
Email: info@eras.biz
Telephone: 510-247-9885 **Fax:** 510-886-5399
Project # 17221
Project location 1401 West Winton, Hayward
Sampler: Andrew Savage

Turnaround Time: Rush | 24Hr | 48 Hr | 72 Hr | X 5 Day
Geotracker: EDF | Excel | Write On (DW

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Matrix: Water	Matrix: Waste	Preservative: HCL	Preservative: H2SO4	Preservative: HNO3	Preservative: ICE	Preservative: None	Analysis Requested: Tph-gro and VOCs by EPA Method 8260	Analysis Requested: TPH-dro and TPH-oro by EPA Method 8015 with silica gel cleanup	Analysis Requested: CAM 17 Metals	Analysis Requested: SVOC by EPA Method 8270	Other	Comments
B-64, 1-1.5		5/30/2018	12:54	1	Tube							X		X	X	X	X		
B-65, 1-1.5		5/30/2018	12:59	1	Tube							X		X	X	X	X		COMPOSITE
B-66, 1-1.5		5/30/2018	13:02	1	Tube							X		X	X	X	X		
B-67, 1-1.5		5/30/2018	13:06	1	Tube							X		X	X	X	X		
B-68, 1-1.5		5/30/2018	13:10	1	Tube							X		X	X	X	X		
B-69, 1-1.5		5/30/2018	13:13	1	Tube							X		X	X	X	X		COMPOSITE
B-70, 1-1.5		5/30/2018	13:17	1	Tube							X		X	X	X	X		
B-71, 1-1.5		5/30/2018	13:22	1	Tube							X		X	X	X	X		
B-72, 1-1.5		5/30/2018	13:25	1	Tube							X		X	X	X	X		
B-73, 1-1.5		5/30/2018	13:28	1	Tube							X		X	X	X	X		COMPOSITE
B-74, 1-1.5		5/30/2018	13:32	1	Tube							X		X	X	X	X		
B-75, 1-1.5		5/30/2018	13:35	1	Tube							X		X	X	X	X		
B-76, 1-1.5		5/30/2018	13:42	1	Tube							X		X	X	X	X		
B-77, 1-1.5		5/30/2018	13:44	1	Tube							X		X	X	X	X		COMPOSITE
B-78, 1-1.5		5/30/2018	13:47	1	Tube							X		X	X	X	X		
B-79, 1-1.5		5/30/2018	13:50	1	Tube							X		X	X	X	X		

RELINQUISHED BY: **RECEIVED BY:**

Relinquished by:		Date: 5/31/18	Time: 1800	Recieved by:	
Relinquished by:		Date: 5/31/18	Time: 1800	Recieved by:	
Relinquished by:		Date:	Time:	Recieved by:	

ICE/t° Condition: 2.4° wet
Head space absent
Dechlorinated in lab
Appropriate containers
Preserved in Lab
Preservation: VOA's O&G Metals Other pH<2

Comments: Please PDF and **PROVIDE J FLAGS**

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1534 Willow Pass Road, Pittsburg, CA 94565-1701
Toll Free Telephone: (877) 252-9262 / Fax: (925) 252-9269
http://www.mccampbell.com / E-mail: main@mccampbell.com

Sample Receipt Checklist

Client Name:	**ERAS Environmental, Inc.**	Date and Time Received:	**5/31/2018 18:00**
Project:	**17221; 1401 West Winton, Hayward, CA**	Date Logged:	**5/31/2018**
		Received by:	Keylen Juarez
WorkOrder №:	**1805H38** Matrix: Soil	Logged by:	Keylen Juarez
Carrier:	Benjamin Yslas (MAI Courier)		

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Sample IDs noted by Client on COC?	Yes	☑	No	☐		
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐		
Sampler's name noted on COC?	Yes	☑	No	☐		
COC agrees with Quote?	Yes	☐	No	☐	NA	☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☑	No	☐	NA	☐
Shipping container/cooler in good condition?	Yes	☑	No	☐		
Samples in proper containers/bottles?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA	☐
Samples Received on Ice?	Yes	☑	No	☐		
(Ice Type: WET ICE)						
Sample/Temp Blank temperature	Temp: 2.4°C				NA	☐
Water - VOA vials have zero headspace / no bubbles?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☐	No	☑		
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes	☐	No	☐	NA	☑
UCMR Samples:						
pH tested and acceptable upon receipt (200.8: ≤2; 525.3: ≤4; 530: ≤7; 541: <3; 544: <6.5 & 7.5)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L)?	Yes	☐	No	☐	NA	☑

Comments:

ATTACHMENT D

Average Concentrations of Elements In Alameda County, California

USGS science for a changing world

Mineral Resources On-Line Spatial Data

Counties page > As in Conterminous US > As in southwestern US > Averages in Alameda County

Average concentrations of elements in Alameda County, California

(Calculated from cells in the geochemical grid plotting in this area.)

Element	Symbol	Mean	Std. dev.	Minimum	Maximum
Aluminum	Al (wt%)	6.556	0.474	5.152	8.003
Arsenic	As (ppm)	8.396	2.253	4.184	17.411
Calcium	Ca (wt%)	1.413	0.295	0.879	2.245
Copper	Cu (ppm)	40.644	18.743	13.986	103.827
Iron	Fe (wt%)	3.054	0.574	1.993	4.649
Mercury	Hg (ppm)	0.254	0.303	0.028	1.500
Magnesium	Mg (wt%)	1.218	0.730	0.482	5.516
Manganese	Mn (ppm)	632.610	204.361	312.313	1550.600
Sodium	Na (wt%)	1.718	0.187	1.356	2.120
Phosphorus	P (wt%)	0.066	0.011	0.036	0.099
Lead	Pb (ppm)	157.843	325.772	8.350	1616.060
Selenium	Se (ppm)	0.318	0.111	0.107	0.698
Titanium	Ti (wt%)	0.328	0.034	0.256	0.415
Zinc	Zn (ppm)	122.947	92.078	40.946	493.126

Soil Sampling Investigation for PFAS, December 3, 2018

ERAS Environmental, Inc.

1533 B Street
Hayward, CA 94541

Phone (510) 247-9885 Facsimile: (510) 886-5399 info@eras.biz

SOIL SAMPLING INVESTIGATION

at

1401 West Winton Avenue
Hayward, California

ERAS PROJECT NUMBER: 17221C

Prepared for

Hayward Executive Airport
20301 Skywest Drive
Hayward, CA 94545
c/o Mr. Dave Hung
Senior Civil Engineer
City of Hayward
Department of Public Works
777 B Street
Hayward CA 94541

December 3, 2018

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A Standard Operating Procedures
B Analytical Results
C Selected Documents Regarding PFOS and PFOA

CERTIFICATION

This **Soil Sampling Investigation** at 1401 West Winton Avenue in Hayward, California, has been prepared by ERAS Environmental, Inc. (ERAS) under the supervision of the Registered Professional Geologist whose signature appears hereon.

This report was prepared in general accordance with the accepted standard of practice that exists in Northern California at the time the investigation was performed. Judgments leading to conclusions and recommendations are generally made with an incomplete knowledge of the conditions present. More extensive studies, including additional environmental investigations, can tend to reduce the inherent uncertainties associated with such studies.

Our firm has prepared this report for the Client's exclusive use for this particular project and in accordance with generally accepted professional practices within the area at the time of our investigation. No other representations expressed or implied and no warranty or guarantee is included or intended.

This report may be used only by the client and only for the purposes stated within a reasonable time from its issuance. Land use, site conditions (both on-site and off-site) or other factors may change over time, and additional work may be required with the passage of time. Any party other than the client who wishes to use this report shall notify ERAS of such intended use. Based on the intended use of report, ERAS may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release ERAS from any liability resulting from the use of this report by any unauthorized party.

Sincerely,
ERAS Environmental, Inc.



Andrew Savage
Project Geologist

Curtis Payton, PG 5068
Senior Geologist

December 3, 2018

1.0 INTRODUCTION

The following report presents the results of the collection and laboratory analysis of soil samples at the subject site (the "Property") for the assessment of the presence of perfluoroalky and polyfluoroalkyl substances (PFASs) typically found in aqueous film forming foams (AFFFs) in soil. AFFF are commonly associated with fire suppression foams. Historic records indicate that AFFFs have been sprayed on the ground when they were no longer needed for firefighting events by the Hayward Fire Department.

ERAS has been requested by Mr. David Hung of City of Hayward to collect soil samples to analyze for these constituents in the vicinity of previous borings B-12 through B-14, B-23 through 28, and B-31. These borings were located along the northern edge of the Property that is planned to be redeveloped by the City of Hayward. This area is currently an undeveloped dirt field were un-needed foam was discharged.

The location of the Property is shown on **Figure 1**. The proposed layout of the Property and the boring locations advanced to date are shown on **Figure 2**.

1.1 BACKGROUND

Eight commercial buildings and a parking area are proposed to be constructed on the Property that is a portion of the Hayward Airport. Most of the Property is currently undeveloped land. Information regarding the proposed development is contained in a report by Rockridge Geotechnical Entitled Final Geotechnical Investigation, Hayward Fire Station #6 & Fire Training Center, 1401 West Winton Avenue, Hayward, California, dated July 14, 2017.

Based on the geotechnical report, the eight buildings have a total estimated footprint area of approximately 71,000 square feet and the parking area has an area of approximately 35,000 square feet. Waste soil will be generated from excavations for the building slabs and footings, a basement for one of the buildings, a pump test pit, a fuel underground storage tank (UST), and parking area for the proposed City of Hayward Fire Academy. The soil to be disposed from this work consists of an approximate total volume of 7,900 cubic yards. Based on a density of 125 pounds per cubic foot, this volume would be approximately 4500 tons.

A review of historical aerial photographs indicates most of the Property has been undeveloped since 1946. Prior to 1946 until prior to 1958, the southwestern area of the Property contained orchards. The only current development on the Property are several buildings along the western side of the Property associated with a current Hayward Fire Station that was constructed between 1968 and 1980.

2.0 REGIONAL GEOLOGY/HYDROLOGY

The Property is in the western part of the City of Hayward in the San Francisco Bay area. The San Francisco Bay area occupies a broad alluvial valley that slopes gently northward toward San Francisco Bay and is flanked by alluvial fans deposited at the foot of the Diablo Range to the east and the Santa Cruz Mountains to the west. The northern part of the valley is called the Santa Clara Valley. Hillside areas that are known as the East Bay Hills, a part of the Diablo Range, rise abruptly approximately three miles to the east. Surface topography in the immediate vicinity of the Property is almost flat. Elevation of the Property is approximately 35 feet above Mean Sea Level (MSL) according to the United States Geological Survey (USGS) Hayward Quadrangle Topographic Map. Overall the topography slopes gently down to the west toward San Francisco Bay.

The sediments in the vicinity of the Property are fine-grained alluvial sediments that represent distal deposits of alluvial fans that were deposited by streams draining upland surfaces to the east of the Property (Helley, et al, 1974). These sediments were deposited in a low energy environment on the margins of San Francisco Bay. At shallow depths beneath these sediments are a series of Recent-age (<10,000 years) blue clay layers that become increasingly thicker toward San Francisco Bay. These clay layers are known as the Bay Mud and were deposited in San Francisco Bay during higher stands of sea level. In the vicinity of the Property it is likely that several hundred feet of these sediments overlie bedrock of the Jurassic-aged Franciscan Formation.

The Property is in an area known as the Bay Plain, which is a subarea of the Santa Clara Valley Groundwater Basin (California Department of Water Resources, 1967). The Bay Plain is characterized by thin interbeds of sand, silt and clay deposited in flat lying marshland and shallow low energy alluvial channels. Groundwater occurs at shallow depths in thin discontinuous fine sand beds within deposits of mostly silt and clay.

Note the Property is a closed leak case under the name City of Hayward Fire Station #6 that was closed by the Regional Water Quality Control Board (RWQCB) on July 16, 2009. Based on subsurface sampling previously conducted on the Property as part of an investigation for former fuel USTs it was reported that groundwater was encountered between 18 and 21.5 feet below ground surface (bgs) and the groundwater flow direction was to the west (RWQCB, 2009).

3.0 FIELD WORK PERFORMED

3.1 SCOPE OF INVESTIGATION

Scope of work conducted for this investigation was as follows.

- Prepared a health and safety plan and marked drilling area for utility locating by Underground Service Alert (USA).
- Drilled five borings using hand digging equipment to a maximum depth of 1 foot below ground surface (bgs) for the collection of soil samples.
- Analyzed the samples from the borings for PFASs by EPA Method E537.
- Summarized the results of the investigation in this technical report.

3.2 BORING LOCATION AND SAMPLING

The locations of the borings are shown on **Figure 2**. The Standard Operating Procedure for direct-push sampling and hand boring are included in **Appendix A**. A total of five borings were drilled by hand digging equipment on the Property on November 1, 2018 as follows.

Sample	Adjacent to boring
PFA-1	B-12
PFA-2	B-14
PFA-3	B-31
PFA-4	B-28
PFA-5	B-23

A selected soil sample was collected between 0.5 and 1-foot bgs from each boring location. The soil samples were kept chilled pending transport under chain-of-custody procedures to a California certified environmental analytical laboratory.

No evidence of contamination was observed in the form of odors or discoloration.

3.3 ANALYTICAL RESULTS

The analytical laboratory report is included in **Appendix B**. The samples were analyzed for PFASs by EPA Method E537. The only PFAS compound detected above the laboratory reporting limits (LRL) was perfluorooctane sulfonate (PFOS).

PFOS was detected in all samples submitted at concentrations ranging from 0.25 milligrams per kilogram (mg/Kg) to 3.3 mg/Kg.

The PFOS results are summarized below:

Sample	PFOS result (mg/kg)
PFA-1	0.35
PFA-2	3.30
PFA-3	1.70
PFA-4	0.40
PFA-5	0.25

Based on research conducted by ERAS no environmental screening limits (ESLs) for exposure to soil have been put in place by the California Regional Water Quality Control Board (RWQCB), the California Department of Toxic Substances (DTSC), or the United Stated Environmental Protection Agency (EPA).

A document prepared by the Department of the Navy cited values for PFOS calculated using the EPA's on-line regional screening level tool dated June 2018. Additionally, a table prepared by the Interstate Technology & Regulatory Council (ITRC) was reviewed. According to these documents the residential limit until set by the above regulatory agencies should be considered 1.3 mg/Kg for residential soil ad 16 mg/Kg for industrial worker exposure. Selected pertinent portions of research regarding PFOS are included in **Appendix C** including fact sheets from the RWQCB and the EPA.

The proposed use of the Property is continued commercial use and concentrations of PFOS detected do not exceed the limits set forth for industrial worker exposure.

4.0 CONCLUSIONS

A total of five borings were drilled by hand digging equipment on the Property on November 1, 2018 in the vicinity of previous borings B-12 through B-14, B-23 through 28, and B-31.

A selected soil sample was collected between 0.5 and 1 foot below ground surface from each boring location and were analyzed for PFASs by EPA Method E537. The only PFAS compound detected above the LRL was PFOS at concentrations ranging from 0.25 mg/Kg to 3.3 mg/Kg.

According to technical documents reviewed by ERAS, the residential limit until set by the above regulatory agencies should be considered 1.3 mg/Kg for residential soil and 16 mg/Kg for industrial worker exposure. The proposed use of the Property is continued commercial use and concentrations of PFOS detected do not exceed the limits set forth for industrial worker exposure.

At least 1-2 feet of the surface soil will be disposed at a Class III landfill during construction activities. PFOS is not currently regulated by DTSC who sets landfill acceptance requirements. The disposal facility should be consulted about their permit conditions with respect to PFCs and what waste profiling criteria, if any, apply.

The soil at the Property that has been affected by the PFOS does not appear to be a risk to workers during these activities provided that (i) the concentrations encountered are representative of overall site conditions in the areas to be excavated; and (ii) the earthwork for the site development uses engineering controls for suppression of airborne soil emissions.

ERAS recommends that the results of this investigation be presented to the DTSC since the detection of the PFOS in soil is an indication of a release to the environment. In accordance with California Health and Safety Code (HSC) Division 20, Chapter 6.95, Section 25510, et seq., "the handler ... shall, upon discovery, immediately report any release or threatened release of a hazardous material to the unified program agency." Generally, the DTSC can serve as or provide a referral to the 'unified program agency'. The term handle and handler are defined in HSC 20 Section 25501 paragraphs (l) and (m), respectively.

5.0 REFERENCES

California Environmental Protection Agency, San Francisco Bay Regional Water Quality Control Board, Environmental Screening Levels (Interim Final – February 2016).

California Health and Safety Code Division 20, Chapter 6.95.

California Regional Water Quality Control Board, Water Quality Control Plan, San Francisco Bay Basin Region (2), December 1986.

California Regional Water Quality Control Board, Closure Letter for Leaking Underground Storage Tank Case, City of Hayward Fire Station #6, 1401 West Winton Avenue, Hayward, Alameda County, July 16, 2009.

California Regional Water Quality Control Board, Groundwater Information Sheet, Perfluorooctanoic Acid (PFOA & Perfluorooctanesulfonic Acid (PFOS), October 15, 2018.

Department of the Navy, Interim Per- and Polyfluoralkyl Substances (PFAS) Site Guidance for NAVFAC Remedial Project Managers (RPMS)/September 2017 Update, September 28, 2017.

Goldman, Harold B., Geology of San Francisco Bay prepared for San Francisco Bay Conservation and Development Commission, February 1967.

Helley, E.J., La Joie, K.R., Spangle, W.E., and Blair, M.L., Flatland Deposits of the San Francisco Bay Region, California - their geology and engineering properties and their importance to comprehensive planning, U.S. Geological Survey Professional Paper 943, 1974.

ITRC, Table 4-2, Residential Soil Standard and Guidance Values for PFAS, http://pfas-1.itrcweb.org, November 28, 2018.

Rockridge Geotechnical, Final Geotechnical Investigation, Hayward Fire Station #6 & Fire Training Center, 1401 West Winton Avenue, Hayward, California, July 14, 2017.

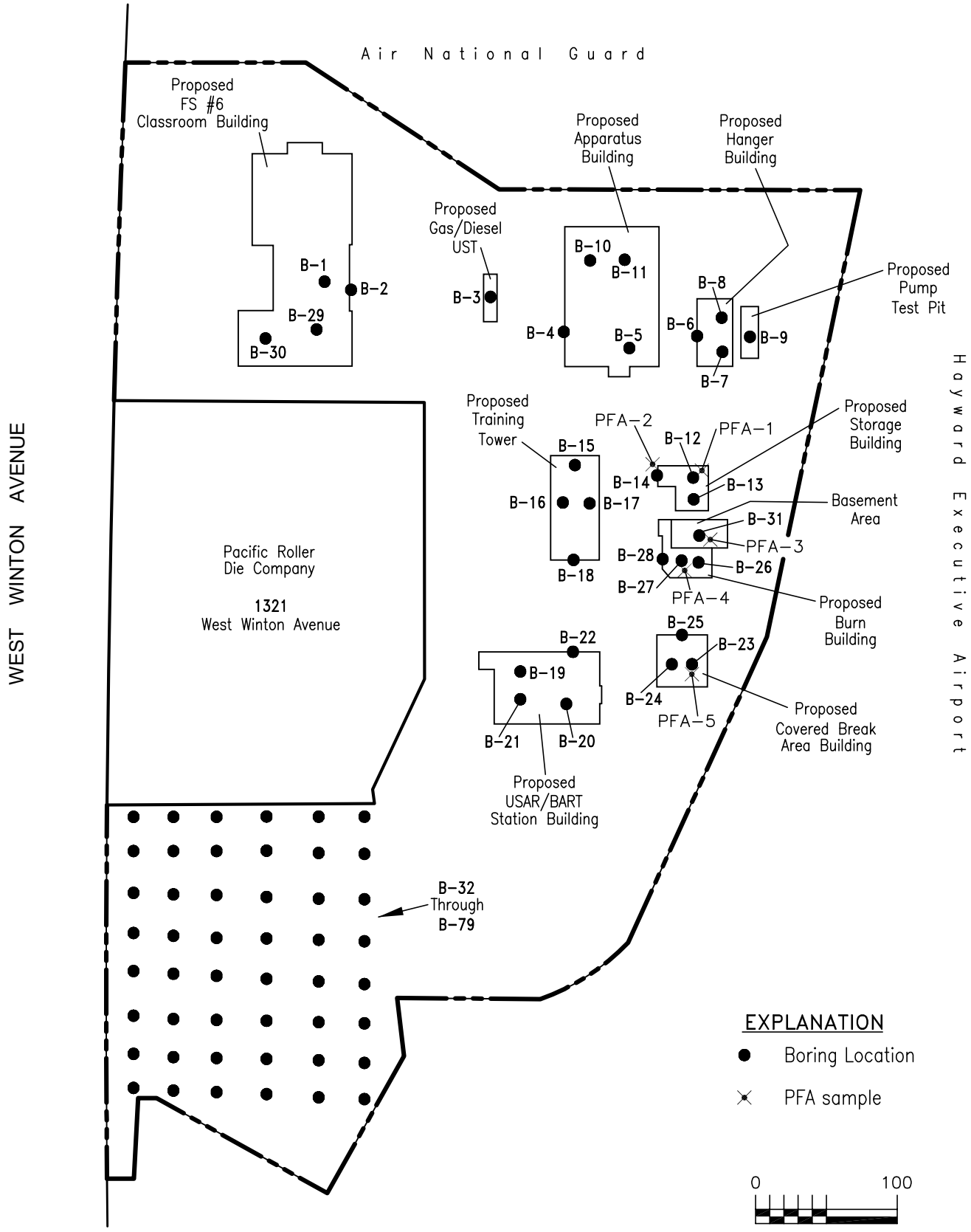
Ross Drulis Cusenbery, Architectural Site Plan – Overall Campus, January 17, 2018.

United States Environmental Protection Agency, Technical Fact Sheet – Perfluorooctane Sulfate (PFOS) and Perfluorooctanoic Acid (PFOA), November 2017.

FIGURES



FIGURE 1
Site Location Map
1401 W. Winton, Hayward, CA



BORING LOCATION MAP — FIGURE 2

Project No. 17221
1401 West Winton Avenue
Hayward, California

November, 2018

ERAS Environmental

APPENDIX A

Standard Operating Procedures

STANDARD OPERATING PROCEDURE– HAND BORINGS

SOIL CORING AND SAMPLING PROCEDURES

Prior to drilling, the surface is either cored if concrete or hammered through using a pick, if asphalt.

A hand operated coring device equipped with a 3-inch diameter auger bit is advanced into the soil until full. The auger is removed and emptied, and this process is repeated until the desired depth is reached. The hand auger is removed and a slide hammer core sampling device, equipped with two 3-inch long, 2-inch diameter brass liners is advanced six inches into the undisturbed soil at the bottom of the borehole.

One of the 3-inch liners is selected, and the ends of the tube are covered with Teflon liner and sealed with plastic caps. The soil-filled liner is labeled with the borehole number, sample depth, site location, date, and time. The samples are placed in bags and stored in a cooler containing ice. Soil from the core adjacent to the interval selected for analyses is placed in a plastic zip-top bag. The soil is allowed to volatilize for a period of time, depending on the ambient temperature. The soil is scanned with a flame-ionization detector (FID) or photo-ionization detector (PID).

All sample barrels, rods, and tools are cleaned with Alconox or equivalent detergent and de-ionized water. All rinsate from the cleaning is contained in covered 5-gallon plastic buckets or 55-gallon drums at the project site.

BOREHOLE GROUTING FOR HAND BORINGS

Upon completion of soil and water sampling, boreholes will be abandoned with neat cement grout. If the borehole was advanced into groundwater, the grout is pumped through a grouting tube positioned at the bottom of the borehole.

APPENDIX B

Analytical Results

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 1811070

Report Created for: ERAS Environmental, Inc.

1533 B Street
Hayward, CA 94541

Project Contact: Dave Siegel
Project P.O.:
Project: 17221C; 1401 W Winton

Project Received: 11/01/2018

Analytical Report reviewed & approved for release on 11/16/2018 by:



Susan Thompson
Project Manager

The report shall not be reproduced except in full, without the written approval of the laboratory. The analytical results relate only to the items tested. Results reported conform to the most current NELAP standards, where applicable, unless otherwise stated in the case narrative.

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CA ELAP 1644 ♦ NELAP 4033 ORELAP

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Glossary of Terms & Qualifier Definitions

Client: ERAS Environmental, Inc.
Project: 17221C; 1401 W Winton
WorkOrder: 1811070

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
DF	Dilution Factor
DI WET	(DISTLC) Waste Extraction Test using DI water
DISS	Dissolved (direct analysis of 0.45 µm filtered and acidified water sample)
DLT	Dilution Test (Serial Dilution)
DUP	Duplicate
EDL	Estimated Detection Limit
ERS	External reference sample. Second source calibration verification.
ITEF	International Toxicity Equivalence Factor
LCS	Laboratory Control Sample
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	Method Detection Limit
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
N/A	Not Applicable
ND	Not detected at or above the indicated MDL or RL
NR	Data Not Reported due to matrix interference or insufficient sample amount.
PDS	Post Digestion Spike
PDSD	Post Digestion Spike Duplicate
PF	Prep Factor
RD	Relative Difference
RL	Reporting Limit (The RL is the lowest calibration standard in a multipoint calibration.)
RPD	Relative Percent Deviation
RRT	Relative Retention Time
SPK Val	Spike Value
SPKRef Val	Spike Reference Value
SPLP	Synthetic Precipitation Leachate Procedure
ST	Sorbent Tube
TCLP	Toxicity Characteristic Leachate Procedure
TEQ	Toxicity Equivalents
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

Quality Control Qualifiers

F2	LCS/LCSD recovery and/or RPD is out of acceptance criteria.

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1811070
Date Received:	11/1/18 16:15	**Extraction Method:**	E537
Date Prepared:	11/6/18	**Analytical Method:**	E537m
Project:	17221C; 1401 W Winton	**Unit:**	mg/kg

Perfluorinated Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
PFA-1	1811070-001A	Soil	11/01/2018 10:03	LC3Q-MS1 F1107181002.D	167929

Analytes	Result	RL	DF	Date Analyzed
NEtFOSSA	ND	0.050	1	11/07/2018 13:01
NMeFOSSA	ND	0.050	1	11/07/2018 13:01
Perfluorobutane sulfonic acid (PFBS)	ND	0.050	1	11/07/2018 13:01
Perfluorodecanoic acid (PFDA)	ND	0.050	1	11/07/2018 13:01
Perfluorododecanoic acid (PFDoA)	ND	0.050	1	11/07/2018 13:01
Perfluoroheptanoic acid (PFHpA)	ND	0.050	1	11/07/2018 13:01
Perfluorohexane sulfonic acid (PFHxS)	ND	0.050	1	11/07/2018 13:01
Perfluorohexanoic acid (PFHxA)	ND	0.050	1	11/07/2018 13:01
Perfluorononanoic acid (PFNA)	ND	0.050	1	11/07/2018 13:01
Perfluorooctane sulfonate (PFOS)	**0.35**	0.050	1	11/07/2018 13:01
Perfluorooctanoic acid (PFOA)	ND	0.050	1	11/07/2018 13:01
Perfluorotetradecanoic acid (PFTA)	ND	0.050	1	11/07/2018 13:01
Perfluorotridecanoic acid (PFTrDA)	ND	0.050	1	11/07/2018 13:01
Perfluoroundecanoic acid (PFUnA)	ND	0.050	1	11/07/2018 13:01

Surrogates	REC (%)	Limits	
NEtFOSAA-d5	76	70-130	11/07/2018 13:01
PFDA-13C2	90	70-130	11/07/2018 13:01
PFHxA-13C2	89	70-130	11/07/2018 13:01

Analyst(s): JS

(Cont.)

McCampbell Analytical, Inc.
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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1811070
Date Received:	11/1/18 16:15	**Extraction Method:**	E537
Date Prepared:	11/6/18	**Analytical Method:**	E537m
Project:	17221C; 1401 W Winton	**Unit:**	mg/kg

Perfluorinated Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
PFA-2	**1811070-002A**	**Soil**	**11/01/2018 10:15**	**LC3Q-MS1 F1107181015.D**	**167929**

Analytes	Result	RL	DF	Date Analyzed
NEtFOSAA	ND	1.2	25	11/07/2018 17:13
NMeFOSAA	ND	1.2	25	11/07/2018 17:13
Perfluorobutane sulfonic acid (PFBS)	ND	1.2	25	11/07/2018 17:13
Perfluorodecanoic acid (PFDA)	ND	1.2	25	11/07/2018 17:13
Perfluorododecanoic acid (PFDoA)	ND	1.2	25	11/07/2018 17:13
Perfluoroheptanoic acid (PFHpA)	ND	1.2	25	11/07/2018 17:13
Perfluorohexane sulfonic acid (PFHxS)	ND	1.2	25	11/07/2018 17:13
Perfluorohexanoic acid (PFHxA)	ND	1.2	25	11/07/2018 17:13
Perfluorononanoic acid (PFNA)	ND	1.2	25	11/07/2018 17:13
Perfluorooctane sulfonate (PFOS)	**3.3**	1.2	25	11/07/2018 17:13
Perfluorooctanoic acid (PFOA)	ND	1.2	25	11/07/2018 17:13
Perfluorotetradecanoic acid (PFTA)	ND	1.2	25	11/07/2018 17:13
Perfluorotridecanoic acid (PFTrDA)	ND	1.2	25	11/07/2018 17:13
Perfluoroundecanoic acid (PFUnA)	ND	1.2	25	11/07/2018 17:13

Surrogates	REC (%)	Limits	
NEtFOSAA-d5	89	70-130	11/07/2018 17:13
PFDA-13C2	94	70-130	11/07/2018 17:13
PFHxA-13C2	98	70-130	11/07/2018 17:13

Analyst(s): JS

(Cont.)

McCampbell Analytical, Inc.
"When Quality Counts"

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http://www.mccampbell.com / E-mail: main@mccampbell.com

Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1811070
Date Received:	11/1/18 16:15	**Extraction Method:**	E537
Date Prepared:	11/6/18	**Analytical Method:**	E537m
Project:	17221C; 1401 W Winton	**Unit:**	mg/kg

Perfluorinated Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
PFA-3	1811070-003A	Soil	11/01/2018 10:25	LC3Q-MS1 F1107181017.D	167929

Analytes	Result	RL	DF	Date Analyzed
NEtFOSAA	ND	0.50	10	11/07/2018 17:38
NMeFOSAA	ND	0.50	10	11/07/2018 17:38
Perfluorobutane sulfonic acid (PFBS)	ND	0.50	10	11/07/2018 17:38
Perfluorodecanoic acid (PFDA)	ND	0.50	10	11/07/2018 17:38
Perfluorododecanoic acid (PFDoA)	ND	0.50	10	11/07/2018 17:38
Perfluoroheptanoic acid (PFHpA)	ND	0.50	10	11/07/2018 17:38
Perfluorohexane sulfonic acid (PFHxS)	ND	0.50	10	11/07/2018 17:38
Perfluorohexanoic acid (PFHxA)	ND	0.50	10	11/07/2018 17:38
Perfluorononanoic acid (PFNA)	ND	0.50	10	11/07/2018 17:38
Perfluorooctane sulfonate (PFOS)	**1.7**	0.50	10	11/07/2018 17:38
Perfluorooctanoic acid (PFOA)	ND	0.50	10	11/07/2018 17:38
Perfluorotetradecanoic acid (PFTA)	ND	0.50	10	11/07/2018 17:38
Perfluorotridecanoic acid (PFTrDA)	ND	0.50	10	11/07/2018 17:38
Perfluoroundecanoic acid (PFUnA)	ND	0.50	10	11/07/2018 17:38

Surrogates	REC (%)	Limits	
NEtFOSAA-d5	73	70-130	11/07/2018 17:38
PFDA-13C2	104	70-130	11/07/2018 17:38
PFHxA-13C2	98	70-130	11/07/2018 17:38

Analyst(s): JS

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1811070
Date Received:	11/1/18 16:15	**Extraction Method:**	E537
Date Prepared:	11/6/18	**Analytical Method:**	E537m
Project:	17221C; 1401 W Winton	**Unit:**	mg/kg

Perfluorinated Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
PFA-4	**1811070-004A**	**Soil**	**11/01/2018 10:30**	**LC3Q-MS1 F1107181005.D**	**167929**

Analytes	Result	RL	DF	Date Analyzed
NEtFOSAA	ND	0.050	1	11/07/2018 13:57
NMeFOSAA	ND	0.050	1	11/07/2018 13:57
Perfluorobutane sulfonic acid (PFBS)	ND	0.050	1	11/07/2018 13:57
Perfluorodecanoic acid (PFDA)	ND	0.050	1	11/07/2018 13:57
Perfluorododecanoic acid (PFDoA)	ND	0.050	1	11/07/2018 13:57
Perfluoroheptanoic acid (PFHpA)	ND	0.050	1	11/07/2018 13:57
Perfluorohexane sulfonic acid (PFHxS)	ND	0.050	1	11/07/2018 13:57
Perfluorohexanoic acid (PFHxA)	ND	0.050	1	11/07/2018 13:57
Perfluorononanoic acid (PFNA)	ND	0.050	1	11/07/2018 13:57
Perfluorooctane sulfonate (PFOS)	**0.40**	0.050	1	11/07/2018 13:57
Perfluorooctanoic acid (PFOA)	ND	0.050	1	11/07/2018 13:57
Perfluorotetradecanoic acid (PFTA)	ND	0.050	1	11/07/2018 13:57
Perfluorotridecanoic acid (PFTrDA)	ND	0.050	1	11/07/2018 13:57
Perfluoroundecanoic acid (PFUnA)	ND	0.050	1	11/07/2018 13:57

Surrogates	REC (%)	Limits	
NEtFOSAA-d5	76	70-130	11/07/2018 13:57
PFDA-13C2	102	70-130	11/07/2018 13:57
PFHxA-13C2	84	70-130	11/07/2018 13:57

Analyst(s): JS

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Analytical Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1811070
Date Received:	11/1/18 16:15	**Extraction Method:**	E537
Date Prepared:	11/6/18	**Analytical Method:**	E537m
Project:	17221C; 1401 W Winton	**Unit:**	mg/kg

Perfluorinated Compounds

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
PFA-5	**1811070-005A**	**Soil**	**11/01/2018 10:38**	**LC3Q-MS1 F1107181006.D**	**167929**

Analytes	Result	RL	DF	Date Analyzed
NEtFOSAA	ND	0.050	1	11/07/2018 14:10
NMeFOSAA	ND	0.050	1	11/07/2018 14:10
Perfluorobutane sulfonic acid (PFBS)	ND	0.050	1	11/07/2018 14:10
Perfluorodecanoic acid (PFDA)	ND	0.050	1	11/07/2018 14:10
Perfluorododecanoic acid (PFDoA)	ND	0.050	1	11/07/2018 14:10
Perfluoroheptanoic acid (PFHpA)	ND	0.050	1	11/07/2018 14:10
Perfluorohexane sulfonic acid (PFHxS)	ND	0.050	1	11/07/2018 14:10
Perfluorohexanoic acid (PFHxA)	ND	0.050	1	11/07/2018 14:10
Perfluorononanoic acid (PFNA)	ND	0.050	1	11/07/2018 14:10
Perfluorooctane sulfonate (PFOS)	**0.25**	0.050	1	11/07/2018 14:10
Perfluorooctanoic acid (PFOA)	ND	0.050	1	11/07/2018 14:10
Perfluorotetradecanoic acid (PFTA)	ND	0.050	1	11/07/2018 14:10
Perfluorotridecanoic acid (PFTrDA)	ND	0.050	1	11/07/2018 14:10
Perfluoroundecanoic acid (PFUnA)	ND	0.050	1	11/07/2018 14:10

Surrogates	REC (%)	Limits	
NEtFOSAA-d5	82	70-130	11/07/2018 14:10
PFDA-13C2	96	70-130	11/07/2018 14:10
PFHxA-13C2	86	70-130	11/07/2018 14:10

Analyst(s): JS

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1811070
Date Prepared:	11/6/18	**BatchID:**	167929
Date Analyzed:	11/7/18	**Extraction Method:**	E537
Instrument:	LC3Q-MS1	**Analytical Method:**	E537m
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221C; 1401 W Winton	**Sample ID:**	MB/LCS/LCSD-167929

QC Summary Report for E537

Analyte	MB Result	RL	SPK Val	MB SS %REC	MB SS Limits
NEtFOSAA	ND	0.050	-	-	-
NMeFOSAA	ND	0.050	-	-	-
Perfluorobutane sulfonic acid (PFBS)	ND	0.050	-	-	-
Perfluorodecanoic acid (PFDA)	ND	0.050	-	-	-
Perfluorododecanoic acid (PFDoA)	ND	0.050	-	-	-
Perfluoroheptanoic acid (PFHpA)	ND	0.050	-	-	-
Perfluorohexane sulfonic acid (PFHxS)	ND	0.050	-	-	-
Perfluorohexanoic acid (PFHxA)	ND	0.050	-	-	-
Perfluorononanoic acid (PFNA)	ND	0.050	-	-	-
Perfluorooctane sulfonate (PFOS)	ND	0.050	-	-	-
Perfluorooctanoic acid (PFOA)	ND	0.050	-	-	-
Perfluorotetradecanoic acid (PFTA)	ND	0.050	-	-	-
Perfluorotridecanoic acid (PFTrDA)	ND	0.050	-	-	-
Perfluoroundecanoic acid (PFUnA)	ND	0.050	-	-	-
Surrogate Recovery					
NEtFOSAA-d5	0.32		0.10	80	70-130
PFDA-13C2	0.095		0.10	95	70-130
PFHxA-13C2	0.094		0.10	94	70-130

(Cont.)

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Quality Control Report

Client:	ERAS Environmental, Inc.	**WorkOrder:**	1811070
Date Prepared:	11/6/18	**BatchID:**	167929
Date Analyzed:	11/7/18	**Extraction Method:**	E537
Instrument:	LC3Q-MS1	**Analytical Method:**	E537m
Matrix:	Soil	**Unit:**	mg/kg
Project:	17221C; 1401 W Winton	**Sample ID:**	MB/LCS/LCSD-167929

QC Summary Report for E537

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Perfluorobutane sulfonic acid (PFBS)	0.098	0.081	0.10	98	81	70-130	19.1	20
Perfluorodecanoic acid (PFDA)	0.098	0.10	0.10	98	103	70-130	5.48	20
Perfluorododecanoic acid (PFDoA)	0.11	0.11	0.10	112	110	70-130	1.23	20
Perfluoroheptanoic acid (PFHpA)	0.11	0.084	0.10	113	84	70-130	30.2,F2	20
Perfluorohexane sulfonic acid (PFHxS)	0.12	0.092	0.10	118	92	70-130	24.9,F2	20
Perfluorohexanoic acid (PFHxA)	0.12	0.090	0.10	124	90	70-130	31.0,F2	20
Perfluorononanoic acid (PFNA)	0.10	0.10	0.10	102	104	70-130	1.43	20
Perfluorooctane sulfonate (PFOS)	0.087	0.11	0.10	87	107	70-130	21.4,F2	20
Perfluorooctanoic acid (PFOA)	0.10	0.096	0.10	102	96	70-130	5.17	20
Perfluorotetradecanoic acid (PFTA)	0.085	0.099	0.10	85	99	70-130	15.6	20
Perfluorotridecanoic acid (PFTrDA)	0.097	0.095	0.10	97	95	70-130	2.27	20
Perfluoroundecanoic acid (PFUnA)	0.096	0.11	0.10	96	107	70-130	10.9	20
Surrogate Recovery								
NEtFOSAA-d5	0.13	0.095	0.10	128	95	70-130	29.7,F2	20
PFDA-13C2	0.13	0.095	0.10	128	95	70-130	29.7,F2	20
PFHxA-13C2	0.13	0.095	0.10	128	95	70-130	29.7,F2	20

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(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1811070 **ClientCode: ERAS**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ▣ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag
▣ Detection Summary ▣ Dry-Weight

Report to:
Dave Siegel
ERAS Environmental, Inc.
1533 B Street
Hayward, CA 94541
(510) 247-9885 FAX: (510) 886-5399

Email: info@eras.biz; dave@eras.biz;andrew@er
cc/3rd Party:
PO:
Project: 17221C; 1401 W Winton

Bill to:
Kasey Cordoza
ERAS Environmental, Inc.
1533 B Street
Hayward, CA 94541

Requested TAT: **7 days;**

Date Received: **11/01/2018**
Date Logged: **11/01/2018**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1811070-001	PFA-1	Soil	11/1/2018 10:03	☐	A											
1811070-002	PFA-2	Soil	11/1/2018 10:15	☐	A											
1811070-003	PFA-3	Soil	11/1/2018 10:25	☐	A											
1811070-004	PFA-4	Soil	11/1/2018 10:30	☐	A											
1811070-005	PFA-5	Soil	11/1/2018 10:38	☐	A											

Test Legend:

1	537_S	2		3		4	
5		6		7		8	
9		10		11		12	

Prepared by: Agustina Venegas

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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WORK ORDER SUMMARY

Client Name: ERAS ENVIRONMENTAL, INC. **Project:** 17221C; 1401 W Winton **Work Order:** 1811070
Client Contact: Dave Siegel **QC Level:** LEVEL 2
Contact's Email: info@eras.biz; dave@eras.biz;andrew@eras.biz **Comments** **Date Logged:** 11/1/2018

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Lab ID	Client ID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	De-chlorinated	Collection Date & Time	TAT	Sediment Content	Hold	SubOut
1811070-001A	PFA-1	Soil	E537 (Perfluorinated Compounds)	1	16OZ GJ, Unpres	☐	11/1/2018 10:03	7 days		☐	
1811070-002A	PFA-2	Soil	E537 (Perfluorinated Compounds)	1	16OZ GJ, Unpres	☐	11/1/2018 10:15	7 days		☐	
1811070-003A	PFA-3	Soil	E537 (Perfluorinated Compounds)	1	16OZ GJ, Unpres	☐	11/1/2018 10:25	7 days		☐	
1811070-004A	PFA-4	Soil	E537 (Perfluorinated Compounds)	1	16OZ GJ, Unpres	☐	11/1/2018 10:30	7 days		☐	
1811070-005A	PFA-5	Soil	E537 (Perfluorinated Compounds)	1	16OZ GJ, Unpres	☐	11/1/2018 10:38	7 days		☐	

NOTES: - STLC and TCLP extractions require 2 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 3 days from sample submission).

- MAI assumes that all material present in the provided sampling container is considered part of the sample - MAI does not exclude any material from the sample prior to sample preparation unless requested in writing by the client.

CHAIN OF CUSTODY FORM

18170

McCampbell Analytical, Inc
1534 Willow Pass Rd.
Pittsburg, CA 94565
877.252.9262
925.252.9269 - fax

Turnaround Time: Rush | 24Hr | 48 Hr | 72 Hr | 5 Day (X)

Geotracker: PDF | Excel | Write On (DW

Report To: ERAS **Bill To:** ERAS

Company: ERAS Environmental, Inc.

Email: info@eras.biz

Telephone: 510-247-9885 **Fax:** 510-886-5399

Project # 17221C

Project location: 401 W Winton

Sampler: Dark Siegel

Sample ID	Location/Field Point Name	Sampling Date	Sampling Time	# of Containers	Container Type	Matrix: Soil	Matrix: Water	Matrix: Waste	Preservative: HCL	Preservative: H2SO4	Preservative: HNO3	Preservative: ICE	Preservative: None
	PFA-1	11/1/18	10:03	1	G	X							
	PFA-2	"	10:15	1	G	X							
	PFA-3	"	10:25	1	G	X							
	PFA-4	"	10:30	1	G	X							
	PFA-5	"	10:38	1	G	X							

Analysis Requested: XXXXX PerFluorinated Compounds ES37

Other

Comments

RELINQUISHED BY:

	Date	Time
Relinquished by:	11/1/18	1142
Relinquished by:	11/1/18	1615
Relinquished by:		

RECEIVED BY:

Recieved by:
Recieved by:
Recieved by:

ICE/t° 2.3 WET

Condition

Head space absent

Dechlorinated in lab

Appropriate containers

Preserved in Lab

Preservation: VOA's | O&G | Metals | Other — pH<2

Comments: Please PDF

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Sample Receipt Checklist

Client Name: **ERAS Environmental, Inc.**
Project: **17221C; 1401 W Winton**

WorkOrder №: **1811070** Matrix: Soil
Carrier: Benjamin Yslas (MAI Courier)

Date and Time Received: **11/1/2018 16:15**
Date Logged: **11/1/2018**
Received by: Agustina Venegas
Logged by: Agustina Venegas

Chain of Custody (COC) Information

Chain of custody present?	Yes	☑	No	☐		
Chain of custody signed when relinquished and received?	Yes	☑	No	☐		
Chain of custody agrees with sample labels?	Yes	☑	No	☐		
Sample IDs noted by Client on COC?	Yes	☑	No	☐		
Date and Time of collection noted by Client on COC?	Yes	☑	No	☐		
Sampler's name noted on COC?	Yes	☑	No	☐		
COC agrees with Quote?	Yes	☐	No	☐	NA	☑

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes	☐	No	☐	NA	☑
Shipping container/cooler in good condition?	Yes	☑	No	☐		
Samples in proper containers/bottles?	Yes	☑	No	☐		
Sample containers intact?	Yes	☑	No	☐		
Sufficient sample volume for indicated test?	Yes	☑	No	☐		

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes	☑	No	☐	NA	☐
Samples Received on Ice?	Yes	☑	No	☐		
(Ice Type: WET ICE)						
Sample/Temp Blank temperature	Temp: 2.3°C				NA	☐
Water - VOA vials have zero headspace / no bubbles?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2; 522: <4; 218.7: >8)?	Yes	☐	No	☐	NA	☑
UCMR Samples:						
pH tested and acceptable upon receipt (200.8: ≤2; 525.3: ≤4; 530: ≤7; 541: <3; 544: <6.5 & 7.5)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L)?	Yes	☐	No	☐	NA	☑

Comments:

ATTACHMENT C

Selected Documents Regarding PFOS and PFOA

June 2018

Table 4-2. Residential soil standards and guidance values for PFAS.

This Table 4-2 belongs with the ITRC PFAS Regulations, Guidance and Advisories Fact Sheet. The values included here are changing rapidly. The ITRC intends to upda version of this file. Please see ITRC Disclaimer http://pfas-1.itrcweb.org/about-itrc/#disclaimer

		Soil Screening Levels for Groundwater Protection (mg/kg)									
		U.S.	U.S States					U.S.			
Agency		USEPA	Alaska	Michigan		North Carolina	Texas	Texas	USEPA	Alaska	Delaware
Department		Regions	DEC	DEQ		DEQ	CEQ	CEQ	Regions	DEC	DNREC
Year		2018	2017	2016		2016	2017	2017	2018	2017	2016
Standard		RSL[a]	CL	GCC		PSRG	PCL	PCL	RSL[a]	CL[b]	
PFAS	CAS RN			Ground-water	Surface Water		0.5 acre source	30 acre source			
PFNA	375-95-1	--	--	--	--	--	0.003	0.0015	--	--	--
PFOA	335-67-1	0.000172	0.0017	0.075	10	0.0081	0.003	0.0015	1.26	1.3	16
PFOS	1763-23-1	0.000378	0.003	0.0024	0.00024	--	0.05	0.025	1.26	1.3	6
PFBA	375-22-4	--	--	--	--	--	0.2	0.098	--	--	--
PFBS	375-73-5	0.13	--	--	--	--	0.11	0.053	1300	--	--
PFPeA	2706-90-3	--	--	--	--	--	0.00032	0.00016	--	--	--
PFHxS	355-46-4	--	--	--	--	--	0.002	0.001	--	--	--
PFHxA	307-24-4	--	--	--	--	--	0.00048	0.00024	--	--	--
PFHpA	375-85-9	--	--	--	--	--	0.0046	0.0023	--	--	--
PFOSA	754-91-6	--	--	--	--	--	0.92	0.46	--	--	--
PFDA	335-76-2	--	--	--	--	--	0.022	0.011	--	--	--
PFDS	335-77-3	--	--	--	--	--	0.04	0.02	--	--	--
PFUnA	2058-94-8	--	--	--	--	--	0.018	0.0092	--	--	--
PFDoA	307-55-1	--	--	--	--	--	0.034	0.017	--	--	--
PFTrDA	72629-94-8	--	--	--	--	--	0.061	0.03	--	--	--
PFTeDA	376-06-7	--	--	--	--	--	0.11	0.056	--	--	--
6:2 FTS	27619-97-2	--	--	--	--	--			--	--	--

Notes:

a. Regional Screening Levels (RSL) for PFBS as presented in the USEPA Regional Screening Level (RSL) Summary Table (TR=1E-06, HQ=1) May 2018. As of June 2(multiple contaminants should consult the USEPA (2018) RSL User's Guide and USEPA (1989) Risk Assessment Guidance.

b. Alaska proposed cleanup levels for Human Health - most stringent value is from the "Over 40 Inch Zone".

c. Interim screening level for contaminated sites

d. Applies to the individual results for PFOA, PFOS, PFNA, PFBA, PFBS, PFHxS, PFHxA, PFPeA, PFHpA, PFOSA, PFDA, AND 6:2 FTS as well as the sum of concent

Regulatory Agency

CEQ = Commission on Environmental Quality
DEC = Department of Environmental Conservation
DENR = Department of Environment and Natural Resources
DES-EHP = Department of Environmental Services-Environmental Health Program
DEQ = Department of Environmental Quality
DER = Department of Environment Regulation
DoEE = Department of Environment and Energy
DNREC = Department of Natural Resources and Environmental Control
HC = Health Canada
HEPA = Heads of EPAs Australia and New Zealand
PCA = Pollution Control Agency
USEPA = United States Environmental Protection Agency

Standard

BCL= Basic Comparison Levels
CL = Cleanup Level
DCRB = Direct Contact Risk-Based concentration
GCC = Generic Cleanup Criteria
PCL = Protective Concentration Level
PSRG = Preliminary Soil Remediation Goal
RSL = Regional Screening Level
SRV = Soil Reference Value
SSV = Soil Screening Value

Per- and polyfluoroalkly substances

PFAS = per- and polyfluroalkyl substances
PFOA = perfluorooctanoic acid (C8)
PFOS = perfluorooctane sulfonic acid (C8)
PFNA = perfluorononanoic acid (C9)
PFBA = perfluorobutyric acid (C4)
PFBS = perfluorobutane sulfonic acid (C4)
PFPeA = perfluoropentanoic acid (C5)
PFHxS = perfluorohexane sulfonic acid (C6)
PFHxA = perfluorohexanoic acid (C6)
PFHpA = perrfluoroheptanoic acid (C7)
PFOSA = perfluorooctane sulfonamide (C8)
PFDA = perfluorodecanoic acid (C10)
PFDS = perfluorodecane sulfonate (10)
PFUnA = perfluoroundecanoic acid (C11)
PFDoA = perfluorododecanoic acid (C12)
PFTrDA = perfluorotridecanoic acid (C13)
PFTeDA = perfluorotetradecanoic acid (C14)
6:2 FTS = 6:2 Fluorotelomer sulfonate

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
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5090
Ser EV/006
28 September 2017

From: Commander, Naval Facilities Engineering Command

Subj: INTERIM PER- AND POLYFLUORALKYL SUBSTANCES (PFAS) SITE GUIDANCE FOR NAVFAC REMEDIAL PROJECT MANAGERS (RPMS)/SEPTEMBER 2017 UPDATE

Ref: (a) DASN (E) Perfluorinated Compounds/Perfluoroalkyl Substances (PFC/PFAS) – Identification of Potential Areas of Concern (AOCs) Memorandum, 20 June 2016

Encl: (1) Interim Per- and Polyfluoroalkyl Substances (PFAS) Site Guidance for NAVFAC Remedial Project Managers (RPMs)/September 2017 Update

1. In accordance with reference (a), guidance and procedures for addressing Perfluoroalkyl Substances (PFAS) under the Environmental Restoration, Navy (ER,N) Program and Navy Base Realignment and Closure (BRAC) Program are provided in Enclosure (1). As many Navy installations have been receiving requests to evaluate PFAS at cleanup sites, this PFAS Site Guidance assists with identifying sampling methodologies and promoting a consistent approach for dealing with PFAS at Navy Environmental Restoration (ER) sites.

2. This Guidance supersedes and updates previous PFC Interim Guidance/FAQs issued on 29 January 2015.

3. The main objective of the PFAS Site Guidance is to assist Remedial Project Managers (RPMs) with programmatic and technical issues related to PFAS at Naval ER sites. These issues include: eligibility and funding responsibilities and scenarios, sampling and analysis, investigation, risk assessment methodology, and response and remedial action requirements.

4. The Headquarters point of contact is Ms. Kim P. Brown, who can be reached at kim.brown@navy.mil or (202) 685-0096. Technical questions can also be directed to Mr. Timothy Reisch at timothy.reisch@navy.mil or (757)322-4130 and Ms. Jennifer Corack at jennifer.corack@navy.mil or (757) 322-4335.

Larry E. Douchand

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Interim Per- and Polyfluoroalkyl Substances (PFAS) Site Guidance for NAVFAC Remedial Project Managers (RPMs)/ September 2017 Update

Objective/Purpose

The objective of this document is to assist Remedial Project Managers (RPMs) with programmatic and technical issues related to a group of chemicals called perfluorinated compounds (PFC)[1] or per- and polyfluoroalkyl substances (PFAS) at Department of Navy (DON) Environmental Restoration (ER) sites. These issues include: funding responsibilities, risk assessment, and regulatory requirements. The "Frequently Asked Questions" are presented to give general guidance. However, RPMs are encouraged to discuss site-specific conditions with their respective ER Manager or Base Closure Manager to determine if circumstances allow for Environmental Restoration, Navy (ER,N) or Base Realignment and Closure (BRAC) eligibility.

Applicability

The guidance and procedures in this document apply to actions taken under the ER,N and BRAC funded Defense Environmental Response Program (DERP).

Background

Certain PFAS have been identified as emerging contaminants (ECs) for the DERP program. PFAS were used in a variety of industrial and military applications, including as a component in aqueous film forming foam (AFFF), routinely used at airfields and firefighting training areas (FTAs). These compounds are environmentally persistent, and have been detected in environmental samples long after a release was reported. This environmental persistence and the tendency to bioaccumulate in living organisms and some demonstrated toxicity in laboratory animals, have increased interest in these ECs.

The U.S. Department of Defense (DoD) works with the U.S. Environmental Protection Agency (EPA) and state agencies to reach consensus on how to address ECs such as PFAS. ECs may have insufficient or limited health and science data. Additionally, sampling and analytical methods may not be available or may not be able to achieve the detection limits needed and contaminant migration pathways may yet to be determined.. Naval Facilities Engineering Command (NAVFAC) has prepared this interim guidance to support RPMs regarding how to handle PFAS at their sites.

PFAS are a class of man-made chemicals that have been used since the mid-20th century to make products that resist heat, stains, grease and water. PFAS have been widely used on products to enhance stain- and water-resistance properties (e.g., cookware, clothing, rugs, fast food wrappers, etc.) Because they help reduce friction, they are also used in a variety of other industries, including aerospace, automotive, building and construction, and electronics. Additionally, PFAS are a component of some firefighting suppressants for fighting petroleum fuel fires.

[1] Previous DoN policy and guidance used the term PFC. PFC are a subset of PFAS; therefore the term PFAS is used in the remainder of this document.

FAQ - Risk Assessment

R1. Should PFAS automatically be included in the risk assessment?

PFAS should only be sampled for if the CSM suggests the potential for a historical release of these chemicals. If the CSM supports environmental sampling for PFAS, then these sampling results should be considered to make remedial decisions. For the majority of sites, this will include a quantitative risk assessment. However, it should be noted in the uncertainty section that Tier 2 and/or 3 toxicity values would be used for these ECs.

R2. What human health risk assessment screening levels are available?

As always, screening levels may be developed through partnering relationships between the RPM and regulatory agencies. Ordinarily, the EPA Regional Screening Level (RSL) tables would be a good place to start. However, the most recent version of the RSL table (June 2017) does not include PFOA and PFOS (although the EPA Office of Water estimated chronic toxicity values for them in May 2016). The toxicity values developed by the EPA Office of Water are included in the on-line RSL calculator. As such it is currently unclear what EPA's recommendation is regarding these toxicity values.

On November 15, 2016, EPA Office of Water released a memorandum that clarified that the Health Advisories developed by the EPA Office of Water in May 2016 were only to be applied to drinking water. The Health Advisories are based on toxicity values derived in documents that specifically target exposure via drinking water; not dermal contact or inhalation. EPA also stated that the Health Advisories are not applicable in identifying risk levels for ingestion of food. The EPA memo did not specifically address ingestion of non-food solids such as soil or if this restriction extends to the toxicity values upon which the LHAs are based.
Until EPA guidance is provided, cleanup teams should discuss the level of confidence they would assign to screening levels based on the EPA Office of Water's toxicity values. When those RfDs are used with the current (June 2017) RSL calculations and default assumptions, the possible screening levels are provided on the table below. Note that since these toxicity values are not listed in the current (June 2017) RSL table, they are not be considered vetted Tier 3 toxicity values as described in EPA directive (2003).

Screening Level Scenario	Groundwater (µg/L)			Soil (mg/kg)		
	PFOA[1]	PFOS[1]	PFBS[2]	PFOA[1]	PFOS[1]	PFBS[2]
Residential exposure	0.4	**0.4**	380	1.3	**1.3**	1,600
Industrial worker exposure	**NA**	**NA**	**NA**	16	**16**	23,000

1. Values calculated for PFOA and PFOS using the EPA's on-line RSL calculator in June 2017 and are based on a target hazard quotient of 1.
2. Values are from the EPA Regional Screening Level table, June 2017.
NA means that currently these values are not applicable.

R3. What human health toxicity values are available?

Currently there are no toxicity values for any PFAS available from a Tier 1 (i.e., EPA's Integrated Risk Information System [IRIS]) source.

Non-cancer toxicity values are currently available for PFOA and PFOS for the ingestion route of exposure (i.e., reference doses [RfDs]) (EPA 2016a; 2016b). Note that as of June 2017 EPA has not confirmed that these are Tier 3 values. Although Tier 3 toxicity values are appropriate for use in CERCLA HHRAs per (EPA 2003), there is always increased uncertainty associated with the use of Tier 3 toxicity values since their level of peer review and acceptance in the scientific community are not as rigorous as for Tier 1 and Tier 2 toxicity values. As such, if CERCLA cleanup levels are being derived, RPMs should discuss this with their respective ER Manager. The chronic noncancer RfDs for both PFOA and PFOS is 2E-05 mg/kg-day. For both chemicals, this value is based on developmental effects. The EPA Office of Water also estimated a cancer slope factor (CSF) for oral exposure to PFOA of 0.07 $(mg/kg\text{-}day)^{-1}$.

A Tier 2 (i.e., EPA's Provisional Peer-Reviewed Toxicity Value [PPRTV]) oral reference dose is available for PFBS (EPA 2014). The chronic Tier 2 noncancer RfD for PFBS is 0.02 mg/kg-day. This is based on kidney effects in a subchronic rat study. EPA also established a Tier 2 subchronic RfD of 0.2 mg/kg-day based on kidney effects in a rat study.

R4. What exposure pathways should be included in a human health risk assessment?

For PFOA, PFOS, and PFBS the only toxicity values available are for ingestion. As such, if the CSM supports it, the ingestion exposure route can be estimated for human health. On November 15, 2016, the U.S. EPA Office of Water issued a memorandum that clarified the Lifetime Health Advisory in drinking water cannot be used to identify risk levels for ingestion of food sources (EPA 2016d). The, U.S. EPA did not clarify if the toxicity values used to develop the Lifetime Health Advisory can be applied to incidental ingestion of soil, such as is reflected in the EPA

United States Environmental Protection Agency

Technical Fact Sheet – Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA)

November 2017



TECHNICAL FACT SHEET – PFOS and PFOA

At a Glance

- Manmade chemicals not naturally found in the environment.
- Fluorinated compounds that repel oil and water.
- Used in a variety of industrial and consumer products, such as carpet and clothing treatments and firefighting foams.
- Extremely persistent in the environment.
- Known to bioaccumulate in humans and wildlife.
- Readily absorbed after oral exposure. Accumulate primarily in the blood serum, kidney and liver.
- Toxicological studies on animals indicate potential developmental, reproductive and systemic effects.
- Health-based advisories or screening levels have been developed by EPA and state agencies.
- EPA has not issued a Maximum Contaminant Level (MCL) for drinking water.
- Standard analytical methods use high-performance liquid chromatography coupled with tandem mass spectrometry.
- Resistant to most chemical and microbial conventional treatment technologies. Most common groundwater treatment method is extraction and filtration through granular activated carbon filters.

Introduction

This fact sheet, developed by the U.S. Environmental Protection Agency (EPA) Federal Facilities Restoration and Reuse Office (FFRRO), provides a summary of two contaminants of emerging concern, perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), including physical and chemical properties; environmental and health impacts; existing federal and state guidelines; detection and treatment methods; and additional sources of information. This fact sheet is intended for use by site managers who may address these chemicals at cleanup sites or in drinking water supplies and for those in a position to consider whether these chemicals should be added to the analytical suite for site investigations.

PFOS and PFOA are part of a larger group of chemicals called per- and polyfluoroalkyl substances (PFASs). PFASs, which are highly fluorinated aliphatic molecules, have been released to the environment through industrial manufacturing and through use and disposal of PFAS-containing products (Liu and Mejia Avendano 2013). PFOS and PFOA are the most widely studied of the PFAS chemicals. PFOS and PFOA are persistent in the environment and resistant to typical environmental degradation processes. As a result, they are widely distributed across all trophic levels and are found in soil, air and groundwater at sites across the United States. The toxicity, mobility and bioaccumulation potential of PFOS and PFOA result in potential adverse effects on the environment and human health.

What are PFOS and PFOA?

- They are human-made compounds that do not occur naturally in the environment (ATSDR 2015; EPA 2009b).
- PFOS and PFOA are fully fluorinated, organic compounds. They are the two PFASs that have been produced in the largest amounts within the United States (ATSDR 2015; EFSA 2008).
- PFOS and PFOA are part of a subset of PFASs known as perfluorinated alkyl acids (PFAAs).

Disclaimer: The U.S. EPA prepared this fact sheet using the most recent publicly-available scientific information; additional information can be obtained from the source documents. This fact sheet is not intended to be used as a primary source of information and is not intended, nor can it be relied on, to create any rights enforceable by any party in litigation with the United States. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

PFAS Chemistry

- The PFAS group is made up of two subgroups: perfluoroalkyl substances and polyfluoroalkyl substances.
- PFOS and PFOA are **perfluoroalkyl substances** (compounds for which all hydrogens on all carbons (except for carbons associated with functional groups) have been replaced by fluorines).
- **Polyfluoroalkyl substances** are compounds for which some hydrogens (but not all) on the carbon atoms have been replaced by fluorines.
- PFASs are extremely persistent in the environment primarily because the chemical bond between the carbon and fluorine atoms is extremely strong and stable.

Source: Buck and others 2011

- PFOS and PFOA can also be formed by environmental degradation or by metabolism in larger organisms from a large group of related PFASs or precursor compounds (ATSDR 2015; UNEP 2006).
- PFOS and PFOA are stable chemicals that are comprised of chains of eight carbons. Because of their unique ability to repel oil and water, these chemicals have been used in: surface protection products such as carpet and clothing treatments; coatings for paper, cardboard packaging and leather products; industrial surfactants, emulsifiers, wetting agents, additives and coatings; processing aids in the manufacture of fluoropolymers such as nonstick coatings on cookware; membranes for clothing that are both waterproof and breathable; electrical wire casing; fire and chemical resistant tubing; and plumbing thread seal tape (ATSDR 2015).
- Through 2001, PFOS and other PFAS chemicals were used in the manufacture of aqueous film forming foam (AFFF), which is used to extinguish liquid hydrocarbon fires (ASTSWMO 2015; EPA 2016f; DoD SERDP 2014; Place and Field 2012). Manufacturers of AFFF in the United States now use PFASs other than PFOS; however, existing stocks of PFOS-based AFFF remain in use.
- By 2002, the primary U.S. manufacturer of PFOS voluntarily phased out production of PFOS. In 2006, eight major companies in the PFASs industry voluntarily agreed to phase out production of PFOA and PFOA-related chemicals by 2015. EPA is concerned about a limited number of ongoing uses of PFOA-related chemicals, which are still available in existing stocks and from companies not participating in the PFOA Stewardship Program. In addition, exposure could occur via goods imported from countries where PFOS and PFOA are still used (EPA 2016b, 2016c, 2016f).

Exhibit 1: Physical and Chemical Properties of PFOS and PFOA (ATSDR 2015; EFSA 2008; EPA 2016b, 2016c)

Property	PFOS (Free Acid)	PFOA (Free Acid)
Chemical Abstracts Service (CAS) number	1763-23-1	335-67-1
Physical description (physical state at room temperature and atmospheric pressure)	White powder (potassium salt)	White powder/ waxy white solid
Molecular weight (g/mol)	500	414
Water solubility at 25°C (mg/L)	680	9.5×10^3
Melting point (°C)	No data	54
Boiling point (°C)	258–260	192
Vapor pressure at 25°C (mm Hg)	0.002	0.525
Organic carbon partition coefficient (K_{oc})	2.57	2.06
Henry's law constant (atm-m^3/mol)	Not measurable	Not measurable

Abbreviations: g/mol – grams per mole; mg/L – milligrams per liter; °C – degree Celsius; mm Hg – millimeters of mercury; atm-m^3/mol – atmosphere-cubic meters per mole

Existence of PFOS and PFOA in the environment

- During manufacturing processes, PFASs were released to the air, water and soil in and around manufacturing facilities (ATSDR 2015). Recently, PFOS and PFOA contamination has also been observed in facilities using PFAS products to manufacture other products (secondary manufacturing facilities).
- PFOS has been detected in surface water and sediment downstream of production facilities and in wastewater treatment plant effluent, sewage sludge and landfill leachate at a number of cities in the United States (OECD 2002; Oliaei and others 2013).
- The environmental release of PFOS-based AFFF may also occur from tank and supply line leaks, use of aircraft hangar fire suppression systems, firefighting training activities, and use at airplane crash sites (DoD SERDP 2014).
- PFOS and PFOA products often contain residuals from manufacturing and formulation that are PFASs. PFOS- and PFOA-based products often contain impurities and residuals which may be precursors to PFOS and PFOA. Biological and abiotic environmental processes have been shown to transform these precursors into PFOS and PFOA (Liu and Mejia Avendano 2013; Buck and others 2011; Conder and others 2010).
- In general, PFOS and PFOA are stable in the environment and resist typical environmental degradation processes. As a result, these chemicals are persistent in the environment (OECD 2002; ATSDR 2015).
- PFOS and PFOA are detected in environmental media and biota in many parts of the world, including oceans and the Arctic, indicating that long-range transport is possible (ATSDR 2015).
- The wide distribution of perfluoroalkyl substances, such as PFOS, in higher trophic level organisms is strongly suggestive of the potential for bioaccumulation and/or bioconcentration (EPA 2015; UNEP 2006).
- PFOS has been shown to accumulate to levels of concern in fish. The estimated bioconcentration factor in fish ranges from 1,000 to 4,000 (EFSA 2008; MDH 2017a). PFOA has been shown to bioaccumulate in air breathing species, including humans, but not in fish (Vierke and others 2012).

What are the routes of exposure and the potential health effects of PFOS and PFOA?

- Studies have found PFOS and PFOA in the blood samples of the general human population and wildlife, indicating that exposure to the chemicals is widespread (ATSDR 2015; EPA 2015).
- Reported data indicate that blood serum concentrations of PFOS and PFOA are higher in workers and individuals living near facilities that use or produce PFASs than for the general population (ATSDR 2015; EPA 2009b).
- Potential exposure pathways include ingestion of food and water, use of consumer products or inhalation of PFAS-containing particulate matter (e.g., soils and dust) or vapor phase precursors (ATSDR 2015; EPA 2009b).
- PFOA and PFOS have been found in drinking water supplies, typically associated with manufacturing locations, industrial use or disposal.
- Human epidemiological studies found associations between PFOA exposure and high cholesterol, increased liver enzymes, decreased vaccination response, thyroid disorders, pregnancy-induced hypertension and preeclampsia, and cancer (testicular and kidney) (EPA 2016e).
- Human epidemiological studies found associations between PFOS exposure and high cholesterol and adverse reproductive and developmental effects (EPA 2016d).
- PFOS and PFOA are toxic to laboratory animals, producing reproductive, developmental and systemic effects in laboratory tests (Austin and others 2003; EPA 2016d, 2016e; Post and others 2012).
- EPA found that there is suggestive evidence that PFOS and PFOA may cause cancer (EPA 2016d, 2016e).
- The American Conference of Governmental Industrial Hygienists (ACGIH) has classified PFOA as a Group A3 carcinogen – confirmed animal carcinogen with unknown relevance to humans (ATSDR 2015).
- The World Health Organization's International Agency for Research on Cancer has found that PFOA is possibly carcinogenic to humans (Group 2B) (IARC 2016).
- In 2009, the Stockholm Convention on Persistent Organic Pollutants added PFOS to Annex B, restricting its production and use. PFOA was proposed for listing in 2015 (Stockholm Convention 2016).

Are there any federal and state guidelines and health standards for PFOS and PFOA?

- EPA derived oral non-cancer reference doses (RfDs) of 0.00002 mg/kg/day for both PFOS and PFOA (EPA 2016d, 2016e). The RfD is an estimate of the daily exposure level that is likely to be without harmful effects over a lifetime.
- In May 2016, EPA established drinking water health advisories of 70 parts per trillion (0.07 micrograms per liter (µg/L)) for the combined concentrations of PFOS and PFOA. Above these levels, EPA recommends that drinking water systems take steps to assess contamination, inform consumers and limit exposure. The health advisory levels are based on the RfDs (EPA 2016b, 2016c).
- EPA found that there are insufficient data to derive inhalation non-cancer reference concentrations (RfCs) for PFOS and PFOA (EPA 2016d, 2016e).
- For PFOA, EPA estimated a cancer slope factor of 0.07 $(mg/kg/day)^{-1}$. Based on this slope factor, EPA calculated that a PFOA drinking water concentration of 0.5 µg/L would correspond to a one-in-a-million increased risk of cancer (EPA 2016c, 2016e).
- EPA has not issued a Maximum Contaminant Level (MCL) for drinking water.
- Various states have established drinking water and groundwater guidelines, including the following:

State	Guideline (µg/L)		Source
	PFOA	PFOS	
Delaware	0.4	0.2	DNREC 2016
Maine	0.13	0.56	MDEP 2016
Michigan	0.42	0.011	MDEQ 2015
Minnesota	0.035	0.027	MDH 2017b
New Jersey	0.04	NA	NJDEP 2016
North Carolina	2	NA	NCDEQ 2013
Texas	0.3	0.6	TCEQ 2016
Vermont	0.02	NA	VTDEC 2016

- Some states have fish consumption advisories for certain water bodies where PFOS has been detected in fish (MDH 2017c; MDHHS 2016).
- PFOS and PFOA are included on the fourth drinking water contaminant candidate list, which is a list of unregulated contaminants that are known to, or anticipated to, occur in public water systems and may require regulation under the Safe Drinking Water Act (EPA 2016a).

What detection and site characterization methods are available for PFOS and PFOA?

- Detection methods for PFOS and PFOA are primarily based on high-performance liquid chromatography (HPLC) coupled with tandem mass spectrometry (MS/MS) (ATSDR 2015).
- EPA Method 537, Version 1.1, is a liquid chromatography/tandem mass spectrometry (LC-MS/MS) method used to analyze PFOS, PFOA and other PFAAs in finished drinking water. While most sampling protocols for organic compounds require sample collection in glass, this method requires plastic sample bottles because PFASs are known to adhere to glass (ATSDR 2015; EPA 2009a). In addition, the method notes that analytes are found in common lab supplies and equipment such as PTFE (polytetrafluoroethylene) products, LC solvent lines, solid phase extraction sample transfer lines, methanol and aluminum foil (EPA 2009a).
- Currently, there are no standard EPA methods for analyzing PFASs in groundwater, surface water, wastewater or solids. EPA is developing analytical methods for these media. EPA expects to have draft methods for water and solids by fall 2017. EPA will also develop standard operating procedures for field sampling (EPA 2017).
- ASTM has published standards for analyzing PFAAs in soil (D7968-14) and in water, sludge, influent, effluent and wastewater (D7979-15). Both standards use LC-MS/MS (ASTM 2014, 2015). These methods have not been multi-lab validated.
- The available detection methods report sensitivities of low picograms per cubic meter (pg/m^3) levels in air, high picograms per liter (pg/L) to low ng/L levels in water, and high picograms per gram to low ng/g levels in soil (ATSDR 2015).
- Experimental techniques are available to measure PFASs in air samples. Some studies have used gas chromatography mass spectrometry (GC/MS) to measured PFASs in air samples (ATSDR 2015). In addition, some precursor chemicals and transformation products are measured by GC/MS/MS or LC/MS/MS (Liu and Mejia Avendano 2013). An oxidative technique has been proposed to estimate precursor levels by LC/MS/MS (Houtz and Sedlak 2012).

- Researchers are developing a new analytical method that uses particle induced gamma emission (PIGE) to quickly and non-destructively detect the presence of PFASs in consumer products and other solid materials (National Science Foundation 2015).

What technologies are being used to treat PFOS and PFOA?

- Chapter 10 of the PFOS and PFOA health advisories discuss the performance of common drinking water technologies to treat these chemicals (EPA 2016b, 2016c). In general, PFOS and PFOA resist most conventional chemical and microbial treatment technologies. Technologies with demonstrated effectiveness include granular activated carbon sorption and ion exchange resins (EPA 2016b, 2016c).
- PFAAs can be formed when precursor chemicals are transformed in the environment or in the body (EPA 2016b, 2016c). Therefore, if precursors are not addressed during remediation, over time they may be transformed to PFAAs, such as PFOS and PFOA. The presence of other contaminants, including PFAS precursors, can also impact design and performance of remedial technologies.
- The most common groundwater treatment is extraction and filtration through granular activated carbon. However, because PFOA and PFOS have moderate adsorbability, the design specifics are very important in obtaining acceptable treatment (EPA 2016b, 2016c). Other potential adsorbents include: ion exchange resins, organo-clays, clay minerals and carbon nanotubes (EPA 2016b, 2016c; Espana and others 2015). Evaluation of these sorbents needs to consider regeneration, as the cost and effort required may be substantial (EPA 2016b, 2016c).
- Other ex situ treatments including nanofiltration and reverse osmosis units have been shown to remove PFASs from water (EPA 2016b, 2016c). Incineration of the concentrated waste would be needed for the complete destruction of PFASs (MDH 2008; Vecitis and others 2009).
- Research into other treatment approaches for PFOS and PFOA in groundwater is ongoing (DoD SERDP 2016).
- One soil management approach is excavation and off-site disposal. Capping may also be an option.
- High-temperature incineration can also be used to destroy PFOS and PFOA (ASTSWMO 2015).
- Stabilization methods for PFAS-contaminated soil may be effective (Kupryianchyk and others 2016).

Where can I find more information about PFOS and PFOA?

- ATSDR. 2015. "Draft Toxicological Profile for Perfluoroalkyls." www.atsdr.cdc.gov/toxprofiles/tp200.pdf
- ASTM. 2014. "D7968-14, Standard Test Method for Determination of Perfluorinated Compounds in Soil by Liquid Chromatography Tandem Mass Spectrometry (LC/MS/MS)." www.astm.org
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- Association of State and Territorial Solid Waste Management Officials (ASTSWMO). 2015. Perfluorinated Chemicals (PFCs): Perfluorooctanoic Acid (PFOA) & Perfluorooctane Sulfonate (PFOS): Information Paper. clu-in.org/download/contaminantfocus/pops/POPs-ASTSWMO-PFCs-2015.pdf
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Where can I find more information about PFOS and PFOA? (continued)

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- Delaware Department of Natural Resources and Environmental Control (DNREC). 2016. "Guidance for Notification Requirements." www.dnrec.delaware.gov/dwhs/sirb/Documents/Notification%20Guidance.pdf
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Contact Information

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State Water Resources Control Board
Division of Water Quality
GAMA Program

GROUNDWATER INFORMATION SHEET

Perfluorooctanoic Acid (PFOA) & Perfluorooctanesulfonic Acid (PFOS)

The purpose of this groundwater information sheet is to provide general information regarding a specific chemical constituent of concern. The information provided herein relates to wells (groundwater sources) used for public drinking water, not water served at the tap.

GENERAL INFORMATION	
Constituent of Concern	Perfluorooctanoic acid (PFOA), Perfluorooctanesulfonic acid (PFOS)
Aliases	PFOA: C8, perfluorooctanoate, pentadecafluorooctanoic acid, perfluorocaprylic acid PFOS: Perfluorooctane sulfonic acid; Perfluorooctylsulfonic acid; Perfluorooctane sulfonate
Chemical Formula	$C_8HF_{15}O_2$ (PFOA), $C_8HF_{17}O_3S$ (PFOA),
CAS No.	335-67-1 (PFOA), 1763-23-1 (PFOS)
STORET Code	C2806 (PFOA), C2805 (PFOS)
Related Compounds	Perfluorononanoic acid (PFNA), Perfluorooctanesulfonamide (PFOSA), and numerous other fluorinated telomers.
Summary	PFOA and PFOS are manmade fluorinated chemicals that are part of a larger group of emerging chemicals of concern referred to as per- and polyfluoroalkyl substances (PFASs). These synthetic compounds are persistent and have been found at low levels in the environment and in humans. Toxicity studies have indicated that PFOA and PFOS can cause developmental and other adverse effects in laboratory animals. Under a PFOA Stewardship Program with the US Environmental Protection Agency (US EPA), eight manufacturers eliminated PFOA from emissions and products in 2015. PFASs are not currently regulated. On July 13, 2018, the State Water Resources Control Board issued a drinking water notification level (NL) of 14 nanograms per liter (ng/L or parts per trillion) for PFOA and a NL of 13 ng/L PFOS. California has tested drinking water supplies for PFOA, PFOS, and PFASs since 2013 as required by US EPA under the Unregulated Contaminant Monitoring Rule (UCMR 3). The

	results are published on the US EPA website referenced below.

REGULATORY AND WATER QUALITY LEVELS

The US EPA has established a lifetime Health Advisory Level (HAL) for PFOA and PFOS of 70 ng/L. When both PFOA and PFOS are found in drinking water, the combined concentrations of PFOA and PFOS should be compared with the 70 ng/L HAL.

The State Water Resources Control Board (SWRCB) adopted the US EPA HAL of 70 ng/L as the California Response Level (RL). The SWRCB also established Notification Levels (NL) of 14 ng/L for PFOA and 13 ng/L for PFOS. When the NLs are exceeded, the Division of Drinking Water (DDW) recommends that the source be removed from service and treated. When the RL is exceeded, and concentrations cannot be reduced below the US EPA HAL, DDW recommends removing the source from service.
https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/PFOA_PFOS.html

Several states have groundwater quality regulations for PFOA. In West Virginia and Ohio, residents must be provided alternative drinking water when PFOA levels exceed 70 ng/L. Minnesota has adopted a Chronic Health Risk Limit of 300 ng/L for PFOA and PFOS in drinking water. In 2018, New Jersey recommended a health-based Maximum Contaminant Level (MCL) of 13 ng/L for PFOS, 14 ng/L for PFOA, and adopted an MCL for PFNA of 13 ng/L in drinking water.

Toxicological Data:

Acceptable/Tolerable Daily Intake (ADI/TDI): PFOA - 1.5 micrograms per kilogram per day (µg/kg/day), PFOS - 0.15 µg/kg/day (Schriks et al., 2009).

Reference Dose (RfD): Draft guidance indicates a RfD for PFOA of 0.02 µg/kg/day, and a RfD for PFOS of 0.03 µg/kg/day (US EPA, 2014[1])

Other health based advisory or guideline levels can be found in literature, but a complete list is beyond the scope of this fact sheet.

SUMMARY OF DETECTIONS IN PUBLIC DRINKING WATER WELLS

In 2012, US EPA revised the UCMR 3 to establish a new set of unregulated contaminants. Assessment monitoring (List 1 Contaminants) was required for all public water systems (PWS) serving more than 10,000 people and for the 800 representative PWS serving 10,000 or fewer people. Assessment monitoring was required of each PWS during a 12-month period from January 2013 – December 2015. PFOA, PFOS, and four other PFASs are included on the List 1 Contaminants. Results for California monitoring, and other participating states are published on the US EPA web site referenced below.

ANALYTICAL INFORMATION

Powerful analytical methods such as LC-MS-ESI (liquid chromatography-mass spectrometry-electrospray ionization) can detect PFOA and PFOS at the nanograms per liter level. For the UCMR 3 monitoring program, a LC/MS/MC-EPA Method 537 rev 1.1 was required with minimum reporting levels of 20 ng/L and 40 ng/L for PFOA and PFOS, respectively.

Based on California's new NLs of 14 ng/L (PFOA) and 13 ng/L (PFOS), lower reporting limits will be necessary. According to the US EPA Method 537 rev 1.1 documentation, lowest concentration minimum reporting levels (LCMRL) are 5.1 ng/L (PFOA) and 6.5 ng/L (PFOS). The LCMRL indicates the lowest true concentration for which the future recovery is predicted to fall, with 99% confidence, between 50 and 150% recovery (Shoemaker, et. al., 2009).

OCCURRENCE	
Anthropogenic Sources	According to the US EPA, PFASs are a class of chemicals not found naturally in the environment. PFOA and PFOS are the most extensively produced and studied of these chemicals and are very persistent in both the environment and the human body. These compounds are used to make materials resistant to stains, water-proof, and non-stick. Examples include: non-stick cookware, furniture, carpets, mattresses, clothing, and food packaging. Additional uses include fire suppression and friction modifiers for the aerospace, automotive, construction and electronic industries. PFOA can also form as a degradation byproduct from other types of PFASs. Some PFASs, including PFOA and PFOS are no longer manufactured in the United States (voluntary phase-out program), except for some accepted industrial processes such as in semiconductors, printed circuits, aviation equipment, defense, pesticides, and solar panels. Although most of these chemicals are no longer manufactured in the United States, other countries still produce PFOA and PFOS and products that contain them may be imported. According to the US EPA, manufactured goods include carpets, leather and apparel, textiles, paper and packaging, coatings, and rubber and plastics.
Natural Sources	PFASs are human made substances and are not found naturally in the environment.
History of Occurrence	Production of PFASs began in 1949, with peak production years from 1970 to 2002. In 2006, the US EPA invited eight companies producing PFASs to join a global stewardship program with a purpose to: • Achieve a 95 percent reduction in facility emissions to all media of PFOA, precursor chemicals that can break down to PFOA and other chemicals, and product content levels of these chemicals. • Commit to working toward the elimination of these chemicals from emissions and products by 2015. According the US EPA, all eight companies have met the program goals.

Contaminant Transport Characteristics	PFASs are characterized by a hydrophobic and lipophobic tail, and a polar and hydrophilic head. Perfluoroalkyl acids, including PFOA and PFOS, have high solubility and low sorption (log K_{oc} 2.06 for PFOA and 2.57 for PFOS, respectively). PFOS and PFOA can result from degradation of precursor substances but are stable end products themselves (US EPA, 2014[2]). Sorption to soil and sediment increases with carbon chain length and sulfonates are also more sportive than carboxylates. PFOA has been detected in groundwater at several sites in the United States, most frequently in locations associated with manufacturing and disposal of PFOA and related compounds. While the atmospheric half-life is 90 days for PFOA and 114 days for PFOS, their half-life in water is greater than 90 years for PFOA and greater than 41 years for PFOS (US EPA, 2014[2]).

REMEDIATION & TREATMENT TECHNOLOGIES

In treatment systems, activated carbon (GAC) has been extensively studied and for PFAS removal and has been shown to have success in removing longer chain PFAS like PFOA and PFOS. Reverse osmosis and nano-filtration are also effective in removing PFAS from water. Anionic resin-based treatment systems are currently being tested at a landfill in Minnesota. Removing PFASs from solids may require excavation and landfilling or incineration, or desorption through ex situ mixing or thermal processes (ITRC, 2018).

Recent evidence suggests that many other degradation techniques may be effective. These methods include photocatalytic oxidation, photochemical oxidation, photochemical reduction, thermally-induced reduction, and sonochemical pyrolysis. The effectiveness depends upon the initial concentration of the constituent, background water chemistry, and degradation time.

HEALTH EFFECT INFORMATION

Potential human exposure pathways include ingestion of food and water, inhalation of particulate matter containing PFAS, and use of certain consumer products containing PFAS. Both PFOA and PFOS have been identified in drinking water supplies. These locations were typically associated with industrial use or disposal locations as well as manufacturing sites.

The half-life of PFOA and PFOS in humans range from 2 to 9 years. Acute and intermediate-duration oral studies on laboratory rodents have raised concerns about potential developmental, reproductive and other systemic effects of PFOS and PFOA. Studies indicate that continued exposure to low levels of PFOA in drinking water may result in adverse health effects. The ingestion of PFOA-contaminated water was found to cause adverse effects on mammary gland development in laboratory mice. One study indicated that exposure to PFOS can affect the neuroendocrine system in laboratory rats; however, the mechanism by which PFOS affects brain neurotransmitters is unclear. The animal studies also show reduced birth

size, physical developmental delays, endocrine disruption, and neonatal mortality. The US EPA has also identified suggestive evidence that PFOS and PFOA may cause cancer (US EPA, 2017).

In December of 2009, California's Office of Environmental Health Hazard Assessment (OEHHA) prioritized PFOA and related salts, transformation, and degradation products for possible listing under Proposition 65. Listing under Proposition 65 would require manufacturers to disclose the presence of PFOA as a potential carcinogenic compound in materials in which PFOA and related compounds were present.

In August 2015, OEHHA proposed that PFOA and PFOS be reviewed by the Developmental and Reproductive Toxicant Identification Committee (DARTIC) under Proposition 65. These chemicals were not proposed for listing, however OEHHA is currently seeking public comments and the DARTIC consultation regarding if these chemicals should proceed to the next stage of the listing process.

KEY REFERENCES

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EBA's PCHMA, May 31, 2019

May 31, 2019

Mr. Dave Hung
City of Hayward
777 B Street
Hayward, CA 94541-5007

RE: REPORT OF INVESTIGATION
PRE-CONSTRUCTION HAZARDOUS MATERIALS ASSESSMENT
FIRE STATION 6
1401 WEST WINTON
HAYWARD, CALIFORNIA
EBA Project Number: 18-2669

Dear Mr. Hung:

The City of Hayward has contracted with EBA Engineering (EBA) to conduct a Pre-Construction Hazardous Materials Assessment (PCHMA) at 1401 West Winton Avenue, in Hayward, California (see Figure 1). The scope of work consisted of drilling a total of 36 exploratory soil borings and collecting soil samples for chemical analysis. The purpose of this work was to provide adequate data to allow for an evaluation of the soil for landfill acceptance and disposal. Further information regarding the work scope is provided in the sections below.

FIELD INVESTIGATION

Soil Boring Advancement

On April 15, 2019, EBA personnel supervised the drilling of 36 soil borings (B-1A through B-12A, B-25A through B-28A, B-40A through B-43A, B-52A through B-55A, OCP-1A through OCP-1D, OCP-2A through OCP-2D, and OCP-3A through OCP-3D). The soil borings were advanced by Cascade Drilling, LP, (Cascade) of Richmond, California, a licensed C-57 contractor.

Prior to the start of drilling activities, the drilling locations were marked for Underground Service Alert (USA) in order to locate subsurface utilities.

Sixteen soil borings were advanced using a direct push technique to a maximum depth of four feet below ground surface (BGS). The remaining 20 soil borings were advanced using a hand auger technique to a maximum depth of one feet BGS.

Soil Sample Collection

On April 15, 2019, EBA personnel collected soil samples from B-1A through B-12A, B-25A through B-28A, B-40A through B-43A, B-52A through B-55A, OCP-1A through OCP-1D, OCP-2A through OCP-2D, and OCP-3A through OCP-3D for chemical analysis. In addition, soil samples were screened for the presence of volatile organic compounds (VOCs) during the course of drilling using a photo-ionization detector (PID).

Soil samples retained for chemical analysis were collected in 2-inch diameter by 6-inch long stainless steel tubes, capped, labeled, logged on a chain-of-custody (C-O-C) form and placed under refrigerated conditions pending transport to K Prime, Inc. (K Prime), a California State-certified analytical laboratory located in Santa Rosa, California, for chemical analysis. The Certified Analytical Reports (CARs) and corresponding C-O-C records are included in Appendix D of this Report. Soil cuttings that were generated as part of the drilling activities were retained and stored on-site in a properly labeled DOT-17H 55-gallon steel drum pending characterization and disposal.

Equipment Decontamination and Borehole Abandonment

The drilling and soil sampling equipment was triple-rinsed in an Alconox® solution and then rinsed with potable water. Decontamination water generated during advancement of the boreholes were containerized and disposed of under City of Santa Rosa Discharge Permit #SR-GW7010. Drill cuttings generated during advancement of the boreholes, were containerized in properly labeled DOT 17H 55-gallon drums and are currently stored onsite pending characterization and disposal. It is anticipated that the soil in the drums will be disposed of during excavation activities. The soil borings were backfilled to ground surface grade using cement grout.

ANALYTICAL TESTING

Soil samples retained for chemical analysis were composited (B-9A/10A/11A/12A-COMP, B-3A/4A/5A-COMP, B-1A/2A-COMP, B-6A/7A/8A-COMP, B-25/26/27/28-A-COMP, B-40/41/42/43-A-COMP, B-52/53/54/55-A-COMP, OCP-1A/B/C/D-COMP, OCP-2A/B/C/D-COMP, OCP-3A/B/C/D-COMP) and analyzed for the following constituents respectively, in accordance with the applicable Environmental Protection Agency (EPA) method(s) and individual requirements from licensed disposal facilities:

- *Wet Chromium (STLC)* — *EPA Method 6020A*
- *Lead (TCLP)* — *EPA Method 6020A*
- *Semi-Volatile Organic Compounds (SVOC's)* — *EPA Method 8270*
- *Organochlorine Pesticides (OCPs)* — *EPA Method 8081*

RESULTS

Soil Sample Results

SVOCs

No SVOCs were detected in soil at or above their respective reporting limits (RLs). As such and given the lack of SVOC impacts at the site, no Table was presented herein.

Metals

A chromium extraction was prepared for six samples (B-1A/2A-COMP, B-9A/10A/11A/12A-COMP, B-3A/4A/5A-COMP, B-25/26/27/28-A-COMP, B-40/41/42/43-A-COMP, B-52/53/54/55-A-COMP) by the laboratory and analyzed by the Soluble Limit Threshold Concentration (STLC) method. The results of the STLC analysis demonstrates concentrations of chromium are below the threshold of Title 22 and does not exceed landfill requirements.

The Toxicity Characteristic Leaching Procedure (TCLP) was performed on a selected sample (B-25/26/27/28-A-COMP) to determine the mobility of lead within the soil. Lead was not detected at or above the RL. The results of the TCLP analysis demonstrates the concentration of lead is below the threshold of Title 22 and does not exceed landfill requirements. Please refer to Tables 2 and 3, Appendix B for STLC and TCLP data.

OCPs

Soil sample OCP-1A/B/C/D-COMP had detections of 4,4'-DDE, 4,4'-DDD, 4,4'-DDT and chlordane at levels above their respective RLs, but below the threshold of Title 22. Soil sample OCP-2A/B/C/D-COMP had a detection of chlordane above the RL, but below the threshold of Title 22. It should be noted that all the OCP concentration values are below the San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) Environmental Screening Levels (ESLs) for Commercial/Industrial Shallow Soil Exposure and for construction workers. All detections of OCPs do not exceed landfill requirements. Please refer to Table 1, Appendix B for OCP data.

LANDFILL ACCEPTANCE

Please see Appendix C for landfill acceptance documents related to the acceptance of Class 2 soil to Hay Road Landfill in Vacaville, California, Potrero Hills Landfill in Suisin City, California, Republic Services Landfill in Pittsburg, California, and Altamont Landfill & Resource Recovery in Livermore, California, all licensed disposal facilities.

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are presented for your review and consideration;

- A review of the soil sampling data found that samples analyzed for chromium, lead, OCPs, and SVOCs displayed concentrations below the threshold of Title 22, and therefore do not exceed landfill requirements.

LIMITATIONS

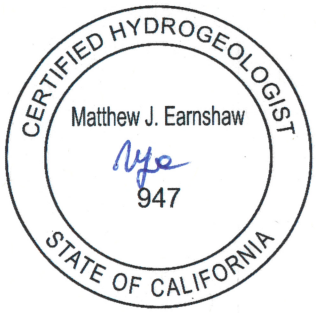
This Report was prepared in accordance with generally accepted standards of environmental practice at the place and time this investigation was performed. This warranty is in lieu of all other warranties, either expressed or implied. This investigation was conducted solely for the purpose of evaluating environmental conditions of soil. No soil engineering or geotechnical references are implied or should be inferred. Evaluation of the environmental conditions at the site for the purpose of this investigation is made from a limited number of observation points. Subsurface conditions may vary away from the data points available. Additional work, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of investigation. This Report has been prepared solely for the Client and any reliance on this report by third parties shall be at such party's sole risk.

If you should have any questions regarding this Report, please contact EBA at (707) 544-0784.

Sincerely,
EBA ENGINEERING

Ian Penn
Staff Geologist

Matthew J. Earnshaw, P.G., C.Hg., QED
Senior Geologist



ATTACHMENTS:

APPENDIX A – FIGURES
APPENDIX B – TABLES
APPENDIX C – LANDFILL ACCEPTANCE FORMS
APPENDIX D – CERTIFIED ANALYTICAL REPORTS AND CHAIN OF CUSTODY DOCUMENTATION
APPENDIX E – DRILLERS PERMIT

REFERENCES

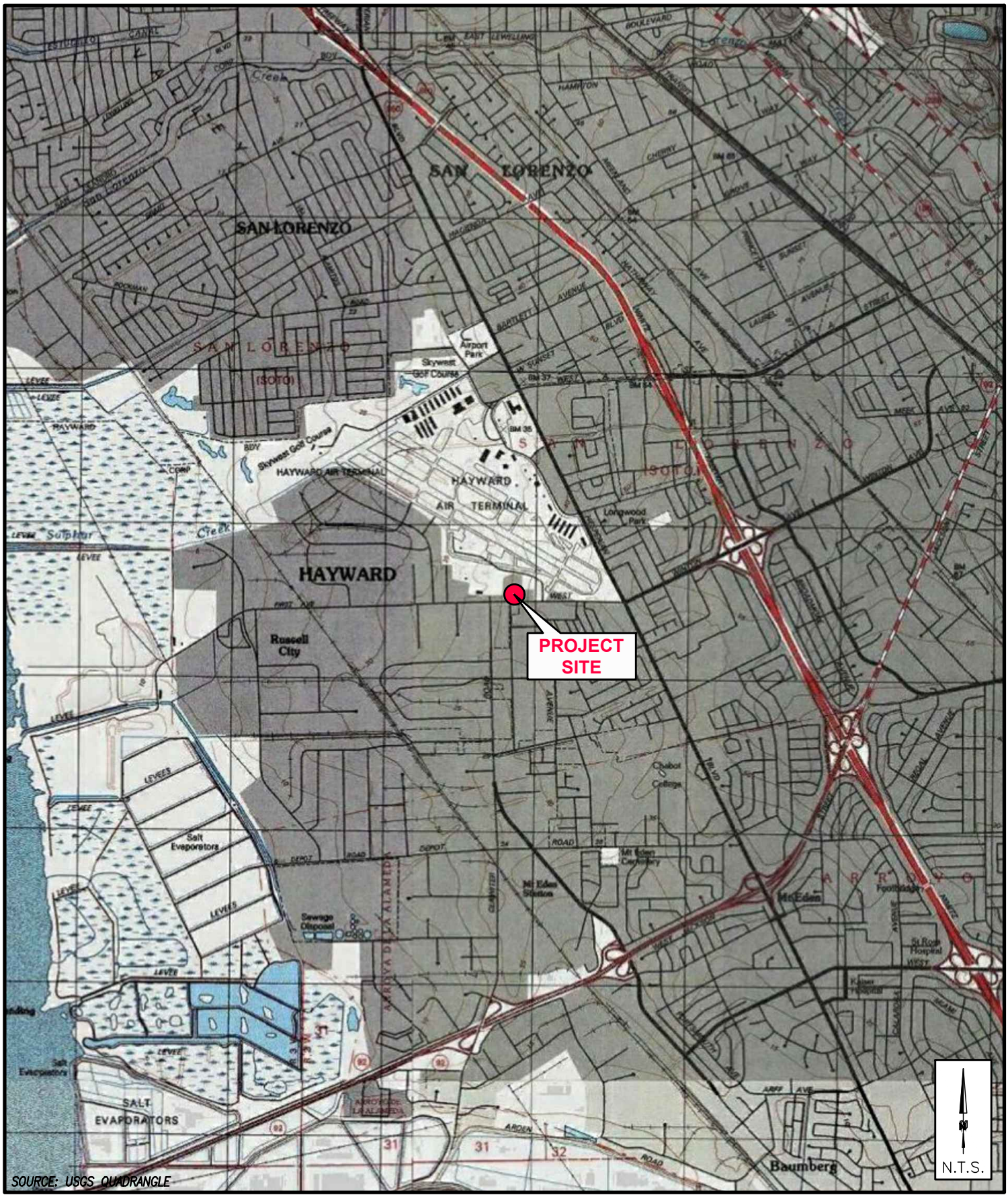
DTSC, *Information Advisory – Clean Imported Fill Material*. October 2001.

San Francisco Bay Regional Water Quality Control Board, Tier 1 Environmental Screening Levels, January 2019 (Rev.1).

APPENDIX A

FIGURES

L:\env\project\2669 COH PCHMA\CAD File\Fig.1 - Location Map.dwg, 5/17/2019 12:15:10 PM



SOURCE: USGS QUADRANGLE

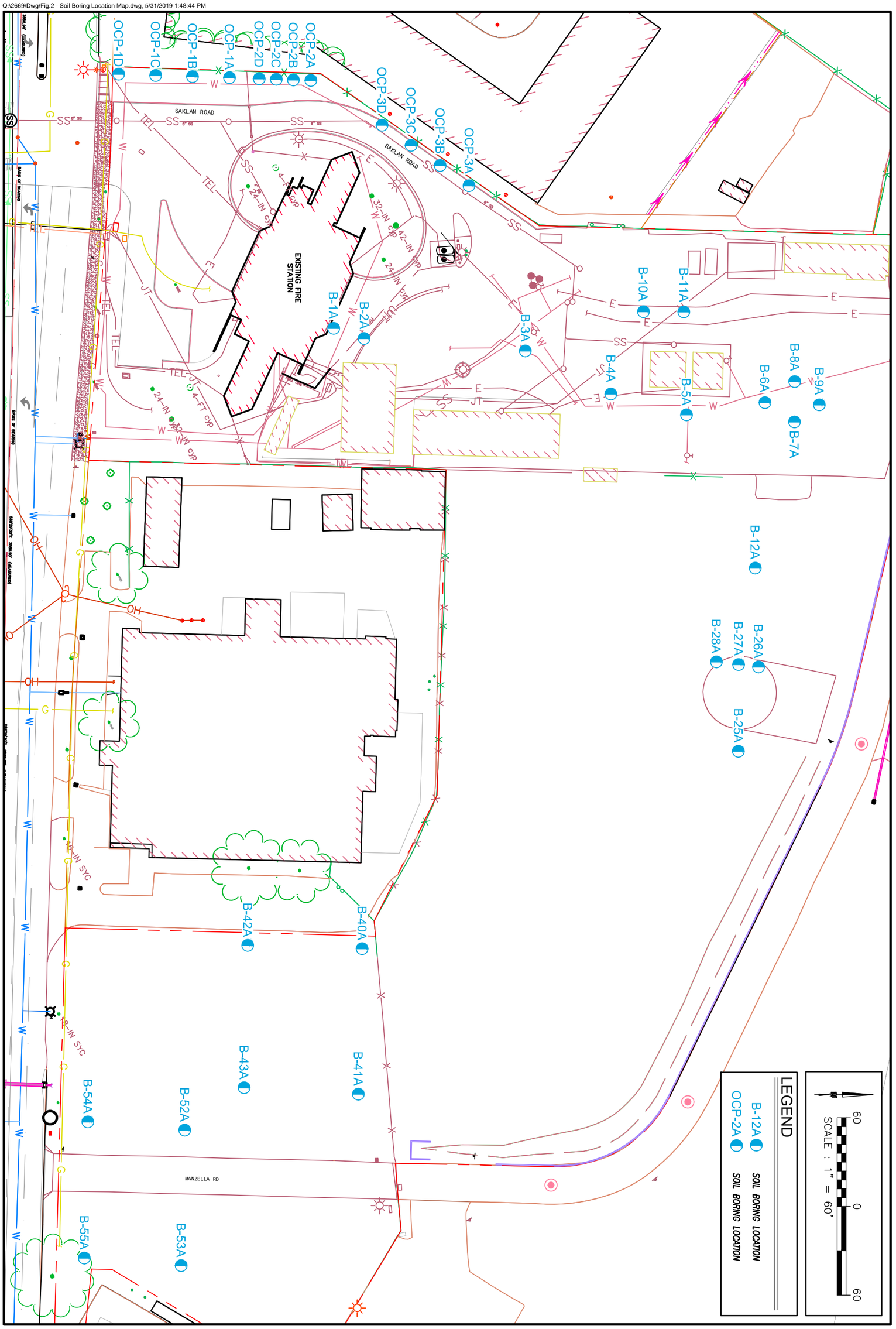
EBA ENGINEERING
825 SONOMA AVENUE
SUITE C
SANTA ROSA, CA 95404
TEL: (707) 544-0784

LOCATION MAP

CITY OF HAYWARD FIRE STATION #6
1401 WEST WINTON AVENUE
HAYWARD, CALIFORNIA

FIGURE
1
18-2669

Q:\2669\Dwg\Fig.2 - Soil Boring Location Map.dwg, 5/31/2019 1:48:44 PM



EBA ENGINEERING
825 SONOMA AVENUE
SUITE C
SANTA ROSA, CA 95404
TEL: (707) 544-0784

SOIL BORING LOCATION MAP

CITY OF HAYWARD FIRE STATION #6
1401 WEST WINTON AVENUE
HAYWARD, CALIFORNIA

FIGURE
2
18-2669

APPENDIX B

TABLES

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
ORGANOCHLORINE PESTICIDES (OCPs)
1401 WEST WINTON STREET, HAYWARD, CALIFORNIA

Sample ID	Date Sampled	Depth (feet BGS)	4,4'-DDE	4,4'-DDD	4,4'-DDT	CHLORDANE
			µg/kg			
OCP-1A/B/C/D-COMP	4/15/2019	1'	**5.39**	**2.29**	**5.02**	**19.5**
OCP-2A/B/C/D-COMP	4/15/2019	1'	<2.00	<2.00	<2.00	**237**
OCP-3A/B/C/D-COMP	4/15/2019	1'	<2.00	<2.00	<2.00	<2.00
Recology Acceptance Criteria			1,000	1,000	1,000	2,500
ESL			8,300	12,000	8,500	2,200

OCPs = Organochlorine Pesticides

All OCPs not shown in Table 1 were not detected at or above the reporting limit

BGS = Below Ground Surface

µg/kg = micrograms per kilogram.

ESL = Environmental Screening Level (Updated 2019) - Commercial/Industrial Shallow Soil Exposure

TABLE 2
SOIL SAMPLE ANALYTICAL RESULTS
STLC ANALYSIS
1401 WEST WINTON STREET, HAYWARD, CALIFORNIA

Sample ID	Date Sampled	Depth (feet BGS)	Wet Chromium
			mg/L
B-1A/2A-COMP	4/15/2019	4'	**0.172**
B-3A/4A/5A-COMP	4/15/2019	4'	**0.079**
B-9A/10A/11A/12A-COMP	4/15/2019	4'	**0.072**
B-25/26/27/28-A-COMP	4/15/2019	4'	<0.050
B-40/41/42/43-A-COMP	4/15/2019	1'	**0.172**
B-52/53/54/55-A-COMP	4/15/2019	1'	**0.104**
Recology Acceptance Criteria			*5*

BGS = Below Ground Surface

mg/L = milligrams per liter

STLC = Soluble Threshold Limit Concentration

TABLE 3
SOIL SAMPLE ANALYTICAL RESULTS
TCLP ANALYSIS
1401 WEST WINTON STREET, HAYWARD, CALIFORNIA

Sample ID	Date Sampled	Depth (feet BGS)	Lead
			mg/L
B-25/26/27/28-A-COMP	4/15/2019	4'	<0.005
Recology Acceptance Criteria			*5*

BGS = Below Ground Surface

mg/L = milligrams per liter

TCLP = Toxicity Characteristic Leaching Procedure

APPENDIX C

LANDFILL ACCEPTANCE FORMS

WASTE MANAGEMENT

EZ Profile™

Requested Facility: Altamont Landfill & Resource Recovery ☐ Unsure Profile Number: 637336CA
☐ Multiple Generator Locations (Attach Locations) ☐ Request Certificate of Disposal ☐ Renewal? Original Profile Number: _____

A. GENERATOR INFORMATION (MATERIAL ORIGIN)

1. Generator Name: City of Hayward - Public Works
2. Site Address: 777 B Street
   (City, State, ZIP) Hayward CA 94540
3. County: Alameda
4. Contact Name: Mr. Dave Hung
5. Email: _____
6. Phone: (510) 583-4071 7. Fax: _____
8. Generator EPA ID: _____ ☑ N/A
9. State ID: _____ ☑ N/A

B. BILLING INFORMATION ☐ SAME AS GENERATOR

1. Billing Name: EBA Engineering
2. Billing Address: 825 Sonoma Avenue
   (City, State, ZIP) Santa Rosa CA 95404
3. Contact Name: Matthew Earnshaw
4. Email: mearshaw@ebagroup.com
5. Phone: (707) 544-0784 6. Fax: _____
7. WM Hauled? ☐ Yes ☐ No
8. P.O. Number: _____
9. Payment Method: ☐ Credit Account ☐ Cash ☐ Credit Card

C. MATERIAL INFORMATION

1. Common Name: Arsenic Contaminated Soil
   Describe Process Generating Material: ☐ See Attached
   Background arsenic - naturally occurring
2. Material Composition and Contaminants: ☐ See Attached

1. Arsenic	4.1 - 7.8 mg/kg
2. Soil	100 %
3.	
4.	
Total comp. must be equal to or greater than 100%	≥100%

3. State Waste Codes: _____ ☐ N/A
4. Color: Bown
5. Physical State at 70˚F: ☐ Solid ☐ Liquid ☑ Other: See Report
6. Free Liquid Range Percentage: _____ to _____ ☑ N/A
7. pH: _____ to _____ ☑ N/A
8. Strong Odor: ☐ Yes ☑ No Describe: _____
9. Flash Point: ☐ <140˚F ☐ 140˚–199˚F ☐ ≥200˚ ☑ N/A

D. REGULATORY INFORMATION

1. EPA Hazardous Waste? ☐ Yes* ☑ No
   Code: _____
2. State Hazardous Waste? ☐ Yes ☑ No
   Code: _____
3. Is this material non-hazardous due to Treatment, Delisting, or an Exclusion? ☐ Yes* ☑ No
4. Contains Underlying Hazardous Constituents? ☐ Yes* ☑ No
5. From an industry regulated under Benzene NESHAP? ☐ Yes* ☑ No
6. Facility remediation subject to 40 CFR 63 GGGGG? ☐ Yes* ☑ No
7. CERCLA or State-mandated clean-up? ☐ Yes* ☑ No
8. NRC or State-regulated radioactive or NORM waste? ☐ Yes* ☑ No

***If Yes, see Addendum (page 2) for additional questions and space.**

9. Contains PCBs? → If Yes, answer a, b and c. ☐ Yes ☑ No
   a. Regulated by 40 CFR 761? ☐ Yes ☐ No
   b. Remediation under 40 CFR 761.61 (a)? ☐ Yes ☐ No
   c. Were PCB imported into the US? ☐ Yes ☐ No
10. Regulated and/or Untreated Medical/Infectious Waste? ☐ Yes ☑ No
11. Contains Asbestos? ☐ Yes ☑ No
    → If Yes: ☐ Non-Friable ☐ Non-Friable – Regulated ☐ Friable

E. ANALYTICAL AND OTHER REPRESENTATIVE INFORMATION

1. Analytical attached ☑ Yes
   Please identify applicable samples and/or lab reports:
   Analytic data was amended on 11/27/18 to address lower SVOC MDLs to comply with non-RCRA characterization as per request by Waste Management. Please see additional analytical results.
2. Other information attached (such as MSDS)? ☐ Yes

F. SHIPPING AND DOT INFORMATION

1. ☑ One-Time Event ☐ Repeat Event/Ongoing Business
2. Estimated Quantity/Unit of Measure: 8680
   ☑ Tons ☐ Yards ☐ Drums ☐ Gallons ☐ Other: _____
3. Container Type and Size: _____
4. USDOT Proper Shipping Name: ☑ N/A

G. GENERATOR CERTIFICATION (PLEASE READ AND CERTIFY BY SIGNATURE)

By signing this EZ Profile™ form, I hereby certify that all information submitted in this and all attached documents contain true and accurate descriptions of this material, and that all relevant information necessary for proper material characterization and to identify known and suspected hazards has been provided. Any analytical data attached was derived from a sample that is representative as defined in 40 CFR 261 - Appendix 1 or by using an equivalent method. All changes occurring in the character of the material (i.e., changes in the process or new analytical) will be identified by the Generator and be disclosed to Waste Management prior to providing the material to Waste Management.

If I am an agent signing on behalf of the Generator, I have confirmed with the Generator that information contained in this Profile is accurate and complete.

Name (Print): Matthew Earnshaw Date: 05/14/2019
Title: Senior Geologist
Company: EBA Engineering

Certification Signature

Matthew Earnshaw
92bac07311...

©2015 Waste Management

Profile Name: Hayward Fire Station 6

ID: a7110462-fa3b-4b2f-a627-1baa46d650cb

Profile Approval

GENERATOR

Name: City of Hayward - Public Works

Address: 777 B Street City: Hayward State: CA

Postal Code: 94540 County: Alameda County

MATERIAL ORIGIN

Address: 1401 West Winton Avenue City: Hayward State: CA

Postal Code: 94540 County: Alameda County

EPA ID: N/A State ID: N/A

DESTINATION FACILITY

Name: Potrero Hills LF

Address: 3675 Potrero Hills Lane City: Suisun State: CA

Postal Code: 94585 County:

BILLING

Name: EBA Engineering

Address: 825 Sonoma Avenue City: Santa Rosa State: CA

Postal Code: 95404 County: Sonoma

MATERIAL

Common Name: Soil

Generation Process:

Preferred Disposal Methods: H132

State Waste Codes: N/A

APPROVAL

Status: Approved

Approval #: PHLF-18-931

Approved By: Nichole Chambers

Approved On: 11/09/2018

Expires On: 11/09/2019

Approved Volume: 8680 metric tons

Approved Disposal Methods:

Conditions: Approved for ADC.

DocuSign Envelope ID: B737FBFE-FE6E-44EE-A62C-5299C9F17AB9

WASTE DISPOSAL AGREEMENT

This Waste Disposal Agreement ("Agreement") is made by and between **Recology Hay Road** ("Company"), and **EBA Engineering** ("Customer") and is effective when signed by both parties below (the "Effective Date").

The parties agree as follows:

1. **Definitions**:
   a. "Landfill" means the Hay Road landfill located at 6426 Hay Rd., Vacaville, CA 95687.
   b. "Conforming Waste" means the waste type listed in Section 2 below, and is a material that requires the application of special treatment, handling, or disposal practices beyond those normally required for solid waste in accordance with applicable law.
   c. "Non-Conforming Materials" means materials or substances that (a) do not conform to Customer's Waste Disposal Application; (b) do not comply with all laws and regulations regarding the generation, removal, packaging, characterization, documentation, transportation and delivery of the Conforming Waste; or (c) Company proves, through accepted analytical methods, do not substantially conform to Customer's Waste Disposal Application.
   d. "Waste Disposal Application" means a written description of the Conforming Waste, in such form required by Company, in its sole discretion.

2. **Job Description**: This Agreement only applies to the following job:

Recology Hay Road Job Number: **J#7810**
Project Name: **Site Development and Grading**
Conforming Waste Type: **contaminated soil (SoilC)**
Master Account: **52209**
Agreement Expiration Date: **3/30/2020**

3. **Delivery and Acceptance**: Customer will deliver and Company will accept all Conforming Waste that conforms with the Waste Disposal Application and the terms of this Agreement. For clarity, Company will not be deemed to have accepted Non-Conforming Materials. Company may perform independent analyses at any time to verify any materials conform to the Waste Disposal Application. Notwithstanding anything in this Agreement to the contrary, Company may reject Conforming Waste (i) during inclement weather, (ii) if Customer delivers more Conforming Waste than it scheduled in accordance with Section 9 below, or (iii) if Company has exceeded the tonnage limits under the Landfill's permits.

4. **Non-Conforming Materials**: Company shall have the right to do either of the following if Customer delivers any Non-Conforming Materials:
   a. Reject the Non-Conforming Materials, and Customer shall remove, at its own expense, such Non-Conforming Materials from the Landfill; or
   b. Accept the Non-Conforming Materials, and Customer shall pay the then-current rate per ton charged by Company for such type of solid waste at the Landfill.

5. **Fees**:
   a. Disposal Fee: Customer shall pay Company **$13.00 per ton** of Conforming Waste it delivers to the Landfill.
   b. Analytical Fee: Customer shall also pay Company a one-time analytical fee of $200. **WAIVED.**
   c. Overweight Fee: Customer shall also pay Company a surcharge of $20 per delivery if the delivery vehicle exceeds the gross maximum weight allowable by law, as determined by Company's inbound scale at the Landfill.

   Customer shall pay Company all fees within 30 days of receipt of invoice. Past due invoices will incur interest at a rate of 1.5% per month.

DocuSign Envelope ID: B737FBFE-FE6E-44EE-A62C-5299C9F17AB9

6. **Term and Termination**: The term of this Agreement is set forth in Section 2 above. This Agreement may be terminated by either party if the other party breaches any of its obligations under this Agreement. Furthermore, either party may terminate this Agreement for convenience upon 60 days' prior written notice.

7. **Indemnification**: To the fullest extent permitted by law, Customer shall indemnify, hold harmless, and defend Company, including its directors, officers, agents, employees, affiliates, parents and subsidiaries, harmless from and against any and all claims, including demands, actions, damages, loss, costs, expenses, and attorney fees arising out of or resulting from (a) any negligent act, error or omission by Customer, in any way related to Customer's obligations under the terms of this Agreement, (b) a breach of the terms of this Agreement; (c) for failure of Customer or its agents, employees or subcontractors to comply with applicable law.

8. **Permits**: Customer shall submit copies of all permits, approvals, certificates and evidence of insurance reasonably requested by Company.

9. **Scheduling Deliveries**: Customer shall schedule all deliveries of Conforming Waste at least 24 hours in advance by calling (707) 564-0810 anytime between 8am and 4pm, Monday through Friday.

10. **Miscellaneous**:
    a. This Agreement shall be construed, enforced, governed, and interpreted by and in accordance with California law.
    b. This Agreement (and any attachments hereto) constitutes the entire agreement between Company and Customer as to the subject matter hereof. It supersedes all prior communications, representations, or agreements, oral or written, with respect to the subject matter hereof. Any modification of this Agreement must be in writing and signed by the party sought to be bound thereby.
    c. The provisions of this Agreement shall be severable and the invalidity or unenforceability of any provision shall not affect the validity and enforceability of the other provisions hereof. If any provision of this Agreement is unenforceable for any reason whatsoever, such provision shall be given effect to the extent that it may be enforceable.
    d. Each party hereto warrants and represents to the other party that such party has the full right, power and authority to enter into this Agreement and has obtained all necessary consents and approvals to consummate the transaction contemplated hereby.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be duly executed as of the Effective Date.

EBA Engineering	**Recology Hay Road**
	DocuSigned by: Lisa Rosales 5CEFD18F30CF477...
By: _____	By: _____
Name: Matt Earnshaw	Name: Lisa Rosales
Title: Vice President	Title: Sales Manager
Date: _____	Date: 4/10/2019

REPUBLIC SERVICES, INC.

Republic Services, Inc.

18500 N. Allied Way, Phoenix, AZ 85054

SPECIAL WASTE DEPARTMENT DECISION

	Waste Profile #	Expiration Date	
	42121820059	12/31/2019	

I. Decision Request: ☑ Initial ☐ Recertification ☐ Change

Disposal Facility: 4212 - Keller Canyon L/F

Generator Name: City of Hayward

Generator Site Address: 1401 West Winton Avenue

City: Hayward	County:	State: CA	Zip:

Name of Waste: Non Haz Soil

Estimated Annual Volume: 6200 Cubic Yards

II. Special Waste Department Decision: ☑ Approved ☐ Rejected

Management Method(s): ☑ Landfill ☐ Solidification ☐ Bioremediation ☐ Deep Well ☐ Transfer Facility

Problematic Special Waste according to Republic? ☐ Yes ☑ No

If yes, which one?

Approved by Special Waste Review Committee? ☐ Yes ☐ No ☑ Not Applicable

Precautions, Conditions or Limitations on Approval

Special Waste Analyst Signature: Holly Wilson **Name (Printed):** Holly Wilson

Date: 5/6/2019

III. Facility Decision: ☐ Approved ☐ Rejected

Precautions, Conditions or Limitations on Approval

By signing below, the General Manager or Designee agrees that a fully executed Special Waste Service Agreement is on file for this profile and that the special waste file is complete.

General Manager or Designee: _____ **Name (Printed):** _____

Date: 5/6/2019

REPUBLIC SERVICES, INC.

Republic Services, Inc.

18500 N. Allied Way, Phoenix, AZ 85054

SPECIAL WASTE DEPARTMENT DECISION

	Waste Profile #	Expiration Date	
	3850196876	12/31/2019	

I. Decision Request: ☑ Initial ☐ Recertification ☑ Change

Disposal Facility: 3850 - Vasco Road Landfill

Generator Name: City of Hayward

Generator Site Address: 1401 West Winton Avenue

City: Hayward	County:	State: CA	Zip:

Name of Waste: Non Haz Soil

Estimated Annual Volume: 6200 Cubic Yards

II. Special Waste Department Decision: ☑ Approved ☐ Rejected

Management Method(s): ☑ Landfill ☐ Solidification ☐ Bioremediation ☐ Deep Well ☐ Transfer Facility

Problematic Special Waste according to Republic? ☐ Yes ☑ No

If yes, which one?

Approved by Special Waste Review Committee? ☐ Yes ☐ No ☑ Not Applicable

Precautions, Conditions or Limitations on Approval

Per the Special Waste Profile Change form dated 5/08/2019, the Generator has also requested disposal at Vasco Road Landfill. That landfill is approved. All conditions of the original profile and approval (#42121820059) remain in effect.

Special Waste Analyst Signature: Holly Wilson **Name (Printed):** Holly Wilson

Date: 5/9/2019

III. Facility Decision: ☐ Approved ☐ Rejected

Precautions, Conditions or Limitations on Approval

By signing below, the General Manager or Designee agrees that a fully executed Special Waste Service Agreement is on file for this profile and that the special waste file is complete.

General Manager or Designee: _____ **Name (Printed):** _____

Date: 5/9/2019

APPENDIX D

CERTIFIED ANALYTICAL REPORTS

AND

CHAIN OF CUSTODY DOCUMENTATION

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 4/26/2019

TO: MR. MATT EARNSHAW
EBA ENGINEERING
825 SONOMA AVENUE
SANTA ROSA, CA 95404

Phone: 707-544-0784
Fax: 707-544-0866
Email: dataeba1@ebagroup.com

ACCT: 9986
PROJ: 2669

FROM: Richard A. Kagel, Ph.D.
Laboratory Director

RAK
by AB
4/26/19

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT 2669

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	TIME	KPI LAB #
B-9A	SOIL	4/15/2019	10:00	181564
B-10A	SOIL	4/15/2019	10:36	181565
B-11A	SOIL	4/15/2019	10:31	181566
B-12A	SOIL	4/15/2019	9:10	181567
B-3A	SOIL	4/15/2019	12:35	181568
B-4A	SOIL	4/15/2019	11:35	181569
B-5A	SOIL	4/15/2019	11:15	181570
B-1A	SOIL	4/15/2019	12:53	181571
B-2A	SOIL	4/15/2019	12:45	181572
B-6A	SOIL	4/15/2019	10:20	181573
B-7A	SOIL	4/15/2019	10:05	181574
B-8A	SOIL	4/15/2019	10:55	181575
B-9A/10A/11A/12A-COMP	SOIL	4/15/2019	NA	181600
B-3A/4A/5A-COMP	SOIL	4/15/2019	NA	181601
B-1A/2A-COMP	SOIL	4/15/2019	NA	181602
B-6A/7A/8A-COMP	SOIL	4/15/2019	NA	181603

The above listed sample group was received on 4/16/2019 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

K PRIME, INC.
LABORATORY REPORT

SAMPLE ID: B-1A/2A-COMP
LAB NO: 181602
DATE SAMPLED: 04/15/2019
TIME SAMPLED: NA
BATCH #: 041219S1
DATE EXTRACTED: 04/17/2019
DATE ANALYZED: 04/24/2019

K PRIME PROJECT: 9986
CLIENT PROJECT: 2669

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	330	ND
ACENAPHTHYLENE	208-96-8	330	ND
ANTHRACENE	120-12-7	330	ND
BENZO (A) ANTHRACENE	56-55-3	330	ND
BENZO (B) FLUORANTHENE	205-99-2	330	ND
BENZO (K) FLUORANTHENE	207-08-9	330	ND
BENZO (A) PYRENE	50-32-8	330	ND
BENZO (G,H,I) PERYLENE	191-24-2	330	ND
BENZYL ALCOHOL	100-51-6	330	ND
BUTYL BENZYL PHTHALATE	85-68-7	330	ND
BIS (2-CHLOROETHYL) ETHER	111-44-4	330	ND
BIS (2-CHLOROETHOXY) METHANE	111-91-1	330	ND
BIS (2-CHLOROISOPROPYL) ETHER	108-60-1	330	ND
BIS (2-ETHYLHEXYL) PHTHALATE	117-81-7	330	ND
4-BROMOPHENYL PHENYL ETHER	101-55-3	330	ND
4-CHLOROANILINE	106-47-8	330	ND
2-CHLORONAPHTHALENE	91-58-7	330	ND
4-CHLOROPHENYL PHENYL ETHER	7005-72-3	330	ND
CHRYSENE	218-01-9	330	ND
DIBENZO (A,H) ANTHRACENE	53-70-3	330	ND
DIBENZOFURAN	132-64-9	330	ND
DI-N-BUTYLPHTHALATE	84-74-2	330	ND
1,2-DICHLOROBENZENE	95-50-1	330	ND
1,3-DICHLOROBENZENE	541-73-1	330	ND
1,4-DICHLOROBENZENE	106-46-7	330	ND
3,3'-DICHLOROBENZIDINE	91-94-1	660	ND
DIETHYLPHTHALATE	84-66-2	330	ND
DIMETHYL PHTHALATE	131-11-3	330	ND
2,4-DINITROTOLUENE	121-14-2	330	ND
2,6-DINITROTOLUENE	606-20-2	330	ND
DI-N-OCTYL PHTHALATE	117-84-0	330	ND
DIPHENYLAMINE	122-39-4	330	ND
FLUORANTHENE	206-44-0	330	ND
FLUORENE	86-73-7	330	ND
HEXACHLOROBENZENE	118-74-1	330	ND
HEXACHLOROBUTADIENE	87-68-3	330	ND
HEXACHLOROCYCLOPENTADIENE	77-47-4	330	ND
HEXACHLOROETHANE	67-72-1	330	ND
INDENO (1,2,3-CD) PYRENE	193-39-5	330	ND
ISOPHORONE	78-59-1	330	ND

K PRIME, INC.
LABORATORY REPORT

SAMPLE ID: B-1A/2A-COMP
LAB NO: 181602
DATE SAMPLED: 04/15/2019
TIME SAMPLED: NA
K PRIME PROJECT: 9986 **BATCH #:** 041219S1
CLIENT PROJECT: 2669 **DATE EXTRACTED:** 04/17/2019
DATE ANALYZED: 04/24/2019

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS **SAMPLE TYPE:** SOIL
REFERENCE: EPA 3550/8270 **UNITS:** ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
2-METHYLNAPHTHALENE	91-57-6	330	ND
NAPHTHALENE	91-20-3	330	ND
2-NITROANILINE	88-74-4	1600	ND
3-NITROANILINE	99-09-2	1600	ND
4-NITROANILINE	100-01-6	1600	ND
NITROBENZENE	98-95-3	330	ND
N-NITROSO-DI-N-PROPYLAMINE	621-64-7	330	ND
PHENANTHRENE	85-01-8	330	ND
PYRENE	129-00-0	330	ND
1,2,4-TRICHLOROBENZENE	120-82-1	330	ND
ACID EXTRACTABLES			
4-CHLORO-3-METHYLPHENOL	59-50-7	660	ND
2-CHLOROPHENOL	95-57-8	660	ND
2,4-DICHLOROPHENOL	120-83-2	660	ND
2,4-DIMETHYLPHENOL	105-67-9	660	ND
2,4-DINITROPHENOL	51-28-5	1600	ND
4,6-DINITRO-2-METHYLPHENOL	534-52-1	1600	ND
2-NITROPHENOL	88-75-5	1600	ND
4-NITROPHENOL	100-02-7	1600	ND
PENTACHLOROPHENOL	87-86-5	1600	ND
PHENOL	108-95-2	660	ND
2-METHYLPHENOL	95-48-7	660	ND
4-METHYLPHENOL	106-44-5	660	ND
2,4,5-TRICHLOROPHENOL	95-95-4	1600	ND
2,4,6-TRICHLOROPHENOL	88-06-2	1600	ND

SURROGATE RECOVERY	%
NITROBENZENE-D5	78
2-FLUOROBIPHENYL	78
P-TERPHENYL-D14	104
PHENOL-D6	88
2-FLUOROPHENOL	85
2,4,6-TRIBROMOPHENOL	72

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

APPROVED BY: AB
DATE: 4/26/19

K PRIME, INC.
LABORATORY REPORT

SAMPLE ID: B-6A/7A/8A-COMP
LAB NO: 181603
DATE SAMPLED: 04/15/2019
TIME SAMPLED: NA
K PRIME PROJECT: 9986 **BATCH #:** 041219S1
CLIENT PROJECT: 2669 **DATE EXTRACTED:** 04/17/2019
DATE ANALYZED: 04/24/2019

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS **SAMPLE TYPE:** SOIL
REFERENCE: EPA 3550/8270 **UNITS:** ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	330	ND
ACENAPHTHYLENE	208-96-8	330	ND
ANTHRACENE	120-12-7	330	ND
BENZO (A) ANTHRACENE	56-55-3	330	ND
BENZO (B) FLUORANTHENE	205-99-2	330	ND
BENZO (K) FLUORANTHENE	207-08-9	330	ND
BENZO (A) PYRENE	50-32-8	330	ND
BENZO (G,H,I) PERYLENE	191-24-2	330	ND
BENZYL ALCOHOL	100-51-6	330	ND
BUTYL BENZYL PHTHALATE	85-68-7	330	ND
BIS (2-CHLOROETHYL) ETHER	111-44-4	330	ND
BIS (2-CHLOROETHOXY) METHANE	111-91-1	330	ND
BIS (2-CHLOROISOPROPYL) ETHER	108-60-1	330	ND
BIS (2-ETHYLHEXYL) PHTHALATE	117-81-7	330	ND
4-BROMOPHENYL PHENYL ETHER	101-55-3	330	ND
4-CHLOROANILINE	106-47-8	330	ND
2-CHLORONAPHTHALENE	91-58-7	330	ND
4-CHLOROPHENYL PHENYL ETHER	7005-72-3	330	ND
CHRYSENE	218-01-9	330	ND
DIBENZO (A,H) ANTHRACENE	53-70-3	330	ND
DIBENZOFURAN	132-64-9	330	ND
DI-N-BUTYLPHTHALATE	84-74-2	330	ND
1,2-DICHLOROBENZENE	95-50-1	330	ND
1,3-DICHLOROBENZENE	541-73-1	330	ND
1,4-DICHLOROBENZENE	106-46-7	330	ND
3,3'-DICHLOROBENZIDINE	91-94-1	660	ND
DIETHYLPHTHALATE	84-66-2	330	ND
DIMETHYL PHTHALATE	131-11-3	330	ND
2,4-DINITROTOLUENE	121-14-2	330	ND
2,6-DINITROTOLUENE	606-20-2	330	ND
DI-N-OCTYL PHTHALATE	117-84-0	330	ND
DIPHENYLAMINE	122-39-4	330	ND
FLUORANTHENE	206-44-0	330	ND
FLUORENE	86-73-7	330	ND
HEXACHLOROBENZENE	118-74-1	330	ND
HEXACHLOROBUTADIENE	87-68-3	330	ND
HEXACHLOROCYCLOPENTADIENE	77-47-4	330	ND
HEXACHLOROETHANE	67-72-1	330	ND
INDENO (1,2,3-CD) PYRENE	193-39-5	330	ND
ISOPHORONE	78-59-1	330	ND

K PRIME, INC.
LABORATORY REPORT

SAMPLE ID: B-6A/7A/8A-COMP
LAB NO: 181603
DATE SAMPLED: 04/15/2019
TIME SAMPLED: NA
K PRIME PROJECT: 9986 **BATCH #:** 041219S1
CLIENT PROJECT: 2669 **DATE EXTRACTED:** 04/17/2019
DATE ANALYZED: 04/24/2019

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS **SAMPLE TYPE:** SOIL
REFERENCE: EPA 3550/8270 **UNITS:** ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
2-METHYLNAPHTHALENE	91-57-6	330	ND
NAPHTHALENE	91-20-3	330	ND
2-NITROANILINE	88-74-4	1600	ND
3-NITROANILINE	99-09-2	1600	ND
4-NITROANILINE	100-01-6	1600	ND
NITROBENZENE	98-95-3	330	ND
N-NITROSO-DI-N-PROPYLAMINE	621-64-7	330	ND
PHENANTHRENE	85-01-8	330	ND
PYRENE	129-00-0	330	ND
1,2,4-TRICHLOROBENZENE	120-82-1	330	ND
ACID EXTRACTABLES			
4-CHLORO-3-METHYLPHENOL	59-50-7	660	ND
2-CHLOROPHENOL	95-57-8	660	ND
2,4-DICHLOROPHENOL	120-83-2	660	ND
2,4-DIMETHYLPHENOL	105-67-9	660	ND
2,4-DINITROPHENOL	51-28-5	1600	ND
4,6-DINITRO-2-METHYLPHENOL	534-52-1	1600	ND
2-NITROPHENOL	88-75-5	1600	ND
4-NITROPHENOL	100-02-7	1600	ND
PENTACHLOROPHENOL	87-86-5	1600	ND
PHENOL	108-95-2	660	ND
2-METHYLPHENOL	95-48-7	660	ND
4-METHYLPHENOL	106-44-5	660	ND
2,4,5-TRICHLOROPHENOL	95-95-4	1600	ND
2,4,6-TRICHLOROPHENOL	88-06-2	1600	ND

SURROGATE RECOVERY	%
NITROBENZENE-D5	84
2-FLUOROBIPHENYL	87
P-TERPHENYL-D14	104
PHENOL-D6	94
2-FLUOROPHENOL	87
2,4,6-TRIBROMOPHENOL	84

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

APPROVED BY: HB
DATE: 4/26/19

K PRIME, INC.
LABORATORY REPORT

METHOD: WET CHROMIUM
REFERENCE: CA WET/EPA 6020A

K PRIME PROJECT: 9986
CLIENT PROJECT: 2669

SAMPLE TYPE: WET (STLC) EXTRACT
UNITS: mg/L

SAMPLE ID	LAB ID	BATCH #	DATE SAMPLED	DATE ANALYZED	REPORTING LIMIT	SAMPLE CONC
B-9A/10A/11A/12A-COMP	181600	041719WT1	N/A	04/19/2019	0.050	0.072
B-3A/4A/5A-COMP	181601	041719WT1	N/A	04/19/2019	0.050	0.079
B-1A/2A-COMP	181602	041719WT1	N/A	04/19/2019	0.050	0.172

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: (N)

DATE: 4/22/19

K PRIME, INC.
LABORATORY QC REPORT

METHOD BLANK ID: B041219S1
BATCH #: 041219S1
DATE EXTRACTED: 04/12/2019
DATE ANALYZED: 04/15/2019

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
ACENAPHTHENE	83-32-9	330	ND
ACENAPHTHYLENE	208-96-8	330	ND
ANTHRACENE	120-12-7	330	ND
BENZO (A) ANTHRACENE	56-55-3	330	ND
BENZO (B) FLUORANTHENE	205-99-2	330	ND
BENZO (K) FLUORANTHENE	207-08-9	330	ND
BENZO (A) PYRENE	50-32-8	330	ND
BENZO (G,H,I) PERYLENE	191-24-2	330	ND
BENZYL ALCOHOL	100-51-6	330	ND
BUTYL BENZYL PHTHALATE	85-68-7	330	ND
BIS (2-CHLOROETHYL) ETHER	111-44-4	330	ND
BIS (2-CHLOROETHOXY) METHANE	111-91-1	330	ND
BIS (2-CHLOROISOPROPYL) ETHER	108-60-1	330	ND
BIS (2-ETHYLHEXYL) PHTHALATE	117-81-7	330	ND
4-BROMOPHENYL PHENYL ETHER	101-55-3	330	ND
4-CHLOROANILINE	106-47-8	330	ND
2-CHLORONAPHTHALENE	91-58-7	330	ND
4-CHLOROPHENYL PHENYL ETHER	7005-72-3	330	ND
CHRYSENE	218-01-9	330	ND
DIBENZO (A,H) ANTHRACENE	53-70-3	330	ND
DIBENZOFURAN	132-64-9	330	ND
DI-N-BUTYLPHTHALATE	84-74-2	330	ND
1,2-DICHLOROBENZENE	95-50-1	330	ND
1,3-DICHLOROBENZENE	541-73-1	330	ND
1,4-DICHLOROBENZENE	106-46-7	330	ND
3,3'-DICHLOROBENZIDINE	91-94-1	660	ND
DIETHYLPHTHALATE	84-66-2	330	ND
DIMETHYL PHTHALATE	131-11-3	330	ND
2,4-DINITROTOLUENE	121-14-2	330	ND
2,6-DINITROTOLUENE	606-20-2	330	ND
DI-N-OCTYL PHTHALATE	117-84-0	330	ND
DIPHENYLAMINE	122-39-4	330	ND
FLUORANTHENE	206-44-0	330	ND
FLUORENE	86-73-7	330	ND
HEXACHLOROBENZENE	118-74-1	330	ND
HEXACHLOROBUTADIENE	87-68-3	330	ND
HEXACHLOROCYCLOPENTADIENE	77-47-4	330	ND
HEXACHLOROETHANE	67-72-1	330	ND
INDENO (1,2,3-CD) PYRENE	193-39-5	330	ND
ISOPHORONE	78-59-1	330	ND

K PRIME, INC.
LABORATORY QC REPORT

METHOD BLANK ID: B041219S1
BATCH #: 041219S1
DATE EXTRACTED: 04/12/2019
DATE ANALYZED: 04/15/2019

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
2-METHYLNAPHTHALENE	91-57-6	330	ND
NAPHTHALENE	91-20-3	330	ND
2-NITROANILINE	88-74-4	1600	ND
3-NITROANILINE	99-09-2	1600	ND
4-NITROANILINE	100-01-6	1600	ND
NITROBENZENE	98-95-3	330	ND
N-NITROSO-DI-N-PROPYLAMINE	621-64-7	330	ND
PHENANTHRENE	85-01-8	330	ND
PYRENE	129-00-0	330	ND
1,2,4-TRICHLOROBENZENE	120-82-1	330	ND
ACID EXTRACTABLES			
4-CHLORO-3-METHYLPHENOL	59-50-7	660	ND
2-CHLOROPHENOL	95-57-8	660	ND
2,4-DICHLOROPHENOL	120-83-2	660	ND
2,4-DIMETHYLPHENOL	105-67-9	660	ND
2,4-DINITROPHENOL	51-28-5	1600	ND
4,6-DINITRO-2-METHYLPHENOL	534-52-1	1600	ND
2-NITROPHENOL	88-75-5	1600	ND
4-NITROPHENOL	100-02-7	1600	ND
PENTACHLOROPHENOL	87-86-5	1600	ND
PHENOL	108-95-2	660	ND
2-METHYLPHENOL	95-48-7	660	ND
4-METHYLPHENOL	106-44-5	660	ND
2,4,5-TRICHLOROPHENOL	95-95-4	1600	ND
2,4,6-TRICHLOROPHENOL	88-06-2	1600	ND

SURROGATE RECOVERY	%
NITROBENZENE-D5	98
2-FLUOROBIPHENYL	100
P-TERPHENYL-D14	137
PHENOL-D6	98
2-FLUOROPHENOL	96
2,4,6-TRIBROMOPHENOL	85

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT APPLICABLE OR AVAILABLE

K PRIME, INC.
LABORATORY QC REPORT

SAMPLE ID: L041219S1
DUPLICATE ID: D041219S1
BATCH #: 041219S1
DATE EXTRACTED: 04/12/2019
DATE ANALYZED: 04/15/2019

METHOD: SEMIVOLATILE ORGANIC COMPOUNDS
REFERENCE: EPA 3550/8270

SAMPLE TYPE: SOIL
UNITS: ug/Kg

ACCURACY (MATRIX SPIKE)

PARAMETER	SPIKE ADDED	SAMPLE RESULT	SPIKE RESULT	RECOVERY (%)	LIMITS (%)
ACENAPHTHENE	5000	ND	4160	83	20-140
1,4-DICHLOROBENZENE	5000	ND	4450	89	10-140
2,4-DINITROTOLUENE	5000	ND	4570	91	20-120
PYRENE	5000	ND	6250	125	30-160
1,2,4-TRICHLOROBENZENE	5000	ND	4290	86	20-140
4-CHLORO-3-METHYLPHENOL	10000	ND	9460	95	20-140
2-CHLOROPHENOL	10000	ND	8220	82	20-140
4-NITROPHENOL	10000	ND	10800	108	D-130
PENTACHLOROPHENOL	10000	ND	10100	101	D-130
PHENOL	10000	ND	9380	94	D-150

PRECISION (SPIKE DUPLICATE)

COMPOUND NAME	REPORTING LIMIT	SPIKE RESULT	DUPLICATE RESULT	RPD (%)	LIMITS (%)
ACENAPHTHENE	330	4160	4150	0.2	±20
1,4-DICHLOROBENZENE	330	4450	4490	0.9	±20
2,4-DINITROTOLUENE	330	4570	4540	0.7	±20
PYRENE	330	6250	6120	2.1	±20
1,2,4-TRICHLOROBENZENE	330	4290	4210	1.9	±20
4-CHLORO-3-METHYLPHENOL	660	9460	9370	1.0	±20
2-CHLOROPHENOL	660	8220	8350	1.6	±20
4-NITROPHENOL	1600	10800	10200	5.7	±20
PENTACHLOROPHENOL	1600	10100	10100	0.0	±20
PHENOL	660	9380	9340	0.4	±20

NOTES:
ND = NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
D = DETECTED

K PRIME, INC.

LABORATORY BATCH QC REPORT

SAMPLE ID: L041719WT1
DUPLICATE ID: D041719WT1
METHOD BLANK ID: B041719WT1
BATCH #: 041719WT1
DATE ANALYZED: 04/19/2019

METHOD: METALS BY ICP/MS
REFERENCE: CA WET (STLC)/EPA 6020A

SAMPLE TYPE: WET (STLC) EXTRACT
UNITS: mg/L

ELEMENT		MB mg/L	SA mg/L	SR mg/L	SP mg/L	SPD mg/L	SP %R	RPD %
CHROMIUM	Cr	<0.050	0.500	0.0	0.491	0.490	98	0.2

NOTES:
ND: NOT DETECTED
MB: METHOD BLANK
SA: SPIKE ADDED
SR: SAMPLE RESULT
SP: SPIKE RESULT
SPD: SPIKE DUPLICATE RESULT
SP(%R): SPIKE % RECOVERY
RPD: RELATIVE PERCENT DIFFERENCE

K PRIME, INC.

CHAIN OF CUSTODY RECORD

CONSULTING ANALYTICAL CHEMISTS 3621 Westwind Blvd., Santa Rosa, CA 95403 PHONE: (707) 527-7574 FAX: (707) 527-7879

Client/Project ID	Address/Phone	ANALYSES	KPI Project No.
EBA Engineering	707-544-0784 825 Sonoma Avenue, Santa Rosa CA 95404		9986
Project Location 1401 W. Winton Ave., Hayward	Client Project No. 2669		☐ EDF Log Code: _____ Global ID
Contact Matt Earnshaw	Sampler (Signature)		

Sample Identification No.	Date	Time	Lab Sample No.	Type of Sample	No. of Containers	STLC chrome	SVOCs						Expected Turnaround Time	Remarks
B-9A/10A/11A/12A-Comp	4/15/19		181600	S	1	X							Std	Comp: 181564-181567
B-3A/4A/5A-Comp	↓		181601	↓	↓	X							↓	Comp: 181568-181570
B-1A/2A-Comp			181602			X	X							Comp: 181571-181572
B-6A/7A/8A-Comp			181603				X							Comp: 181573-181575

Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Lab Composite	Hong Luu	4/16/19	13:36
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received by: (Signature)	Date	Time

Disposal Method

Disposed by: (Signature) Date Time

White Copy : Accompanies Samples
Yellow Copy : Sampler

K PRIME, INC.

CHAIN OF CUSTODY RECORD

CONSULTING ANALYTICAL CHEMISTS 3621 Westwind Blvd., Santa Rosa, CA 95403 PHONE: (707) 527-7574 FAX: (707) 527-7879

Client/Project ID	Address/Phone	ANALYSES	KPI Project No.
EBA Engineering	(707)-544-0784 825 Sonoma Avenue, Santa Rosa, CA 95404		No EDF 9984
Project Location: 1401 W. Winton Ave., Hayward	Client Project No.: 2669		☐ EDF Log Code: _____
Contact: Matt Earnshaw	Sampler (Signature)		Global ID

Sample Identification No.	~~Date~~ KPI #	Time	Lab Sample No.	Type of Sample	No. of Containers	STLC Chrome	SVOCs	Expected Turnaround Time	Remarks
B-9A	181564	10:00	4/15/19	Soil	1	X	X	Std	
B-10A	181565	10:36							4-1 lab comp.
B-11A	181566	10:31							
B-12A	181567	9:10							
B-3A	181568	12:35							3-1 lab comp.
B-4A	181569	11:35							
B-5A	181570	11:15							
B-1A	181571	12:53							2-1 lab comp.
B-2A	181572	12:45							
B-6A	181573	10:20							3-1 lab comp
B-7A	181574	10:05							
B-8A	181575	10:55							

Relinquished by: (Signature)	Received by: (Signature)	Date	Time
	KPI	4/16/19	1336
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received by: (Signature)	Date	Time

Disposal Method

Disposed by: (Signature)	Date	Time

White Copy : Accompanies Samples
Yellow Copy : Sampler

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 4/24/2019

TO: MR. MATT EARNSHAW
EBA ENGINEERING
825 SONOMA AVENUE
SANTA ROSA, CA 95404

Phone: 707-544-0784
Fax: 707-544-0866
Email: dataeba1@ebagroup.com

ACCT: 9986
PROJ: 2669

FROM: Richard A. Kagel, Ph.D. RAK
Laboratory Director by AB 4/24/19

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT 2669

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	TIME	KPI LAB #
OCP-1A	SOIL	4/15/2019	14:30	181576
OCP-1B	SOIL	4/15/2019	14:34	181577
OCP-1C	SOIL	4/15/2019	14:37	181578
OCP-1D	SOIL	4/15/2019	14:40	181579
OCP-2A	SOIL	4/15/2019	14:00	181580
OCP-2B	SOIL	4/15/2019	14:20	181581
OCP-2C	SOIL	4/15/2019	14:30	181582
OCP-2D	SOIL	4/15/2019	14:26	181583
OCP-3A	SOIL	4/15/2019	13:30	181584
OCP-3B	SOIL	4/15/2019	13:40	181585
OCP-3C	SOIL	4/15/2019	13:51	181586
OCP-3D	SOIL	4/15/2019	14:03	181587
OCP-1A/B/C/D-COMP	SOIL	4/15/2019	NA	181604
OCP-2A/B/C/D-COMP	SOIL	4/15/2019	NA	181605
OCP-3A/B/C/D-COMP	SOIL	4/15/2019	NA	181606

The above listed sample group was received on 4/16/2019 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9986
CLIENT PROJECT: 2669

SAMPLE ID: OCP-1A/B/C/D-COMP
LAB NO: 181604
DATE SAMPLED: 04/15/2019
TIME SAMPLED: NA
BATCH NO: 041519S1
DATE EXTRACTED: 04/17/2019
DATE ANALYZED: 04/22/2019

METHOD: ORGANOCHLORINE PESTICIDES
REFERENCE: EPA 3550/8081

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
ALPHA-BHC	319-84-6	2.00	ND
BETA-BHC	319-85-7	2.00	ND
GAMMA-BHC (LINDANE)	58-89-9	2.00	ND
HEPTACHLOR	76-44-8	2.00	ND
DELTA-BHC	319-86-8	2.00	ND
ALDRIN	309-00-2	2.00	ND
HEPTACHLOR EPOXIDE	1024-57-3	2.00	ND
ENDOSULFAN I	959-98-8	2.00	ND
4,4'-DDE	72-55-9	2.00	5.39
DIELDRIN	60-57-1	2.00	ND
ENDRIN	72-20-8	2.00	ND
4,4'-DDD	72-54-8	2.00	2.29
ENDOSULFAN II	33213-65-9	2.00	ND
4,4'-DDT	50-29-3	2.00	5.02
ENDRIN ALDEHYDE	7421-93-4	2.00	ND
ENDOSULFAN SULFATE	1031-07-8	2.00	ND
ENDRIN KETONE	53494-70-5	2.00	ND
METHOXYCHLOR	72-43-5	2.00	ND
CHLORDANE	57-74-9	2.00	19.5
TOXAPHENE	8001-35-2	12.5	ND

SURROGATE RECOVERY	%
TCMX	87
DCBP	105

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: AB
DATE: 4/23/19

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9986
CLIENT PROJECT: 2669

SAMPLE ID: OCP-2A/B/C/D-COMP
LAB NO: 181605
DATE SAMPLED: 04/15/2019
TIME SAMPLED: NA
BATCH NO: 041519S1
DATE EXTRACTED: 04/17/2019
DATE ANALYZED: 04/22/2019

METHOD: ORGANOCHLORINE PESTICIDES
REFERENCE: EPA 3550/8081

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
ALPHA-BHC	319-84-6	2.00	ND
BETA-BHC	319-85-7	2.00	ND
GAMMA-BHC (LINDANE)	58-89-9	2.00	ND
HEPTACHLOR	76-44-8	2.00	ND
DELTA-BHC	319-86-8	2.00	ND
ALDRIN	309-00-2	2.00	ND
HEPTACHLOR EPOXIDE	1024-57-3	2.00	ND
ENDOSULFAN I	959-98-8	2.00	ND
4,4'-DDE	72-55-9	2.00	ND
DIELDRIN	60-57-1	2.00	ND
ENDRIN	72-20-8	2.00	ND
4,4'-DDD	72-54-8	2.00	ND
ENDOSULFAN II	33213-65-9	2.00	ND
4,4'-DDT	50-29-3	2.00	ND
ENDRIN ALDEHYDE	7421-93-4	2.00	ND
ENDOSULFAN SULFATE	1031-07-8	2.00	ND
ENDRIN KETONE	53494-70-5	2.00	ND
METHOXYCHLOR	72-43-5	2.00	ND
CHLORDANE	57-74-9	2.00	237
TOXAPHENE	8001-35-2	12.5	ND

SURROGATE RECOVERY	%
TCMX	81
DCBP	96

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: AB
DATE: 4/23/19

K PRIME, INC.
LABORATORY REPORT

K PRIME PROJECT: 9986
CLIENT PROJECT: 2669

SAMPLE ID: OCP-3A/B/C/D-COMP
LAB NO: 181606
DATE SAMPLED: 04/15/2019
TIME SAMPLED: NA
BATCH NO: 041519S1
DATE EXTRACTED: 04/17/2019
DATE ANALYZED: 04/22/2019

METHOD: ORGANOCHLORINE PESTICIDES
REFERENCE: EPA 3550/8081

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
ALPHA-BHC	319-84-6	2.00	ND
BETA-BHC	319-85-7	2.00	ND
GAMMA-BHC (LINDANE)	58-89-9	2.00	ND
HEPTACHLOR	76-44-8	2.00	ND
DELTA-BHC	319-86-8	2.00	ND
ALDRIN	309-00-2	2.00	ND
HEPTACHLOR EPOXIDE	1024-57-3	2.00	ND
ENDOSULFAN I	959-98-8	2.00	ND
4,4'-DDE	72-55-9	2.00	ND
DIELDRIN	60-57-1	2.00	ND
ENDRIN	72-20-8	2.00	ND
4,4'-DDD	72-54-8	2.00	ND
ENDOSULFAN II	33213-65-9	2.00	ND
4,4'-DDT	50-29-3	2.00	ND
ENDRIN ALDEHYDE	7421-93-4	2.00	ND
ENDOSULFAN SULFATE	1031-07-8	2.00	ND
ENDRIN KETONE	53494-70-5	2.00	ND
METHOXYCHLOR	72-43-5	2.00	ND
CHLORDANE	57-74-9	2.00	ND
TOXAPHENE	8001-35-2	12.5	ND

SURROGATE RECOVERY	%
TCMX	79
DCBP	89

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: AB
DATE: 4/23/19

K PRIME, INC.
LABORATORY BATCH QC REPORT

METHOD BLANK ID: B041519S1
BATCH NO: 041519S1
DATE EXTRACTED: 04/15/2019
DATE ANALYZED: 04/16/2019

METHOD: ORGANOCHLORINE PESTICIDES
REFERENCE: EPA 3550/8081

SAMPLE TYPE: SOIL
UNITS: ug/Kg

COMPOUND NAME	CAS NO.	REPORTING LIMIT	SAMPLE CONC
ALPHA-BHC	319-84-6	2.00	ND
BETA-BHC	319-85-7	2.00	ND
GAMMA-BHC (LINDANE)	58-89-9	2.00	ND
HEPTACHLOR	76-44-8	2.00	ND
DELTA-BHC	319-86-8	2.00	ND
ALDRIN	309-00-2	2.00	ND
HEPTACHLOR EPOXIDE	1024-57-3	2.00	ND
ENDOSULFAN I	959-98-8	2.00	ND
4,4'-DDE	72-55-9	2.00	ND
DIELDRIN	60-57-1	2.00	ND
ENDRIN	72-20-8	2.00	ND
4,4'-DDD	72-54-8	2.00	ND
ENDOSULFAN II	33213-65-9	2.00	ND
4,4'-DDT	50-29-3	2.00	ND
ENDRIN ALDEHYDE	7421-93-4	2.00	ND
ENDOSULFAN SULFATE	1031-07-8	2.00	ND
METHOXYCHLOR	72-43-5	2.00	ND
CHLORDANE	57-74-9	2.00	ND
TOXAPHENE	8001-35-2	12.5	ND

SURROGATE RECOVERY	%
TCMX	94
DCBP	94

NOTES:
ND - NOT DETECTED ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

K PRIME, INC.
LABORATORY BATCH QC REPORT

SAMPLE ID: B041519S1
SPIKE ID: L041519S1
DUPLICATE ID: D041519S1
BATCH NO: 041519S1
DATE EXTRACTED: 04/15/2019
DATE ANALYZED: 04/16/2019

METHOD: ORGANOCHLORINE PESTICIDES
REFERENCE: EPA 3550/8081

SAMPLE TYPE: SOIL
UNITS: ug/Kg

ACCURACY (MATRIX SPIKE)

COMPOUND NAME	SPIKE ADDED	SAMPLE RESULT	SPIKE RESULT	RECOVERY (%)	LIMITS (%)
GAMMA-BHC (LINDANE)	125	ND	120	96	50-150
HEPTACHLOR	125	ND	105	84	50-150
ALDRIN	125	ND	113	91	50-150
DIELDRIN	125	ND	108	86	50-150
ENDRIN	125	ND	186	149	50-150
DDT	125	ND	142	114	50-150

PRECISION (SPIKE DUPLICATE)

COMPOUND NAME	REPORTING LIMIT	SPIKE RESULT	DUPLICATE RESULT	RPD (%)	LIMITS (%)
GAMMA-BHC (LINDANE)	2.00	120	118	1.6	±40
HEPTACHLOR	2.00	105	103	2.1	±40
ALDRIN	2.00	113	111	2.4	±40
DIELDRIN	2.00	108	106	1.3	±40
ENDRIN	2.00	186	188	0.9	±40
DDT	2.00	142	149	4.5	±40

ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

K PRIME, INC.

CHAIN OF CUSTODY RECORD

CONSULTING ANALYTICAL CHEMISTS 3621 Westwind Blvd., Santa Rosa, CA 95403 PHONE: (707) 527-7574 FAX: (707) 527-7879

Client/Project ID	Address/Phone	ANALYSES	KPI Project No.
EBA Engineering	(707)-544-0784 825 Sonoma Avenue, Santa Rosa, CA 95404		NO EDF 9980
Project Location	Client Project No.		☐ EDF Log Code:
1401 W. Winton Ave, Hayward	2669		Global ID
Contact	Sampler (Signature)		
Matt Earnshaw			

Sample Identification No.	Date	Time	Lab Sample No.	Type of Sample	No. of Containers	OCP's	Expected Turnaround Time	Remarks
OCP-1A	4/15/19	14:30	181576	Soil	1	X	std	
OCP-1B		14:34	181577			X		4-1 lab comp
OCP-1C		14:37	181578			X		
OCP-1D		14:40	181579			X		
OCP-2A		14:00	181580			X		
OCP-2B		14:20	181581			X		4-1 lab comp
OCP-2C		14:30	181582			X		
OCP-2D		14:26	181583			X		
OCP-3A		13:30	181584			X		
OCP-3B		13:40	181585			X		4-1 lab comp
OCP-3C		13:51	181586			X		
OCP-3D	↓	14:03	181587	↓	↓	X	↓	

Relinquished by: (Signature)	Received by: (Signature) KPI	Date 4/16/19	Time 1336
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Disposal Method	White Copy : Accompanies Samples Yellow Copy : Sampler		
Disposed by: (Signature)	Date	Time	

K PRIME, INC.

CHAIN OF CUSTODY RECORD

CONSULTING ANALYTICAL CHEMISTS 3621 Westwind Blvd., Santa Rosa, CA 95403 PHONE: (707) 527-7574 FAX: (707) 527-7879

Client/Project ID	Address/Phone	ANALYSES	KPI Project No.
EBA Engineering	707-544-0784 825 Sonoma Avenue, Santa Rosa CA 95404		9986
Project Location	Client Project No.		☐ EDF Log Code: _____
1401 W. Winton Ave., Hayward	2669		Global ID
Contact	Sampler (Signature)		
Matt Earnshaw			

Sample Identification No.	Date	Time	Lab Sample No.	Type of Sample	No. of Containers	OCPs	Expected Turnaround Time	Remarks
OCP-1A/B/C/D-Comp	4/15/19		181604	S	1	X	Std	Comp: 181576-181579
OCP-2A/B/C/D-Comp	↓		181605	↓	↓	X	↓	Comp: 181580-181583
OCP-3A/B/C/D-Comp	↓		181606	↓	↓	X	↓	Comp: 181584-181587

Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Lab Composite	Hong Luu	4/16/19	13:36
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received by: (Signature)	Date	Time

Disposal Method		
Disposed by: (Signature)	Date	Time

White Copy : Accompanies Samples
Yellow Copy : Sampler

K PRIME, Inc.

CONSULTING ANALYTICAL CHEMISTS

3621 Westwind Blvd.
Santa Rosa CA 95403
Phone: 707 527 7574
FAX: 707 527 7879

TRANSMITTAL

DATE: 4/22/2019

TO: MR. MATT EARNSHAW
EBA ENGINEERING
825 SONOMA AVENUE
SANTA ROSA, CA 95404

Phone: 707-544-0784
Fax: 707-544-0866
Email: dataeba1@ebagroup.com

ACCT: 9986
PROJ: 2669

FROM: Richard A. Kagel, Ph.D. RAK
Laboratory Director 64 AB
4/22/19

SUBJECT: LABORATORY RESULTS FOR YOUR PROJECT 2669

Enclosed please find K Prime's laboratory reports for the following samples:

SAMPLE ID	TYPE	DATE	TIME	KPI LAB #
B-52A	SOIL	4/15/2019	15:20	181588
B-53A	SOIL	4/15/2019	15:26	181589
B-54A	SOIL	4/15/2019	15:17	181590
B-55A	SOIL	4/15/2019	15:23	181591
B-40A	SOIL	4/15/2019	15:00	181592
B-41A	SOIL	4/15/2019	15:05	181593
B-42A	SOIL	4/15/2019	15:08	181594
B-43A	SOIL	4/15/2019	15:10	181595
B-25A	SOIL	4/15/2019	8:30	181596
B-26A	SOIL	4/15/2019	8:55	181597
B-27A	SOIL	4/15/2019	8:46	181598
B-28A	SOIL	4/15/2019	8:36	181599
B-52/53/54/55-A-COMP	SOIL	4/15/2019	NA	181607
B-40/41/42/43-A-COMP	SOIL	4/15/2019	NA	181608
B-25/26/27/28-A-COMP	SOIL	4/15/2019	NA	181609

The above listed sample group was received on 4/16/2019 and tested as requested on the chain of custody document.

Please call me if you have any questions or need further information.
Thank you for this opportunity to be of service.

K PRIME, INC.
LABORATORY REPORT

METHOD: WET CHROMIUM
REFERENCE: CA WET/EPA 6020A

K PRIME PROJECT: 9986
CLIENT PROJECT: 2669

SAMPLE TYPE: WET (STLC) EXTRACT
UNITS: mg/L

SAMPLE ID	LAB ID	BATCH #	DATE SAMPLED	DATE ANALYZED	REPORTING LIMIT	SAMPLE CONC
B-52/53/54/55-A-COMP	181607	041719WT1	N/A	04/19/2019	0.050	0.104
B-40/41/42/43-A-COMP	181608	041719WT1	N/A	04/19/2019	0.050	0.172
B-25/26/27/28-A-COMP	181609	041719WT1	N/A	04/19/2019	0.050	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: NJ

DATE: 4/22/19

K PRIME, INC.
LABORATORY REPORT

METHOD: TCLP LEAD
REFERENCE: EPA 1311/EPA 6020A

K PRIME PROJECT: 9986
CLIENT PROJECT: 2669

SAMPLE TYPE: TCLP-SOIL
UNITS: mg/L

SAMPLE ID	LAB ID	BATCH #	DATE SAMPLED	DATE ANALYZED	REPORTING LIMIT	SAMPLE CONC
B-25/26/27/28-A-COMP	181609	041619TP1	N/A	04/18/2019	0.005	ND

NOTES:
ND - NOT DETECTED AT OR ABOVE THE STATED REPORTING LIMIT
NA - NOT AVAILABLE OR APPLICABLE

APPROVED BY: (N)

DATE: 4/22/19

K PRIME, INC.

LABORATORY BATCH QC REPORT

SAMPLE ID: L041719WT1
DUPLICATE ID: D041719WT1
METHOD BLANK ID: B041719WT1
BATCH #: 041719WT1
DATE ANALYZED: 04/19/2019

METHOD: METALS BY ICP/MS
REFERENCE: CA WET (STLC)/EPA 6020A

SAMPLE TYPE: WET (STLC) EXTRACT
UNITS: mg/L

ELEMENT		MB mg/L	SA mg/L	SR mg/L	SP mg/L	SPD mg/L	SP %R	RPD %
CHROMIUM	Cr	<0.050	0.500	0.0	0.491	0.490	98	0.2

NOTES:
ND: NOT DETECTED
MB: METHOD BLANK
SA: SPIKE ADDED
SR: SAMPLE RESULT
SP: SPIKE RESULT
SPD: SPIKE DUPLICATE RESULT
SP(%R): SPIKE % RECOVERY
RPD: RELATIVE PERCENT DIFFERENCE

K PRIME, INC.

LABORATORY BATCH QC REPORT

SAMPLE ID: MS181609
DUPLICATE ID: SD181609
METHOD BLANK ID: B041719WT1
BATCH #: 041719WT1
DATE ANALYZED: 04/19/2019

METHOD: METALS BY ICP/MS
REFERENCE: CA WET (STLC)/EPA 6020A

SAMPLE TYPE: WET (STLC) EXTRACT
UNITS: mg/L

ELEMENT		MB mg/L	SA mg/L	SR mg/L	SP mg/L	SPD mg/L	SP %R	RPD %
CHROMIUM	Cr	<0.050	0.500	ND	0.461	0.456	87	1.0

NOTES:
ND: NOT DETECTED
MB: METHOD BLANK
SA: SPIKE ADDED
SR: SAMPLE RESULT
SP: SPIKE RESULT
SPD: SPIKE DUPLICATE RESULT
SP(%R): SPIKE % RECOVERY
RPD: RELATIVE PERCENT DIFFERENCE

K PRIME, INC.

LABORATORY BATCH QC REPORT

SAMPLE ID: L041619TP1
DUPLICATE ID: D041619TP1
METHOD BLANK ID: B041619TP1
BATCH #: 041619TP1
DATE ANALYZED: 04/18/2019

METHOD: TCLP METALS BY ICP/MS
REFERENCE: EPA 1311/EPA 6020A

SAMPLE TYPE: TCLP-SOIL
UNITS: mg/L

ELEMENT		MB mg/L	SA mg/L	SR mg/L	SP mg/L	SPD mg/L	SP %R	RPD %
LEAD	Pb	<0.005	0.050	0.0	0.051	0.052	102	1.6

NOTES:
ND: NOT DETECTED
MB: METHOD BLANK
SA: SPIKE ADDED
SR: SAMPLE RESULT
SP: SPIKE RESULT
SPD: SPIKE DUPLICATE RESULT
SP(%R): SPIKE % RECOVERY
RPD: RELATIVE PERCENT DIFFERENCE

K PRIME, INC.

LABORATORY BATCH QC REPORT

SAMPLE ID: MS181609
DUPLICATE ID: SD181609
METHOD BLANK ID: B041619TP1
BATCH #: 041619TP1
DATE ANALYZED: 04/18/2019

METHOD: TCLP METALS BY ICP/MS
REFERENCE: EPA 1311/EPA 6020A

SAMPLE TYPE: TCLP-SOIL
UNITS: mg/L

ELEMENT		MB mg/L	SA mg/L	SR mg/L	SP mg/L	SPD mg/L	SP %R	RPD %
LEAD	Pb	<0.005	0.050	ND	0.050	0.050	99	0.1

NOTES:
ND: NOT DETECTED
MB: METHOD BLANK
SA: SPIKE ADDED
SR: SAMPLE RESULT
SP: SPIKE RESULT
SPD: SPIKE DUPLICATE RESULT
SP(%R): SPIKE % RECOVERY
RPD: RELATIVE PERCENT DIFFERENCE

K PRIME, INC.

CHAIN OF CUSTODY RECORD

CONSULTING ANALYTICAL CHEMISTS 3621 Westwind Blvd., Santa Rosa, CA 95403 PHONE: (707) 527-7574 FAX: (707) 527-7879

Client/Project ID	Address/Phone	ANALYSES	KPI Project No.
EBA Engineering	707-544-0784 825 Sonoma Avenue, Santa Rosa CA 95404		9986
Project Location: 1401 W. Winton Ave., Hayward	Client Project No.: 2669		☒ EDF Log Code: _____
Contact: Matt Earnshaw	Sampler (Signature)		Global ID

Sample Identification No.	Date	Time	Lab Sample No.	Type of Sample	No. of Containers	STLC chrome	TCLP lead						Expected Turnaround Time	Remarks
B-52/53/54/55-A-Comp	4/15/19		181607	S	1	X							Std	Comp: 181588-181591
B-40/41/42/43-A-Comp	↓		181608	↓	↓	X							↓	Comp: 181592-181595
B-25/26/27/28-A-Comp	↓		181609	↓	↓	X	X						↓	Comp: 181596-181599

Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Lab Composite	Hong Luu	4/16/19	13:36
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received by: (Signature)	Date	Time

Disposal Method		
Disposed by: (Signature)	Date	Time

White Copy : Accompanies Samples
Yellow Copy : Sampler

K PRIME, INC.

CHAIN OF CUSTODY RECORD

CONSULTING ANALYTICAL CHEMISTS 3621 Westwind Blvd., Santa Rosa, CA 95403 PHONE: (707) 527-7574 FAX: (707) 527-7879

Client/Project ID	Address/Phone	KPI Project No.
EBA Engineering	(707)-544-0784 825 Sonoma Avenue, Santa Rosa, CA 95404	9986
Project Location	Client Project No.	☑ EDF Log Code: ____
1401 W. Winton Ave, Hayward	2689	
Contact	Sampler (Signature)	Global ID
Matt Earnshaw		

Sample Identification No.	Date	Time	Lab Sample No.	Type of Sample	No. of Containers	STLC chrome	TCLP Lead	Expected Turnaround Time	Remarks
B-52A	4/15/19	15:20	191588	Soil	1	X	X	Std	Pleas- 4-1 lab
B-53A		15:26	191589						Composite
B-54A		15:17	191590						
B-55A		15:23	191591						
B-40A		15:00	191592						4-1 lab comp.
B-41A		15:05	191593						
B-42A		15:08	191594						
B-43A		15:10	191595						
B-25A		8:30	191596						4-1 lab comp.
B-26A		8:55	191597						
B-27A		8:46	191598						
B-28A		8:36	191599						

Relinquished by: (Signature)	Received by: (Signature) KPI	Date 4/16/19	Time 1330
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Received by: (Signature)	Date	Time
Disposal Method	White Copy : Accompanies Samples Yellow Copy : Sampler		
Disposed by: (Signature)	Date	Time	

APPENDIX E

DRILLERS PERMIT

Alameda County Public Works Agency - Water Resources Well Permit

Public Works Agency
Alameda County

399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 03/25/2019 By jamesy

Permit Numbers: W2019-0209
Permits Valid from 04/15/2019 to 04/15/2019

Application Id:	1553025919614	**City of Project Site:**	Hayward
Site Location:	1401 W Winton Ave, Hayward, CA 94545, USA		
Project Start Date:	04/15/2019	**Completion Date:**	04/15/2019
Assigned Inspector:	Contact Eneyew Amberber at (510) 670-5759 or eneyew@acpwa.org		
Applicant:	EBA Engineering - Matt Earnshaw 825 Sonoma Avenue, Suite C, Santa Rosa, CA 95404	**Phone:**	707-799-4165
Property Owner:	City of Hayward Department of Public Works 777 B Street, Hayward, CA 94541	**Phone:**	--
Client:	** same as Property Owner **		
Contact:	Matt Earnshaw	**Phone:** **Cell:**	707-799-4165 --

	Total Due:	$265.00
Receipt Number:	**Total Amount Paid:**	$265.00
Payer Name : Matt Earnshaw	Paid By: VISA	**PAID IN FULL**

Works Requesting Permits:

Borehole(s) for Geo Probes-Sampling 24 to 72 hours only (soil and water only) - 40 Boreholes
Driller: Cascade Drilling - Lic #: 938110 - Method: DP **Work Total: $265.00**

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2019-0209	03/25/2019	07/14/2019	40	2.50 in.	4.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site. The containers shall be clearly labeled to the ownership of the container and labeled hazardous or non-hazardous.

2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.

3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

4. Applicant shall contact assigned inspector listed on the top of the permit at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

5. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or

waterways or be allowed to move off the property where work is being completed.

6. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of $500.00.

7. NOTE:
Under California laws, the owner/operator are responsible for reporting the contamination to the governmental regulatory agencies under Section 25295(a). The owner/operator is liable for civil penalties under Section 25299(a)(4) and criminal penalties under Section 25299(d) for failure to report a leak. The owner/operator is liable for civil penalties under Section 25299(b)(4) for knowing failure to ensure compliance with the law by the operator. These penalty provisions do not apply to a potential buyer.

8. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

9. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

EBA's Health and Safety Plan, August 20, 2019

PROJECT HEALTH AND SAFETY PLAN

Excavation, Grading, and General Earthwork / Foundation Construction
Hayward Fire Station #6
1401 West Winton Avenue
Hayward, California

***Plan Prepared For*:**

City of Hayward
777 B Street
Hayward, CA 94541

***Prepared By*:**

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(Revision 1)

August 20th, 2019

Limitations

Services provided by Earth Safety Dynamics and its subcontractors have been provided in accordance with generally accepted professional practices for the nature and conditions of similar work completed in the same or similar localities, at the time the work was performed. The scope of work for the project was conducted within the limitations prescribed by the client. This Health and Safety Plan reflects conditions as reported to Earth Safety Dynamics at the time of production, and is not meant to represent a legal opinion. No other warranty, expressed or implied, is made. This Plan was prepared for the sole use of EBA Engineering, Inc. and their designees and may not be duplicated or used by any other party without the expressed consent of the client.



Kevin R. Braun, CIH
Certified Industrial Hygienist

ABIH Certification # 7029

August 20th, 2019

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List of Abbreviations and Acronyms

ACGIH	American Conference of Governmental Industrial Hygienists
A.L.	Action Level
A.P.R.	Air Purifying Respirator
Bgs	Below Ground Surface
C	Ceiling Limit (8 CCR 5155)
Cal/OSHA	California Department of Labor; Division of Occupational Safety and Health
CCR	California Code of Regulations
CFR	Code of Federal Regulations
C.I.H.	Certified Industrial Hygienist (American Board of Industrial Hygiene)
CRZ	Contamination Reduction Zone
dBA	Decibels; A-Weighted Range
ESL	Environmental Screening Level
ESLI	End of Service Life Indicator
EZ	Exclusion Zone
GFCI	Ground Fault Circuit Interrupter
HASP	Health And Safety Plan
IDLH	Immediately Dangerous to Life or Health
LEL	Lower Explosive Limit
MCE	Mixed Cellulose Ester
MSHA	Mine Safety and Health Administration
M.U.C.	Maximum Use Concentration
NIOSH	National Institute for Occupational Safety and Health
NRR	Noise Reduction Rating
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit (8 CCR 5155)
PNAs	Polynuclear (or Polycyclic) Aromatic Hydrocarbons
PRG	Preliminary Remediation Goal
RCRA	Resource Conservation & Recovery Act
SAR	Supplied Air Respirator
SPOC	Single Point of Contact
STEL	Short-Term Exposure Limit
STLC	Solubility Threshold Leachate Concentration
SSO	Site Safety Officer
TLV	Threshold Limit Value (ACGIH)
USCG	United States Coast Guard
USEPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds
XRF	X-Ray Fluorescence

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SECTION 1
INTRODUCTION

The existing Hayward Fire Station #6 is expanding to include additional administrative, maintenance, and training facilities on their property located at 1401 West Winton Avenue, in Hayward. Eight commercial buildings and a parking area are proposed to be constructed on the Property. Most of the Property is currently undeveloped land. Information regarding the proposed development is contained in a report by Rockridge Geotechnical entitled "*Final Geotechnical Investigation, Hayward Fire Station #6 & Fire Training Center, 1401 West Winton Avenue, Hayward, California*", dated July 14, 2017.

The City of Hayward (City) has developed this site Health And Safety Plan (HASP) specifically for potential earthwork associated with any proposed redevelopment, including concrete removal, demolition of structures and/or subsurface encumbrances, site dewatering, pile installation, and excavation, stockpile, sampling, and disposal of excess soils associated with the Site.

Earthwork may require handling and disposal of soils with elevated arsenic concentrations (normal background for this geological unit) and possible pumping and treatment/disposal of contaminated groundwater. The potential exists for encountering contaminated soils during various phases of the project. Work will stop and the client EH&S personnel and/or project Certified Industrial Hygienist (CIH) will be contacted immediately before excavation in areas of identified contamination is performed, or if any indications of unanticipated contamination are encountered, including but not limited to:

- Stained or discolored soil
- Characteristic or unidentified odor
- Visible unidentified residues
- Underground Storage Tanks (USTs) or Containers

This HASP establishes the specific policies and procedures that protect workers and the public from potential hazards posed by work under these conditions and with these materials at this site. The City considers safety the highest priority and has established a culture of minimizing exposure to chemical and physical hazards, which is applied on all projects. All activities will be conducted in a manner that minimizes the probability of injury, accident, or incident occurrence.

This HASP is written, and all site activities will be conducted, in compliance with all applicable regulations and guidelines, including but not limited to Federal Occupational Safety and Health Administration (OSHA) and California Division of Occupational Safety and Health (Cal/OSHA) requirements contained respectively in 29 CFR 1910 and 1926, and California Title 8, §1500 - 1938:

1) United States Department of Labor, OSHA Standards, specifically:

- Title 29 CFR Part 1910.120 - Hazardous Waste Site Operations and Emergency Response
- Title 29 CFR Part 1926 - Safety and Health Regulations for Construction

2) California Occupational Safety and Health Regulations, specifically:

- Title 8 CCR §5192 - Hazardous Waste Operations and Emergency Response
- Title 8 CCR §1532.3 – Crystalline Silica
- Title 8 CCR §5194 - Hazard Communication
- Title 8 CCR Chapter 4, Subchapter 4 - Construction Safety Orders
- Title 8 CCR §3203 and §1509 - Injury and Illness Prevention Programs

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- Title 8 CCR §5214 – Inorganic Arsenic

3) USEPA Standard Operating Safety Guides, July 1988.

4) NIOSH/OSHA/USCG/USEPA: *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, October 1985

5) EBA's Injury and Illness prevention Program (available on site)

This plan takes into account the preliminary information provided to the project management team detailed in the Contract Specifications provided by the Owner.

SECTION 2
PROJECT DESCRIPTION

The existing Hayward Fire Station #6 is being demolished and expanded to include additional administrative, maintenance, and training facilities on their property located at 1401 West Winton Avenue, in Hayward. Eight commercial buildings and a parking area are proposed to be constructed on the Property. Information regarding the proposed development is contained in a report by Rockridge Geotechnical entitled "*Final Geotechnical Investigation, Hayward Fire Station #6 & Fire Training Center, 1401 West Winton Avenue, Hayward, California*", dated July 14, 2017.

Based on the geotechnical report, the eight buildings have a total estimated footprint area of approximately 64,476 square feet and the parking area has an area of approximately 50,000 square feet. Waste soil will be generated from excavations for the proposed building slabs and footings, a basement for one of the buildings, an elevator pit, a pump test pit, a fuel underground storage tank (UST) excavation, and grading of the parking area. The soil to be disposed from this work consists of an approximate total volume of 7,900 cubic yards (11,850 tons).

A review of historical aerial photographs indicates most of the Property has been undeveloped since 1946. Prior to 1946 until prior to 1958, the southwestern area of the Property contained orchards. The only current development on the Property are several buildings along the western side of the Property associated with a current Hayward Fire Station that was constructed between 1968 and 1980.

Site investigations indicated that source removal activities had been conducted in conjunction with removal of underground storage tanks, reportedly resulting in only minor residual petroleum contamination in the existing fills. (The site is a closed leak case as of July 16, 2009).

The Property is in an area known as the Bay Plain, which is a subarea of the Santa Clara Valley Groundwater Basin (California Department of Water Resources, 1967). The Bay Plain is characterized by thin interbeds of sand, silt and clay deposited in flat lying marshland and shallow low energy alluvial channels. Groundwater occurs at shallow depths in thin discontinuous fine sand beds within deposits of mostly silt and clay. Groundwater was reported in previous studies at depths between 18 and 21.5 feet bgs, so it may be encountered and dewatering required for the deepest anticipated excavations (pump test / emergency well at 19 feet),

This Project involves excavation and disposal of approximately 7,900 cubic yards (cy) of soil, concrete, and rubble from the site as part of the construction.

Information obtained from the prior referenced site investigation indicates that only arsenic is present in concentrations exceeding direct contact ESLs.

The potential also exists to encounter soil and ground water contaminated with petroleum hydrocarbons by leaking storage tanks (known

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and unknown) located at facilities in the vicinity of the project. All personnel working in the project therefore are bound to satisfy the Cal-OSHA requirements for Hazard Communication (8 CCR 5194), and all workers entering exclusion zones or performing tasks governed by the scope and application of 8 CCR 5192 will be trained in Hazardous Waste Operations and Emergency Response (HAZWOPER).

SECTION 3
ORGANIZATION AND RESPONSIBILITIES

The City maintains a policy of providing its employees, subcontractors, and authorized visitors with information and procedures in accordance with the requirements of the Cal/OSHA Hazard Communication Standard in order to protect them and the adjacent community from any adverse effects that might result from work at a job site involving potentially hazardous substances. All personnel working on this project will follow the health and safety procedures set forth in this plan. Visitors will not be allowed entry unless they have read and agreed to comply with this plan. The HASP acknowledgment will be signed by all representatives who actively participate at this project.

3.1 INDUSTRIAL HYGIENIST

The City will designate a representative to provide industrial hygiene support.

The City's representative shall have the following responsibilities:

- Provide Single Point of Contact (SPOC) for interface between City's representative and Client safety personnel
- Health surveillance (if required)
- Assure that safety procedures in effect are in compliance with all appropriate federal, state, and local regulations
- Maintain EBA personnel exposure monitoring records
- Ensure that appropriate personal protective equipment is used

The City's representative will maintain a safety log (in the Appendices), which will be kept for all site activities. This log will include safety meeting topics, training records, air monitoring information, and any incidents related to employee or contractor health and safety. The City's representative has responsibility for implementing and enforcing all aspects of this HASP. He will oversee any personnel monitoring and will decide when action levels have been reached which require work stoppage. The City's representative establishes and enforces the protective equipment to be used by site personnel for various site activities.

3.2 SITE SAFETY OFFICER (SSO)

The SSO will be designated by the City of Hayward. He will determine when a change in conditions warrants consultation with or the additional presence of the Industrial Hygienist. He or his designated alternate SSO shall be on site at all times during the execution of work. In addition, supervision of all Hazardous Waste Operations (as defined in 8 CCR 5192) will be done by a certified HAZWOPER supervisor.

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3.3 EMPLOYEE SAFETY RESPONSIBILITY

Although the employer is responsible for providing a safe and healthful workplace, each employee is responsible for his/her own safety as well as the safety of those around him/her. All personnel are aware that they are responsible for ensuring that all unsafe conditions and actions are isolated and corrected, either by direct action (fix it themselves) or by alerting their respective supervisors after isolating the problem. All employees shall use provided equipment in a safe and responsible manner as directed by his supervisor. Employees are expected to report fit for work. Use or being under the influence of drugs or alcohol in the workplace is strictly forbidden. Any employee suspected of being under the influence on the job will be referred by the site safety officer to the corporate safety manager.

3.3.1 Buddy System

No work will be performed in any designated exclusion zone without benefit of the "buddy system". Workers will be paired in buddy teams at the start of each shift for any and all hazardous waste operations or emergency response work to be undertaken during the day. Buddy teams will remain in communication for the duration of the shift.

3.4 LOGS, REPORTS, AND RECORD KEEPING

Recordkeeping is a crucial component of any effective health and safety program. Site safety records shall therefore be updated daily. The following logs, reports, and records shall be maintained in the appendices of this HASP:

- Safety meetings
- Training logs - site specific and visitors
- Weekly safety inspection logs
- Air Monitoring Results
- Canceled Permits
- Instrument Calibration Logs

SECTION 4
JOB HAZARD ANALYSIS

This section discusses chemical, physical, and environmental hazards to workers on the site. A summary table (Table 4.1) of chemicals of most concern is included (Page 10).

4.1 CHEMICAL AND BIOHAZARDS

The chemicals listed in Figure 4.1 are believed or suspected to be present on this site. This table is based on geotechnical investigations and information summarized in the ESA and SMP prepared by ERAS Environmental, Inc.

Potential Contaminants of Concern (COCs) present at the site are limited to the hazards associated with exposure inorganic arsenic. These hazards are discussed below:

METALS, INORGANIC COMPOUNDS

Contaminants known or suspected on site include on site include:

- Inorganic Arsenic

Inorganic Arsenic

Arsenic is a lustrous grey metal. It may appear as a whitish, brittle salt in soils. It likely was used in the area as a lead arsenate component of herbicides and pesticides. Routes of exposure to arsenic and its compounds include inhalation, ingestion, and absorption through the skin and mucus membranes. Effects of acute exposure include headache, nausea, and vomiting. Chronic exposure to subacute dosages of arsenic has been linked to a number of types of cancer.

A lethal dose of arsenic oxide is generally regarded as 100 mg for an average sized adult.

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MINERALS

Hazardous building materials potentially present on site include:

- Concrete Dust / Crystalline Silica

Crystalline Silica

Crystalline silica is a basic component of concrete. Quartz is the most common form of crystalline silica. Cristobalite and tridymite are two other forms of crystalline silica, but are not expected on this job site. All three forms may form respirable dusts during all phases of concrete demolition and loading of debris.

Acute Effects: Acute silicosis occurs after a few months or as long as 2 years following exposures to extremely high concentrations of respirable crystalline silica. Symptoms of acute silicosis include severe disabling shortness of breath, weakness, and weight loss, which often leads to death.

Chronic / Classic Effects: Crystalline silica has been classified as a human lung carcinogen. Additionally, breathing crystalline silica dust can cause silicosis, which in severe cases can be disabling, or even fatal. Respirable silica dust enters the lungs and causes the formation of scar tissue, reducing the lungs' gas exchange capacity. Silicosis also increases susceptibility to lung infections. Smoking exacerbates these effects.

Symptoms: Silicosis is classified into three types: Chronic/classic, accelerated, and acute. Chronic/classic silicosis, the most common, occurs after 15–20 years of moderate to low exposures to respirable crystalline silica. Symptoms associated with chronic silicosis may or may not be obvious; therefore, workers need to have a chest x-ray to determine if there is lung damage. As the disease progresses, the worker may experience shortness of breath upon exercising and have clinical signs of poor oxygen/carbon dioxide exchange. (Cyanosis, clubbed fingers.)

Cancer Risk: Classified as probable human carcinogen.

BIOLOGICAL HAZARDS

Biological hazards may be present at the jobsite in the form of hazardous flora and fauna as well as human pathogens potentially found in raw and partially treated sewage.

Expected hazards potentially posed by harmful organisms at the job site include:

- Poison Oak
- Spiders

Poison Oak

Poison Oak (Toxicodendron diversiloba) is a shrub with three-part, lobed compound leaves. The sap and oil contain a reactive compound that results in an allergic rash in sensitive individuals. The first symptom of poisoning is a severe itching of the skin. Later, a red inflammation and a blistering of the skin occurs. In severe cases, oozing sores develop. The rash spreads by the poisonous sap (urushiol), not as the result of contamination from sores. Exposure comes through direct contact with plants and secondary contact with the sap and oils from contaminated clothing and other surfaces. The blood vessels develop gaps that leak fluid through the skin, causing blisters and oozing. Workers in areas with identified poison oak growth should avoid contact with any part of plants and wear disposable coveralls when handling or disposing of them. Decontamination protocols (including washing of exposed skin as soon as possible after exposure) should be followed to limit allergic reactions and limit secondary exposures.

Spiders

The only poisonous spider identified in the area is the Western Black Widow (Latrodectus Hesperus). This spider is historically found in brush, woodpiles, and under structures. As with most spiders, black (and other) widow spiders bite humans only in accidental situations: Widow spiders are practically blind and spend most of their lives in the web. The bite causes pain, redness, swelling, and left untreated can cause

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localized tissue necrosis. Workers should wear gloves or gauntlets at all times when handling brush or old lumber and when working in crawl spaces and other areas known as habitat for widow and other spiders.

4.2 Exposure Prevention

Engineering controls (consisting primarily of an aggressive dust control program) are expected to be sufficient to control all exposures to particulate and particulate-bound contaminants. Assuming that arsenic (the highest concentrated COPC with respect to its lowest published exposure limit) is represented in all generated dust in concentrations equal to its maximum detected remaining concentration in soil (7.9 mg/kg), the calculation for arsenic content of dust on site is:

$mg/m^3 = [(mg/m^3 \text{ dust}) \times (mg/kg \text{ As})]/10^6$

Using an arsenic concentration of 7.9 mg/kg (the maximum detected soil concentration) in generated dust, the Action Level of 0.005 mg/m^3 (8 CCR 5214) would be reached at total dust concentrations exceeding 632 mg/m^3, a value well above the site action level for total nuisance dust (5 mg/m^3).

Dust becomes visible (depending on lighting, reflectivity, background, etc.) generally at or below a concentration of 2 mg/m^3. Specifications call for no visible fugitive dust evolution during earthwork or soils treatment, so the PEL for dust and particulate-bound contaminants is unlikely to be reached or exceeded. Required engineering controls (No earthwork will be performed without active dust suppression, achieved through application of water before and during soil-disturbing activities.) and personal protective equipment (PPE) requirements combined with general hygiene requirements (wash arms, face, and hands before eating or smoking) will prevent exposures due to inhalation, absorption, or ingestion of arsenic-containing dust. A wash facility will be located on site at all times. In addition, the Site Safety Officer and Site Supervisor shall observe and warn the crew members to be aware of the initial symptoms of chemical exposure. The severity of exposure depends primarily on the specific activities undertaken and the care with which the activities are performed.

Any crew member will be removed from the work site and placed under watch immediately if these initial symptoms are noted:

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

Level C protection will be required only in the event that unexpected contaminant concentrations are encountered or dust control efforts prove ineffective. Action levels for respiratory protection are established for the site based on maximum known contaminant concentrations.

Respiratory protection will be utilized in accordance with Section 6.4 – 6.10 if the following sustained (≥ 5 minutes) breathing zone concentrations are recorded:

Contaminant	**Action Level**
Arsenic	0.005 mg/m^3
Nuisance Dust (total)	5.0 mg/m^3
Concrete Dust	450 $\mu g/m^3$ *

* Monitoring for nuisance or concrete dust required only if activities potentially exposing employees to crystalline silica are conducted at variance with Table 1 of the silica standard.

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4.2.1 Hazard Communication Program

A written hazard communication program will be established by the City's representative. The purpose of this program is to transmit information about the various chemical hazards in the workplace to the workers using various media. The transmittal of information will be accomplished by means of a comprehensive hazard communication program, which will include container labeling and other forms of warning, Safety Data Sheets, and employee training in accordance with Title 8 CCR §5194. . The City will fulfill the hazard communication requirements through formal safety training, departmental safety meetings, and job site safety meetings. Material Safety Data Sheets for all chemicals likely to be encountered on this job will be maintained and available on site.

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TABLE 4. 1 SUMMARY OF CONTAMINANTS OF POTENTIAL CONCERN (COPCs) ON-SITE				
Compound	Description	Exposure Limits	Routes	Signs and Symptoms
Inorganic Arsenic $[\ ]_{max}$= 7.8 mg/kg (soil)	Silvery, lustrous grey metal.	PEL = 10 µg/m^3;** AL = 5 µg/m^3 *	Inhalation Ingestion Absorption	Respiratory/skin irritant, perforation of nasal septum, liver/kidney damage, blood changes, skin ulcers, dermatitis. Carcinogen (VI)
Crystalline Silica *, ** (Quartz,);	Fine dust generated by saw cutting, grinding, etc. of concrete and mortar	PEL = 50 µg/m^3 AL = 25 µg/m^3	Inhalation	Respiratory irritation; Impaired pulmonary function (silicosis); lung cancer
Concrete Dust	Fine dust generated by demolition and processing activities	AL = 450 µg/m^3 ††	Inhalation	Respiratory irritation; Impaired pulmonary function (silicosis); lung cancer

LEGEND

Units: **mg/m^3** = milligrams per cubic meter
µg/m^3 = micrograms per cubic meter

AL	Project Action Level for Respiratory Protection
TLV	Threshold Limit Value; ACGIH
*	California Action Level as defined in 8 CCR 5214 (arsenic), 1532.3 (crystalline silica)
**	Exposure to carcinogens maintained As Low As Reasonably Achievable
††	Action Level for respirable dust based on 20% Quartz; Dust PEL = 10 / % Silica + 2

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4.3 PHYSICAL HAZARDS

In order to minimize physical hazards, standard safety protocols have been developed that will be followed at all times. Hazard analyses are produced, updated frequently, and reviewed daily with all affected crew members for every jobsite operation. Failure to follow safety protocols or continued negligence of these policies will result in expulsion of a crew member from the site as well as possible termination of employment.

Hard hats, safety vests, and leather work boots will be required in all areas of the site.

4.3.1 Tripping, Slipping, and Falling Hazards

In order to minimize tripping hazards caused by construction debris, material will be removed daily from the work areas and stockpiled in appropriate designated storage areas. Spoils will be kept a safe distance from excavations at all times, and all personnel will exercise extreme caution around trenches. This "house cleaning" effort will be enforced by the SSO at the end of each day. Use of safety harnesses and fall arrest/restraint will be required for any personnel exposed to falls exceeding six feet (including on manlifts) and whenever they are exposed to impalement hazards.

4.3.2 Head, Eye, and Back Injuries

As minimum requirements, hard hats and safety glasses will be donned prior to entering any active work area or performing any related job tasks. (This includes visitors, outside service contractors, etc.) Personnel will be trained in and required to use proper lifting techniques for all lifts. Carts will be used for transporting materials, tools, and equipment any significant distance within pipes.

4.3.3 Falling Objects

All tasks can and should be accomplished without any object free-falling to the ground. No personnel shall work under equipment or elevated loads at any time. Areas beneath elevated work will be barricaded and posted with warning signs.

4.3.4 Heavy Equipment and Traffic

Proximity of traffic and the use of heavy equipment and trucks on site presents the greatest potential for injury to personnel. In order to minimize these hazards, designated routes will be established for transport of material through the site and specific traffic patterns will be established. All trucks will be equipped with operable backup alarms and shall use spotters for backing procedures. Where possible, the work area will be physically separated (K-Rail or equivalent barricades) from traffic.

Personnel needing to approach heavy equipment during operation will observe the following protocols:

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

Only qualified personnel, as determined by the Site Superintendent, will operate heavy equipment. Those crew members directly involved with spotting for the operator will be the only personnel allowed within the operating radius of the heavy equipment. All other personnel will remain a safe distance away from these operations. Subcontractors will follow all Client traffic rules and instructions, including use of reflective safety vests.

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4.3.5 Site Pre-inspection of Equipment

Only equipment that is in safe working order will be used on-site. To maintain this policy, all equipment brought onto the project site will be inspected for structural integrity, smooth operational performance, and proper functioning of all critical safety devices in accordance with the manufacturer's specifications. This inspection will be performed by a qualified equipment operator. Also, every operator will perform and document a Daily Equipment Inspection at the start of each work shift and turn the form in to the foreman by the end of shift. Equipment found during this inspection not conforming to operational and safety requirements will not be put into service until all necessary repairs are made to the satisfaction of the inspection group.

4.3.6 Operator Qualifications

Only qualified operators familiar with the equipment to be used will be permitted to operate. Subcontractors will supply proof of operators' qualifications to operate in a safe manner, including certification for any equipment requiring it (lift trucks, etc.).

4.3.7 Electrical Hazards

In order to prevent accidents caused by electric shock, the SSO will inspect all electrical connections on a daily basis. He will shut down and lock out any equipment that is found to have frayed wiring or loose connections until a qualified electrician can be contacted and repairs effected. Electrical equipment will be de-energized and tested by qualified personnel before any electrical work is done. All equipment will be properly grounded before and during all work.

In addition, ground fault circuit interrupters (GFCIs) will be used with portable hand power tools between the power source and tool. Generators used to supply power will be equipped with GFCIs.

4.3.8 Hot Work (General)

A Hot Work Permit is required for all work involving open flame, sparks, arc, or other potential sources of ignition. The Permit (obtained from the SSO) is good for a single shift and details (in addition to precautions dictated in this section) all required safety precautions and provisions associated with execution of the work in accordance with Plant safety standards. ***(Note: Fusion welding of HDPE does <u>not</u> constitute introduction of an ignition source and is exempt. No other hot work other than possible repair is anticipated.)***

4.3.9 Welding/ Cutting Torch Hazards

Personnel who will be performing or observing welding or torch-cutting operations are required to use approved welding shields or glasses.

Welding shields and glasses are to be inspected prior to each use for scratches and pits that would inhibit their ability to shield harmful ultraviolet light. Workers will be required to wear protective clothing to shield the skin from slag and from the harmful ultraviolet light produced by arc welding operations. Personnel working near ongoing welding operations that could ignite protective clothing must wear flame retardant outer apparel (Nomex or equivalent). A fire watch (equipped with extinguisher) will be posted for all welding, burning, cutting, or other activities producing sparks or other sources of ignition. All combustible material within 25 feet of hot work will be removed or covered with fire blankets for the duration. Fire watch will be maintained for a minimum of 30 minutes after cessation of hot work. ***(See note above.)***

4.3.10 Fire and Explosion

All flammable liquids will be stored in UL-Approved safety containers in designated areas. Oxygen and acetylene cylinders will be stored secured upright in separate areas except when on carts for immediate use. All high-pressure cylinders will be transported with caps in place, and all valves and gauges will be inspected before each use. Continuous monitoring for explosive

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gases /vapors (primarily methane) will be performed during all pipeline entries.

4.3.11 Rigging and Hoisting

Note: *All hoisting operations will be conducted in strict accordance with the standard "Manual of Wire Rope and Rigging.* All rigging will be supervised by a "competent person". Cranes, boom trucks, and other lifting devices will be operated only by trained operators. The swing path will be kept clear of all personnel and critical objects.

4.3.12 Trenching and Excavation Entry

A dig permit must be obtained before any excavation work on site. All excavations to be entered will be sloped or shored in accordance with 8 CCR 1539 - 1547.

4.3.13 Sanitation

Sanitation facilities (in addition to decontamination facilities) will be provided in accordance with 8 CCR 1519 and 8 CCR 5192(n). These will include properly serviced toilets, hand washes with single-use towels, and drinking water with single-use cups.

4.4 ENVIRONMENTAL HAZARDS

4.4.1 Weather and Thermal Stress

Heat Stress

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

- Heat rash
- Heat cramps
- Heat exhaustion
- Heat stroke

An action level for heat stress observation for this project is set at 75° F. Whenever the ambient temperature is greater than or equal to this action level, the SSO will alert his crew to be vigilant for symptoms of heat stress. The SSO will also advise the crew to increase the amount of water intake.

Heat stroke, heat cramps, and heat exhaustion are covered in detail during general and site-specific training program. In addition, this information is discussed during safety "tailgate" meetings. Workers are encouraged to increase consumption of water and electrolyte-containing beverages such as Gatorade during warm weather. Water and electrolyte-containing beverages will be provided on-site and will be available for consumption during work breaks.

Workers are encouraged to take rests whenever they feel any adverse effects, especially those effects that may be heat-related. The frequency of breaks may need to be increased upon worker recommendation to the SSO. Also, should resting pulse rates exceed 110 beats per minute (BPM), more frequent breaks will be taken.

During the safety "tailgate" meetings, the SSO will talk about heat stress, its symptoms, and the factors that affect a person's ability to handle heat stress.

Cold Stress

Cool and wet conditions are possible during the execution of this work. The SSO and workers will be alert for signs and symptoms of cold stress (hypothermia). This is commonly caused by prolonged exposure to cool / windy conditions while wearing clothing that has become wet, either from precipitation, dust control measures, or paradoxically by perspiration caused by heavy work in protective suits.

The SSO will monitor the ambient air temperature using a thermometer in the support zone. At temperatures below 40° F, actual temperature or corrected for wind chill, the most current published ACGIH cold stress standard will be followed.

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Field personnel will be observed for the following signs and symptoms:

- Pain in the extremities
- Uncontrolled shivering
- Malaise or reduced responsiveness

Any team member who exhibits these signs will be monitored for cold stress. Any individual with an oral temperature of less than 97° F will be taken immediately to a warming shelter, which will be provided on any job site where the ambient temperature is less than 40° F. Breaks will be taken in the shelter as needed according to ACGIH TLV for cold stress.

4.4.2 Hearing Conservation Program

Hearing protection will be used for all personnel working with or within 50 feet of power tools or within any areas designated by management. Hearing conservation program complies with both the California and Federal Hearing Conservation Standards.

4.4.3 Confined Space Entry

All entries into a trench or other enclosed space in potentially contaminated soils will be conducted as non-permit confined space entries after ventilation and initial monitoring have demonstrated that atmospheric conditions are acceptable.

Monitoring: Initial (pre-entry) and continuous monitoring will be performed at the entrance and throughout the work area for flammable gases, oxygen, carbon monoxide, and hydrogen sulfide. Preliminary monitoring will be performed at the access point and documented on the entry form. Continuous monitoring will be conducted and documented at 15-minute intervals. Work will cease and the trench will be evacuated immediately in the event any meter goes into "alarm" mode, or any of the following parameters for acceptable entry is exceeded:

Parameter	**Acceptable Range**
Oxygen	19.5% - 23%
Combustible Gas	≤ 10% LEL
H_2S	≤ 2 ppm
CO	≤ 10 ppm
VOCs	≤ 10 ppm

The space will not be re-entered for any reason until the condition has abated or the condition has been further evaluated and deemed safe by the SSO in consultation with the project Industrial Hygienist.

Buddy System: Nobody will be permitted alone for any period of time within any confined space. Ideally, crews should move and function as a unit, but may split up into subgroups of two provided each group maintains monitoring and communications capability.

Access / Egress: Ladders, ramps, or other compliant access will be provided at maximum 100-foot intervals in all trenches.

Emergency Action / Notification: In the event that any entrant becomes injured, incapacitated, non-responsive, or otherwise impaired, or if contact is lost with any crew or sub-team, the observer will immediately initiate emergency response actions detailed in Section 9 of this Health and Safety Plan. If safe and feasible, the remaining members of the crew will assist the injured or incapacitated worker to the extraction point.

Illumination: Temporary lighting will be installed if needed at each work area sufficient to maintain a minimum illumination level of 10 foot-candles. Access lighting will provide a minimum of 5 foot-candles of illumination.

Note: Maximum anticipated trench depth ≤ 5 feet below grade. Confined space entry therefore is not anticipated at this time.

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4.4.4 General Illumination

No night work is anticipated for this project, but work may occur within enclosed areas. Adequate lighting will be provided in all work areas. Should work occur after darkness or within buildings, portable spotlights will be used to maintain at least 10 to 20-foot candle light at the site.

4.5 HAZARD ANALYSIS SUMMARY

This work involves significant risk from several sources. Physical hazards and construction activity present a higher than normal risk due to the confined work areas. These risks will be minimized by adequate traffic control, planning, and worker education.

In addition to the described physical and general hazards, the primary health hazards associated with the work consist of the potential for worker exposure to contaminated soil / dust or groundwater resulting from leaking tanks (known and otherwise) at this and adjacent facilities.

Wet methods will be used to limit dust generation where possible. A requirement for Level C respiratory protection therefore is not anticipated. Representative personal and ambient air sampling for contaminants will be performed as deemed necessary by the CIH using calibrated sampling pumps and appropriate collection media to confirm compliance with Permissible Exposure Limits. Additional exposure monitoring may be performed at the discretion of the project CIH and SSO. All monitoring (personal and area) will be performed in accordance with Section 8 of this Plan.

In most areas, work will proceed without respiratory protection unless or until sampling or air monitoring results indicate protection is required or advisable.

Protective equipment ensembles for each of the levels of protection are described in Section 6.

4.6 TASK SPECIFIC RISK ASSESSMENT

TASK: Excavation, Drilling, Grading, Compaction and Disposal of Contaminated or Arsenic-Containing Soils

SPECIFIC HAZARDS: Utilities, noise, heavy equipment and truck operations, vehicular traffic, volatile and particulate-bound contaminants, contaminated groundwater.

CONTROL MEASURES: A survey for underground utilities shall be conducted prior to any excavation. Personnel will use care when walking around excavation edges. All work is expected to be performed without respiratory protection unless unforeseen conditions are encountered or use is otherwise specified by City's designated representative or SSO. The work area will be clearly marked. Ground personnel shall maintain eye contact with the equipment operator and wear hearing protection while inside the operating radius of the equipment, and shall otherwise maintain a minimum distance of 40 feet from the equipment unless spotting for the operator. Only qualified and experienced operators will operate equipment. Hard hats, safety glasses, gloves and work boots are mandatory for all personnel, and rubber overboots and tyvek suits (or equivalent) will be worn by all personnel entering exclusion zones or performing any job tasks with potential for contact with contaminated materials. An aggressive program of dust control will be utilized to prevent any visible dust generation and will thereby reduce the potential for airborne contaminants. Spotters/flaggers will be used to direct traffic and spot trucks. Stockpiles of contaminated soils will be kept on lined and bermed areas. Water from dewatering activities will be contained and tested in order to determine proper discharge procedures. Trucks will be securely tarped before transport of hazardous or contaminated material on any public road outside of project limits. Spilled material will be cleaned immediately from vehicles and (open) road surface and returned to excavation.

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TASK: Demolition of subsurface encumbrances
SPECIFIC HAZARDS: Utilities, equipment, slips, trips, & falls, noise, contact with contaminated materials, atmospheric hazards
CONTROL MEASURES: All utilities will be disconnected and disconnect verified by SSO or his designee before commencement of any demolition activity. The work area will be surrounded by a barricade to exclude ground personnel from projectile and impalement hazards. All potentially exposed personnel shall wear hearing protection. Only qualified and experienced operators (as detailed in Section 4.3.6 of this HASP) will operate equipment. Hard hats and safety glasses will be required at all times. All hazardous building materials (asbestos, lead, etc.) will have been removed and removal verified in writing by "soft demolition" subcontractor before commencement of demolition. Dust control will be utilized to reduce the potential for airborne concrete dust. Air monitoring and sampling will be conducted in accordance with Section 8 of this HASP.

TASK: Demolition of utilities and process piping, Line Breaking
SPECIFIC HAZARDS: Utilities, equipment, slips, trips, & falls, noise, contact with contaminated residues, trench entry, atmospheric hazards, unanticipated chemical reactions.
CONTROL MEASURES: All utilities and process piping will be disconnected and disconnect verified by SSO before commencement of any demolition activity. The work area will be surrounded by a barricade to exclude unauthorized personnel. All exposed personnel shall wear hearing protection as dictated by noise levels. Only qualified and experienced operators (as detailed in Section 4.3.6 of this HASP) will operate equipment. Hard hats and safety glasses will be required at all times. All hazardous materials (asbestos insulation) will have been removed and removal verified in writing by "soft demolition" subcontractor. Lines will be drained and purged whenever possible. All trenches will be properly shored or sloped before entry and will be treated as non-permit required confined spaces. Air monitoring and sampling will be conducted in accordance with Section 8 of this HASP.

TASK: Stockpile Management and Sampling
SPECIFIC HAZARDS: Equipment, slips, trips, & falls, noise, contamination of underlying and surrounding soils, contact with contaminated material. *(All sampling will comply with acceptance criteria of disposal facility.)*
CONTROL MEASURES: Ground personnel shall wear hearing protection as required by noise levels. Only qualified and experienced operators (as detailed in Section 4.3.6 of this HASP) will operate tools and equipment. Hard hats and safety glasses will be required at all times. Stockpiles will be located in bermed and lined areas and will be covered when inactive. Full decontamination protocols will be followed by samplers leaving the stockpile area. Gloves and overboots will be used by individuals performing sampling.

TASK: Backfill
SPECIFIC HAZARDS: Equipment, slips, trips, & falls, noise, contact with contaminated fill
CONTROL MEASURES: Ground personnel shall wear hearing protection as required by noise levels. Only qualified and experienced operators (as detailed in Section 4.3.6 of this HASP) will operate tools and equipment. Hard hats and safety glasses will be required at all times. Aggressive dust control will be used to prevent airborne exposure to any residual contamination contained in stockpiled soils used as backfill.

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SECTION 5
WORK AND SUPPORT AREAS

To prevent migration of contamination caused by personnel or equipment, work areas and personal protective equipment are clearly specified prior to beginning operations. Site Safety has designated work areas or zones as suggested by the NIOSH/ OSHA/USCG/EPA document, "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities". Each work area will be divided into three zones: an exclusion (or "hot") zone (EZ), a contamination reduction zone (CRZ), and a support zone.

5.1 EXCLUSION ZONE

In the event impacts are encountered during construction, the exclusion zones will consist of areas where inhalation, oral contact, or dermal contact with contaminants is considered to be possible. It is anticipated that each EZ will encompass only the confines of open excavations in contaminated (known or suspected) areas of the site prior to installation of clean base as well as the immediate confines of any stockpiles before sampling. The size and configuration of each area may vary according to air monitoring results. Each exclusion zone boundary will be clearly and conspicuously marked. A single entry and exit point will be established at each zone. Entry shall be limited to essential personnel or pre-approved visitors. Areas immediately surrounding demolition of or tie-ins to process piping will be likewise isolated.

5.2 CONTAMINATION REDUCTION ZONE

A CRZ will be established between each exclusion zone and support zone. In this area, personnel will begin the sequential decontamination process required to exit the exclusion zone. This will consist of a small, plastic-lined step-off area in which contaminated soils may be removed from boots, gloves, coveralls, and tools before moving to next location. Potentially contaminated dirt will be added to grade or excess material stockpile area. A complete CRZ will be established and utilized only at the end of each work period (before breaks, etc.).

5.3 SUPPORT ZONE

The support zone will consist of a clearly marked area where the administrative area, break areas, and changing facilities are located. Smoking, drinking, and eating will be allowed only in designated areas. Sanitation facilities (with hand wash) are provided in the support zone.

5.4 ACCESS CONTROLS

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

The City's representative shall also designate a decontamination corridor through which personnel may exit from a contaminated area and enter into adjacent clean break areas.

Visitors should check in immediately upon arrival. Only authorized visitors will be allowed access to active work areas. Each visitor will be required to provide and wear the necessary protective equipment for use during site visits and shall be escorted by the Supervisor while on site. All visitors, subcontractors and other personnel will be required to sign a safety plan acknowledgement sheet to certify that they have read and will comply with this site health and safety plan. Failure to comply with this site entry procedure will result in expulsion from the site.

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SECTION 6
PROTECTIVE EQUIPMENT

The following lists define the required personal protective equipment for each work location and task within a specific zone.

6.1 Exclusion Zone(s)

Tasks: Earthwork / Debris Removal/Drilling
EPA Level: D/C *
Respiratory Protection: Half-face APR w/P-100 HEPA filters *
Head: Hard hat
Hand: Work Gloves; Nitrile Gloves†
Suit: Work Clothing; Tyvek†
Foot: ANSI – Approved Steel-Toed Work Shoes; rubber work boots or overboots†
Eye: Safety Glasses; Face Shields**
Special Requirements: None
Comments: Hearing protection is required within 50 feet of operating power tools and all other areas found to present noise levels in excess of 85 dBA.

* Routine use of respiratory protection will be necessary only in the event that engineering controls are unable to maintain airborne dust concentrations below established action levels. Respiratory protection will be used in accordance with State and Federal respiratory protection standards as well as EBA's Respiratory Protection Program.

† Coveralls, overboots, and gloves needed only as required to prevent contact with and soiling by contaminated materials and as needed to facilitate decontamination. Workers not in direct contact with soils may substitute work clothes and gloves for coveralls and Nitrile/Liner system.

** Face shields required for operations presenting projectile hazards as detailed in Section 4.6.

6.2 CONTAMINATION REDUCTION ZONE

Tasks: All decontamination procedures
EPA Level: D
Respiratory Protection: None
Head: Hard hat
Hand: Nitrile gloves *
Suit: Standard Work Clothes.
Feet: Leather work boots
Eye: Safety Glasses / Goggles *
Special Requirements: None
Comments: See Section 4.6

* Gloves and Goggles required only when dispensing concentrated bleach to mix 10% disinfectant solution if sewage is encountered.

6.3 SUPPORT ZONE

Personnel working in the support zone will use the following Level "D" protective gear:

- Leather work boots
- Hard hat
- Safety glasses

6.4 RESPIRATOR CARTRIDGES

Should conditions require an upgrade to Level "C" protection for some tasks, crew members working in Level "C" will wear NIOSH/MSHA-approved respirators equipped with combination organic vapor and P-100 HEPA air purifying cartridges.

These cartridges hold approval for:

- Dusts, fumes and mists with a TLV of 0.05 mg/m3 or greater
- Asbestos containing dusts and mists
- Radon daughters and radionuclides
- Organic Vapors

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6.5 CARTRIDGE CHANGES

All cartridges will be changed a minimum of once daily. However, water saturation of the HEPA filter or extremely dusty conditions may necessitate more frequent changes. Changes will occur when personnel begin to experience increased breathing resistance, notice any unusual odor inside the respirator, or experience excessive heat generation in the cartridges.

6.6 INSPECTION AND CLEANING

Respirators will be inspected daily before use by the individual user(s) and will be checked periodically by the EBA SSO. All respirators and associated equipment will be decontaminated, cleaned, and disinfected by the user after each shift using materials that will be provided on site.

6.7 FIT TESTING

Annual respirator fit tests are required of all personnel wearing negative pressure respirators. Qualitative fit tests will utilize isoamyl acetate or irritant smoke. Fit tests must incorporate the style and size of respirator to be used. Additionally, a positive and negative pressure fit check shall be conducted each time any tight-fitting respirator is donned.

6.8 FACIAL HAIR

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

6.9 CORRECTIVE LENSES

Normal eyeglasses cannot be worn under full-face respirators because the temple bars interfere with the respirator's sealing surfaces. For workers requiring corrective lenses who also must don full-face respiratory protection, special spectacles designed for use with respirators will be provided. Eyeglasses rated as safety glasses (ANSI Approval Z87 displayed on frame) are acceptable provided they are fitted with rigid side shields.

6.10 MEDICAL CERTIFICATION

Only workers who have been certified by a physician as being physically capable of respirator usage will be issued a respirator. Documentation of this approval will be maintained on site.

SECTION 7
DECONTAMINATION

This section describes the procedures necessary to ensure that both personnel and equipment are free from contamination when they leave the work site.

7.1 PERSONNEL DECONTAMINATION

Decontamination of personnel shall be accomplished to ensure that any material that they may have contacted in the exclusion zone is removed in the contamination reduction zone. Decontamination of personnel exiting the exclusion zone will utilize the following steps as appropriate to the specific site:

Step 1: Segregated equipment drop
Deposit equipment used on-site on plastic drop cloths or in containers with plastic liners.

Step 2: Overboot and glove wash
Scrub overboots and gloves with soap and water if visibly soiled.

Step 3: Overboot and glove rinse
Rinse boots and gloves with water.

Step 4: Outer glove removal
Remove outer gloves and deposit in container with plastic liner.

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Step 5: Suit and boot removal
Remove Tyvek suit with assistance of helper or buddy as needed. Deposit in container with plastic liner. Pull off rubber boots.

Step 6: Respirator removal (Level C)
Remove respirator. Avoid touching face with gloves. Place respirator in wash basin.

Step 7: Inner glove removal
Remove inner gloves and dispose of in container with plastic liner.

Step 8: Wash
Wash hands, face, and neck before breaks and lunch.

7.2 VEHICLE DECONTAMINATION

Brushing and establishment of a 50-foot track-out zone will suffice for decontamination of vehicles. A separate decontamination pad will be established for the decontamination of all equipment and vehicles leaving established hazardous waste exclusion zones. The following steps will be performed sequentially:

Step 1: Gross Contamination Removal
Gross soil deposits will be removed manually from tracks, tires, drives, etc. using digging bars, scrapers, etc. before moving onto decontamination pad.

Step 2: Pressure Wash
If surfaces cannot be sufficiently decontaminated manually and by track out buffer, they will be pressure washed with surfacted water to remove any remaining adhering contamination.

Step 3: Final water rinse
A final rinse is performed to remove dissolved contaminant, water, and surfactant residues.

All trackout that does occur will be recovered through use of a wet-sweeper to clean all road surfaces of any deposited contaminated material. All rinsates and dislodged soils and other potentially contaminated material will be added to haul trucks for removal.

7.3 SUSPECTED CONTAMINATION

Any employee suspected of sustaining skin contact with hazardous materials will proceed to the contamination reduction zone and wash off the contamination. If chemical contact causes injury, the employee will remove clothing, shower, don clean clothing, and immediately be taken to the First Aid Station.

7.4 PERSONAL HYGIENE

Before any eating, smoking, or drinking, personnel will exit exclusion zones and wash hands, arms, neck, and face. Separate - sex sanitation facilities will be available in the support zone if ten or more employees are to be accommodated.

7.5 OTHER DECONTAMINATION PROCEDURES

All decontamination liquids and disposable clothing will be handled as contaminated waste and disposed of properly at the direction of the client.

7.6 EQUIPMENT DECONTAMINATION

All heavy equipment and dump trucks used to excavate, handle, or transport contaminated material on site will have gross contamination removed prior to leaving site. Tools and small equipment will be cleaned prior to leaving the Exclusion Zone. Rinsates are to be applied for dust control.

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SECTION 8
EXPOSURE MONITORING

Site contaminant concentrations are such that objective data may be used to demonstrate acceptable exposure levels. Exposures will be quantified as outlined in this section only if work is performed in areas found or suspected to be contaminated at higher than expected concentrations of volatile compounds, arsenic, or other contaminants that may become known. Personal and ambient air monitoring will be conducted by City's representative as necessary in order to determine airborne contamination levels. Air sampling to ensure and document that exposure control measures in use are adequate to protect personnel against the contaminants present on site will be conducted in accordance with 8 CCR Sections 1532.1, 5155 and 5192.

Exposure assessments will be performed by obtaining representative personal breathing zone samples over full shifts. Samples will be obtained and analyzed for individual contaminants consistent with analytical results for contaminated soils in the area.

All personal arsenic exposure monitoring will be performed in accordance NIOSH Method 7300 and results shared with full crew at the next scheduled safety meeting.

The Industrial Hygienist or SSO will perform all air sampling, and the CIH and SSO or City's representative will perform all of the daily confirmatory visual dust monitoring specified in this health and safety plan.

Sampling will be performed in accordance with standard methods prescribed by the National Institute for Occupational Safety and Health (NIOSH), and will be conducted at the start of each job task in each contaminated area. Representative personal samples will be obtained from the breathing zones of individuals considered by site safety and project management to be engaged in activities with the greatest exposure potential. Visual monitoring for dust will be performed constantly and work will be stopped and aggressive dust control measures taken any time dust generation is visible. All decisions to downgrade respiratory protection levels (if respirators become necessary) will be based on sampling results of at least two employees over two shifts during typical activity. Project management and safety officers will be notified of when personnel sampling is to take place.

Noise levels will be evaluated and safe (85 dBA or less) perimeters established for all areas, operations, and equipment. Dosimetry will be performed for non-routine job tasks and those requiring frequent transit of areas requiring hearing protection to determine requirements for these tasks.

All exposure monitoring records will be kept in the appendices of this Plan and made available to all employees and their designated representatives on request.

SECTION 9
EMERGENCY RESPONSE

Prior to start of field activities, the SSO shall plan emergency egress routes and discuss them with all personnel who will be conducting the field work. Initial planning includes establishing and posting of emergency warning signals and evacuation routes in case of an emergency.

9.1 EMERGENCY SERVICES

A tested system shall exist for rapid and clear distress communication. All personnel shall be provided concise and clear directions and accessible transportation to local emergency services. A map outlining directions to the nearest hospital will be posted on site.

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The following emergency equipment shall be located in the support zone of each access point:

- Fire extinguishers
- Industrial first aid kit
- Portable eye washes, capable of supplying 15 minutes of water
- Emergency shower (if corrosives are in use).

9.2 EMERGENCY EVACUATION FROM WORK ZONES (RESCUE)

Injured workers will be assisted to the nearest access point for extraction if they can be moved and extracted without risking further injury. All rescue of incapacitated or seriously injured personnel will be performed by Emergency Medical Services (EMS). Personnel requiring emergency medical attention shall be evacuated immediately from exclusion and contamination reduction zones. Personnel shall not enter the area to attempt a rescue if their own lives would be threatened. The decision whether or not to decontaminate a victim prior to evacuation is based on the type and severity of the illness or injury and the nature of the contaminant. For some emergency victims, immediate decontamination may be an essential part of life saving first aid. For others, decontamination may aggravate the injury or delay life saving treatment. If decontamination does not interfere with essential treatment, it should be performed.

If decontamination can be performed:
- Wash external clothing and cut it away.

If decontamination cannot be performed:
- Wrap the victim in blankets or plastic to reduce contamination of other personnel.
- Alert emergency and off-site medical personnel to potential contamination; instruct them about specific decontamination procedures.
- Send along site personnel familiar with the incident

9.3 FIRST AID

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

At least two persons currently certified in first aid and CPR will be on site at all times during site activity.

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

- First aid kit(s)
- Portable emergency eye wash
- Supply of clean water

9.4 EMERGENCY ACTIONS

If actual or suspected serious injury occurs, these steps shall be followed:

- Remove the exposed or injured person(s) from immediate danger.
- Render first aid if necessary. Affected personnel will be decontaminated after critical first aid is given.
- Obtain paramedic services or ambulance transport to local hospital. This procedure shall be followed even if there is no visible injury.
- Other personnel in the work area shall be evacuated to a safe distance until the site supervisor determines that it is safe for work to resume. If there is any doubt regarding the condition of the area, work shall not commence until all hazard control issues are resolved.
- Notify Project Manager and Regional Safety Manager of incident.
- Notify client of incident.

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In the event of a small spill, the following steps shall be taken:

1. Immediately shut off all equipment or stop operations presenting potential ignition sources if material is ignitable. Identify and stop the source of the release.
2. Don appropriate protective gear (boots, gloves, etc.), and using materials in the Spill Kit, dike the spill to protect all drains, ditches, culverts, and any drainage to storm drains or surface water.
3. Use absorbent material, pads, etc. to recover the spill.
4. Other personnel in the work area shall be evacuated to a safe distance until the site supervisor determines that it is safe for work to resume. If there is any doubt regarding the condition of the area, work shall not commence until all hazard control issues are resolved.
5. Recover all sorbent materials and place in containers. Label.
6. Notify IH or SSO of incident.

For larger spills, follow those steps to the greatest extent possible and contact designated Large Spill Response contractor. Notify City of Hayward and Regional Water Quality Control Board if any release to surface water, ground water, or storm/sanitary sewer has occurred.

9.5 GENERAL EVACUATION PLAN

In the event of any alarm condition, accident, or any other emergency, evacuate the work area immediately and contact the Site Safety Officer.

In the event that any entrant or the observer notes any anomalous instrument readings, physiological or behavioral symptoms or abnormalities indicating possible exposure or other adverse effects, all personnel shall evacuate the work area immediately and notify site safety personnel.

In the general case of a large fire, explosion, or toxic vapor release, a site evacuation shall be ordered and shall follow these steps:

- Sound the applicable alarm and advise client representative.
- Evacuate the site via the closest safe route.
- All personnel will assemble at the staging area when the situation permits, and a head count will be taken.
- Determine the extent of the problem.
- Brief and direct Emergency Response Team members when they arrive on site.

A muster point will be established for each work area. Absent specific direction, the assembly area will be at the foreman's truck or location of morning toolbox safety meeting.

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9.6 EMERGENCY PHONE NUMBERS

Fire /Medical Emergency 911

Large Spill Response

Cal/OSHA (SF Region): (415) 703-5210

Spill Release

California Office of Emergency Services
(800) 852-7550

Regional Water Quality Control Board
(510) 622-2441

USEPA National Response Center
(800) 424-8802

Project Personnel (TBD)

Project Manager, Superintendent, SSO:

Site Safety Officer (alternates):

Corporate Safety Manager:

Project CIH:

Medical Provider

Emergency Medical Services:
Saint Rose Hospital (510) 264-4000
27200 Calaroga Avenue
Hayward, CA 94545

When calling for assistance from outside emergency responders, use the procedures for reporting emergencies as outlined in Section 9.7.

Directions to Hospital:
Note: Only those individuals with minor (non life-threatening) injuries are to be transported by project personnel. Emergency medical services will be summoned for all other injuries and illnesses.

Leave the site and head east on West Winton Avenue. Follow a half-mile to Hesperian Blvd. and turn right. Take Hesperian for 1 mile (past the Highway 82 interchange) and turn left onto Cathy Way. After one block turn right onto Calaroga Avenue. Hospital will be on the left; follow directions to Emergency Department.

9.7 STANDARD PROCEDURES FOR REPORTING EMERGENCIES

When calling for assistance in an emergency situation, the following information should be provided:

1. Call the appropriate emergency phone number (Posted on site; see above).

2. Provide the following information upon request:
- Location of nearest access point
- Name of person making the call.
- Telephone number at location of person making call.
- Name of person(s) exposed or injured.
- Nature of emergency (Be SURE to include nature of confined space conditions).
- Actions already taken.

3. Remain on line until instructed by dispatch to hang up.

Note: When calling 911 from a cell phone, calls are routed through CHP central dispatch. Additional information regarding nature of emergency, appropriate response agency and measure, etc. may be required.

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SECTION 10
TRAINING REQUIREMENTS

In addition to all required training (craft training, hazard communication, respiratory protection, etc.), all personnel entering exclusion zones will be trained in the provisions of this site Health and Safety Plan and be required to sign the Health and Safety Plan Acknowledgement Page. All site worker also will receive training in Hazard Awareness and Control, and all workers potentially exposed at or above the action level for respirable crystalline silica will be trained in accordance with the Silica standard.

Workers engaged in activity covered by the state and federal Hazardous Waste Operations and Emergency Response standards (8 CCR 5192; 29 CFR 1910.120) will receive training and supervised field experience in accordance with those standards and be supervised by a certified HAZWOPER supervisor.

SECTION 11
MEDICAL SURVEILLANCE PROGRAM

All personnel utilizing respiratory protection will be cleared to do so by a physician or licensed healthcare practitioner (PLHCP). All personnel potentially exposed to hazardous materials in concentrations at or exceeding permissible exposure limits (PELs) (or lead Action Level) for 30 or more days per year without regard to use of respiratory protection will participate in a Medical Surveillance Program in accordance with 8 CCR 1532.1, 1532.3, and 5192. Other medical consultants will be retained if additional expertise is required.

Medical Surveillance Elements

Item	Initial	Annual
Medical History	X	X
Work History	X	X
Visual Acuity	X	X
Pulmonary Function *	X	X
Audiometry	X	X
Chest X-Ray **	X	
Complete Blood Count	X	X
Blood Chemistry (SMAC)	X	X
Blood Lead / ZPP	X	X
Urinalysis	X	X
Dermatology Exam	X	X

* Pulmonary function test at discretion of physician after review of Pulmonary Fitness Questionnaire.

** X-rays required for personnel utilizing respiratory protection for crystalline silica or asbestos for 30 or more days per year.

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Figure 1:
1401 West Winton Avenue Earthwork
Health and Safety Organization (TBD)

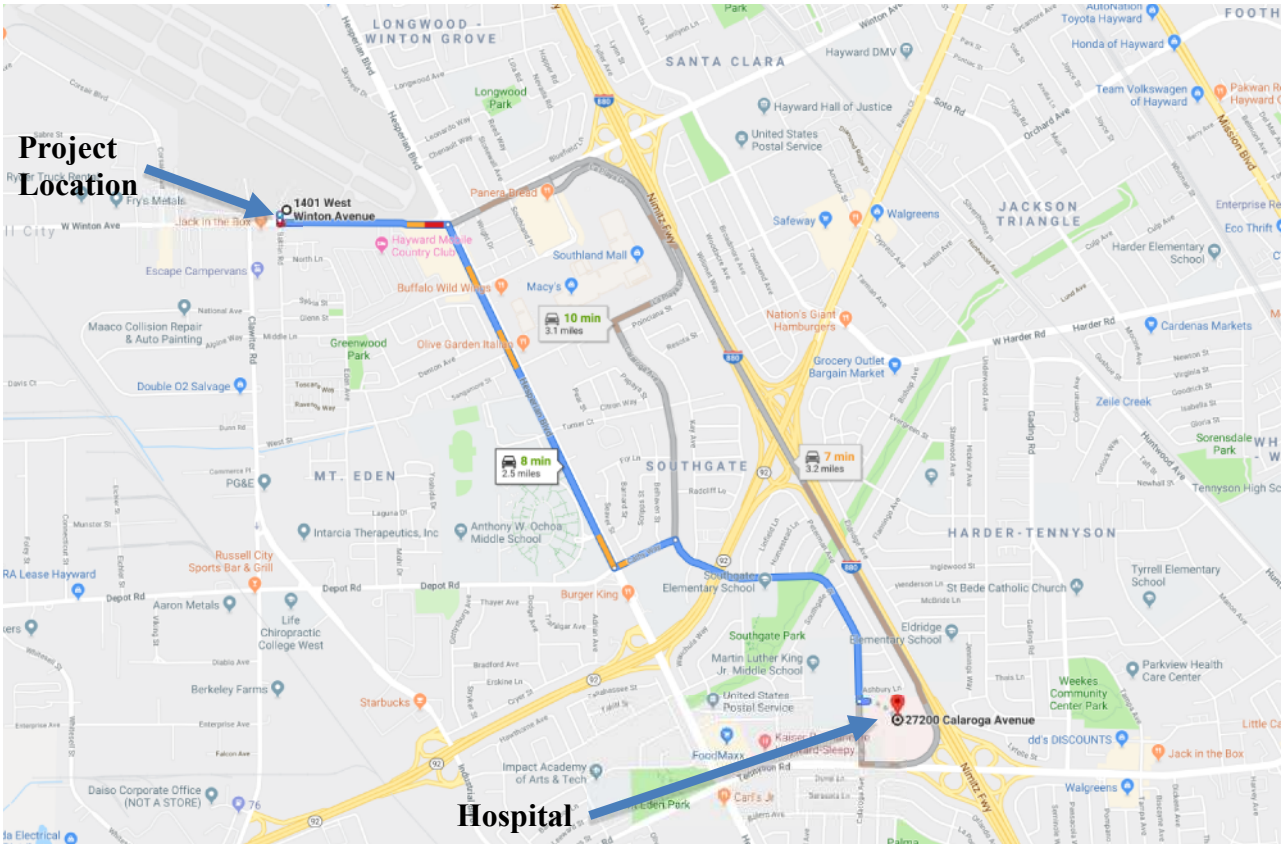
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Google Maps

1401 West Winton Avenue, Hayward, CA to 27200 Calaroga Ave, Hayward, CA 94545

Drive 2.5 miles, 8 min

Route to Saint Rose Hospital



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Health and Safety Plan Acknowledgement

I have read, understand, accept and will abide by all provisions of this Health and Safety Plan. I also agree to inform my supervisor and/or the Site Safety Officer of any conditions which are or appear to be unsafe.

Date	Time	Name (Print)	Signature

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APPENDIX A: CHANGES TO THIS HEALTH AND SAFETY PLAN

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APPENDIX B: SAFETY INSPECTION REPORTS

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APPENDIX C: EMPLOYEE EXPOSURE MONITORING RECORDS

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APPENDIX D: MATERIAL SAFETY DATA SHEETS

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APPENDIX E: EMPLOYEE MEDICAL SURVEILLANCE AND IMMUNIZATION RECORDS

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APPENDIX F: RESPIRATOR FIT TEST RECORDS

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APPENDIX G: EMPLOYEE TRAINING RECORDS

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APPENDIX H: SAFETY MEETING FORMS

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