FINAL

B112 Transformer Area
PCB Cleanup and Removal Action
Implementation Summary Report

Richmond Field Station Site
University of California, Berkeley

Prepared for

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TABLE OF CONTENTS

Figures

Appendices

Attachments

ACRONYMS AND ABBREVIATIONS

95UCL	95th percent upper confidence limit
µg/m^3	Micrograms per cubic meter
µm	Micrometers
µm/m^3	Micrometers per cubic meter
ARB	Air Resources Board
bgs	Below ground surface
CFR	Code of Federal Regulations
DQO	Data quality objectives
DTSC	Department of Toxic Substances Control
ELAP	Environmental Laboratory Accreditation Program
EPA	U.S. Environmental Protection Agency
LUC	Land Use Control
IDW	Investigation-derived waste
ISM	Incremental sampling methodology
ITRC	Interstate Technology and Regulatory Council
IUR	Inhalation unit risk
MDL	Method detection limit
mg/kg	Milligrams per kilogram
mg/m^3	Milligrams per cubic meter
OEHHA	Office of Environmental Health Hazard Assessment
PCB	Polychlorinated biphenyl
PDR	Personal Data Rams
QA	Quality assurance
QC	Quality control
RAW	Removal Action Workplan
REL	Reference exposure level
RFS	Richmond Field Station
Tetra Tech	Tetra Tech, Inc.
TSCA	Toxic Substances Control Act
UC	University of California

1.0 INTRODUCTION

The University of California (UC) Berkeley has conducted investigative and cleanup actions at the Richmond Field Station (RFS) under the oversight of the California Environmental Protection Agency Department of Toxic Substances Control (DTSC), in compliance with the Site Investigation and Remediation Order for the Richmond Field Station Site, Docket No. IS/E-RAO 06/07-004 (DTSC Order) dated September 15, 2006. The DTSC Order details the investigation and cleanup of 96 acres of upland habitat and 13 acres of tidal marsh and transition habitat within RFS.

Concurrent with investigative and cleanup actions under the DTSC Order, UC Berkeley has entered into a Toxic Substances Control Act (TSCA) Polychlorinated Biphenyls (PCBs) Risk-Based Disposal Approval Application (TSCA Approval) with U.S. Environmental Protection Agency (EPA), Region 9 TSCA Branch (UC Berkeley 2021). This application addresses the investigation and cleanup actions associated with PCBs at the B112 Transformer Area, located west of Building 112 at the RFS.

Based on the information developed during investigation activities, UC Berkeley, DTSC, and EPA determined further action was required for soils adjacent to the B112 Transformer Area due to elevated concentrations of PCBs detected during previous soil sampling investigations. To address the PCB contamination, UC Berkeley submitted the TSCA Application to EPA and DTSC. This cleanup action has been implemented in accordance with the TSCA Approval and the DTSC Order.

This report describes the actions associated with the cleanup action, including pre-excavation field efforts, excavation activities, particulate monitoring, confirmation sampling, waste disposal, and site finishing.

1.1 REMOVAL ACTION OBJECTIVE

The removal action objective for the B112 Transformer Area PCB cleanup was to reduce residual concentrations of total PCBs within the project area to 1 milligram per kilogram (mg/kg), as calculated by the 95th percent upper confidence limit (95UCL) of the mean. Detailed discussion of the removal action objectives, establishment of the cleanup goal, and calculation of the 95UCL are presented in Section 7.

1.2 REPORT CONTENTS

To document the objective and satisfy regulatory requirements, this summary report includes the following elements:

- Section 2.0 provides the RFS setting, background and summary of pre-removal action sample results within the B112 Transformer Area, and summary of the TSCA Approval.
- Section 3.0 documents the removal action activities including site preparation, waste profiling, contractor selection, soil excavation, soil management and transport, confirmation sampling, decontamination, traffic controls, air monitoring, dust control, site finishing, and any deviations from the TSCA Approval.
- Section 4.0 summarizes waste disposal of California non-hazardous waste and investigation-derived waste.
- Section 5.0 presents the air monitoring action levels and results from particulate air

monitoring.

- Section 6.0 provides the data quality assessment and confirmation sample results.
- Section 7.0 describes the removal action objectives, rationale for the cleanup goal, methodology for calculating the 95UCL, and 95UCL results.
- Section 8.0 concludes the report with an overview of the excavation activities, 95UCL results, and ongoing site management.
- Section 9.0 provides the references within this report.
- Appendices consist of:
    - Appendix A: Photolog
    - Appendix B: Air and Wind Monitoring Logs
    - Appendix C: 95UCL Calculations
- Attachments consist of:
    - Attachment 1: Comments and Response to Comments
    - Attachment 2: TSCA Risk-based Disposal Approval Application
    - Attachment 3: DTSC Work Notice
    - Attachment 4: Bill of Lading Manifests
    - Attachment 5: McCampbell Analytical Inc. Incremental Sampling Methodology (ISM) Laboratory Processing for PCBs and Semi-Volatile Compounds
    - Attachment 6: Complete Analytical Results

This final report incorporates comments provided by EPA and DTSC; comments and response-to-comments are included as Attachment 1.

2.0 BACKGROUND

This section provides a summary of the RFS, B112 Transformer Area, and TSCA Approval as they pertain to this removal action.

2.1 RFS SETTING

RFS is located at 1301 South 46th Street, Richmond, California, along the southeastern shoreline of the City of Richmond on the San Francisco Bay and northwest of Point Isabel. It consists of upland areas developed for academic teaching and research activities; an upland remnant coastal terrace prairie; a tidal salt marsh; and a transition zone between the upland areas and marsh. The 5.5-acre transition area consists entirely of artificial fill placed on historic mudflats. Between the late 1800s and 1948, several companies, including the California Cap Company, manufactured explosives at the Site (UC Berkeley 2018). In 1950, The UC Regents purchased the property from the California Cap Company. UC Berkeley initially used RFS for research for the College of Engineering; later, it was also used by other campus departments and non-UC tenants. Figure 1 presents the site location map.

2.2 B112 TRANSFORMER AREA BACKGROUND

PCBs have been found in soil near the location of the former pole-mounted transformer located in the meadow near the northeast corner of Building 112, also known as the B112 Transformer Area. Records showed that all PCB-containing electrical distribution system transformers were either removed for off-site disposal or retrofilled on-site with non-PCB oils in the late 1980s and early 1990s. Electrical power distribution equipment currently present on RFS contains only non-PCB dielectric fluids. There are no records indicating that spills of PCB oils ever occurred, and former employees did not recall any leaks or spills associated with the transformers at RFS. The B112 Transformer Area contamination likely resulted from either transformer seepage or unreported spills during maintenance.

PCBs in the samples at the B112 Transformer Area were identified as Aroclor-1248, -1254, and -1260. Aroclor-1248 and -1254 were detected in two of 24 samples, and 12 of 24 samples, respectively, and were reported at maximum concentrations of 35 and 24 mg/kg, respectively. Aroclor-1260 was detected in one of 24 samples at a concentration of 0.032 mg/kg. The highest concentrations of Aroclor-1248 and -1254 are southeast of the transformer area, as shown on Figure 2. All samples where PCBs concentrations exceeded 1 mg/kg were in surface soil (0- to 0.5-feet below ground surface [bgs]) samples, except Aroclor-1248 reported at a concentration of 2.2 mg/kg at location B11202 at 1.5- to 2-feet bgs. A paved road runs north-south approximately 5 feet east of the transformer area and may serve as a barrier to surface soil contamination to the east. The maximum concentration of PCBs found was 35 mg/kg at any sampling location.

There is no evidence of significant groundwater contamination based on groundwater well sampling performed in November 2010 (Tetra Tech 2011). Depth to groundwater has ranged historically from 4.6- and 8.5-feet bgs (Tetra Tech 2022) based on piezometer CCC3 located approximately 45 feet cross-gradient from the excavation area. No PCBs were detected in four samples collected during the groundwater events at CCC3. Detection limits for the PCB results ranged from 0.19 to 0.38 micrograms per liter. MFA-R is the closest downgradient piezometer located approximately 200 feet south of the transformer area; samples were non-detect for PCBs at similar detection limits.

Groundwater contamination is not a concern if the cleanup goals are met at the deepest confirmation samples within the excavation.

Complete sample results, figures, and tables, are provided in the TSCA Risk-based Disposal Approval Application, included as Attachment 2.

2.3 TSCA APPROVAL

UC Berkeley and EPA, with review by DTSC, formalized the TSCA Approval as submitted April 21, 2021 and approved by EPA on May 11, 2021. A summary of the content is provided below.

- Section 1 provides an executive summary, a summary of PCB impacts, a description of the proposed action, and federal, state, and community interests in the project.
- Section 2 presents a comprehensive background of RFS and B112 Transformer Area, including:
    - Surrounding land uses, current, and proposed or future land uses. The B112 Transformer Area is included within the Research, Education, and Support land use designation of RFS.
    - Hydrology and depth to groundwater information regionally and on-site, proximity to surface water, stormwater collection system and discharges, and typical weather patterns.
    - Soil types and geologic features both regionally and on-site, sources of operations related to use of PCBs, and any other potential contaminants beyond PCBs.
    - Current site environmental conditions and the extent of PCB contamination, and nearby sensitive environments or receptors.
- Section 3 describes the proposed PCB cleanup.
- Section 4 proposes the cleanup goal of 1 mg/kg which was selected to be protective of both ecological receptors in Western Stege Marsh and potential human receptors within RFS.
- Section 5 presents the conceptual site model details, data quality objectives (DQO) process for the cleanup action, and all previous sample results and vertical and horizontal extent of PCB contamination.
- Section 6 includes an evaluation of cleanup alternatives and disposal methods, a sampling plan, the method for evaluating cleanup verification sample results, and compliance with cleanup goals. Section 6 also includes any long-term inspection, maintenance, and repairs expected to occur at RFS only if the cleanup goals are not met.
- Section 7 provides the methods for equipment decontamination.
- Section 8 presents the waste disposal requirements for the cleanup action.
- Section 9 identifies the elements of the PCB cleanup completion report, which is the basis for this report.

- Section 10 identifies the use of a deed restriction to be implemented as a land use restriction following completion of all cleanup activities.
- Section 11 is the certification by the landowner, UC Berkeley, that all information provided is true, accurate, and complete to the best of their knowledge.

3.0 REMOVAL ACTION ACTIVITIES

This section describes the specific activities or protocols conducted to successfully implement soil excavation at the B112 Transformer Area. The removal action excavation activities were conducted on December 22, 2021, February 10 and 11, 2022, and March 11, 2022.

3.1 SITE PREPARATION

DTSC was notified at least 14 days in advance of field work. DTSC prepared and distributed a work notice to their public distribution list in December 2021. The work notice is included as Attachment 3. UC Berkeley also provided an email notification regarding the project to all RFS tenants on December 9, 2021, January 26, 2022, and February 7, 2022.

Land use actions within areas owned and controlled by the UC Regents are not subject to local municipal permits, such as tree and grading permits. This approach is consistent with the conditions included in the Long-Range Development Plan (UC Berkeley 2014) and the California Environmental Quality Act.

Site preparation activities included establishing work zones and controlling access to the B112 Transformer Area. Exclusion, decontamination, and support zones were identified at the onset of field activities. The exclusion zone encompassed all areas of excavation and truck loading. The decontamination zone for personnel, equipment, and vehicles exiting the exclusion zone was located adjacent to the exclusion zone. The support zone was in the designated work zone but outside the exclusion and decontamination zones. The support zone was used to temporarily store sampling equipment, vehicles, and personnel. During excavation activities, access to all work areas were limited to authorized personnel.

3.2 WASTE PROFILE SAMPLING

Waste profile sampling was completed prior to excavation activities to meet the documentation requirements of landfills accepting California Non-Hazardous Waste (PCBs less than 50 mg/kg). Waste profile results were provided to the contractor who subsequently provided the results to the receiving landfill. Waste profile results confirmed that soil in the proposed excavation area qualified as California Non-Hazardous Waste, with PCBs less than 50 mg/kg.

3.3 CONTRACTOR SELECTION

UC Berkeley procured Clean Harbors as the construction contractor through an existing UC Berkeley master services contract for hazardous waste management. UC Berkeley prepared a scope of work for all cleanup activities to be conducted by Clean Harbors, with oversight by Tetra Tech and UC Berkeley.

3.4 SOIL EXCAVATION

All soil identified within the proposed excavation boundaries was excavated, managed, and disposed of according to the TSCA Approval. Tetra Tech provided continuous oversight during all excavation activities, including: (1) confirming proper installation and maintenance of boundary fencing to prevent unauthorized intruders; (2) verifying the contractor met the vertical and lateral excavation boundaries; (3) ensuring compliance with all health and safety requirements; (4) overseeing use of

mitigative measures to prevent off-site migration of dust and soil; and (5) ensuring decontamination procedures were followed.

Soil was excavated by a backhoe with a 3-foot bucket. The initial soil excavation activities were completed on December 22, 2021. All soil excavated was stored in a secure bin and covered until it was loaded onto trucks for off-site disposal following approval that all cleanup levels were met. Tetra Tech collected confirmation samples, and then the excavation was covered, fenced, and secured until confirmation results were received.

Confirmation results collected on December 22, 2021 indicated the initial excavation activities did not achieve the cleanup goal of 1 mg/kg, as shown on Figure 3. Additional excavation was conducted on February 10 and 11, 2022, and Tetra Tech collected a second round of confirmation samples on February 11, 2022. The excavation was covered, fenced, and secured until confirmation results were received.

The second round of confirmation samples results demonstrated the additional excavation achieved the cleanup goal, as shown on Figure 4. Confirmation results are presented in Section 6 and calculation of the cleanup goal is presented in Section 7.

Tetra Tech staff continuously observed the excavated soil to monitor for indications of potential contamination such as pyrite cinders or unusual debris, such as buried containers, miscellaneous debris, and archaeological artifacts. None of the items listed were identified during excavation activities.

Appendix A, Photolog, provides documentation of excavation activities and field observations identified.

3.5 SOIL MANAGEMENT AND TRANSPORT

All excavated soil was managed on-site pending loading into covered, secured 10-cubic yard bins on the same working day. No temporary stockpiles were implemented. Site controls, including security fencing, around the excavation area was maintained at all times, including during non-working hours, until the excavation was backfilled.

Following completion of the additional excavation activities, the 10-cubic yard bins were transported to the front gate of RFS pending off-site disposal. Off-site disposal was completed on March 16, 2022. Waste disposal activities are presented in Section 4.

3.6 CONFIRMATION SAMPLING

Confirmation sample results document the PCB concentrations of soil remaining within the B112 Transformer Area excavation boundaries. Incremental sampling methodology (ISM) was used to collect and analyze soil samples from sidewalls and excavation bottoms, as shown on Figures 3 and 4. ISM was selected for this project to provide a comprehensive and thorough evaluation of chemical concentrations in a specific volume of soil, or “decision unit.”

ISM involves collecting multiple small soil masses (increments) evenly across the decision units, and in this case, evaluating the results of the decision units comprehensively to determine the final concentration of the soil remaining after excavation activities. The statistical evaluation applied to this evaluation is a 95UCL of the final confirmation samples, which is presented in Section 7. The ISM samples were collected as presented in the TSCA Approval, *Description and evaluation of*

cleanup alternatives, 1. Soils, c. Describe cleanup verification sampling methods and include a SAP for this purpose, Pages 18 and 19. ISM sampling was conducted consistent with the methods and procedures in the Incremental Sampling Guidance, ISM-II Update, prepared by the Interstate Technology and Regulatory Council (ITRC) (ITRC 2020).

3.6.1 Sampling Methodology

The initial excavation consisted of five sidewalls and two bottoms (at different depths). The final excavation consisted of four sidewalls and two bottoms. Decision units were established at each sidewall and bottom of the initial and final excavations. An ISM sample was collected from each decision unit, with one decision unit collected in field triplicates per event. A total of 75 increments were collected from within each decision unit, and 225 increments from the triplicate decision units. Figure 3 presents the initial excavation and Figure 4 presents the final excavation.

The spacing of increments was determined in the field based on the shape of each decision unit. The precise location of each increment is not critical, as long as they were distributed evenly throughout the decision unit. 705 increments were collected across the initial excavation, and 660 increments were collected across the final excavation, providing complete coverage of soil conditions within the project area.

Increments of approximately 20 grams of soil were collected with a disposable scoop from the surface of each sidewall or bottom. Any loose soil was removed before each increment was collected. Increments from each decision unit were placed directly into a 32-ounce glass jar, labeled, and packed into an insulated, iced cooler. The coolers were sealed under chain-of-custody protocols (Tetra Tech 2010) and delivered via courier to McCampell Analytical laboratory in Pittsburg, California on the same day of sample collection. McCampbell Analytical is a California Environmental Laboratory Accreditation Program (ELAP) certified laboratory.

3.6.2 Quality Control Samples

Quality control samples in the form of field triplicates assess the ability of an ISM sample to reliably estimate the decision unit concentration and quantify inherent soil and contaminant heterogeneity; it is a measure of representativeness.

Field triplicates were collected at minimum rate of 10 percent of the total samples collected, or one triplicate per event. A field triplicate consists of collecting 75 increments three times within the same decision unit from different locations. Decision unit DU01 was randomly selected from the initial excavation, and Decision unit DU03 was randomly selected from the final excavation to provide 10 percent of the decision units sampled during each event. Field triplicates are reported as R1, R2, and R3.

Quality control samples in the form of laboratory triplicates assess the adequacy of sample processing, subsampling, and analysis performed by the laboratory. A laboratory triplicate consists of the laboratory subsampling, processing, and analyzing one of the field triplicates three times. Laboratory triplicates were completed on the third sample (R3) of each triplicate set. Laboratory triplicates are reported as R3A, R3B, and R3C.

Results of triplicate results and evaluation are presented in Section 6.2.

3.6.3 Storm Water Inlet Sample

A single sediment sample was collected from the storm water inlet catch basin due southeast of Building 112. This storm water inlet collects storm water runoff from the B112 Transformer Area during storm events. The sediment sample was collected on February 2, 2023, following completion of all soil removal activities as required in the TSCA Approval to determine if any continuing source of PCB contamination associated with the B112 Transformer Area exists.

The sediment sample consisted of the entire volume of sediment within the catch basin. The sediment sample was collected consistent with the methods presented in Section 3.6.1, except that the sample was delivered to the laboratory on the day following sample collection. The sediment sample results are discussed in Section 6.3.

3.7 DECONTAMINATION

During confirmation sampling, no reusable sampling tools were used; all sampling equipment and bags were disposable, and therefore decontamination was not necessary.

Personal protective equipment and miscellaneous waste from sampling (paper towels, spoons, trowels, plastic bags, and plastic sheeting) were placed in large garbage bags, sealed, and disposed of with the soil transported to the off-site disposal facility.

Access to and from the exclusion zone by personnel and equipment was controlled by Tetra Tech to mitigate risks and prevent the spread of contamination from heavy equipment.

Workers brushed any excess soil from the equipment and loaded into the bins between excavation events. Vehicles and bins exiting the site were inspected to confirm they were free of mud on tires, wheel wells, undercarriages, and other exposed surfaces outside the covered roll-off bins.

3.8 TRAFFIC CONTROLS

Traffic cones were placed on both sides of the parking area at Building 112 used as the support zone for the excavation activities. No personal vehicles were allowed within the support zone or near the excavation equipment or bins. RFS staff and tenants who normally park at Building 112 were notified of the parking lot closures prior to each excavation event.

3.9 AIR MONITORING

Air monitoring was conducted to monitor airborne levels of contaminants from the excavation and ensure that all on- and off-site workers and communities were protected. The monitoring documented that excavation activities did not expose project personnel or any downwind human receptors to unacceptable particulate concentrations. Based on the known PCB concentrations, real-time dust monitoring was performed during all soil disturbance and excavation activities. Section 5.2 provides an explanation of the calculations equating possible PCB concentrations to dust monitoring values.

Weather during the initial excavation included heavy rain, and therefore, according to manufacture recommendations, and with EPA and DTSC approval, air monitoring was not performed.

Air monitoring for total dust particulates during the final excavation was performed using aerosol monitors (MIE Personal Data Rams [PDR]) with data loggers to provide real-time total dust levels. The lower detection limit for the operating range of the PDR is 0.001 milligrams per cubic meter (mg/m^3) or 1.0 microgram per cubic meter ($\mu g/m^3$). The particle size maximum range of response for the PDR is 0.1 to 10 micrometers (µm). The PDRs were rented from Equipco Rentals in Concord, California.

Air monitoring was performed at the perimeter of the excavation area to verify that dust control measures were adequate. The PDRs were positioned along excavation area at locations most likely to be in the direction of off-site dust migration from each excavation area depending on the wind direction on the day and time of work. Two PDRs were placed downwind of the excavation area to monitor for fugitive dust and one PDR was placed upwind of the excavation to measure ambient dust concentrations. The monitors were positioned each day based on the prevailing wind direction and relocated if wind direction changed during the day.

The contractor was notified verbally to stop work if real-time dust monitoring showed downwind levels for dust exceeded the action level of 50 $\mu g/m^3$, or if wind speeds exceeded 25 miles per hour and were sustained for 15 minutes. There were no dust monitoring or wind exceedances. The complete calculations supporting the action levels and results are presented in Section 5.

The PDRs were set to automatically log dust levels over 5-minute intervals and were visually checked approximately hourly during the workday and the value was manually recorded in the field logs to verify equipment operation and compliance with the target action levels. The PDRs were returned to Equipco Rentals for downloading the 5-minute interval readings. Equipco Rentals informed Tetra Tech that the downloads were unsuccessful, and the continuous readings were not recoverable. It is undetermined if it was a software issue or user-error during the equipment set up. This error is discussed in Section 3.12 Deviations.

3.10 DUST CONTROL

Fugitive dust was controlled during all excavation, transportation, and handling of soils so that there was no visible dust at the perimeter or in the exclusion zone of the excavation and in accordance with the air monitoring described in Section 3.7. During the initial excavation activities, weather included heavy rain, and therefore additional water was not required to suppress dust. During the final excavation activities, the soil excavated had high water content and no elevated dust readings were recorded; therefore, dust suppression by water was not deemed necessary.

3.11 SITE FINISHING

Site finishing activities consisted of removing all fencing, debris, and materials associated with the excavation activities. Clean fill material was used to backfill the final excavation on March 11, 2022. The clean fill material was trucked from the DTSC-approved clean soil stockpile located west of the meadow adjacent to Building 112. The top 3 inches was filled with wood chips and mulch from RFS maintenance activities on March 22, 2022. Documentation of site finishing are included in the photolog included as Appendix A.

3.12 DEVIATIONS

Field excavation and sampling activities were completed consistent and in accordance with the TSCA

Approval. Recording of the continuous air monitoring data for the final excavation was not successful, and therefore continuous monitoring data is not available. Based on the high moisture content of excavated soils and low hourly air monitoring results, this deviation does not impact the overall data objectives for the cleanup action.

4.0 WASTE DISPOSAL

Wastes generated during the B112 Transformer Area removal action consisted of California Non-Hazardous Waste for soil with PCB concentrations less than 50 mg/kg and other investigation-derived waste (IDW). Wastes were managed according to the protocols described in the TSCA Approval.

4.1 CALIFORNIA NON-HAZARDOUS WASTE

UC Berkeley profiled, transported, and disposed of 55.45 tons of soil with PCB concentrations less than 50 mg/kg as California Non-Hazardous Waste to Potrero Hills Landfill, Inc. in Fairfield, California, a California Class II disposal facility permitted to accept California Non-Hazardous Waste. The California Non-Hazardous Waste was tallied by tonnage per the disposal facility's incoming waste measurement and tracking methods. Soil was loaded directly from the excavation to secured, covered roll-off bins and stored at the RFS entrance prior to shipment for off-site disposal. The bins were collected on March 16 for disposal at Potrero Hills Landfill. The signed bills of lading, receipts, and tonnage summaries are included in Attachment 4.

4.2 INVESTIGATION-DERIVED WASTE

Investigation-derived waste, including personal protective equipment, disposable sampling equipment, and any other solid material associated with sampling equipment, personal decontamination such as paper towels, disposable boot covers and gloves, were bagged and disposed of with wastes described above. No decontamination water was generated during the excavation activities. Disposal occurred daily and at the completion of all removal action activities.

5.0 AIR MONITORING RESULTS

Air particulate monitoring was conducted to monitor possible airborne levels of respirable dust from any excavation and stockpile areas and ensure that all on- and off-site workers and communities were protected. The monitoring helped ensure that excavation activities did not expose project personnel or any downwind human receptors to unacceptable PCB concentrations.

5.1 ACTION LEVELS

One action level for fugitive dust concentrations was identified for the downwind perimeter fence lines. The action level of 50 $\mu g/m^3$ was used for all excavation activities based on the historic maximum total PCB concentration of 35 mg/kg at the B112 Transformer Area.

The measured upgradient particulate levels are subtracted from the measured downgradient levels resulting in net particulate concentrations, which are compared to the action level. For example, if an upgradient particulate level is measured at 10 $\mu g/m^3$ and the downgradient particulate level is measured at 30 $\mu g/m^3$, the resulting net particulate concentration of 20 $\mu g/m^3$ is compared against the action level. The perimeter dust action level was protective of the most sensitive offsite receptors including children, elderly, and the ill.

5.2 ACTION LEVEL CALCULATIONS

A hypothetical worst-case dust concentration exposure to an individual outside the excavation area was calculated for total PCBs by assuming all dust released from the excavations contained the maximum concentrations of total PCBs found during previous site investigations. Most soil in each proposed excavation area contained PCBs at much lower concentrations than the maximum concentrations used in the worst-case. For monitoring purposes, the California Ambient Air Quality Standard (CAAQS) standard for particulate matter with diameter of 10 microns and smaller (PM_{10}) standard of 50 $\mu g/m^3$ was used as the benchmark dust concentration. The PM_{10} standard is a health-based standard considered safe for a 24-hour exposure. The maximum soil concentration for total PCBs was converted to milligrams of PCBs per milligrams of dust, and then multiplied by the PM_{10} standard to determine the worst-case PCB concentration in dust.

Maximum Soil Results. The maximum known soil concentration of total PCBs at the B112 Transformer Area is 35 mg/kg. If total dust concentrations were equivalent to the PM_{10} standard, the calculated worst-case total PCB concentration in dust would be 35 mg/kg x 0.000001 kg/mg x 50 $\mu g/m^3$ = 0.0018 $\mu g/m^3$.

Determination of Acceptable Concentration in Dust. A hierarchy approach was used to identify the appropriate regulatory or risk-based concentrations for comparison to the calculated worst-case PCB concentrations in dust. Bay Area Air Quality Management District regulatory levels were consulted first; however, they do not address PCB contamination. The California Office of Environmental Health Hazard Assessment (OEHHA) reference exposure levels (REL) for inhalation were consulted second, which also do not include PCBs.

Calculation of Risk-Based Acceptable PCB Concentrations in Dust. The acceptable risk-based PCB concentrations in dust were calculated using a target risk of 1 x 10^{-6} for carcinogenic effects from PCBs; non-carcinogenic effects are not published. The target risk was divided by the inhalation unit risk (IUR) for PCBs to determine an acceptable concentration in dust. The IUR for total PCBs was obtained from the Consolidated Table of

OEHHA/Air Review Board (ARB) Approved Risk Assessment Health Values, dated October 2, 2020, as follows: PCBs (high risk) = 5.7E-04 $(\mu g/m^3)^{-1}$. The target risk was divided by the IUR of 0.00057 $m^3/\mu g$, resulting in an acceptable total PCB concentration in dust of 1 x 10^{-6} / 0.00057 $(\mu g/m^3)$ = 0.0018 $\mu g/m^3$.

Comparison of Worst-Case PCB Concentrations in Dust to Acceptable PCB Concentrations in Dust. The calculated worst-case total PCB concentrations in dust (0.0018 $\mu g/m^3$) is the same as the acceptable total PCB concentration of 0.0018 $\mu g/m^3$. This comparison demonstrates that exposure to dust at the PM_{10} standard of 50 $\mu g/m^3$ could result in an unacceptable exposure to PCBs for off-site receptors. This indicates the PM_{10} standard of 50 $\mu g/m^3$ should be used as the action level for exposure to PCBs via dust inhalation.

Calculation of Action Levels for Total Dust. The acceptable PCB concentration in dust 0.0018 $\mu g/m^3$ results in an action level of 50 $\mu g/m^3$.

5.3 FIELD RESULTS

The air monitoring program is based on two measurements: (1) daily average PDR results logged every 5 minutes and downloaded at the end of each working day; and (2) hourly readings noted by field staff. Since the daily average results are not visible or accessible throughout the working day, the hourly readings and field observations were the key indicators to evaluate the effectiveness of dust control measures. Daily average results based on the 5-minute interval measurements were not available, as discussed in Section 3.9.

There were no exceedances of the action level noted during the real-time hourly readings. The hourly readings and wind speeds for the final excavation activities are presented below. Air and wind monitoring logs are included as Appendix B.

Air Monitoring Summary

Final Excavation Activities Date	Time	Wind (mph)	PDR Reading/s (mg/m^3)		
			Station 1	Station 2	Station 3
February 10, 2022	10:15	9	0	0.022	0
	11:15	11	0	0.048 0.041	0
	12:15	10	0	0.039 0.046	0
	13:15	10	0.054 0.008	0.047 0.047	0
	14:15	7	0.011 0.008	0.041 0.045	0
	15:15	5	0.018 0.011	0.047 0.045	0
February 11, 2022	09:35	5	0	0.002 0.002	0
	10:35	6	0.007 0	0	0

Notes:
Station 1 represents the upwind location; Stations 2 and 3 are downwind of excavation activities.
Multiple listings indicates multiple readings.
Measurements recorded only during excavation activities.

Particulate sampling was not performed during the initial excavations as discussed in Section 3.9.

6.0 CONFIRMATION SAMPLING RESULTS

This section presents the laboratory data quality assessment of sidewall and bottom confirmation sample results and a summary of the total PCB concentrations.

6.1 DATA QUALITY ASSESSMENT

A summary of data quality objectives (DQO), review of analytical data and findings, and any deviations from the work plans or previous sampling events is presented below.

The data collected in December 2021 and February 2022 meet all the requirements of the precision, accuracy, representativeness, completeness, and comparability described in EPA guidance for quality assurance project plans (EPA 2002a) and the Quality Assurance Project Plan (Tetra Tech 2010), and are usable for meeting the project DQOs and for future risk assessments. The overall assessment of the sampling program, quality assurance (QA)/quality control (QC) data, and data review indicates the data from this investigation are of acceptable precision, accuracy, representativeness, completeness, and comparability.

6.1.1 Data Quality Objectives

DQOs were developed during the planning process to help ensure data collected is appropriate to support defensible decisions. The DQOs stated the need for confirmation samples to verify completion of cleanup of PCBs from the B112 Transformer Area. This objective was achieved through the placement of the confirmation decision units, and collection of a minimum of 75 increments at each decision unit to ensure representativeness. Additionally, one decision unit per event was collected in triplicate to ensure acceptable precision.

All sampling in 2021 and 2022 was conducted according to the methods described in the sampling plan and quality assurance project plan in the Field Sampling Workplan (Tetra Tech 2010) and the Code of Federal Regulations for PCB remediation waste cleanup. The analytical data achieved appropriate method detection limits (MDL) to be compared with the cleanup goal of 1 mg/kg.

6.1.2 Laboratory Data Review

Assignment of data qualification flags for analytical data from McCampbell Analytical laboratory conformed to EPA National Functional Guidelines for Organic Superfund Methods Data Review (EPA 2020). Data review specifications require that various data qualifiers be assigned when a deficiency is detected or when a result is less than its detection limit. If no qualifier is assigned to a result that has been reviewed, the data user is assured that no technical deficiencies were identified during validation. The qualification flags used are defined as follows:

- U – Indicates that the chemical was not detected at or above the numerical detection limit (sample-specific detection limit) noted. Non-detected results from the laboratory are reported in this manner.

- UJ: Indicates that the chemical was not detected; however, the detection limit (sample-specific detection limit) is considered estimated based on problems encountered during laboratory analysis. The associated numerical detection limit is regarded as inaccurate or imprecise. This qualifier is also added to a positive result (reported by the laboratory) if the detected concentration is determined to be attributable to contamination introduced during field sampling or laboratory analysis.
- J: Indicates that the chemical was detected; however, the associated numerical result is not a precise representation of the concentration present in the sample. The laboratory-reported concentration is considered an estimate of the true concentration.
- J+: Indicates that the chemical was detected; however, the associated numerical result is not a precise representation of the concentration present in the sample. The laboratory-reported concentration is considered an estimate of the true concentration and may be biased high (the reported concentration may be higher than the true concentration).
- J-: Indicates that the chemical was detected; however, the associated numerical result is not a precise representation of the concentration present in the sample. The laboratory-reported concentration is considered an estimate of the true concentration and may be biased low (the reported concentration may be lower than the true concentration).
- R: Indicates that the chemical may or may not be present, and that the data was rejected. The analytical result reported by the laboratory is considered unreliable and unusable. This qualifier is applied in cases of gross technical deficiencies (for example, a holding time missed by a factor of two times the specified time limit, severe calibration non-compliance, or extremely low analyte recovery in QC spike samples).

The preceding data qualifiers may be categorized as indicating major or minor problems. Major problems are defined as issues that result in the rejection of data and qualification with R. These data are considered invalid and are not used for decision-making unless they are used in a qualitative way and the use is justified and documented. Minor problems are defined as issues resulting in the estimation of data and qualification with U, J, J+, J-, and UJ qualifiers. Estimated analytical results are considered suitable for decision-making unless the data use requirements are stringent and the qualifier indicates a deficiency that is incompatible with the intended data use. A U qualifier does not indicate that a data deficiency exists, because all non-detect values are flagged with the U qualifier regardless of whether a quality deficiency has been detected.

6.2 DATA QUALITY REVIEW SUMMARY

Samples collected during the December 2021and February 2022 sampling events were received by McCampbell Analytical in two sample delivery groups (SDG); SDG 2112D059 and SDG 2202654. All samples were prepared using standard ISM techniques (ITRC 2020), and were dried, sieved, and ground prior to extraction. Sample aliquots were weighed for extraction after the air-drying step. All samples were analyzed for PCBs by EPA Method 8082 (EPA 1996) and extracted by Soxhlet EPA Method 3540C (EPA 1996). The standard operating procedure for McCampbell Analytical Inc. laboratory processing is included as Attachment 5.

Samples were received above the goal of 6 degrees Celsius, however, data quality is not expected to be affected. Matrix spike and matrix spike duplicate recoveries for Aroclor-1016 and Aroclor-1260

were above QC criteria in sample B112-PCBRA-DU01-R1 (SDG 2112D59); however, parent sample results were non-detect for Aroclor-1016 and Aroclor-1260 and no qualification was required. Matrix spike and matrix spike duplicate recoveries for Aroclor-1260 were above QC criteria for sample B112-PCBRA2-DU01 (SDG 2202654); however, parent sample results were non-detect for Aroclor-1260 and no qualification was necessary. Although the samples in SDG 2112D59 required dilution, all non-detect results were comparable to the relevant criteria. All other QC criteria were met.
The reported values for SDG 2202654 were revised after a reevaluation of the initial chromatograms and data set. The pattern for Aroclor-1248 in the samples received showed evidence of possible heavily-aged degradation products, but the pattern was borderline for identification. After comparing the SDG 2202654 data set with the prior set reported for this project site (SDG 2112D59), the laboratory decided that providing consistency was necessary, despite the ambiguity of the identification. Results for Aroclor-1248 were included in the revised SDG, and only the revised results are being reported.

6.2.1 Laboratory Triplicates Evaluation

Laboratory triplicates provide an independent evaluation of laboratory precision based on the samples submitted. Two sets of laboratory triplicate samples were analyzed: DU01-R3A, -R3B, -R3C from the initial excavation, and DU03-R3A, -R3B, and -R3C from the final excavation.

Laboratory Triplicate Results

Sample ID	Result (mg/kg)	Concentration Range	Relative Standard Deviation
DU01-R3A	4.9	0.6	6.7 percent
DU01-R3B	4.4		
DU01-R3C	5.0		
DU03-R3A	0.23	0.18	60 percent
DU03-R3B	0.20		
DU03-R3C	0.05 U		

Notes:
U Non-detect, reporting limit noted.

The laboratory triplicate evaluation is based on a qualitative analysis of the concentration range and relative standard deviation.

For the DU01 triplicate set, the concentration range and relative standard deviation are acceptable for laboratory reporting. For the DU03 triplicate set, the concentration range is acceptable. The relative standard deviation is high, but it is directly attributable to the low concentrations of the sample results, given the acceptable concentration range. The laboratory triplicate results indicate acceptable laboratory precision for the contaminants identified in the triplicate sets.

6.2.2 Field Triplicates Evaluation

Field triplicates provide an independent evaluation of sample collection methods and laboratory reporting based on the samples submitted; the laboratory reporting is inherent in the field triplicate results. Two sets of field triplicate results were analyzed: DU01-R1, -R2, -R3A from the initial excavation, and DU03-R1, -R2, and -R3A from the final excavation. Per protocols established with

DTSC and EPA, the first laboratory triplicate reported is used as the surrogate result for that field triplicate.

Field Triplicate Results

Sample ID	Result (mg/kg)	Concentration Range (mg/kg)	Relative Standard Deviation
DU01-R1	3.6	1.3	17 percent
DU01-R2	3.9		
DU01-R3A	4.9		
DU03-R1	1.2	0.97	73 percent
DU03-R2	0.59		
DU03-R3A	0.23		

The field triplicate evaluation is based on a qualitative analysis of the concentration range, relative standard deviation, relation to cleanup goal, and results of the laboratory triplicates.

For the DU01 and DU03 triplicate sets, the concentration ranges of 1.3 mg/kg and 0.97 are acceptable given the laboratory triplicates exhibited a concentration range up to 0.6 mg/kg. These concentration ranges could be concerning for sample results near the cleanup goal of 1.0 mg/kg, as evidenced by DU03 where one result was above the cleanup goal and two results were below the cleanup goal. This concern is lessened since the cleanup determination is not based on individual sample results, and instead based on the 95UCL which incorporates confidence intervals determined from sample distribution.

For the DU01 triplicate set, the relative standard deviation is acceptable. For the DU03 triplicate set, the relative standard deviation is high. The high standard deviation is directly attributable to the low concentrations of the sample results, which is consistent with the laboratory triplicate evaluation.

The field triplicate results indicate acceptable sample collection methods for the contaminants identified in the triplicate sets.

6.2.3 Summary

A final review of the dataset compared with EPA data quality parameters indicate the data are of high overall quality. Laboratory triplicate results indicated good precision. Field triplicate results indicate acceptable sample collection methods. The data meet all the requirements of the precision, accuracy, representativeness, completeness, and comparability described in EPA guidance for quality assurance project plans (EPA 2002a) and the Quality Assurance Project Plan (Tetra Tech 2010) and are usable for meeting the project DQOs and future risk assessments. The overall assessment of the sampling program, QA/QC data, and data review indicates the data from this investigation are of acceptable precision, accuracy, representativeness, completeness, and comparability.

6.3 SAMPLE RESULTS

Confirmation samples were collected following the initial and final excavations. Total PCB sample results from the initial excavation ranged from 2.2 mg/kg at DU06 to a maximum of 8.2 mg/kg at

DU05. All results were greater than the cleanup goal of 1.0 mg/kg, and therefore additional excavation activities were conducted. Confirmation sample results from the initial excavation activities are summarized below and presented on Figure 3.

Initial Excavation
Confirmation Results

Decision Unit	Decision Unit Type	Triplicate Results (mg/kg)	Total PCB Results (mg/kg)
01	Sidewall Triplicate	3.6 R1 3.9 R2 4.9 R3A 4.4 R3B 5.0 R3C	4.1
02	Sidewall	--	2.6
03	Sidewall	--	4.6
04	Sidewall	--	3.7
05	Sidewall	--	8.2
06	Bottom	--	2.2
07	Bottom	--	3.6

Note:
The concentration used as surrogate result for Decision Unit 01 triplicate is the average of R1 (3.6 mg/kg), R2 (3.9 mg/kg), and R3A (4.9 mg/kg).

Total PCB sample results from the final excavation ranged from 0.24 mg/kg at DU02 and DU06 to a maximum of 0.79 mg/kg at DU01. Confirmation sample results from the final excavation activities are summarized below and presented on Figure 4.

Final Excavation
Confirmation Results

Decision Unit	Decision Unit Type	Triplicate Results (mg/kg)	Total PCB Results (mg/kg)
01	Sidewall	--	0.79
02	Sidewall	--	0.24
03	Sidewall Triplicate	1.2 R1 0.59 R2 0.23 R3A 0.20 R3B 0.05 U R3C	0.67
04	Sidewall	--	0.35
05	Bottom	--	0.64
06	Bottom	--	0.24

Notes:
The concentration used as surrogate result for Decision Unit 03 triplicate is the average of R1 (1.2 mg/kg), R2 (0.59 mg/kg), and R3A (0.23 mg/kg).

U Non-detect, reporting limit noted.

The storm water inlet sediment sample discussed in Section 3.6.3 was dried, sieved, and ground prior to extraction. The sample aliquot was weighed for extraction after the air-drying step. The sample was analyzed for PCBs by EPA Method 8082 and extracted by Soxhlet EPA Method 3540C.

Storm Water Inlet
Sample Results

Analyte	Result	Method Detection Limit	Method Reporting Limit	Dilution Factor
Aroclor 1016	ND	0.25	0.25	5
Aroclor 1221	ND	0.25	0.25	5
Aroclor 1232	ND	0.25	0.25	5
Aroclor 1242	ND	0.25	0.25	5
Aroclor 1248	ND	0.25	0.25	5
Aroclor 1254	ND	0.25	0.25	5
Aroclor 1260	ND	0.25	0.25	5
Aroclor 1262	ND	0.25	0.25	5
Aroclor 1268	ND	0.25	0.25	5
Total PCBs	**ND**	NA	0.25	5

Notes:
All concentrations reported in milligrams per kilogram (mg/kg). Dilution factor due to high organic content in sediment sample.

NA Not applicable.

ND Non-detect.

The sediment sample results were reported as non-detect for all PCBs. Complete analytical results are included as the final report in Attachment 6.

7.0 REMOVAL ACTION OBJECTIVES

Removal action objectives are medium-specific goals for protecting human health and the environment. The removal action objectives should specify: (1) the chemical of concern; (2) the exposure route and receptors; and (3) an acceptable chemical concentration or range of concentrations for each exposure route, also referred to as the cleanup goal for this action. Removal action objectives include both an exposure pathway and a chemical concentration in a given medium because protectiveness may be achieved in two ways: (1) limiting or eliminating the exposure pathway; or (2) reducing chemical concentrations.

The chemical of concern for this removal action is total PCBs. The exposure route and receptors are human and ecological. The cleanup goal is the more stringent of human or ecological thresholds, which are both 1.0 mg/kg, as presented below.

7.1 CLEANUP GOAL

The cleanup level is based on the more stringent of human health or ecological thresholds. The current human health criteria identified in the Removal Action Workplan (RAW) (Tetra Tech 2014) is 1 mg/kg for total PCBs. The methodology provided by EPA regarding ecological cleanup levels is based on meeting a marine biota threshold concentration of 0.047 mg/kg in sediment entering at the marsh. The ecological cleanup level is calculated by a three-step process:

(1) **Applying an attenuation factor based on distance from the source area to the marsh.** The distance of B112 Transformer Area to the marsh via the nearest stormwater inlet is 680 feet. This distance is comparable to the distance from the approved EPA North Meadow PCB cleanup (630 feet) where the attenuation factor of 10 was applied (Tetra Tech 2022). Applying an attenuation factor of 10 to the ecological threshold of 0.047 mg/kg results in a goal of 0.47 mg/kg within sediment entering the marsh attributed to B112 Transformer Area soil runoff.

(2) **Measuring the runoff concentration from the source area**. Unlike the EPA North Meadow, there is no downgradient storm inlet which captures sediment exclusively from the B112 Transformer Area. If the human health goal of 1 mg/kg is applied, then sediment runoff concentrations would not be higher than 1 mg/kg.

(3) **Calculating PCB runoff concentration from the source area.** Based on maximum sediment concentration scenario of 1 mg/kg, the maximum concentration reaching the marsh is (1 mg/kg) x (0.1 attenuation factor) = 0.1 mg/kg, which meets the ecological threshold of 0.47 mg/kg.

A cleanup goal of 1 mg/kg is selected as a conservative cleanup level to protect ecological and human receptors exposed to B112 Transformer Area soil.

7.2 METHODOLOGY FOR MEETING CLEANUP GOAL

The evaluation of meeting the cleanup goal of 1 mg/kg for PCBs is based on the calculation of the 95UCL of the mean concentration for all remaining PCB sample results. The approach and

calculations used to calculate the 95UCL follow EPA guidance and tools (EPA 2002b, 2015, 2016). All 95UCL calculations were performed using version 5.1 of EPA's ProUCL software (EPA 2016). The approach used for calculating 95UCLs for chemicals with and without censored results followed EPA guidelines and recommendations offered in EPA's ProUCL 5.1 Technical Guide (EPA 2015).

The decision rules followed for selecting appropriate statistical methods are based on the underlying distribution, sample collection method (ISM or discrete), sample size, degree of skewness, and detection frequency of the data set. The confirmation samples were collected through ISM and the sample population is small (fewer than 10 samples), thus per the ProUCL output and in accordance with ITRC technical guidance on ISM (ITRC 2020), the 95% Chebyshev UCL was selected as the appropriate UCL for the data set.

7.3 DATA INPUT AND RESULTS

Data imported in to the 95UCL calculation consists of the six ISM confirmation samples collected from the final excavation to represent residual soil concentrations within the B112 Transformer Area. The six sample concentrations are presented below.

Final Excavation Confirmation Results

Decision Unit	Decision Unit Type	Total PCB Results (mg/kg)
01	Sidewall	0.79
02	Sidewall	0.24
03	Sidewall	0.67
04	Sidewall	0.35
05	Bottom	0.64
06	Bottom	0.24

The calculated 95UCL based on the nonparametric 95% Chebyshev UCL for ISM data is 0.91 mg/kg, below the cleanup goal of 1.0 mg/kg, therefore successfully meeting the cleanup goal and remedial action objectives established for this removal action.

A summary table of the results and 95UCL calculations including data input are presented in Appendix C. Complete analytical results are included as Attachment 6.

8.0 CONCLUSION

UC Berkeley conducted a PCB cleanup and removal action at the B112 Transformer Area under TSCA 40 CFR Section 761.61(c) Risk-Based Cleanups and Health and Safety Code Section 25356.1(h)(1), in compliance with the RFS Site Investigation and Remediation Order.

8.1 CLEANUP ACTION OBJECTIVES AND CLEANUP ACTIONS

The purpose of the removal action was to excavate and remove contaminated soil such that the 95UCL total PCB concentration for remaining soil is below the cleanup goal of 1.0 mg/kg. In December of 2021 and February of 2022, UC Berkeley excavated 55.45 tons of PCB-contaminated soil for disposal as California Non-Hazardous Waste.

8.2 CONFIRMATION SAMPLING AND RESULTS

Following excavation activities, confirmation samples were collected from the excavation sidewalls and bottoms to confirm the lateral and vertical PCB concentrations of residual soil. Sidewall and bottom confirmation samples were collected with ISM to maximize the sample coverage and representativeness across the cleanup area.

UC Berkeley applied a 95UCL calculation to the soil sample results remaining following the final excavation area, which consisted solely of the sidewall and bottom confirmation samples to evaluate adherence to the cleanup goal. The 95UCL for total PCBs is 0.91 mg/kg, below the cleanup goal of 1.0 mg/kg, therefore successfully meeting the cleanup goal and removal action objectives for the cleanup established in the TSCA Approval and DTSC Order.

Following the successful removal of contaminated soil, the excavation area was backfilled with clean soil and covered with woodchips and mulch from RFS.

The sediment sample collected at the storm water inlet southeast of Building 112 did not detect any PCB concentrations, supporting that no continuing source of PCB contamination associated with the B112 Transformer Area exists.

8.3 ONGOING SOIL MANAGEMENT

The B112 Transformer Area is located within the Research, Education, and Support land designation of RFS, and as such, land use is defined and protected by the Long-Range Development Plan for the Richmond Field Station (UC Berkeley 2014). The land use designation applies to areas intended to remain as or be developed in the future for UC Berkeley or other tenant use for research or educational activities.

As such, the selected remedy for the B112 Transformer Area also includes land use controls (LUC) prohibiting future residential development and requires implementation of the Soil Management Plan (Tetra Tech 2017). LUCs are tools and mechanisms applied to implement restrictions at a site. LUCs encompass both institutional and engineering controls. LUCs will be applied to RFS following completion of all soil actions identified in the RAW, consisting of the Mercury Fulminate Area, Corporation Yard removal actions, and PCB removal actions including this B112 cleanup action. While the Mercury Fulminate Area and PCB removal actions are complete, the Corporation Yard removal action is ongoing.

The Soil Management Plan developed within the RAW and subsequently updated in April 2017 provides a framework for the entire Research, Education, and Support designated areas to prohibit uncontrolled land excavation or disturbance activities which may expose workers or visitors to unknown or unidentified unsafe environmental contaminants. The Soil Management Plan ensures that soils disturbed during future construction or redevelopment projects will be sampled and managed to ensure no uncontrolled exposures to unknown or unidentified contaminants within the Research, Education, and Support areas occur.

9.0 REFERENCES

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FIGURES

Richmond Field Station Site Boundary

B112 Transformer Area

TETRA TECH

Richmond Field Station Site
University of California, Berkeley

FIGURE 1
SITE MAP

B112 Transformer Area

7/31/2022 C:\misc_GIS\Richmond_Field_Station\Projects\B112 Transformer\Figure1_SiteMap.mxd TtEMI-ABQ michelle.handley

POINT ID	SAMPLE ID	SAMPLE DATE	DEPTH (ft bgs)	RESULT (mg/kg)
B11201	PCB21	10/26/2011	0 - 0.5	0.0650
B11201	PCB22	10/26/2011	1.5 - 2	ND
B11202	PCB23	10/26/2011	0 - 0.5	35.0000
B11202	PCB24	10/26/2011	1.5 - 2	2.2000
B11203	PCB25	10/26/2011	0 - 0.5	ND
B11203	PCB26	10/26/2011	1.5 - 2	ND
B11204	PCB27	10/26/2011	0 - 0.5	ND
B11204	PCB27D	10/26/2011	0 - 0.5	ND
B11204	PCB28	10/26/2011	1.5 - 2	ND
B11205	PCB29	10/26/2011	0 - 0.5	ND
B11205	PCB30	10/26/2011	1.5 - 2	ND
B11206	PCB103	08/13/2012	0 - 0.5	24.0000
B11206	PCB104	08/13/2012	1.5 - 2	0.1400
B11206	PCB105	08/13/2012	3 - 3.5	0.0400
B11207	PCB106	08/13/2012	0 - 0.5	0.0073
B11207	PCB107	08/13/2012	1.5 - 2	0.0070
B11207	PCB108	08/13/2012	3 - 3.5	ND
B11207	PCB108D	08/13/2012	3 - 3.5	ND
B11208	PCB109	08/13/2012	0 - 0.5	1.4000
B11208	PCB110	08/13/2012	1.5 - 2	0.1900
B11208	PCB111	08/13/2012	3 - 3.5	0.1400
B11209	PCB112	08/13/2012	0 - 0.5	4.5000
B11209	PCB113	08/13/2012	1.5 - 2	0.5600
B11209	PCB114	08/13/2012	3 - 3.5	0.1300

PCB in Soil Concentrations

- ≥ 1 mg/kg
- < 1 mg/kg

PCB Excavation Footprint and Depth

- 1 ft bgs
- 2.5 ft bgs

N

0 10 20

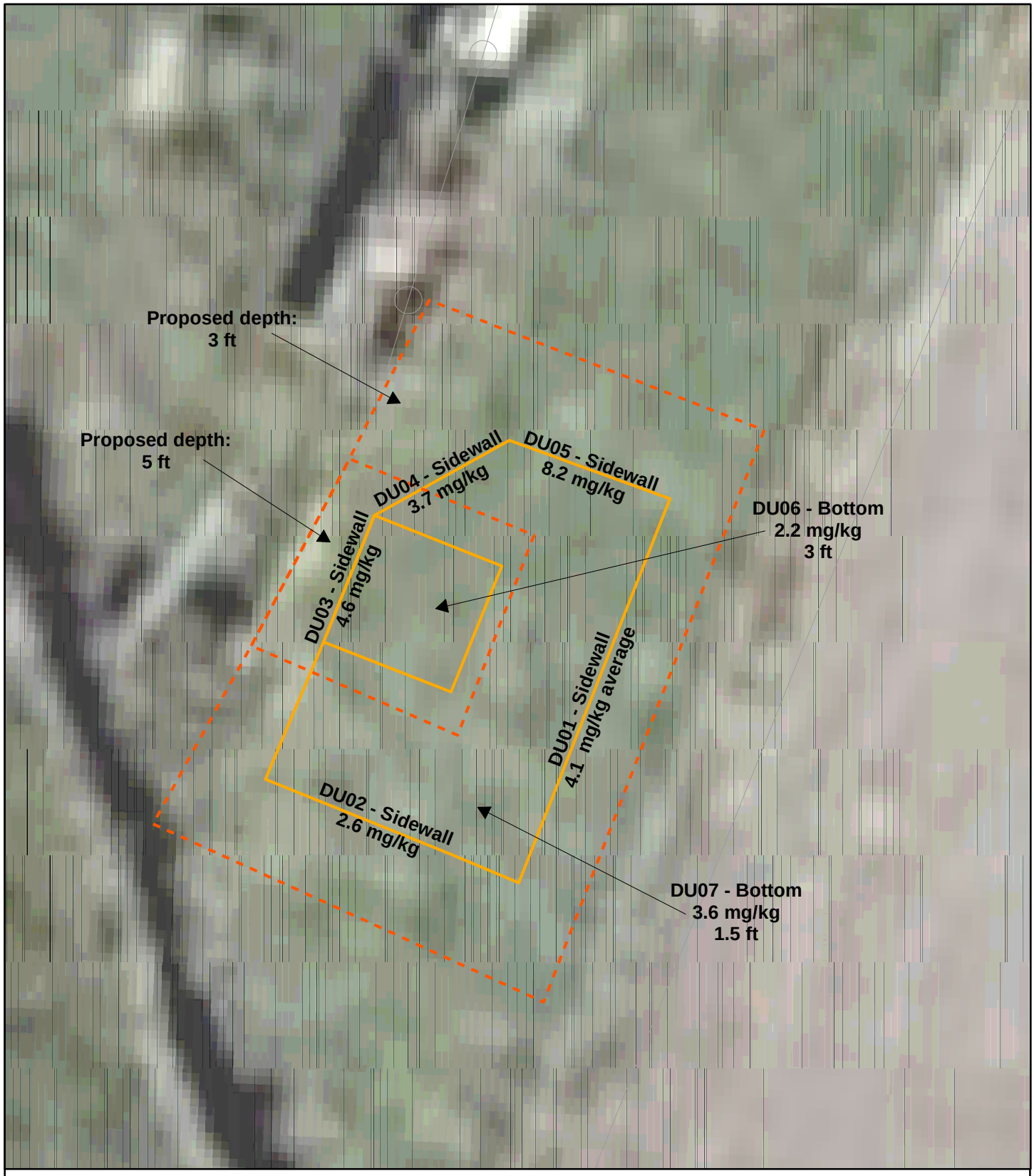
Feet

TETRA TECH

Richmond Field Station Site
University of California, Berkeley

FIGURE 2
B112 TRANSFORMER
PREVIOUS PCB SAMPLE RESULTS

8/18/2022 C:\misc_GIS\Richmond_Field_Station\Projects\B112 Transformer\Figure2_PreviousResults.mxd TtEMI-OAK michelle.handley



Excavation

Initial Excavation

Proposed Stepout Excavation

mg/kg milligrams per kilogram

N

0 4 8

Feet

TETRA TECH

Richmond Field Station Site
University of California, Berkeley

FIGURE 3
B112 TRANSFORMER
INITIAL CONFIRMATION PCB RESULTS
AND PROPOSED STEPOUT

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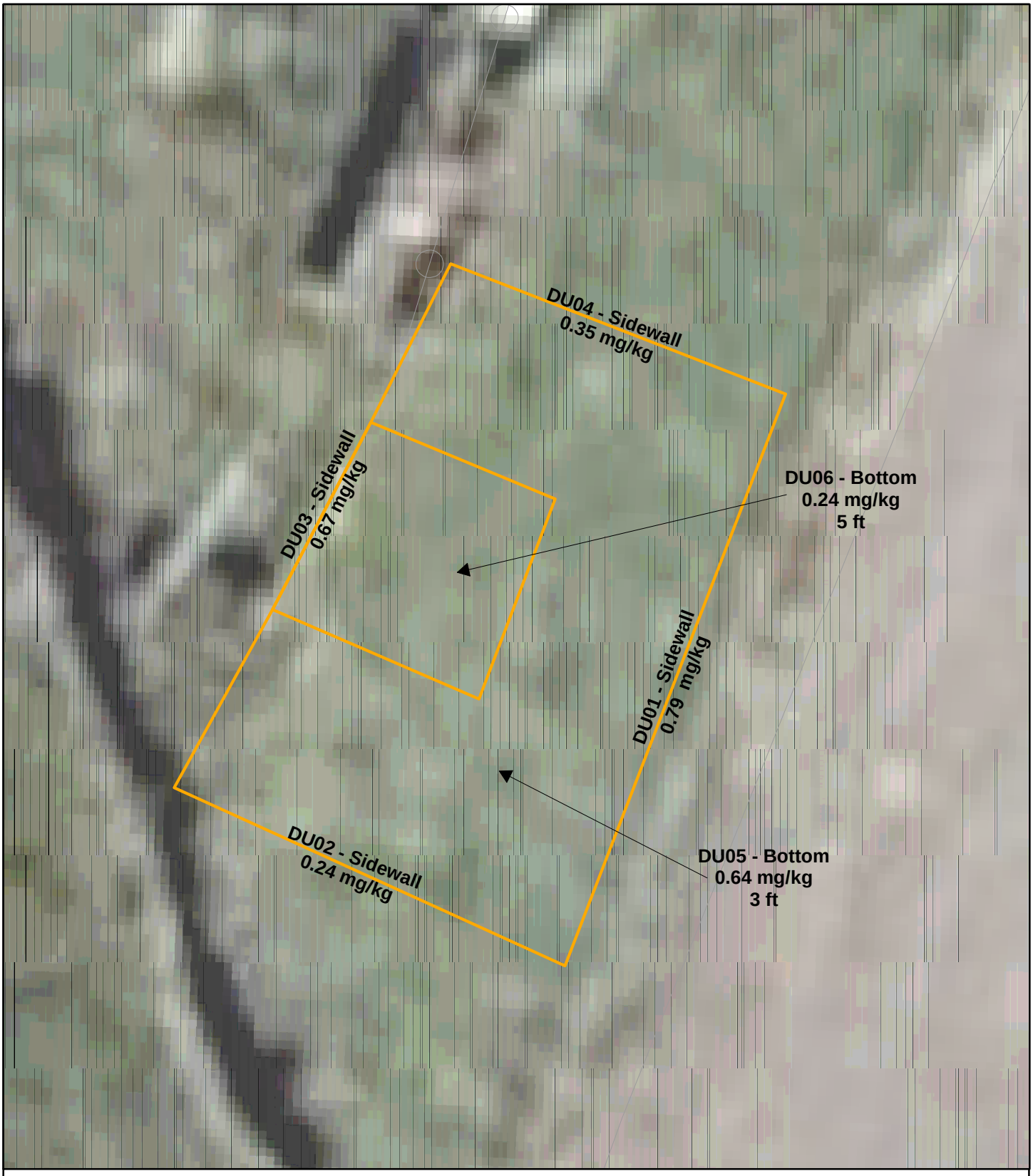

Excavation

Final Excavation

mg/kg milligrams per kilogram

N

0 4 8

Feet

TETRA TECH

Richmond Field Station Site
University of California, Berkeley

FIGURE 4
B112 TRANSFORMER
FINAL CONFIRMATION PCB
SAMPLE RESULTS

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APPENDIX A: PHOTOLOG

Appendix A - Photolog
B112 Transformer Area
Implementation Summary Report

Photo 1 Start of initial excavation. **Date** December 22, 2021 **Orientation** South	
Photo 2 Initial excavation. **Date** December 22, 2021 **Orientation** Northwest	

Photo 3 Placing soil into lined bins. **Date** December 22, 2021 **Orientation** South	
Photo 4 Completed initial excavation was secured and covered pending confirmation soil sample results. **Date** December 22, 2021 **Orientation** Northwest	

Photo 5 Start of final excavation. **Date** February 10, 2022 **Orientation** North	
Photo 6 Final excavation boundaries. **Date** February 11, 2022 **Orientation** North	

Photo 7 Final excavation boundaries. **Date** February 11, 2022 **Orientation** South	
Photo 8 Completed final excavation was secured and covered pending confirmation soil sample results. **Date** February 11, 2022 **Orientation** North	

Photo: 9 Completed final excavation was secured and covered pending confirmation soil sample results. **Date** February 11, 2022 **Orientation** West	
Photo: 10 Imported clean fill. **Date** March 11, 2022 **Orientation** West	

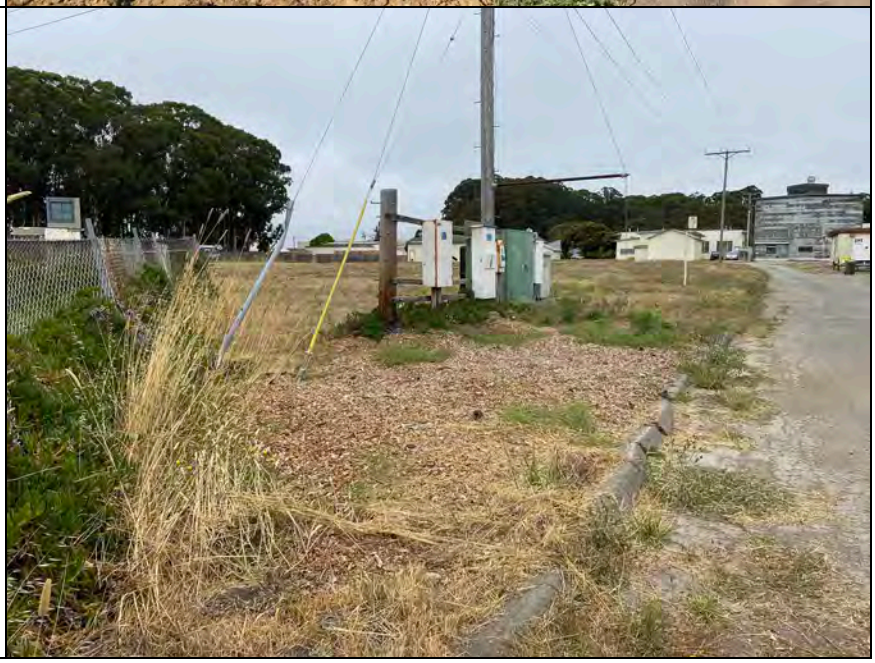
Photo: 11 Imported clean fill. **Date** March 11, 2022 **Orientation** North	
Photo 14 Final site finishing with wood chips and mulch. **Date** July 26, 2022 **Orientation** North	

Photo 15 Storm drain located southeast of Building 112. **Date** January 30, 2023 **Orientation** Northwest		
Photo 16 Storm drain at Building 112 fitted with sediment fiber trap. **Date** January 30, 2023 **Orientation** Northwest		

APPENDIX B: AIR AND WIND MONITORING LOGS

Richmond Field Station
University of California, Berkeley
B112 PCB Removal Action

AIR MONITORING LOG					
Date	12/22/2021				Page 1 of ___
Time	~~0745~~			units: mg/m3	Notes
0745	Affected Cells	Deep ·	S Station 1 Reading/Loc	0.00 0.00	Monitoring Station 1 always located upwind; station locations moved based on continuous wind direction measurements as documented on Wind Monitoring Log. Action Level: 50 µg/m³ crew begins dig
	Wind Speed	5mph	E Station 2 Reading/Loc	0.00 0.00	
	Wind Dir	NE	N Station 3 Reading/Loc	0.00 0.00	
845	Affected Cells	Deep & Shallow	S Station 1 Reading/Loc	0.00 0.00	Hydraulic fluid leak @8:30, crew shuts down machine and begins to hand dig the rest. Eastern (station 2) begins to malfunction due to moisture. All PDRs are removed for
	Wind Speed	5mph	E Station 2 Reading/Loc	0.00 0.00	
	Wind Dir	N	N Station 3 Reading/Loc	0.00 0.00	
	Affected Cells		Station 1 Reading/Loc		protection of equipment and because heavy machinery is no longer in use East station: 6866 & 2697 North station: 6564 South station: 2746
	Wind Speed		Station 2 Reading/Loc		
	Wind Dir		Station 3 Reading/Loc		
	Affected Cells		Station 1 Reading/Loc		
	Wind Speed		Station 2 Reading/Loc		
	Wind Dir		Station 3 Reading/Loc		
	Affected Cells		Station 1 Reading/Loc		
	Wind Speed		Station 2 Reading/Loc		
	Wind Dir		Station 3 Reading/Loc		
	Affected Cells		Station 1 Reading/Loc		
	Wind Speed		Station 2 Reading/Loc		
	Wind Dir		Station 3 Reading/Loc		
	Affected Cells		Station 1 Reading/Loc		
	Wind Speed		Station 2 Reading/Loc		
	Wind Dir		Station 3 Reading/Loc		

Richmond Field Station
University of California, Berkeley
B112 PCB Removal Action

AIR MONITORING LOG

Date: February 10, 2022 — Page 1 of 3

Time					Notes
	Affected Cells		Station 1 Reading/Loc	Conc TWA	Monitoring Station 1 always located upwind; station locations moved based on continuous wind direction measurements as documented on Wind Monitoring Log. Action Level: 50 µg/m³ Station 1: North, serial No. 6564 Station 3: South, serial No. 4674? ehard to read Station 2: East, serial NO. 4393
	Wind Speed		Station 2 Reading/Loc		
	Wind Dir		Station 3 Reading/Loc		
10:15	Affected Cells	DU 2	Station 1 Reading/Loc	0	Crew begins dig at southern end
	Wind Speed	9 mph	Station 2 Reading/Loc	0.022 0.022	
	Wind Dir	W	Station 3 Reading/Loc	0	
11:25	Affected Cells	All	Station 1 Reading/Loc	0	Bin is full. Crew has to stop and wait for another one.
	Wind Speed	11 mph	Station 2 Reading/Loc	0.048 0.041	
	Wind Dir	W	Station 3 Reading/Loc	0	
1215	Affected Cells	All	Station 1 Reading/Loc	0	Crew just restarted dig. Station 1 was off at time of reading, appears to have run out of battery. Started different PDR: 6866 (serial No.)
	Wind Speed	10 mph	Station 2 Reading/Loc	0.059 0.046	
	Wind Dir	SW	Station 3 Reading/Loc	0	
1315	Affected Cells	All	Station 1 Reading/Loc	0.054 0.008	Crew switches out bins. Heavy equipment still running.
	Wind Speed	10 mph	Station 2 Reading/Loc	0.047 0.047	
	Wind Dir	SW	Station 3 Reading/Loc	0	
1415	Affected Cells	All	Station 1 Reading/Loc	0.011 0.008	Still waiting for bin.
	Wind Speed	7 mph	Station 2 Reading/Loc	0.041 0.045	
	Wind Dir	SW	Station 3 Reading/Loc	0	
1515	Affected Cells	All	Station 1 Reading/Loc	0.018 0.011	Ending for the day. Will need to come back tomorrow.
	Wind Speed	5 mph	Station 2 Reading/Loc	0.047 0.045	
	Wind Dir	S	Station 3 Reading/Loc	0	

Richmond Field Station
University of California, Berkeley
B112 PCB Removal Action

AIR MONITORING LOG					
Date	February 11, 2022				Page 2 of 2
Time					Notes
	Affected Cells	~~All~~	Station 1 Reading/Loc	North 6866	Monitoring Station 1 always located upwind; station locations moved based on continuous wind direction measurements as documented on Wind Monitoring Log. Action Level: 50 µg/m³
	Wind Speed		Station 2 Reading/Loc	4393 East	
	Wind Dir		Station 3 Reading/Loc	South 4673	
935	Affected Cells	All	Station 1 Reading/Loc	0	Dig starts.
	Wind Speed	5 mph	Station 2 Reading/Loc	~~0~~ 0.002 ~~0~~ 0.002	
	Wind Dir	SouthWest	Station 3 Reading/Loc	0	
10:35	Affected Cells	All	Station 1 Reading/Loc	0.007 0.000	Machinery ends dig @ 10:17.
	Wind Speed	6mph	Station 2 Reading/Loc	0	
	Wind Dir	SW	Station 3 Reading/Loc	0	
	Affected Cells		Station 1 Reading/Loc		
	Wind Speed		Station 2 Reading/Loc		
	Wind Dir		Station 3 Reading/Loc		
	Affected Cells		Station 1 Reading/Loc		
	Wind Speed		Station 2 Reading/Loc		
	Wind Dir		Station 3 Reading/Loc		
	Affected Cells		Station 1 Reading/Loc		
	Wind Speed		Station 2 Reading/Loc		
	Wind Dir		Station 3 Reading/Loc		
	Affected Cells		Station 1 Reading/Loc		
	Wind Speed		Station 2 Reading/Loc		
	Wind Dir		Station 3 Reading/Loc		

APPENDIX C: 95UCL CALCULATIONS

1	**UCL Statistics for Uncensored Full Data Sets**											
2												
3		User Selected Options										
4		Date/Time of Computation	ProUCL 5.18/2/2022 10:51:42 AM									
5		From File	WorkSheet.xls									
6		Full Precision	OFF									
7		Confidence Coefficient	95%									
8		Number of Bootstrap Operations	2000									
9												
10												
11	**PCB**											
12												
13	**General Statistics**											
14		Total Number of Observations	6				Number of Distinct Observations	5				
15							Number of Missing Observations	0				
16		Minimum	0.24				Mean	0.488				
17		Maximum	0.79				Median	0.495				
18		SD	0.241				Std. Error of Mean	0.0982				
19		Coefficient of Variation	0.493				Skewness	0.0788				
20												
21	**Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use**											
22	**guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest.**											
23	**For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012).**											
24	**Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1**											
25												
26	**Normal GOF Test**											
27		Shapiro Wilk Test Statistic	0.863				**Shapiro Wilk GOF Test**					
28		5% Shapiro Wilk Critical Value	0.788				Data appear Normal at 5% Significance Level					
29		Lilliefors Test Statistic	0.236				**Lilliefors GOF Test**					
30		5% Lilliefors Critical Value	0.325				Data appear Normal at 5% Significance Level					
31	**Data appear Normal at 5% Significance Level**											
32												
33	**Assuming Normal Distribution**											
34		**95% Normal UCL**					**95% UCLs (Adjusted for Skewness)**					
35		95% Student's-t UCL	0.686				95% Adjusted-CLT UCL (Chen-1995)	0.653				
36							95% Modified-t UCL (Johnson-1978)	0.687				
37												
38	**Gamma GOF Test**											
39		A-D Test Statistic	0.521				**Anderson-Darling Gamma GOF Test**					
40		5% A-D Critical Value	0.699				Detected data appear Gamma Distributed at 5% Significance Level					
41		K-S Test Statistic	0.275				**Kolmogorov-Smirnov Gamma GOF Test**					
42		5% K-S Critical Value	0.333				Detected data appear Gamma Distributed at 5% Significance Level					
43	**Detected data appear Gamma Distributed at 5% Significance Level**											
44												
45	**Gamma Statistics**											
46		k hat (MLE)	4.533				k star (bias corrected MLE)	2.378				

47				Theta hat (MLE)		0.108				Theta star (bias corrected MLE)		0.205
48				nu hat (MLE)		54.4				nu star (bias corrected)		28.53
49				MLE Mean (bias corrected)		0.488				MLE Sd (bias corrected)		0.317
50										Approximate Chi Square Value (0.05)		17.34
51				Adjusted Level of Significance		0.0122				Adjusted Chi Square Value		14.29
52												
53						**Assuming Gamma Distribution**							
54	95% Approximate Gamma UCL (use when n>=50))					0.803				95% Adjusted Gamma UCL (use when n<50)		0.975
55												
56						**Lognormal GOF Test**							
57				Shapiro Wilk Test Statistic		0.847				**Shapiro Wilk Lognormal GOF Test**		
58				5% Shapiro Wilk Critical Value		0.788				Data appear Lognormal at 5% Significance Level		
59				Lilliefors Test Statistic		0.263				**Lilliefors Lognormal GOF Test**		
60				5% Lilliefors Critical Value		0.325				Data appear Lognormal at 5% Significance Level		
61						**Data appear Lognormal at 5% Significance Level**							
62												
63						**Lognormal Statistics**							
64				Minimum of Logged Data		-1.427				Mean of logged Data		-0.831
65				Maximum of Logged Data		-0.236				SD of logged Data		0.538
66												
67						**Assuming Lognormal Distribution**							
68				95% H-UCL		0.971				90% Chebyshev (MVUE) UCL		0.813
69				95% Chebyshev (MVUE) UCL		0.959				97.5% Chebyshev (MVUE) UCL		1.162
70				99% Chebyshev (MVUE) UCL		1.56						
71												
72						**Nonparametric Distribution Free UCL Statistics**							
73						**Data appear to follow a Discernible Distribution at 5% Significance Level**							
74												
75						**Nonparametric Distribution Free UCLs**							
76				95% CLT UCL		0.65				95% Jackknife UCL		0.686
77				95% Standard Bootstrap UCL		0.635				95% Bootstrap-t UCL		0.709
78				95% Hall's Bootstrap UCL		0.59				95% Percentile Bootstrap UCL		0.642
79				95% BCA Bootstrap UCL		0.628						
80				90% Chebyshev(Mean, Sd) UCL		0.783				95% Chebyshev(Mean, Sd) UCL		0.917
81				97.5% Chebyshev(Mean, Sd) UCL		1.102				99% Chebyshev(Mean, Sd) UCL		1.466
82												
83						**Suggested UCL to Use**							
84				95% Student's-t UCL		0.686						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	Recommendations are based upon data size, data distribution, and skewness.											
88	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
89	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
90												

ATTACHMENT 1: COMMENTS AND RESPONSE TO COMMENTS

Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
700 Heinz Avenue
Berkeley, California 94710-2721

Yana Garcia
Secretary for
Environmental Protection

Gavin Newsom
Governor

M E M O R A N D U M

TO: Nicole Yuen, Project Manager
Senior Environmental Scientist
Cleanup Program, Berkeley Office
Site Mitigation and Restoration Program

FROM: Mark Sorensen, PG 7448
Engineering Geologist
Geological Services Branch – Berkeley
Site Mitigation and Restoration Program

DATE: November 9, 2022

SUBJECT: **REVIEW OF DRAFT B112 TRANSFORMER AREA PCB CLEANUP AND REMOVAL ACTION IMPLEMENTATION SUMMARY REPORT, RICHMOND FIELD STATION SITE, UNIVERSITY OF CALIFORNIA, BERKELEY**

SITE 201605-00 PCA: 11018 MPC: TECHMEMO WR 20088492

DOCUMENT REVIEWED

As requested, the Berkeley Geological Services Unit (GSU) has reviewed the *Draft B112 Transformer Area PCB Cleanup and Removal Action Implementation Summary Report, Richmond Field Station Site* [Site]*, University of California, Berkeley* (Report), dated August 22, 2022. The Report was prepared by Tetra Tech, Inc., for the Office of Environment, Health and Safety, University of California, Berkeley. The Report addresses the investigation and cleanup actions taken to remedy the presence of PCBs in soils at the B112 Transformer Area, located west of Building 112 at the Richmond Field Station. The Report was reviewed with respect to geologic and hydrogeologic interpretations and technical adequacy. Evaluation of human health and ecological risk issues is deferred to DTSC's Human and Ecological Risk Office (HERO).

BACKGROUND

Records indicate that all PCB-containing electrical distribution system transformers at the Site were either removed for off-site disposal or backfilled onsite with non-PCB oils in the late 1980s and early 1990s. There are no records of spills of PCB oils having occurred at the Site; instead, the B112 Transformer Area contamination, limited to shallow soils (upper 1 to 2.5 feet), likely resulted from either transformer seepage or unreported spills during maintenance. The established cleanup goal for total polychlorinated biphenyls (PCBs) in site soils is 1 milligram per kilogram (mg/kg), based on both human and ecological thresholds, with the latter based on potential effects on marine biota. The Report documents the site remedy of excavation and confirmation sampling followed by backfilling of clean fill, wood chips, and mulch.

COMMENTS AND RECOMMENDATIONS

1. *Section 3.6.1, Sampling Methodology, Page 8*
   Please cite the guidance for incremental sampling methodology (ISM) provided in the references.

2. *Section 5.3 Field Results, Page 13*
   The Air Monitoring Summary table shows PDR (Personal Data Rams) data for particulate levels using units of micrograms per cubic meter (µg/m^3). The lower detection limit is listed in Section 3.9 as 1 µg/m^3. However, all the values listed in the Air Monitoring Summary table are significantly less than this detection limit, as low as 0.002 µg/m^3, which is 500 times lower than the detection limit. It appears that the units in this table should instead be indicated as milligrams per cubic meter (mg/m^3). This assessment is consistent with the units of mg/m^3 indicated in the field forms provided in Appendix B (see the first page of Appendix B).

The description and supporting information for the remedial action presented in the Report are clear and appropriate, and the methods used are consistent with the sampling approach previously approved by DTSC. GSU has no additional comments beyond those provided above, and I support approval of the Report once the above minor comments are addressed.

If you have any questions or comments regarding this memorandum, please contact Mark Sorensen at (510) 540-3947 or Mark.Sorensen@dtsc.ca.gov, or Jon Buckalew (Buck) King at (510) 540-3955 or Buck.King@dtsc.ca.gov.

Reviewed by: Theodore Mazzoli, PG
Engineering Geologist, Geological Services Unit
Geological Services Branch
Site Mitigation and Restoration Program

B112 Transformer Area PCB Cleanup and Removal Action
Draft Implementation Summary Report
University of California, Richmond Field Station
August 22, 2022

Response to Comments

Department of Toxic Substances Control
Comments dated November 9, 2022

U.S. Environmental Protection Agency
Comments dated January 5, 2023
Provided electronically within document PDF

DTSC Comment No.	DTSC Comment	UC Berkeley Response
1	Section 3.6.1, Sampling Methodology, Page 8 Please cite the guidance for incremental sampling methodology (ISM) provided in the references.	Text has been edited to include references to the ISM language within the TSCA Approval, the Incremental Sampling Guidance, ISM-II Update prepared by the Interstate Technical and Regulatory Council (ITRC), and the laboratory's standard operating procedures for ISM sample preparation.
2	Section 5.3 Field Results, Page 13 The Air Monitoring Summary table shows PDR (Personal Data Rams) data for particulate levels using units of micrograms per cubic meter ($\mu g/m^3$). The lower detection limit is listed in Section 3.9 as 1 $\mu g/m^3$. However, all the values listed in the Air Monitoring Summary table are significantly less than this detection limit, as low as 0.002 $\mu g/m^3$, which is 500 times lower than the detection limit. It appears that the units in this table should instead be indicated as milligrams per cubic meter (mg/m^3). This assessment is consistent with the units of mg/m^3 indicated in the field forms provided in Appendix B (see the first page of Appendix B).	The air monitoring units presented in Section 5.3, Field Results, Air Monitoring Summary, have been changed to mg/m^3.

US EPA Comment No.	EPA Comment	UC Berkeley Response
1	Section 5.1, Action Levels, Page 12 For future RFS sites, the action level should not be added to the upgradient level. The action level is independent of the upgradient level.	Text has been edited to clarify that the action levels were not changed, but that the upgradient particulate concentrations were subtracted from the downgradient concentrations, resulting in a net downgradient concentration to be compared to the action levels. This method is consistent with previous air monitoring activities at RFS per DTSC direction.
2	Section 6.3, Sample Results, Final Excavation Confirmation Results, Page 19 Footnote indicating R3A (0.05 mg/kg) should read R3C (0.05 mg/kg)	The footnote has been edited to indicate R3A (0.23 mg/kg) as the final concentration used to calculate the surrogate result for Decision Unit 03.

3	Attachment 2: TSCA Risk-Based Disposal Approval Application Please confirm all sediment actions listed in EPA approval letter have been completed. The comment highlights the following text from the EPA approval letter: In addition to the soil removal, any sediment within existing storm drains affected by the B112 transformer area will be removed and sediment filters will be installed at storm drain inlets. During the rainy season, straw wattles will be staked around the inlets to reduce inflow of sediment. Sediment filters will be monitored quarterly, and once enough sediment has accumulated for PCB analysis, a sample will be collected to determine if the area is a continuing source of PCBs.	A sediment filter was installed at the storm water inlet located southeast of B112 which collects storm water runoff from the B112 Transformer Area during major storm events. The sediment filter is designed to reduce the inflow of sediment at the storm drain inlet. Less than a ¼ inch layer of sediment was observed at the bottom of the storm drain inlet. Photographs of the installed sediment filter are presented in Appendix A, Photolog. Per discussions with EPA and DTSC on February 1, 2023, UC Berkeley collected a sediment sample from the subject storm drain inlet. Due to the small volume of sediment present, all sediment was removed from the storm water inlet and provided to the laboratory for analysis. The laboratory performed incremental sampling methodology subsampling preparation to reduce the provided volume to the volume required for analysis. No PCBs were detected within the sediment sample results, and therefore no additional sampling or monitoring is necessary since the B112 Transformer Area is no longer a continuing source of PCBs.

ATTACHMENT 2: TSCA RISK-BASED DISPOSAL APPROVAL APPLICATION

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Greg Haet
Environmental Project Manager
Office of Environment, Health & Safety
University of California, Berkeley
University Hall 3rd Floor #1150
Berkeley, California 94720

Re: USEPA Conditional Approval of PCB Cleanup Plan for University of California, Berkeley Richmond Field Station B112 Transformer at 1301 South 46th Street in Richmond, California, CAD983669268

Dear Greg Haet:

Thank you for working with the U.S. Environmental Protection Agency, Region 9 ("USEPA") to address the disposal of polychlorinated biphenyls ("PCBs") found in soil near the former pole-mounted transformer in the Central Meadow, which is near the northeast corner of Building 112 at the University of California, Berkeley ("UC Berkeley") Richmond Field Station ("RFS") located at 1301 South 46th Street in Richmond, California (the "Site"). The transformer was also known as the B112 transformer. USEPA has received and reviewed UC Berkeley's *Risk-based Disposal Approval Application* (the "Application") dated April 21, 2021, which outlines UC Berkeley's plan for excavation and disposal of soils containing PCBs at the Site as well as post-remediation verification sampling.

The Application describes excavation and subsequent disposal of soils consistent with Toxic Substances Control Act ("TSCA") standards. The RFS currently has non-residential land use consisting of an academic teaching and research facility, library facility, and several non-university commercial tenants. The 2014 Berkeley Global Campus Long Range Development Plan anticipates continued similar land use. Additionally, a planned deed restriction will prohibit residential use. The site-specific risk-based cleanup level of 1 ppm total PCBs is protective of both ecological receptors in nearby Stege Marsh which is impacted by stormwater flow, and of human receptors at the Site given the current and anticipated future non-residential land use.

There are no records of releases of PCBs at the Site, but it is likely that the PCB contamination resulted either from transformer leaks or spills during maintenance. The maximum concentration of PCBs found at the Site was 35 ppm. It is estimated that 3.63 cubic yards of soil will need to be removed for off-site disposal to meet the cleanup level of 1 ppm. Confirmation sampling from excavation bottoms and sidewalls will ensure the cleanup level has been reached. Incremental sampling methodology will be used for confirmation sampling.

In addition to the soil removal, any sediment within existing storm drains affected by the B112 transformer area will be removed and sediment filters will be installed at storm drain inlets. During the rainy season, straw wattles will be staked around the inlets to reduce inflow of sediment. Sediment filters will be monitored quarterly, and once enough sediment has accumulated for PCB analysis, a sample will be collected to determine if the area is a continuing source of PCBs.

USEPA is approving UC Berkeley's Application with conditions pursuant to 40 C.F.R. § 761.61(c) (i.e., risk-based disposal standards of TSCA). USEPA believes implementation of the approval will pose no unreasonable

risk of injury to health or the environment. UC Berkeley shall implement the Application as modified by the conditions listed below.

USEPA Conditions of Approval and Additional Comments:

1. **Disposal of PCBs:** UC Berkeley shall dispose of all PCB waste that it generates during the PCB cleanup in accordance with the TSCA PCB regulations and other applicable federal, state, and local regulations. In determining the disposal method for the waste, UC Berkeley must comply with the anti-dilution requirements in 40 C.F.R. § 761.1(b). All bulk PCB remediation waste (i.e., soil) must be disposed of in accordance with the requirements in 40 C.F.R. § 761.61(a)(5). UC Berkeley must select appropriate disposal facilities based on the in-situ PCB concentrations of the waste.

2. **PCB Cleanup Waste Disposal:** Cleanup waste (e.g., personal protective equipment, rags, gloves, booties) shall be disposed of in accordance with 40 C.F.R. § 761.61(a)(5)(v). Disposal of all waste shall be in accordance with all federal, state, and local regulations.

3. **Equipment Decontamination:** UC Berkeley shall decontaminate non-disposable sampling tools and equipment, as well as movable equipment used during cleanup and/or additional sampling in accordance with 40 C.F.R. § 761.79(c)(2). Decontamination residues must be disposed of at their original concentrations in accordance with the requirements in 40 C.F.R. § 761.79(g). Recordkeeping of the decontamination events must be maintained in accordance with the requirements in 40 C.F.R. § 761.79(f)(2). These procedures must be implemented in a manner that is protective of human health and the environment consistent with the requirements in 40 C.F.R. § 761.79(e).

4. **PCB Cleanup Report:** UC Berkeley shall submit a PCB cleanup report to USEPA, to include all relevant data and justification demonstrating that the work completed is consistent with this approval. UC Berkeley must address at a minimum all the reporting requirements set forth at 40 C.F.R. § 761.61(a)(9) and 40 C.F.R. § 761.125(c)(5). UC Berkeley shall also include figures, surveys, or GPS coordinates depicting the location and results for all site characterization samples and verification samples.

5. **Procedures to Submit Reports, Documentation, and Correspondence to USEPA:** The cleanup party should follow the below procedures to submit reports and documentation required in this approval to USEPA and to send correspondence to USEPA related to this approval.
    a. The title of the report or the subject line on documentation and correspondence (inclusive of emails) shall include the PCB cleanup site identification number ("PCB SITE ID") assigned by USEPA and the PCB site name ("PCB Site"). Specific to USEPA's approval of the cleanup party's initial application: the PCB SITE ID is CAD983669268, the PCB Site is UC Berkeley Richmond Field Station B112 Transformer, and the USEPA project manager is Sara Ziff (ziff.sara@epa.gov).
    b. If no claim of confidentiality accompanies the submitted information, then such information may be made available to the public by USEPA without further notice to you [15 U.S.C. 2613; 82 FR 6522 (January 19, 2017); 40 C.F.R. § 2.203(a)].
    c. The cleanup party must contact USEPA about submission procedures, if the cleanup party intends to submit information to USEPA with an assertion of business confidentiality.
    d. Except as otherwise specified in these instructions, all documentation (e.g., reports), correspondence, and other written communications shall be submitted to USEPA electronically via email to the USEPA project manager (ziff.sara@epa.gov) with a courtesy electronic copy via email to R9LandSubmit@EPA.gov. Please include the PCB SITE ID (i.e., CAD983669268) and PCB Site name (i.e., UC Berkeley Richmond Field Station B112 Transformer) in the email's subject line.

6. **Future Proposed Modifications to Cleanup Plan:** UC Berkeley shall request any changes to the approved cleanup plan via email to USEPA, and USEPA will provide any response to the request via email.

This approval does not relieve UC Berkeley from complying with all other applicable federal, state, and local regulations and permits. Departure from the conditions of the approval without prior written permission from USEPA may result in the commencement of proceedings to revoke this approval and/or an enforcement action. Nothing in this approval bars USEPA from imposing penalties for violations of this approval or for violations of other applicable TSCA PCB requirements or for activities not covered under this approval.

This approval only applies to the Site. USEPA reserves the right to require additional characterization and/or cleanup of PCBs at the Site if new information during additional site characterization, cleanup verification, and/or during future post-cleanup activities shows that PCBs remain at the Site above the approved PCB cleanup level or change of land use (e.g., redevelopment or post-redevelopment) at the property. In addition, USEPA may require cleanup of areas immediately adjacent to the Site if those areas are found to be impacted by PCBs from the Site. If additional information demonstrates that EPA cannot sustain the no unreasonable risk determination, EPA will modify or revoke this approval. In case of conflict between the Application and applicable requirements in 40 CFR Part 761, the applicable requirements in 40 CFR Part 761 take precedent.

USEPA appreciates the opportunity to assist UC Berkeley with this PCB cleanup. If you have any questions regarding this approval, please contact Sara Ziff at (415) 972-3536 or ziff.sara@epa.gov. Thank you for your cooperation.

Sincerely,

Jeff Scott, Director
Land, Chemicals, and Redevelopment Division

cc (electronic): Alicia Bihler, UC Berkeley Office of Environment, Health & Safety
Lynn Nakashima, DTSC

Toxic Substances Control Act (TSCA) Polychlorinated Biphenyls (PCBs) Risk-Based Disposal Approval Application
University of California, Berkeley
Richmond Field Station

B112 Transformer Cleanup Site

April 21, 2021

Office of Environment, Health & Safety

Berkeley EH&S

Toxic Substances Control Act (TSCA) Polychlorinated Biphenyls (PCBs)
Risk-Based Disposal Approval Application
University of California, Berkeley
Richmond Field Station

B112 Transformer Cleanup Site

1. Executive Summary, Introduction, Certification

This application for a risk-based disposal approval for PCB cleanup is being submitted to address a planned soil excavation removal action at a PCB transformer location at the University of California, Berkeley's Richmond Field Station, located along the City of Richmond Southeast Shoreline. This application is based on the EPA May 2017 Facility Approval Streamlining Toolbox (EPA530-F-17-002) Tool 4, TSCA Risk-Based PCB Cleanups Checklist to address the requirements of 40 CFR 761.61(c)(1).

Site address:

University of California, Berkeley (UC Berkeley), Richmond Field Station (RFS), 1301 S. 46th St., Richmond, CA 94804

Owner and/or operator name and contact information:

Owner and operator:

Owner: The Regents of the University of California
Operator: University of California, Berkeley

Contact:

Greg Haet
Environmental Project Manager
Office of Environment, Health, & Safety (EH&S)
University of California, Berkeley
University Hall 3rd Fl., #1150
Berkeley, CA 94720
(510) 642-4848
gjhaet@berkeley.edu

Brief Summary of PCB impacts (impacted media and maximum PCB levels)

PCBs have been found in soil near the location of the former pole-mounted transformer located in the Central Meadow, near the northeast corner of Building 112, also known as the B112 transformer. The impacted area totals approximately 74 square feet and it is estimated that 3.63 cubic yards of soil will need to be removed for off-site disposal. In the excavation area, PCB concentrations are below the TSCA bulk remediation waste level of 50 milligrams per kilogram (mg/kg), but exceed the proposed cleanup level of 1 mg/kg. The maximum concentration of PCBs found was 35 mg/kg.

PCBs in the samples at the B112 transformer area were identified as Aroclor 1248, 1254, and 1260. There is no evidence of significant groundwater contamination based on historic (November 2010) groundwater well sampling. Groundwater is located between 4.6 and 8 feet below ground surface (bgs). No PCBs were detected in four samples collected during the September 2010 groundwater events at the CCC3 well located near the proposed excavation area. Detection limits for the PCB results ranged from 0.19 to 0.38 micrograms per liter. CCC3 is located approximately 50 feet west and cross-gradient of the transformer area. MFA is the closest downgradient piezometer located approximately 200 feet south of the transformer area, with non-detected PCBs at similar detection limits. CCC3 and MFA are shown on Figure 3. Groundwater contamination will not be a concern provided that the cleanup goals are met at the deepest confirmation samples within the excavation.

Brief description of proposed cleanup option, cleanup schedule date by which cleanup needs to be completed, and reasons for schedule (e.g. redevelopment)

The proposed PCB cleanup option is hand-excavation in the B112 transformer area with PCBs above the 1 mg/kg cleanup level. This removal action is incorporated into the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) approved *Removal Action Workplan, Richmond Bay Campus, Richmond, California, Research, Education, and Support Area and Groundwater within the Former Richmond Field Station (RAW)*, dated July 18, 2014. The University will procure a hazardous materials contractor to excavate soil using shovels and demo-hammers. Soil will be placed into roll-off bins and/or cubic yard boxes for eventual off-site disposal at a licensed disposal facility approved for the PCB waste stream. It is estimated that the excavation work will take two days to complete and that containerized soil will remain on-site for no longer than 30 days to complete waste profiling and approval with disposal sites.

Upon approval by EPA and DTSC, it is anticipated that the B112 PCB Transformer soil removal action will be conducted in Spring 2021.

Brief discussion of state or local agency or community interests in the project, if applicable.

As described above, the RAW removal actions are being completed under the DTSC Order issued to UC Berkeley and according to an estimated three-year schedule provided to DTSC in August 2020. DTSC addressed community interests through communications with the Richmond

Southeast Shoreline Community Advisory Group which meets once per month and will issue a Work Notice at least one week ahead of mobilization for the project.

Certification

The Certification follows at the end of the application.

2. Site Description

Surrounding land uses

The RFS is bounded to the north by Meade Street and Hoffman Boulevard, east by South 46th St., south by the East Bay Regional Park District (EBRPD) Bay Trail and the San Francisco Bay, and west by Meeker Slough and Regatta Boulevard. See Figure 1 Site Location and Figure 2, Site Map.

Land uses immediately adjacent to the site are industrial, office, and transportation corridors, along with the Marina Bay single- and multi-family residential neighborhood immediately to the southwest.

Land uses to the west of the RFS include Bio-Rad Laboratories, a private research equipment manufacturing company located south of Regatta Boulevard, and the 24-acre UC Berkeley 3200-3300 Regatta property which is the location of campus museums storage, the UC Berkeley Property Surplus facility, and tenants.

Businesses at the adjacent property to the northwest include the Safeway Bread Plant and otherwise are commercial warehousing and office space.

The adjacent property immediately to the northeast includes railways and the Meade Street and I 580 roadway corridors. Richmond residential neighborhoods and Booker T. Anderson Park are located across I 580, approximately 500 feet from the RFS.

The adjacent property to the east is the location of former Stauffer chemical production operations previously owned by Zeneca and currently owned by Cherokee Simeon Ventures, LLC. The currently vacant Campus Bay Business Park is located on part of this site, but the Richmond Bay Specific Plan, approved by the City of Richmond City Council in December 2016 anticipates property development as mixed-use commercial/residential.

The EBRPD East Shore Park lies east and south of the RFS extending south and east along the Richmond Southeast Shoreline Area extending to the southern city limits and beyond. The EBRPD Bay Trail dissects UC Berkeley property at the southern boundary of the inboard marsh.

Current and proposed or planned future land uses

The RFS is currently an academic teaching and research facility that houses campus research and teaching programs, a cooperative library facility, and a number of non-University tenants with functions compatible with commercial/institutional land use, including the US EPA Region 9 Laboratory, the Watershed Project and Earth Team non-profit organizations, and a number of small private sector start-ups. The B112 transformer areas is within the academic teaching and research portion of RFS. The RFS property also includes a large area of natural open space consisting of rare remnant Bay edge Coastal Terrace Prairie, ruderal and restored marsh edge transitional habitat, tidal salt marsh, mud flats, and submerged SF Bay land.

The University owns 195.8 total acres along the Richmond Southeast Shoreline comprised of the portion of the Richmond Field Station covered by the DTSC Order (110.1 acres inboard of the EBRPD Bay Trail), adjacent 3200-3300 Regatta Property (24 acres, almost all hardscape), and the undevelopable tidal marsh, mudflats, and submerged lands outboard of the EBRPD Bay Trail (61.7 acres).

Proposed future land use as presented the 2014 Berkeley Global Campus Long Range Development Plan anticipates continued similar land use. Additionally, a planned deed restriction will prohibit residential use. Deed restrictions are discussed in Section 6.1.g and Section 10.

Onsite buildings, including age and use plans for the buildings

The RFS houses 80 buildings with approximately 500,000 square feet of space on the 96-acre upland portion of the campus, see Figure 3, Richmond Field Station Physical Features. Buildings date from the late 1800s to 2020. Buildings were constructed in the 1800s to 1940s for the California Cap Company, a blasting cap and explosives manufacturer company that was one of the first industrial occupants of the Richmond Southeast Shoreline. The University purchased the property after 1950 and has constructed new buildings and research facilities with the most recent dating to 2020 with the construction of the fourth phase of the Northern Regional Library Facility. Current buildings use includes laboratory research space, offices, libraries, classrooms, conference rooms, facilities support storage and storage warehouses. There is one small café on site. One building housing the US EPA Region 9 Laboratory, is owned and operated by a third party under a ground lease with the University.

Building 112 is the closest occupied building, and is used for laboratory research, and office space. Other Buildings in the vicinity are, B102 and B110 (both unoccupied), and B111 and 113 which are used as a storage area and subzero refrigerator warehouse, respectively.

Hydrology and depth to groundwater

Surface and Storm Water

The RFS is located at the downstream base of a small watershed (~2,200 acres, 3.3 square miles) of a perennial creek draining from the North Richmond and El Cerrito East Bay Hills, extending to McBryde Avenue near Alvarado Park. The creek watershed is not formally named but is

generally referred to as the Meeker Slough watershed, the tidally influenced water channel into which the creek drains. Meeker Slough courses through Western Stege Marsh, the delta of the creek, then to San Francisco Bay at the confluence with Baxter Creek, the adjacent creek watershed to the east of the RFS.

There is no dry season waterway in the upland portion of RFS as the uplands area is currently disconnected from surface water and storm water runoff from the watershed by the storm drain system which drains into Meeker Ditch and Meeker Tidal Creek and then to the marsh. Storm water runoff from most of the RFS flows from north to south by way of sheet flow, open swales, culverts and storm drains. The existing storm drain system consists of two main 24-inch storm drain lines- the Eastern Storm Drain and the Western Storm Drain- spanning the respective eastern and western edges of existing improvements. RFS hydrology is depicted on Figure 4.

It is believed that the Western Storm Drain was originally a sewer line draining to the San Francisco Bay mudflats that was placed along Syndicate Avenue prior to the establishment of the Richmond Publicly Owned Treatment Works (POTW) and construction of the existing City of Richmond sewer mains traversing the north and south portions of the RFS. After construction of the Richmond POTW, the Western Storm Drain remained connected as an overflow port to the City of Richmond sanitary sewer main traversing the northern portion of the RFS before the overflow was closed in 2004. The Western Storm Drain now conveys only runoff from the central and northeastern portions of the RFS, the NRLF (Building 400), eastern portions of the coastal-terrace prairie, and the asphalt pads to the east of Building 128. The Western Storm Drain discharges to Meeker Slough downstream of the confluence of Meeker Tidal Creek and Meeker Ditch.

The Eastern Storm Drain collects runoff from the southeast portion of the RFS (Building 180 and south), including B112, and discharges in the northeastern corner of Western Stege Marsh, which drains via slough channels to the west into Meeker Slough upstream of the Bay Trail bridge.

The former Zeneca site, now known as Campus Bay, is east of S. 46th Street. In the past, runoff from a portion of the former Zeneca Site drained into the RFS Eastern Storm Drain via an interconnecting storm drain originating on South 46th Street on the east side of RFS Building 185. Following 2002 and 2003 Zeneca site remediation activities, only a small amount of Zeneca site surface runoff now flows into the interconnecting and Eastern Storm Drain.

Ground Water Hydrology

Evaluation of historic research groundwater well installations and site contamination piezometer installations (site-wide 47 shallow and 4 deep, installed in 2010) have revealed three water-bearing zones within 100 feet bgs. These are:

- Shallow zone, 1.5 to 20 feet below the surface;
- Intermediate zone, 30 to 74 feet below the surface; and
- Deeper zone, 90 to 100 feet below the surface.

Depth to groundwater as measured within the RFS piezometer network over the past 10 years ranges from 1.5 feet bgs in the southeastern portion of RFS to 16.5 feet bgs in the northern

portion of RFS. Depth to groundwater at the CCC3 well, located 50 feet west of the B112 transformer, was measured in 2019 at 4.27 feet bgs during the wet season and 6.37 feet bgs during the dry season. The shallow water-bearing zone spans the depth in which artificial fill, Quaternary alluvium, and young Bay sediments are found. Although the sediments are generally coarser in the upper 20 feet, clay content and sufficiently discontinuous permeable lenses slow groundwater flow such that the yield from shallow wells is low. Intermediate zone groundwater appears to flow through a relatively continuous, five-foot-thick sand stratum at a depth of about 30 to 35 feet. Groundwater may be under semi-confined conditions within this zone. The older Bay Mud acts as a confining layer or aquitard. The deeper groundwater zone is below or within the older Bay Mud.

The ground surface elevation slopes from about 30 feet National Geodetic Vertical Datum (NGVD) in the RFS site northeast corner and slopes down to the south and west. To the south, it slopes to about 15 to 20 feet NGVD in the site's central portion, down to about 2 feet along the edge of Meeker Slough.

Groundwater gradients vary somewhat seasonally and locally across the RFS site, probably due to differences in the amount of recharge and local differences in vertical permeability. The general direction of flow is toward the southwest, in the direction of Meeker Slough. In the late fall, groundwater elevations in the shallow zone are about 10 to 11 feet National Geodetic Vertical Datum (15 feet bgs) in the RFS site northeast corner, falling to about 6 feet National Geodetic Vertical Datum (10 feet bgs) in the RFS site central area, and dropping to about just below the ground surface along Meeker Slough. During groundwater monitoring rounds between November and April, groundwater elevations in the site's northeast corner increased about one foot in April wet season relative to November dry season, probably as a result of greater springtime recharge.

Proximity to surface water

There is no dry season waterway in the RFS uplands as perennial flow from the watershed is routed around the RFS through the City of Richmond storm drain system. The RFS storm drains and Meeker Slough drain to Western Stege Marsh. RFS property includes approximately 6.5 acres of inboard marsh and 62 acres of outboard area consisting of tidal salt marsh, mudflats, and submerged land. The B112 transformer area is approximately 435 feet from Western Stege Marsh at its nearest point.

Western Stege Marsh and Meeker Slough, in the southern portion of the RFS site, include high marsh, low marsh, tidal mudflat, and open water slough. They are all jurisdictional wetlands. The primary hydrologic feature in the area is the approximately 40- to 50-foot wide Meeker Slough. The high marsh is dominated by inland saltgrass and the low marsh is dominated by pacific cordgrass. Inland saltgrass is typically found in temperate grassland with sparse shrub layer. Habitats can be irregularly flooded or permanently saturated with shallow water table in haline or saline water chemistry. Western Stege Marsh is considered a sensitive natural community. The saltmarsh habitat provides high quality wildlife habitat for numerous special-status species including the federally endangered Ridgway's rail known to nest on site, and also functions to reduce erosion and sedimentation.

Storm water runoff and any collection system, and discharges to surface water and other areas

As described in the Hydrology and Depth to Groundwater section above, the RFS storm drain system consists of sheet flow, open swales, culverts and storm drains that discharge to Western Stege Marsh or Meeker Slough through two 24-inch culverts or by overland flow.

The B112 transformer is located at the eastern edge of the Central Meadow, where stormwater tends to pond and infiltrate into dirt soils. During periods of heavy rainfall, the B112 transformer area drains overland to the Eastern Storm Drain system, and ultimately to the restored marsh. The nearest sediment catch basin is 264 feet from the transformer pad; the catch basin captures runoff from the entire eastern portion of RFS, including the Corporation Yard and some runoff from the adjacent Campus Bay site. The distance traveled between B112 transformer area and the Eastern Storm Drain outfall is approximately 680 feet. Historic sediment sampling at the Eastern Storm Drain outfall area has not shown elevated levels of PCBs.

Typical weather patterns, climate, and wind rose depicting wind direction and speed

The Richmond South Shoreline Area enjoys a very mild Mediterranean climate year-round. The temperature is slightly warmer than in the coastal areas of San Francisco, the Peninsula, and Marin County. It is, however, more temperate than areas further inland. The average highs range from 57 to 73°F and the lows between 43 and 56°F year-round. September is, on average, the warmest month and January is, on average, the coldest month. The highest recorded temperature in Richmond was 107°F in September 1971 while the coldest was 24°F in January 1990.

The average annual wind speed is 6 to 9 miles per hour primarily from the direction of the San Francisco Bay. It is generally windier from March through August than in other months and the strongest winds typically occur in June.

The rainy season typically begins in late October and ends in April with some showers in May. Most of the rain occurs during stronger storms in November through March when rainfall is usually three to five inches per month, and the seasonal average for downtown Richmond is 21.81 inches (Richmond City Hall DWR gauge). Most precipitation occurs during January and February. Seasonal wet meadows are known to occur throughout the Richmond Bay Campus site during the rainy season (Figure 4. Hydrology). The area experiences no snowfall but has brief hail storms annually during the coldest months.

The City of Richmond experiences sunshine more than 80% of the day lit hours during seven months out of the year and there are ten months where 60% or more of the day lit hours experience sunshine. December and January are the darkest months with about 45% average brightness. The South Shoreline Area and the ridges of the East Bay hills experience more fog than do the northern areas of Richmond. Morning humidity is 75% to 92% year-round. Afternoon humidity ranges from 20-40% May through October (the summer months) and from 40-70% during the winter.

Soil types and geological features and characteristic at the site

The RFS is at the distal end of an alluvial plain that slopes to the southwest. The Hayward Fault Zone transects the alluvial plain to the northeast, toward the Berkeley Hills. The alluvial plain consists of relatively recent Quaternary age deposits (less than 2 million years old).

The lithology of the alluvial plain is primarily consolidated to unconsolidated clay, silt, sand, and gravel, with organic-rich clay and silt bordering the San Francisco Bay. Total thickness of the deposits ranges from shallow surface deposits, where the alluvium thins against the Berkeley Hills, to a depth of approximately 300 feet. These deposits are underlain by bedrock of the Mesozoic Franciscan Formation. The Franciscan Formation is a complex assemblage of serpentinite, greenstone, greywacke, chert, shale, sandstone, and schist, found on many ridges and mountains of the San Francisco Bay region.

Four major hydrogeologic units were defined for the RFS area as:

- Artificial Fill
- Quaternary Alluvium
- Bay Sediments
- Yerba Buena Mud (Older Bay Mud)

The Artificial Fill at RFS predominantly consists of imported soils, including pyrite cinders that originated from adjacent properties, and on-site soils that were moved and re-deposited in upland area soils as part of construction activities. Most of the artificial fill that was historically and recently imported to the RFS was placed in the Transition Area and in the marsh and upland areas excavated during remedial activities in falls 2002 to 2004. The Transition Area formerly contained a large area of pyrite cinders that was excavated as part of remediation activities by UC Berkeley from 2002 to 2004. Excavated areas were backfilled with clean fill from sources outside of the RFS.

The RFS is a topographically flat area of an alluvial fan reflecting historical conditions. Pyrite cinders have been found in small patches around buildings. Pyrite cinders at RFS are managed according to the DTSC-approved Pyrite Cinder-containing Soils Management Plan. Imported clean upland soil was used for backfill in five areas excavated during Phase 3 of the remediation project in 2004 and in one area during the 2007 Forest Products Laboratory (FPL) Time Critical Removal Action (TCRA). Approximately 2,000 cubic yards of clean fill was used during the removal action at the Mercury Fulminate Area completed in January 2020. Two areas of mounded soil, north and west of the EPA laboratory, are believed to be native soils deposited as part of grading activities during construction of the EPA Building 201 Laboratory in the early 1990s; these soil mounds have been removed under a separate TSCA application. Imported fill has also been used for road base and utility backfill.

The Quaternary Alluvium consists of fine- to coarse-grained sediments. The Bay Sediments consist of fine- to very fine-grained sediments, while the Yerba Buena Mud is a fine-grained unit that behaves as a regionally extensive aquitard.

The B112 transformer area is believed to consist of native soils covered with concrete pavement pad surrounding the transformer.

Sources of PCBs and historic operations

Development of the current location of the RFS for industrial, commercial, and institutional uses dates to the 1870s when the California Cap Company and associated industries began manufacturing explosives on site. The neighboring former Zeneca site was established as a sulfuric acid plant by Stauffer Chemical in 1897. The University of California purchased the California Cap Company in 1950 and undeveloped plots to the west through the 1950s.

The current understanding of potential sources of PCBs at the RFS includes:

- Electrical distribution transformers and other oil-filled devices. Electrical power distribution equipment currently present on the RFS contains only non-PCB dielectric fluids. Records showed that all PCB-containing electrical distribution system transformers were either removed for off-site disposal or retrofilled onsite with non-PCB oils in the late 1980s and early 1990s. There are no records indicating that spills of PCB oils ever occurred, and former employees did not recall any leaks or spill associated with the transformers at the RFS.
- Building materials. Caulking and possibly other building materials, such as exterior paint may contain PCBs.
- Laboratory equipment. Historic laboratory research operations likely used oil-filled equipment such as power supplies with large PCB capacitors, diffusion pumps, and other devices. There is no known laboratory equipment currently on site that contains PCBs.
- PG&E Storage Yard to the north of RFS. The storage yard historically located immediately north of the Western Storm Drain is a possible source of PCBs in the storm drain and Western Stege Marsh.
- Western Storm Drain overflows. Storm drainage from northern off-site properties entered RFS through underground culverts and open ditches. Prior to the construction of the City of Richmond's publicly owned treatment works in the early 1950s, sewage and industrial wastes were discharged directly to the San Francisco Bay through a system of combined sanitary sewer and storm drains. The RFS Western Storm Drain line was one of a number of wastewater and stormwater conveyance pipes located on and around the RFS. The date of construction of RFS's Western Storm Drain line is unknown. It is believed to have served as a combined sewer through the 1900s until the early 1950s, draining industrial and residential wastewater and stormwater from a portion of the City of Richmond upstream of the California Cap Company and from portions of the RFS site itself. Sometime in the late 1940s or early 1950s, the City of Richmond wastewater treatment plant was constructed and historic sewers were routed to newly constructed sanitary sewer lines. The northern sewer line was constructed with an overflow into the Western Storm Drain and therefore possibly served as a source of PCBs until the overflow was plugged in 2004.
- Former Stauffer Chemical/Zeneca Site. Aerial photos dating from the 1940's show a line of manholes on the tidal flat south of the Zeneca and RFS sites indication a sanitary sewer system running approximately east/west. This system is believed to have flowed directly to the Bay prior to the construction of the City of Richmond wastewater

treatment plant in the early 1950's. During Phase 2 remediation, the pipe was exposed in Area 4 or Subunit 2A and removed. On October 3, 2003 a hotspot of volatile organic compounds was encountered in soil that apparently leaked from the pipe. This soil was analyzed and contained 63 mg/kg total PCBs. This result suggests that the Zeneca site or another site upstream along this pipe may be a source of PCBs in the marsh.

PCB Sources B112 Transformer Cleanup Site

There are no records of spills of PCB oils at the proposed cleanup site, but it is likely that the B112 transformer area contamination resulted from either transformer seepage or spills during maintenance.

Other contaminants present such as volatile organic compounds (VOCs), total petroleum hydrocarbons (TPH), or metals including a list of those that can enhance mobility of PCBs.

Other RFS site-wide contaminants that have been addressed through remediation actions or continue be addressed in field investigation and planned removal include:

- Mercury, primarily from former mercury fulminate manufacturing at the California Cap Company
- Arsenic, primarily from pyrite cinders deposited from sulfuric acid manufacturing at the Stauffer Chemical/ former Zeneca site
- Other pyrite cinder related metals (lead, copper, zinc)
- Polyaromatic hydrocarbons, believed to have originated from legacy industrial emissions and/ or spills of petroleum compounds
- Dioxins, at the Corporation Yard due to historic trash incineration
- Volatile organic compounds (VOCs, particularly PCE, TCE, and breakdown products), carbon tetrachloride, and other solvents in groundwater.

There are no known or suspected contaminants other than PCBs at the B112 transformer area. The area is within the boundary of the Mercury Fulminate Area; however, mercury was detected was 11 mg/kg, below the mercury cleanup level of 187 mg/kg.

VOCs are present in groundwater along the eastern property boundary of the RFS and adjacent areas of the former Zeneca site. UC Berkeley concludes that the source of known TCE and related chlorinated hydrocarbons in groundwater is legacy industrial activities at the former Zeneca site, based on (1) the measured groundwater gradient from the former Zeneca site to RFS, (2) known historical TCE sources and groundwater contamination at the upgradient former Zeneca site, and (3) lack of measured or identified TCE sources within the RFS property.

Cleanup sites other contaminants that can affect mobility of PCBs

VOCs in groundwater could affect mobility of PCBs; however, the VOCs of concern along the property boundary, PCE, TCE and vinyl chloride, have been found at relatively low concentrations. VOCs are not present in the vicinity of the proposed cleanup site.

Current site environmental conditions including extent of PCB contamination onsite and beyond the property boundary

Detailed current site environmental conditions at the RFS are presented in the 2013 Site Characterization Report, the 2014 RBC Long Range Development Plan EIR, the 2014 Removal Action Workplan, the Final 2019 Groundwater Sampling Results Technical Memorandum, the Final Soil Management Plan Revision 2, and the 2018 Phase V Sampling Results Technical Memorandum Western Stege Marsh; all documents are available on the Publications page of the RFS Environmental Website at https://rfs-env.berkeley.edu/resources/publications.

The RFS is currently undergoing continued site assessment under the DTSC Order. In summary three soil removal actions (Corporation Yard, Former PCB Transformer areas at B150 and B112, and the Mercury Fulminate Area), and groundwater monitoring have been identified.

Aroclors-1248, -1254, and -1260 were detected at the Building 112 transformer area. Aroclors-1248 and -1254 were detected in 2 of 24 samples, and 12 of 24 samples, respectively, and were reported at maximum concentrations of 35 and 24 mg/kg, respectively. Aroclor-1260 was detected in 1 of 24 samples at a concentration of 0.032 mg/kg. The highest concentrations of Aroclor-1248 and -1254 are southeast of the transformer area, as shown on Figure 5. All samples where PCBs concentrations exceeded 1 mg/kg were surface soil (0 to 0.5 feet bgs) samples, the exception of Aroclor-1248 was reported at a concentration of 2.2 mg/kg at location B11202 at 1.5 to 2 feet bgs. The vertical extent of PCB concentrations in soil are not bounded vertically below the cleanup goal of 1 mg/kg below 2 feet bgs at location B11202. The samples are also not bounded by samples laterally to the east and south. A paved road runs north-south approximately 5 feet east of the transformer area and may serve as a barrier to surface soil contamination to the east. Confirmation samples will be collected following excavation to address delineation in all directions.

All concentrations presented are Total PCB concentrations.

Sample results, locations, and depths are shown on Figure 5.

The extent of PCBs on site is undergoing continued evaluation. The 2005 Summary of PCB Results Richmond Field Station (BBL, https://rfs-env.berkeley.edu/publications/20050708-summary-pcb-results-richmond-field-station) provides a site-wide summary of PCB contamination up to that date. Additional sampling conducted since 2005 under the Field Sampling Workplan has increased knowledge of site PCB conditions at PCB transformers. These are summarized in the 2013 Site Characterization Report (https://rfs-env.berkeley.edu/publications/20130528-final-site-characterization-report).

The current PCB site conditions reported in the 2018 Phase V Results Technical Memorandum, the 2010 Year 5 Monitoring Report for the Western Stege Marsh Restoration Project (https://rfs-env.berkeley.edu/publications/20100930-year-5-monitoring-report-western-stege-marsh-restoration-project), and 2005 BBL report are generally representative of current conditions in Western Stege Marsh.

Other Site Conditions including:

- **Identification of threatened or endangered species (Endangered Species Act)**
- **Identification of any historic or culturally sensitive landmarks (National Historic Preservation Act)**
- **Identification of any potentially impacted environments and receptors**

The RFS contains natural open space consisting of rare coastal terrace prairie, seasonal wet meadows, and tidal salt marsh. One federally listed endangered species, the Ridgway's rail (*Rallus obsoletus*), is present in Western Stege Marsh. The natural open space is home to other special status plants and animals. There are no sensitive natural areas or habitats for special status species in the vicinity of the B112 Transformer cleanup site.

The RFS contains or potentially contains cultural resources, both prehistoric Native American archaeological resources and historic buildings and objects associated with the California Cap Company that are subject to the requirements of the National Historic Preservation Act. The BGC Long Range Development Plan addresses these cultural resources through required mitigation measures that must be implemented for all projects. The current proposed excavations at the cleanup site will not affect NHPA resources. However, any excavation could potentially uncover unexpected archaeological resources or historic resources associated with the California Cap Company, and contractors will be instructed to stop work in the event that a potential cultural resource is uncovered for evaluation by an archaeologist.

Sensitive environments such as crops, livestock, wetlands, waterways

The RFS contains natural open space consisting of rare coastal terrace prairie, seasonal wet meadows, and tidal salt marsh. There are no sensitive natural areas in the vicinity of the B112 Transformer cleanup site.

Sensitive receptors such as children

There are no sensitive receptors at RFS or in the vicinity of the B112 Transformer cleanup site.

Brief summary of Comprehensive Site-Specific Conceptual Site Model and Data Quality Objectives included under Site Characterization and Data Gaps in Item 5 below

The 2013 *Site Characterization Report Proposed Richmond Bay Campus (RBC) Research, Education, and Support Area and Groundwater within the Richmond Field Station* (May 28, 2013 Tetra Tech, "Site Characterization Report" or "SCR", http://rfs-env.berkeley.edu/documents/2013.05.28.RFS.SCR.FINAL.pdf) contains an updated comprehensive Conceptual Site Model (CSM) for the RBC including the RFS, based on the 2008 Current Conditions Report for the RFS. The CSM describes possible migration of potential contaminants through the primary pathways in soil, water, and utilities. The CSM identifies the former transformer storage areas, include the B112 transformer area, as potential sources of PCBs.

3. Description of PCB "Cleanup Site"

Define and describe the "cleanup site" being addressed in the Application

There proposed cleanup site for this current removal action is the B112 transformer area. The total excavation area is approximately 74 square feet. The transformer pad is located in the southeast corner of the Central Meadow, and is bounded by the B112 curb and parking lot to the east. The Mercury Fulminate Area fenceline is to the south of the pad, and open meadow extends to the north and west of the pad. The excavation boundaries and depths are presented in the RAW, and depicted on Figure 5.

Describe the need for access for investigation/cleanup beyond impacted property boundary, if applicable

Not applicable. There is no need for access beyond the property boundary at this time for the proposed cleanup site.

4. Proposed Risk-Based PCB Cleanup Levels

Description and justification of PCB cleanup goals to be applied. Cleanup goals that may be applied include:

- **EPA risk-based Regional Screening Levels**
- **Site-specific risk-assessment derived values, or**
- **State and County agency established PCB cleanup levels- EPA's agreement is needed for us of such levels**

The cleanup level is based on the more stringent of human health or ecological thresholds. The current human health criteria identified in the RAW is 1 mg/kg for total PCBs. The methodology provided by EPA regarding ecological cleanup levels is based on meeting a marine biota threshold concentration of 0.047 mg/kg in sediment entering the marsh. The ecological cleanup level is calculated by a three-step process:

(1) **Applying an attenuation factor based on distance from the source area to the marsh.** The distance of B112 transformer to the marsh via the nearest stormwater inlet is 680 feet. This distance is comparable to the distance from the approved EPA North Meadow PCB cleanup (630 feet) where the attenuation factor of 10 was applied. Applying an attenuation factor of 10 to the ecological threshold results in a goal of 0.47 mg/kg within sediment entering the marsh attributed to B112 transformer soil runoff.

(2) **Measuring the runoff concentration from the source area**. Unlike the EPA North Meadow, there is no downgradient storm inlet which captures sediment exclusively from the B112 transformer. If the human health goal of 1 mg/kg is applied, then sediment runoff concentrations would not be higher than 1 mg/kg.

Calculating PCB mass reduction from the source area. Based on maximum sediment concentration scenario of 1 mg/kg, a reduction of the existing contaminant mass is applied in

order to meet the 0.47 mg/kg excess sediment loading. The estimated mass concentration of soil at the B112 transformer is 19 mg/kg, based on the 95th upper confidence level of the mean of all soil samples collected at the B112 transformer area.

The mass runoff reduction factor is calculated by dividing the estimated sediment concentration by the sediment goal, or (1 mg/kg)/(0.47 mg/kg) = 2.1. Reducing 19 mg/kg by a factor 2.1, or (19 mg/kg)/2.1 results in a cleanup level of 9.1 mg/kg.

The more stringent of the human health and ecological cleanup levels is the human health level of 1 mg/kg. A cleanup level of 1 mg/kg is selected as a conservative cleanup level to protect ecological and human receptors exposed to B112 transformer area soil.

In addition to the soil removal, any sediment within existing storm drains affected by the B112 transformer area will be removed and sediment filters will be installed at the storm drain inlet. During the rainy season, straw wattles will be staked around the inlets to reduce inflow of sediment from the area. Sediment filters will be monitored quarterly, and once a sufficient amount of sediment has accumulated for PCB analysis, a sample will be collected to determine if the area is a continuing source of PCBs to the inlets. Note that per the discussion above, if PCBs are detected in the nearest storm drain, those concentrations cannot be directly attributed to the B112 transformer area since the storm drain serves a much larger geographic area than B112.

5. Site Characterization and Data Gaps

Detailed Comprehensive Site-Specific Conceptual Site Model and Data Quality Objectives

Conceptual Site Model

The 2013 *Site Characterization Report Proposed Richmond Bay Campus (RBC) Research, Education, and Support Area and Groundwater within the Richmond Field Station* (May 28, 2013 Tetra Tech, "Site Characterization Report" or "SCR", http://rfs-env.berkeley.edu/documents/2013.05.28.RFS.SCR.FINAL.pdf) contains an updated comprehensive Conceptual Site Model (CSM) the RFS based on the 2008 Current Conditions Report (CCR) for the RFS. The CSM describes possible migration of potential contaminants through the primary pathways in soil, water, and utilities.

The CSM identifies former transformer storage areas as potential sources of PCBs due to possible direct disposals or releases. The conditions in soil and groundwater at the B112 Transformer Area was identified in the CCR as a data gap and therefore were subject to field investigations under the Field Sampling Workplan with implementation beginning in 2010 with site-wide groundwater monitoring.

Data Quality Objectives

DQOs are intended to help ensure collection of data appropriate for support of defensible decisions. The DQO process is a seven-step iterative approach to prepare plans for environmental data collection activities. It is a systematic approach for defining the criteria that a data collection design should satisfy, including when, where, and how to collect samples or measurements; determining tolerable decision error rates; and identifying the number of samples

or measurements that should be collected. The DQOs for the soil removal action are outlined below.

Step 1: State the Problem.

– Five soil samples collected as part of previous investigations at B112 Transformer Area exceed the cleanup goal of 1 mg/kg. Soil sample results are shown on Table 1.
– The concentrations present in soil may present unacceptable exposures to human and ecological receptors.

Step 2: Identify the Goals of the Study

– Soils above the cleanup goal of 1 mg/kg will be removed by excavation to reduce possible unacceptable exposures to human and ecological receptors.
– The excavation area will be sampled to ensure that the 95UCL of the confirmation samples are not above the cleanup goal.
– The excavation area will be completed to existing grade.

Step 3: Identify Information Inputs

– Previously conducted sampling locations and concentrations, as summarized in the Site Characterization Report.
– Confirmation samples to be collected following completion of the excavation area identified in the following step. A single 75-point incremental sample will be collected from each completed side wall and excavation bottom.

Step 4: Define the Boundaries of the Study

– Soil contamination above 1 mg/kg has been identified at location B11202, B11206, B11208, and B11209 at 0 to 0.5 feet bgs, and at B11202 at 1.5 to 2 bgs.
– The extent of proposed soil excavation was presented in the RAW and includes the four locations and five samples above 1 mg/kg. The lateral and vertical boundaries are shown on Figure 5.
– No temporal boundaries are imposed upon this investigation.

Step 5: Develop the Decision Rules

– A weighted 95UCL for total PCBs will be calculated following receipt of the confirmation results. Results will be shared with EPA and DTSC following receipt. While a "not to exceed" concentration has not been established for this action, UC Berkeley will ensure that EPA and DTSC approve of the concentrations to be left in place.
– If the 95UCL is above 1 mg/kg, an additional 1 or 2 feet will be excavated at the highest concentration, a confirmation sample collected, and a new weighted 95UCL will be calculated. The process will continue until the cleanup objective has been met. In the event that excavation continues eastward to the paved road, UC Berkeley will contact EPA and DTSC to discuss options other than excavation within the roadway.
– If the 95UCL is below 1 mg/kg, then the cleanup objectives will be met, and the area will be backfilled to grade.

Step 6: Specify Performance or Acceptance Criteria

– The weighted 95UCL result for total PCBs will be compared to the cleanup goal of 1 mg/kg.

Step 7: Optimize Design for Obtaining Data

– The proposed 75-point incremental sample and use of the weighted 95UCL calculation has been applied and approved by EPA at the previous Corporation Yard and EPA North Meadow PCB removal actions. Both techniques are designed to optimize confidence in sample coverage and subsequent cleanup decisions.

Sampling and Analysis Plan (SAP) developed using a site-specific comprehensive conceptual site model and data quality objectives

The May 2013 Site Characterization Report provides a comprehensive description of the sampling completed at the B112 Transformer Area during implementation of Phases II and III of the Field Sampling Plan.

Aroclors-1248, -1254, and -1260 were detected within the Building 112 transformer area. Aroclors-1248 and -1254 were detected in 2 of 24 samples, and 12 of 24 samples, respectively, and were reported at maximum concentrations of 35 and 24 mg/kg, respectively, which exceed the cleanup goal of 1 mg/kg as shown on Table 1 and Figure 5. Aroclor-1260 was detected in 1 of 24 samples at a concentration of 0.032 mg/kg, which does not exceed the cleanup goal. The highest concentrations of Aroclor-1248 and -1254 are southeast of the transformer. All samples where PCBs were detected at concentrations above the cleanup goal were surface soil (0 to 0.5 feet bgs) samples, with only two exceptions: in the 1.5- to 2-foot bgs sampling interval, Aroclor-1248 was reported at a concentration of 2.2 mg/kg at location B11202.

Vertical and horizontal extent of PCB contamination

The vertical extent of PCB concentrations in soil are not bounded vertically below TSCA criteria (1 mg/kg) below 2 feet bgs, at location B11202. The samples are also not bounded by samples laterally to the east and south. A paved road runs north-south approximately 5 feet east of the transformer area and may serve as a barrier to surface soil contamination to the east.

In the B112 Transformer Area there are two adjacent areas currently planned for excavation of soils that have been sampled and found to contain PCBs. Figure 5 provides the location along with the estimated volumes of anticipated soil removal and the maximum concentration of various chemicals of concern. The impacted area totals approximately 74 square feet and it is estimated that 3.63 cubic yards of soil will need to be removed for off-site disposal.

Figures and tables

Figures provided include a site location, site map, physical features map, RFS hydrology, summary of PCB results at B112 Transformer Area, and the PCB excavation areas. Table 1 provides a comprehensive summary of all PCB results, including non-detects, at the B112 Transformer Area.

Identification and Description of Data Gaps

The proposed excavation area has been characterized and there are no current data gaps. Confirmation sampling, as described in Section 6.1d, will ensure no residual PCB concentrations remain above the cleanup level.

6. Application and Cleanup Plan

Inclusion of the Notification of PCB Activity Form required in 40 CFR 761, Subpart K

Notification of PCB Activity Form is attached.

Description of storage for disposal activities that will be carried out, including waste containers that will be used, marking, labeling, and manifesting.

The University will procure a hazardous materials contractor to excavate and dispose of the soil following approval of this application. Soil will either be placed directly into covered trucks or placed into roll-off bins and/or cubic yard boxes for eventual off-site disposal at a licensed disposal facility approved for the PCB waste stream. If the soil is containerized, the bins will remain on-site for no longer than 30 days to receive approval from disposal sites.

If confirmation sample results indicate PCB concentrations greater than 50 mg/kg, containers of such PCB remediation waste will be marked with large PCB mark- ML labels as required by 40 CFR 761.45 and identified as remediation derived waste soil pending analysis. PCB concentrations greater than 50 mg/kg are not anticipated. Soils containing PCBs less than 50 mg/kg will be identified as remediation derived waste soil pending analysis.

Description of disposal methods that will be used

PCB remediation wastes containing greater than 50 mg/kg PCBs will be transported to a TSCA approved landfill, either Kettleman Hills Landfill or the Buttonwillow Landfill Facility.

Soils containing PCBs at concentrations less than 50 mg/kg will be transported to Potrero Hills Landfill, Altamont Landfill, or a similar facility as Class II waste to be disposed of as alternative landfill cover.

Description and evaluation of cleanup alternatives

Since publication of the RAW, UC Berkeley has been working with both DTSC and EPA to address and manage PCB contamination within RFS. This sampling approach, including cleanup level determination, has been updated since the publication of the RAW, but continues to meet the substantive requirements of the RAW.

1. Soils

a. Identify, evaluate, and justify cleanup alternatives in addition to excavation and onsite disposal. Among other factors, the evaluation should consider investigation data, risk-based cleanup levels, receptors, sensitive habitats and/or environments, presence of other contaminants that may enhance PCB solubility and/or mobility (PCB co-solvency), and depth to ground water and flow direction

Remedial action alternatives were evaluated in the July 2014 Removal Action Workplan (RAW, https://rfs-env.berkeley.edu/publications/20140718-final-removal-action-workplan-richmond-bay-campus-research-education-and).

RAW Sections 3 and 4 provide remedial alternative evaluations for the Corporation Yard, Mercury Fulminate Plant Area, PCB Areas, groundwater contaminated with carbon tetrachloride, and the remainder of the RFS. In general five soil alternatives were evaluated for non-PCB soil contamination and areas with co-mingled PCB and other chemicals of concern (RAW Section 3.3.l): 1) S-1 No action, 2) S-2 Excavation to unrestricted reuse and off-site disposal, 3) S-3 Excavation to commercial reuse, off-site disposal, Land Use Controls, and a Soil Management Plan, 4) S-4 Land Use Controls, and 5) S-5 for the MFA area only, Asphalt Cap, Land Use Controls, and a Soil Management Plan.

For areas assessed exclusively for PCBs, TSCA section 40 CFR 761.61 (c) was selected for removal of PCB contaminated soils found at concentrations greater than the cleanup level of 1 mg/kg. While the RAW Section 4.1 identifies 40 CFR 761.61 (a), Self-Implementing Program, as the basis for cleanup action, subsequent determinations by EPA and DTSC have clarified that 40 CFR 761.61 (c), Risk Based Cleanup, is the appropriate cleanup program and citation. The cleanup goal of 1 mg/kg is not affected by the change in cleanup program.

The current planned removal action is being completed to remove soil containing PCBs from areas that could be an exposure risk to future construction and maintenance workers. Because there is no current redevelopment plan for this area, alternatives, such as re-use of soils on site with capping with pavement or a foundation were not considered feasible.

b. Identify and justify preferred cleanup alternative

See 6.1.a.

c. Describe cleanup verification sampling methods and include a SAP for this purpose

Confirmation sampling for soil excavations is presented in RAW Section 5.1.3 with the PCB confirmation sampling summarized below to include the new option of incremental sampling methodology as an alternative to discrete of TSCA Subpart M composite sampling.

The Sampling and Analysis plan for all RFS soil management including this current removal action excavation is contained in the Soil Management Plan, RAW Appendix C, as revised in as the Final Soil Management Plan, Revision 1, Removal Action Workplan, Attachment C.

For PCBs the RAW (Section 5.1.3.1) provides for a confirmation sample from each side wall and the bottom of each excavation. The RAW directs that samples be collected according to 40 CFR 761.280, with samples collected on a 1.5 meter grid basis and a not-to-exceed concentration of 1 mg/kg. Per current EPA guidance, confirmation samples will be collected either as a single grab sample, on a 1.5 meter grid basis, or as a ISM sample with a minimum of 75 increments. UC Berkeley proposes to collect a single ISM sample for each side wall and bottom location. None of the sidewalls are larger than 20 linear feet. A 75-increment ISM sample will be collected from each decision unit. Decision units consist of each sidewall and the excavation bottom. Given the small excavation area, if excavation boundaries are altered, the final delineations of decision units will be determined in the field through consultation with EPA.

d. Describe methods for evaluating cleanup verification sample results

If total PCBs are present at concentrations greater than 1 mg/kg, the excavation will be expanded laterally, as long as the excavation does not threaten to undermine buildings or utility pipelines not scheduled for removal, and expanded one foot vertically unless groundwater prevents the expansion of the excavation to a deeper depth. Lateral excavations will not extend into the street east of the B112 Transformer Area.

e. Describe methods for demonstrating compliance with cleanup goals (e.g., statistical methods)

As described in d. above, compliance with the cleanup goal will be demonstrated through confirmation samples.

f. Describe any capping, long-term inspection, maintenance, and repairs expected to occur at the site

The planned removal action excavations are intended to remove all contamination, including over-excavation as needed demonstrated on confirmation sampling. No long-term inspection or maintenance is anticipated. In the event that concentrations exceed the cleanup level adjacent to the road east of the B112 Transformer Area, UC Berkeley will consult with EPA and DTSC regarding necessary documentation.

g. Describe any land use covenants that will be used for caps or fences; or when caps and fences are not used and the site is not cleaned up to risk-based unrestricted land use levels

A Land Use Control in the form of a deed restriction will be implemented as part of the RAW to prohibit residential use consisting of a residence, mobile home, or factory-built housing constructed or installed for use as residential human habitation. Certain commercial uses defined as “sensitive uses” will also be prohibited. Sensitive uses consist of (a) a hospital for humans, (b) a public or private school for persons less than 18 years of age, (c) a day care center for children, or (d) any permanently occupied habitation other than those used for industrial purposes. Land use controls are also discussed in Section 10.

h. If ISM is used, provide the information described in 1.a through 1.g above for each decision unit

The information is provided above.

2. Storm water runoff collection systems, piping, and impacted receiving areas

a. Identify, evaluate, and justify cleanup alternatives. Among other factors consider human and ecological receptors, surface water impacts, and recreational use
b. Describe and justify preferred cleanup alternative
c. Describe methods for debris/sediment removal
d. Describe post-removal sampling methods
e. Describe methods for demonstrating compliance with cleanup level
f. Describe methods for post-cleanup monitoring with routine sediment removal depending on PCB levels
g. Describe land use restrictions expected to be used at the site, as applicable

The current planned removal action is being completed to protect ecological receptors in the marsh and current and future maintenance and construction workers from exposure to contamination during soil excavation.

3. Surface Water

a. If applicable, include measures for surface water protection

The current planned removal action is being completed to protect ecological receptors in the marsh, and current and future maintenance and construction workers from exposure to contamination in the marsh.

4. Buildings and non-Building structures

a. Describe risk-based cleanup goals for on-site buildings and structures
b. Describe decontamination methods for on-site buildings and structures
c. Describe verification sampling that will be used for non-building structures
d. Describe verification sampling that will be used for building structures that will remain in use
    1. Description of sampling and analysis methods for substrates
    2. Description of indoor air, bulk dust, and surface wipe sampling and analytical methods
    3. Descriptions of methods that will be used to demonstrate achievement of air target levels
    e. Description of BMPs to be used
f. Description of land use covenants to be used, if applicable
g. Description of any contingencies that may apply (e.g., tenant protection in occupied buildings)

There are currently no anticipated building or non-building structures included in the planned removal action excavations.

7. Decontamination of Tools, Equipment, and Movable Equipment

Description of applicable decontamination standards and procedures to be applied (410 CFR 761.79).

All equipment will be decontaminated prior to and following exposure to the excavation soils. The equipment will first be dry brushed into soil waste containers, followed by a double wash/rinse with Alconox or an alternative detergent and wet-wiped clean. Water, detergent, wipes and PPE will be disposed of in the waste soil containers. Complete decontamination procedures are included in the 2014 Final RAW. Use of disposable sampling equipment will not require decontamination.

8. Waste Disposal – PCB Remediation Waste and Cleanup Wastes

Description of applicable disposal procedures for bulk, porous, non-porous, and liquid PCB remediation wastes that will be implemented.

All wastes generated from the planned removal action excavations will be non-liquid soil with small amounts of miscellaneous debris (rags, PPE, etc.). Soil will be either direct-load to appropriate covered trucks for disposal or contained in roll-off bins and cubic yard (or cubic meter) boxes. Equipment will be decontaminated with the minimal amount of liquid detergent as necessary and rinsate placed into soil containers.

Soil will be transported to Potrero Hills Landfill, Altamont Landfill or a similar facility as Class II waste to be disposed of as alternative landfill cover.

Description of applicable disposal procedures for cleanup wastes that will be implemented.

See above.

9. PCB Cleanup Completion Report

Descriptive Outline of the PCB cleanup report that covers all the PCB cleanup activities completed for the site such as removal of PCB remediation wastes, removal of other PCB containing wastes, cleanup verification sampling and results, data evaluation including statistics, waste storage (as applicable), and waste disposal. EPA may recommend additional information that should be included in the PCB cleanup completion report.

The implementation summary report will be organized in the same manner as previous removal action implementation reports conducted at the RFS and contain the data and information listed below. An example table of contents is presented below.

Acronyms and Abbreviations
1.0 Introduction
2.0 Site Background
3.0 Removal Action Activities and Results

10. Land Use Restrictions

A Land Use Control in the form of a deed restriction is expected to be implemented as part of the 2014 Removal Action Workplan to prohibit residential use consisting of a residence, mobile home, or factory-built housing constructed or installed for use as residential human habitation. In addition, certain commercial uses defined as “sensitive uses” will also be prohibited. Sensitive uses consist of (a) a hospital for humans, (b) a public or private school for persons less than 18 years of age, (c) a day care center for children, or (d) any permanently occupied habitation other than those used for industrial purposes. This LUC will be issued upon completion of RAW activities and approval by DTSC.

11. Certification

I certify that all sampling plans, sample collection procedures, sample preparation procedures, extraction procedures, and instrumental/chemical analysis procedures used to assess or characterize the PCB contamination at the cleanup site, are on file at the location designated in the certificate, and are available for EPA inspection.

Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18U.S.C. 1001 and 15 U.S.C. 2615), I certify that the information contained in or accompanying this document is true, accurate, and complete. As to the identified section(s) of this document for which I cannot personally verify truth and accuracy, I certify as the company official having supervisory responsibility for the persons who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

Signed by:

Patrick Goff, _____, as Executive Director of UC Berkeley's Office of Environment Health & Safety and representing the Owner where the site is located (Richmond Field Station) and the Party Conducting the Cleanup (UC Berkeley)

UC Berkeley
Office of Environment Health & Safety
University Hall, 3rd Fl. #1150
Berkeley, CA 94720

12. Figures, Tables, and Attachments

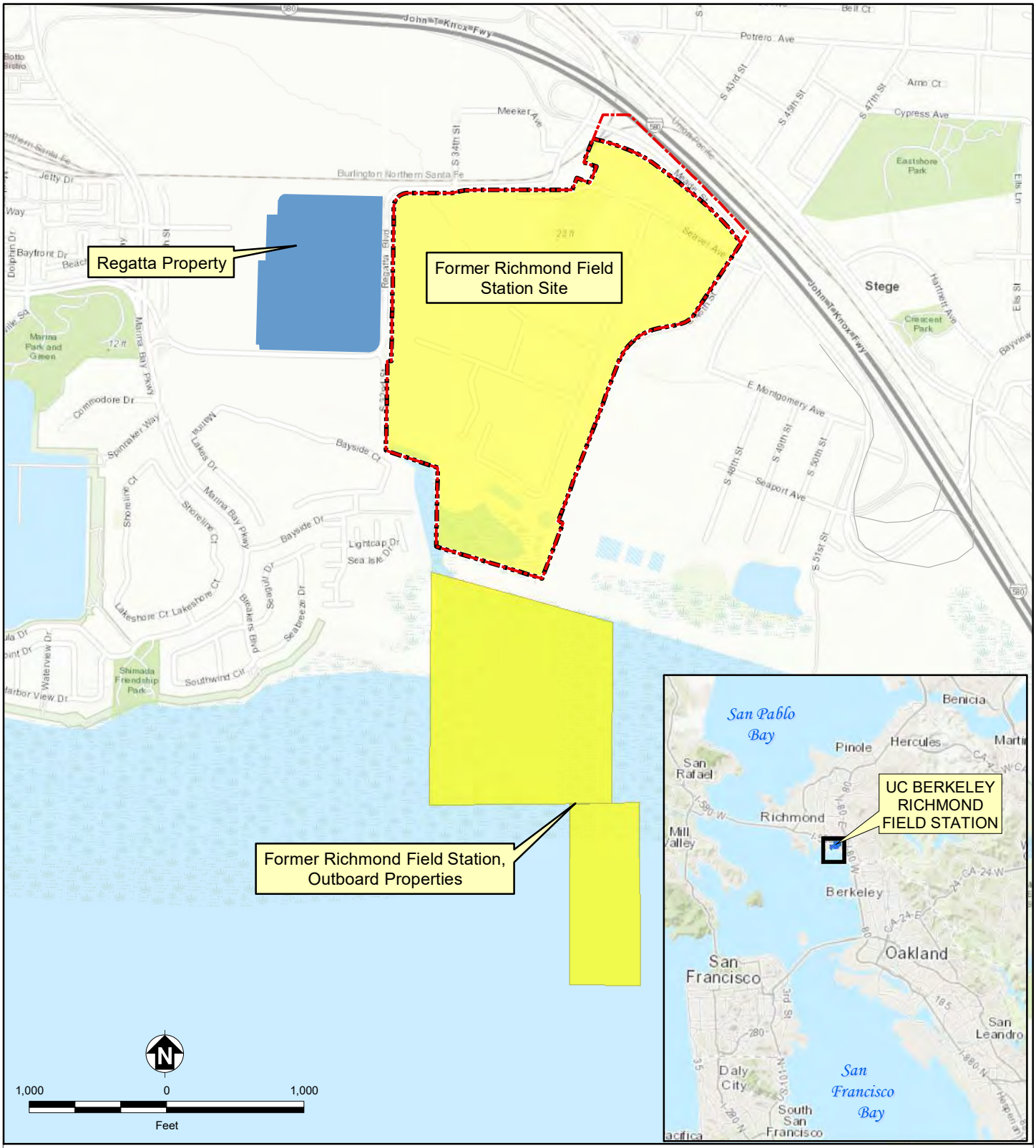
Figures:

1. Site location
2. Site Map
3. RFS Physical Features
4. RFS Hydrology
5. PCB Concentrations in Soil in the Transformer Areas

Tables:

1. PCB Sampling Results at B112 Transformer

Attachment:
Notification of PCB Activity Form required in 40 CFR 761, Subpart K



RFS DTSC Order Boundary

Former Richmond Field Station Properties

Former Richmond Field Station Site Boundary

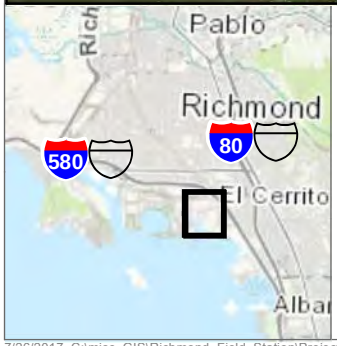
Regatta Property

TETRA TECH

Richmond Field Station Site
University of California, Berkeley

FIGURE 1
SITE LOCATION MAP

Phase IV Sampling Results Technical Memorandum



- Bay Trail
- Meeker Slough
- Western Stege Marsh
- Transition Area (Including Bulb)
- Upland
- Richmond Field Station Site Boundary

Notes:

EBRPD	East Bay Regional Park District
EERC	Earthquake Engineering Research Center
EPA	Environmental Protection Agency
NRLF	Northern Regional Library Facility
RFS	Richmond Field Station

TETRA TECH

Richmond Field Station Site
University of California, Berkeley

FIGURE 2
SITE MAP

Phase V Sampling Results Technical Memorandum

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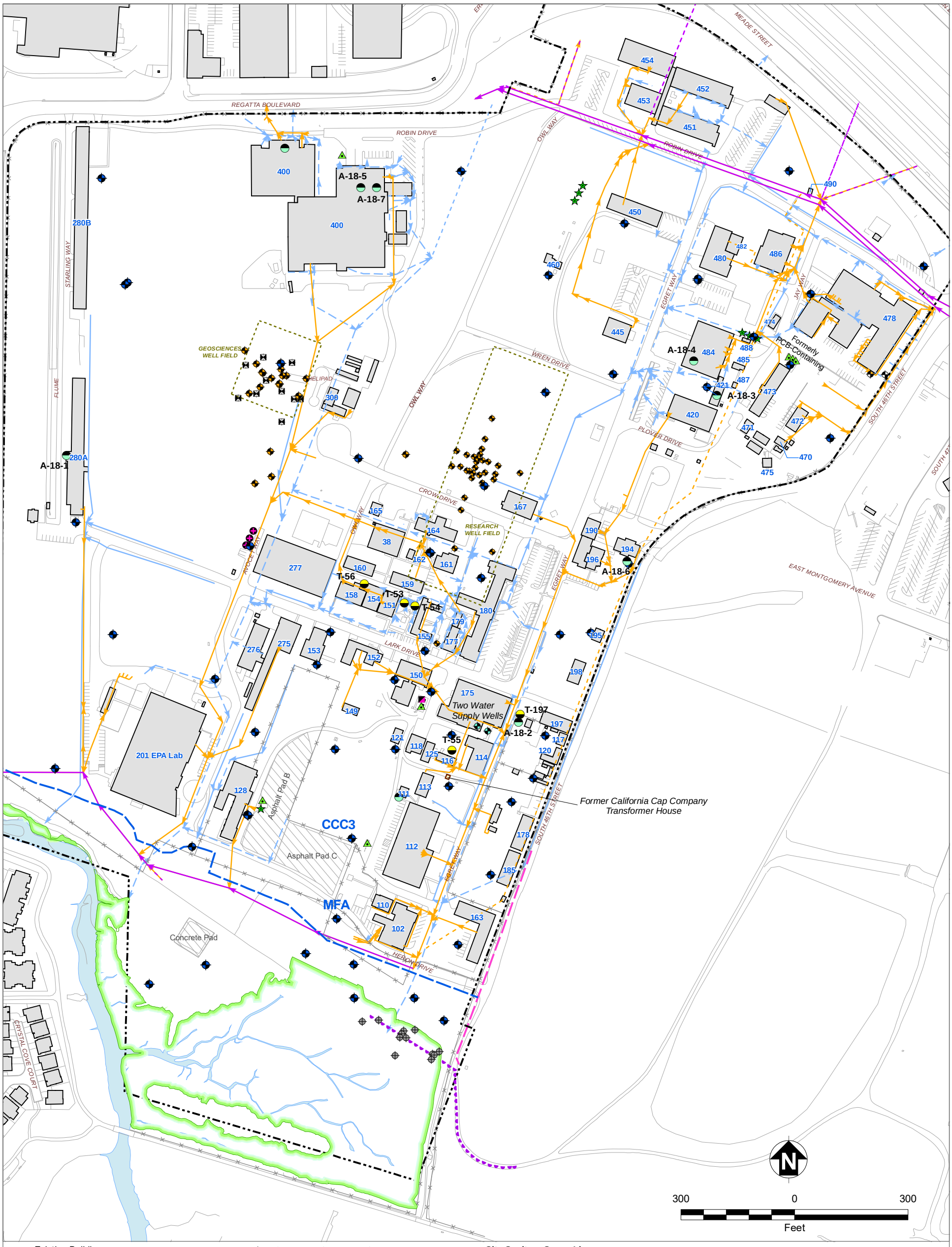


Existing Building (Building Numbers Shown in Blue)
Marsh Boundary
Surface Water
Asphalt/Concrete Pads
Well Field Boundary
Portion of RFS Property Subject to DTSC order, Defined as "Site"
Fenceline
Biologically Active Permeable Barrier Wall
Former Seawall
Slurry Wall
Aboveground Storage Tank (AST)
Former Underground Storage Tank (UST)

Open Well (Not in Use)
Closed Well (Pressure Grouted)
Open Piezometer
Open Geosciences Well
BAPB Wells on RFS Property
Zeneca Wells on RFS Property

Transformer Locations:

Pad-Supported, Non PCB-Containing
Pad-Supported, Former PCB-Containing (Removed)
Pole-Mounted, Non PCB-Containing
Pole-Mounted, Former PCB-Containing (Removed)

City Sanitary Sewer Lines:

Existing City of Richmond Sewer
Abandoned City of Richmond Sewer
Existing RFS Sewer
Abandoned RFS Sewer

Storm Drain Lines:

Open Swale
Underground Culvert
Gutters
Underground Culvert, Abandoned (Grouted at Manholes)

Note:

BAPB	Biologically Active Permeable Barrier
DTSC	Department of Toxic Substances Control
EBRPD	East Bay Reagional Parks District
EPA	Evironmental Protection Agency
PCB	Polychlorinated biphenyls
RFS	Richmond Field Station

TETRA TECH

Berkeley Global Campus at Richmond Bay

FIGURE 3
PHYSICAL FEATURES

Soil Management Plan

Jurisdictional Status

- Not Surveyed
- Not Jurisdicational
- Jurisdictional
- Surface Water (sea level)
- Asphalt/Concrete Pads
- Well Field Boundary
- Portion of RFS Property Subject to DTSC order, Defined as "Site"
- Biologically Active Permeable Barrier Wall
- Former Seawall
- Slurry Wall

City Sanitary Sewer Lines:

- Existing City of Richmond Sewer
- Abandoned City of Richmond Sewer
- Existing RFS Sewer
- Abandoned RFS Sewer
- Open Swale
- Underground Culvert
- Gutters
- Underground Culvert, Abandoned (Grouted at Manholes)
- Storm Drain Outfalls
- UC outboard parcels
- Meadows (2006 Botanical Survey)
- NRLF Coastal Prairie high quality edge

Berkeley EH&S

University of California, Berkeley
Richmond Field Station

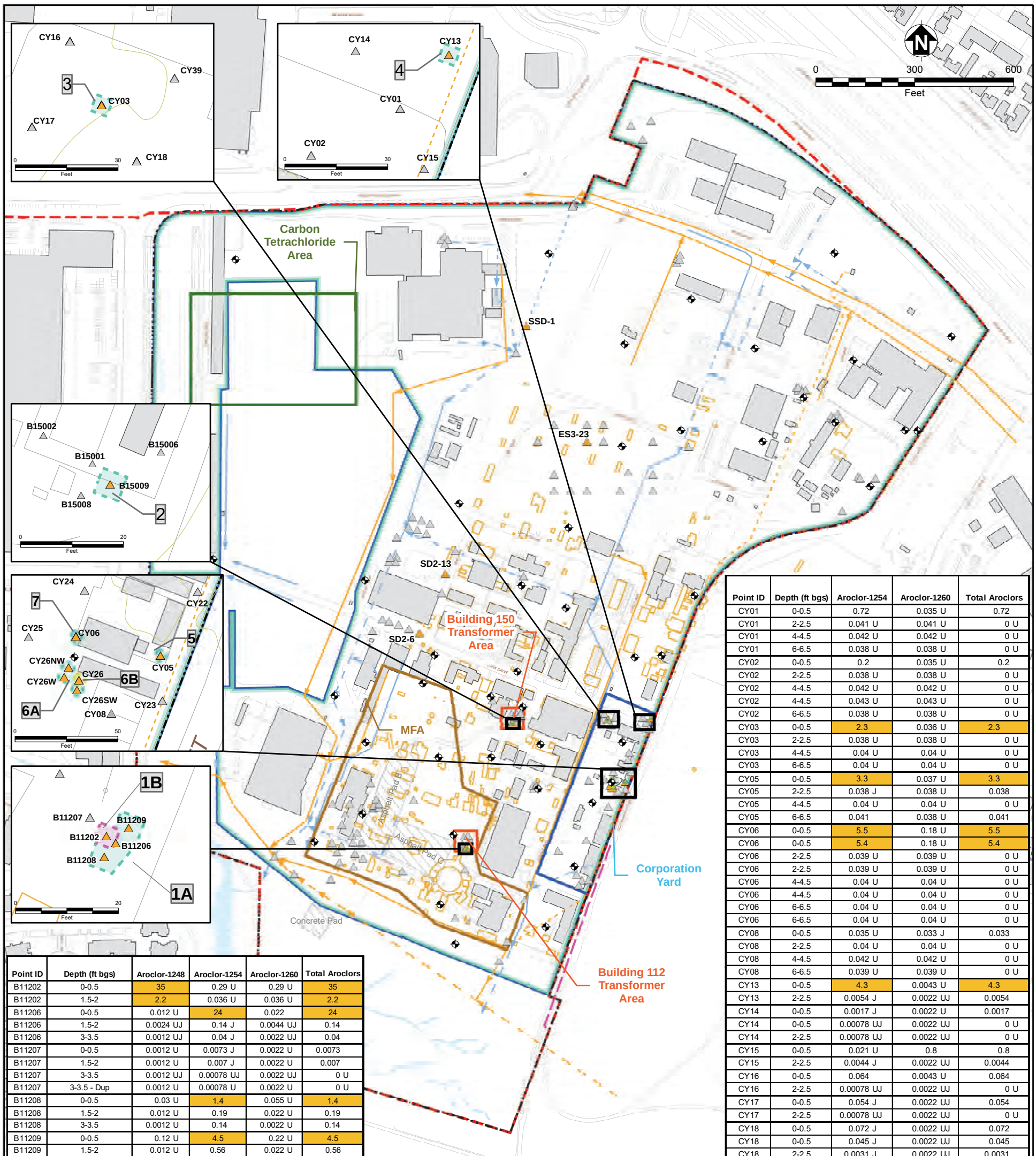
Figure 4
RFS Hydrology

Richmond, CA Southeast Shoreline

Note:

BAPB	Biologically Active Permeable Barrier
DTSC	Department of Toxic Substances Control
EBRPD	East Bay Reagional Parks District
EPA	Evironmental Protection Agency
PCB	Polychlorinated biphenyls
RFS	Richmond Field Station

2018.08.13 UC Berkeley EH&S ANB



Point ID	Depth (ft bgs)	Aroclor-1248	Aroclor-1254	Aroclor-1260	Total Aroclors
B11202	0-0.5	35	0.29 U	0.29 U	35
B11202	1.5-2	2.2	0.036 U	0.036 U	2.2
B11206	0-0.5	0.012 U	24	0.022	24
B11206	1.5-2	0.0024 UJ	0.14 J	0.0044 UJ	0.14
B11206	3-3.5	0.0012 UJ	0.04 J	0.0022 UJ	0.04
B11207	0-0.5	0.0012 U	0.0073 J	0.0022 U	0.0073
B11207	1.5-2	0.0012 U	0.007 J	0.0022 U	0.007
B11207	3-3.5	0.0012 UJ	0.00078 UJ	0.0022 UJ	0 U
B11207	3-3.5 - Dup	0.0012 U	0.00078 U	0.0022 U	0 U
B11208	0-0.5	0.03 U	1.4	0.055 U	1.4
B11208	1.5-2	0.012 U	0.19	0.022 U	0.19
B11208	3-3.5	0.0012 U	0.14	0.0022 U	0.14
B11209	0-0.5	0.12 U	4.5	0.22 U	4.5
B11209	1.5-2	0.012 U	0.56	0.022 U	0.56
B11209	3-3.5	0.0012 U	0.13	0.0022 U	0.13

Point ID	Depth (ft bgs)	Aroclor-1248	Aroclor-1254	Aroclor-1260	Total Aroclors
B15001	0-0.5	0.64	0.037 U	0.037 U	0.64
B15001	1.5-2	0.039 U	0.039 U	0.039 U	0 U
B15002	0-0.5	0.037 U	0.028 J	0.036 J	0.064
B15002	1.5-2	0.04 U	0.04 U	0.04 U	0 U
B15006	0-0.5	0.035 U	0.028 J	0.034 J	0.062
B15006	1.5-2	0.04 U	0.04 U	0.04 U	0 U
B15008	0-0.5	0.0012 U	0.052	0.0022 U	0.052
B15008	1.5-2	0.0012 U	0.018	0.0022 U	0.018
B15009	0-0.5	0.033 U	0.021 U	1.7	1.7
B15009	1.5-2	0.0012 UJ	0.14 J	0.0022 UJ	0.14
B15010	0-0.5	0.0034 U	0.048	0.0062 U	0.048
B15010	1.5-2	0.0012 U	0.024	0.0022 U	0.024
B15010	1.5-2 - Dup	0.0012 U	0.023	0.0022 U	0.023

Excavation Site	EST. Depth (ft bgs)	EST. Area (ft²)	EST. Volume (cy)
1A	1	58	2.15
1B	2.5	16	1.48
2	1	25	0.93
3	1	25	0.93
4	1	25	0.93
5	1	25	0.93
6A	1	92	3.41
6B	3	25	2.78
7	1	25	0.93
Total		**316**	**14.45**

Point ID	Depth (ft bgs)	Aroclor-1254	Aroclor-1260	Total Aroclors
CY01	0-0.5	0.72	0.035 U	0.72
CY01	2-2.5	0.041 U	0.041 U	0 U
CY01	4-4.5	0.042 U	0.042 U	0 U
CY01	6-6.5	0.038 U	0.038 U	0 U
CY02	0-0.5	0.2	0.035 U	0.2
CY02	2-2.5	0.038 U	0.038 U	0 U
CY02	4-4.5	0.042 U	0.042 U	0 U
CY02	4-4.5	0.043 U	0.043 U	0 U
CY02	6-6.5	0.038 U	0.038 U	0 U
CY03	0-0.5	2.3	0.036 U	2.3
CY03	2-2.5	0.038 U	0.038 U	0 U
CY03	4-4.5	0.04 U	0.04 U	0 U
CY03	6-6.5	0.04 U	0.04 U	0 U
CY05	0-0.5	3.3	0.037 U	3.3
CY05	2-2.5	0.038 J	0.038 U	0.038
CY05	4-4.5	0.04 U	0.04 U	0 U
CY05	6-6.5	0.041	0.038 U	0.041
CY06	0-0.5	5.5	0.18 U	5.5
CY06	0-0.5	5.4	0.18 U	5.4
CY06	2-2.5	0.039 U	0.039 U	0 U
CY06	2-2.5	0.039 U	0.039 U	0 U
CY06	4-4.5	0.04 U	0.04 U	0 U
CY06	4-4.5	0.04 U	0.04 U	0 U
CY06	6-6.5	0.04 U	0.04 U	0 U
CY06	6-6.5	0.04 U	0.04 U	0 U
CY08	0-0.5	0.035 U	0.033 J	0.033
CY08	2-2.5	0.04 U	0.04 U	0 U
CY08	4-4.5	0.042 U	0.042 U	0 U
CY08	6-6.5	0.039 U	0.039 U	0 U
CY13	0-0.5	4.3	0.0043 U	4.3
CY13	2-2.5	0.0054 J	0.0022 UJ	0.0054
CY14	0-0.5	0.0017 J	0.0022 U	0.0017
CY14	0-0.5	0.00078 UJ	0.0022 UJ	0 U
CY14	2-2.5	0.00078 UJ	0.0022 UJ	0 U
CY15	0-0.5	0.021 U	0.8	0.8
CY15	2-2.5	0.0044 J	0.0022 UJ	0.0044
CY16	0-0.5	0.064	0.0043 U	0.064
CY16	2-2.5	0.00078 UJ	0.0022 UJ	0 U
CY17	0-0.5	0.054 J	0.0022 UJ	0.054
CY17	2-2.5	0.00078 UJ	0.0022 UJ	0 U
CY18	0-0.5	0.072 J	0.0022 UJ	0.072
CY18	0-0.5	0.045 J	0.0022 UJ	0.045
CY18	2-2.5	0.0031 J	0.0022 UJ	0.0031
CY22	0-0.5	0.019 0	0.0022 U	0.019
CY22	2-2.5	0.055 J	0.0022 UJ	0.055
CY23	0-0.5	0.6	0.055 UJ	0.6
CY23	2-2.5	0.36	0.055 U	0.36
CY24	0-0.5	0.082	0.0022 U	0.082
CY24	2-2.5	0.014	0.0022 U	0.014
CY25	0-0.5	0.00078 U	0.0022 U	0 U
CY25	2-2.5	0.00078 U	0.0022 U	0 U
CY26	0-0.5	110	2.2 U	110
CY26	2-2.5	7.2	0.22 U	7.2
CY26NW	0-0.5	1.1	0.022 U	1.1
CY26SW	0-0.5	8.3	0.22 U	8.3
CY26W	0-0.5	12	0.22 U	12
CY39	0-0.5	0.062	0.0022 U	0.062
CY39	2-2.5	0.17 J	0.0022 UJ	0.17

PCB Concentrations[1,2]
- PCB Concentrations[1,2] < 1 mg/kg (TSCA High Occupancy, No Conditions)
- PCB Concentrations[1,2] ≥ 1 mg/kg (TSCA High Occupancy, No Conditions)

PCB Excavation Footprint and Depth (ft bgs)
- 1 ft
- 2.5 ft
- 3 ft

Area Boundaries
- Transformer Areas
- Carbon Tetrachloride Area
- Corporation Yard
- MFA
- Research, Education & Support Area within the Site
- Richmond Bay Campus

- Portion of RFS Property Subject to DTSC order, Defined as "Site"
- Buildings
- Former California Cap Company Facilities/Buildings
- Roads other Landscape Features
- Piezometer Groundwater Monitoring Well
- Slurry Wall
- Asphalt/Concrete Pads
- Surface Water

Sanitary Sewer Lines:
- Existing Sewer Line
- Removed Sewer Line
- Abandoned Sewer Line

Storm Drain Lines:
- Open Swale
- Underground Culvert
- Underground Culvert, Abandoned (Grouted at Manholes)

Notes:
Results in table are presented in mg/kg.

1 Total PCB concentration is the sum of detected concentrations of Aroclors-1248, -1254, and -1260 in each sample. The maximum concentration at each location is represented.

2 Results for locations ES3-23, SD2-6, SD2-13, and SSD-1 are not presented in the tables and are not proposed for cleanup because they are not associated with any transformer area or any transformer maintenance activities.

bgs	Below ground surface
cy	Cubic yards
DTSC	California Department of Toxic Substances Control
Dup	Duplicate Sample
EST	Estimated
ft	Feet
J	Estimated
MFA	Mercury Fulminate Area
mg/kg	Milligram per kilogram
PCB	Polychlorinated biphenyl
RES	Research, Education & Support
RFS	Richmond Field Station
TSCA	Toxic Substances Control Act
U	Not Detected

TETRA TECH

Richmond Bay Campus

FIGURE 5
PCB EXCAVATION AREAS

Removal Action Workplan

Table 1. B112 Transformer Area PCB Sampling Results

Sample Location ID	Sample ID	Sample Depth (ft)	PCBs (mg/kg)							
			Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260	Total Aroclor
B11201	PCB21	0.00 - 0.50	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.033 J	0.032 J	0.065
B11201	PCB22	1.50 - 2.00	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0 U
B11202	PCB23	0.00 - 0.50	0.29 U	0.29 U	0.29 U	0.29 U	**35**	0.29 U	0.29 U	**35**
B11202	PCB24	1.50 - 2.00	0.036 U	0.036 U	0.036 U	0.036 U	**2.2**	0.036 U	0.036 U	**2.2**
B11203	PCB25	0.00 - 0.50	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0 U
B11203	PCB26	1.50 - 2.00	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0 U
B11204	PCB27	0.00 - 0.50	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0 U
B11204	PCB27D	0.00 - 0.50	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0 U
B11204	PCB28	1.50 - 2.00	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0 U
B11205	PCB29	0.00 - 0.50	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0 U
B11205	PCB30	1.50 - 2.00	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0 U
B11206	PCB103	0.00 - 0.50	0.027 U	0.05 U	0.012 U	0.016 U	0.012 U	**24**	0.022 U	**24**
B11206	PCB104	1.50 - 2.00	0.0054 UJ	0.01 UJ	0.0024 UJ	0.0032 UJ	0.0024 UJ	0.14 J	0.0044 UJ	0.14
B11206	PCB105	3.00 - 3.50	0.0027 UJ	0.005 UJ	0.0012 UJ	0.0016 UJ	0.0012 UJ	0.04 J	0.0022 UJ	0.04
B11207	PCB106	0.00 - 0.50	0.0027 U	0.005 U	0.0012 U	0.0016 U	0.0012 U	0.0073 J	0.0022 U	0.0073
B11207	PCB107	1.50 - 2.00	0.0027 U	0.005 U	0.0012 U	0.0016 U	0.0012 U	0.007 J	0.0022 U	0.007
B11207	PCB108	3.00 - 3.50	0.0027 UJ	0.005 UJ	0.0012 UJ	0.0016 UJ	0.0012 UJ	0.00078 UJ	0.0022 UJ	0 U
B11207	PCB108D	3.00 - 3.50	0.0027 U	0.005 U	0.0012 U	0.0016 U	0.0012 U	0.00078 U	0.0022 U	0 U
B11208	PCB109	0.00 - 0.50	0.068 U	0.12 U	0.03 U	0.04 U	0.03 U	**1.4**	0.055 U	**1.4**
B11208	PCB110	1.50 - 2.00	0.027 U	0.05 U	0.012 U	0.016 U	0.012 U	0.19	0.022 U	0.19
B11208	PCB111	3.00 - 3.50	0.0027 U	0.005 U	0.0012 U	0.0016 U	0.0012 U	0.14	0.0022 U	0.14
B11209	PCB112	0.00 - 0.50	0.27 U	0.5 U	0.12 U	0.16 U	0.12 U	**4.5**	0.22 U	**4.5**
B11209	PCB113	1.50 - 2.00	0.027 U	0.05 U	0.012 U	0.016 U	0.012 U	0.56	0.022 U	0.56
B11209	PCB114	3.00 - 3.50	0.0027 U	0.005 U	0.0012 U	0.0016 U	0.0012 U	0.13	0.0022 U	0.13

Notes:

J Estimated Value

U Nondetected

mg/kg milligrams per kilogram

BOLD concentrations above TSCA cleanup level 1 mg/kg

ATTACHMENT 3: DTSC WORK NOTICE

December 2021

DTSC WORK NOTICE

Department of Toxic Substances Control – Our mission is to protect the people, communities, and environment of California from harmful chemicals by cleaning up contaminated sites, enforcing hazardous waste laws, and compelling the development of safer products.

Richmond Field Station

1301 South 46th Street, Richmond, CA 94804

Work begins December 16, 2021

What is the work?
Under the oversight of the Department of Toxic Substances Control (DTSC), the University of California, Berkeley's environmental consultant will be conducting a soil cleanup near Building 112 at the Site. The soil cleanup involves excavation approximately 10 cubic yards of soil contaminated with polychlorinated biphenyls (PCBs). A backhoe will remove the soil and it will be covered or directly loaded onto trucks for off-Site disposal. A truck and forklift may also be present to support the excavation.

When will you see the work?

- Work will begin **December 16, 2021** and the excavation will take approximately 1 day. Backfilling will take place by **December 21, 2021** and is dependent on weather and soil characterization results. Excavation will be covered and the area fenced-off.
- All work will be completed during normal business hours on weekdays (7:00 AM to 6:00 PM).

Where will you see the work?

- Please see map on the reverse side of this notice.
- The excavation will be focused near Building 112 (outlined on the map). There will be no traffic impacts or road closures.

What safety measures will be in place?

- Workers will be wearing protective gear and following Contra Costa County's COVID-19 social distancing requirements. The area will be fenced. Staff from the consultant will be on-Site for perimeter air monitoring and confirmation sampling of the excavation area. If necessary, a water truck and hoses will be used to control dust from leaving the excavation boundaries.

You may review Site information on DTSC's EnviroStor website:
https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=07730003

DTSC Contact Information:
Nicole Yuen, Project Manager, (510) 540-3881 or Nicole.Yuen@dtsc.ca.gov
Alejandro Vivas, Public Participation Specialist, (510) 540-3911 or toll free at (866) 495-5651 or Alejandro.Vivas@dtsc.ca.gov
For media requests, contact:
Russ Edmondson, Public Information Officer, (916) 323-3372 or Russ.Edmondson@dtsc.ca.gov

Hearing impaired individuals may use the California Relay Service at 711 or 800-735-2929 TTY/VCO/HCO to voice.

Additional information on DTSC sites can be found through our **EnviroStor**. (rev. 5-2020)

ATTACHMENT 4: BILL OF LADING MANIFESTS

Site Address: 1301 South 46th Street
Richmond,CA 94804

SC PPW 8/1/2021

WORK ORDER NO 2105708471-002

DOCUMENT NO. 0156092 **STRAIGHT BILL OF LADING**

TRANSPORTER 1 Clean Harbors Environmental Services, Inc. VEHICLE ID # 17019-764

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5000

TRANSPORTER 2 _____ VEHICLE ID # _____

EPA ID # _____ TRANS. 2 PHONE _____

DESIGNATED FACILITY	SHIPPER
Waste Connections Potrero Hills LF	ATTN:Alicia Bihler University of California
FACILITY EPA ID # CAR000089466	SHIPPER EPA ID # CAD983669268
ADDRESS 3675 Potrero Hills Lane	ADDRESS University of California - Berkeley - EHandS University Hall, Room 317
CITY STATE ZIP Suisun City CA 94585	CITY STATE ZIP Berkeley CA 94720

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
01	CM		A. NON HAZARDOUS, NON D.O.T. REGULATED, (SOIL)	20	Y
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

EMERGENCY PHONE #: (800) 483-3718 GENERATOR: University of California

A.PHLF-21-1009 CHHP 20020 W/LINER PO# W211482706

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Justin Cole		3-16-22
TRANSPORTER 1	GENO Menon		3-16-22
TRANSPORTER 2			
RECEIVED BY			3/16/22

1

CHI 107

POTRERO HILLS LANDFILL, INC.
Weighed at:
POTRERO HILLS LANDFILL, INC.
P.O. Box 68
FAIRFIELD, CA 94533

Deputy: Natosha S
Deposit: DOMINGO R
BILL TO: 2635
CLEAN HARBORS ENVIRONMENTAL

Vehicle ID: 17019
Reference: PHL211009L
Grid: 18
HaulCust#: RICHMOND W/LINER
DriverOn?: N GENE MONER
Route: PO#W211482706
TRLR/LP#: 0156092 105708471-002

Origin: RICHMOND
DATE IN: 03/16/2022 TIME IN: 10:48:06
DATE OUT: 03/16/2022 TIME OUT: 11:14:08

INBOUND TICKET Number: 01-01361243

SCALE 1 GROSS WT.	60300	LB
SCALE 3 TARE WT.	41020	LB
NET WEIGHT	19280	LB

Qty	Description	Amount
9.64	Profile Soil-T Disp	

X_____

WEIGHMASTER CERTIFICATE:

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code), administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

X_____
(Deputy Signature)

This is to certify that this load does not contain any hazardous materials, medical waste or liquids of any type.

X_____
(Driver Signature)

Site Address: 1301 South 46th Street
Richmond,CA 94804

SC PPW 8/1/2021

WORK ORDER NO: 2105708471-002

DOCUMENT NO. 0156093

STRAIGHT BILL OF LADING

3426

TRANSPORTER 1 Clean Harbors Environmental Services, Inc. VEHICLE ID # 17819-7169 (RW)

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5000

TRANSPORTER 2 _____ VEHICLE ID # _____

EPA ID # _____ TRANS. 2 PHONE _____

DESIGNATED FACILITY	SHIPPER
Waste Connections Potrero Hills LF	ATTN:Alicia Bihler University of California
FACILITY EPA ID # CAR000089466	SHIPPER EPA ID # CAD983669268
ADDRESS 3675 Potrero Hills Lane	ADDRESS University of California - Berkeley - EHandS University Hall, Room 317
CITY STATE ZIP Suisun City CA 94585	CITY STATE ZIP Berkeley CA 94720

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
01	CM		A. NON HAZARDOUS, NON D.O.T. REGULATED, (SOIL)	20	Y
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

EMERGENCY PHONE #: (800) 483-3718 GENERATOR: University of California

A.PHLF-21-1009 CHMP 21720 W/LINER PO# W211482706

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Justin Cohn		3-15-22
TRANSPORTER 1	GENE MENDL		3-15-22
TRANSPORTER 2			
RECEIVED BY			3/15/22

1

CHI 107

POTRERO HILLS LANDFILL, INC.
Weighed at:
POTRERO HILLS LANDFILL, INC.
P.O. Box 68
FAIRFIELD, CA 94533

Deputy: Richard C
Deposit: DOMINGO R
BILL TO: 2635
CLEAN HARBORS ENVIRONMENTAL

Vehicle ID: 17019
Reference: PHL211009L
Grid: 18
HaulCust#: RICHMOND W/LINER
DriverOn?: N GENE MENOR
Route: 0156093 105708471002

Origin: RICHMOND
DATE IN: 03/15/2022 TIME IN: 10:21:58
DATE OUT: 03/15/2022 TIME OUT: 10:54:53

INBOUND TICKET Number: 01-01360828

SCALE 1 GROSS WT.	64840	LB
SCALE 3 TARE WT.	42120	LB
NET WEIGHT	22720	LB

Qty	Description	Amount
11.36	Profile Soil-T Disp	

X_____

WEIGHMASTER CERTIFICATE:

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code), administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

X_____
(Deputy Signature)

This is to certify that this load does not contain any hazardous materials, medical waste or liquids of any type.

X_____
(Driver Signature)

Site Address: 1301 South 46th Street
Richmond,CA 94804

SC PPW 8/1/2021

WORK ORDER NO: 105708471-002

DOCUMENT NO. 0156094

STRAIGHT BILL OF LADING

3426

TRANSPORTER 1 Clean Harbors Environmental Services, Inc. VEHICLE ID # 17019 7164 (TW)

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5000

TRANSPORTER 2 _____ VEHICLE ID # _____

EPA ID # _____ TRANS. 2 PHONE _____

DESIGNATED FACILITY			SHIPPER ATTN:Alicia Bihler		
Waste Connections Potrero Hills LF			University of California		
FACILITY EPA ID # CAR000089466			SHIPPER EPA ID # CAD983669268		
ADDRESS 3675 Potrero Hills Lane			ADDRESS University of California - Berkeley - EHandS University Hall, Room 317		
CITY Suisun City	STATE CA	ZIP 94585	CITY Berkeley	STATE CA	ZIP 94720

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
01	CM		A. NON HAZARDOUS, NON D.O.T. REGULATED, (SOIL)	20	Y
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS EMERGENCY PHONE #: (800) 483-3718 GENERATOR: University of California

A.PHLF-21-1009 CHMP 20070 W/LINER PO# W211482706

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

SHIPPER	PRINT Justin Cooke	SIGN		DATE 3.15.22
TRANSPORTER 1	PRINT SONG MONROE	SIGN		DATE 3.15.22
TRANSPORTER 2	PRINT	SIGN		DATE
RECEIVED BY	PRINT	SIGN		DATE 3/15/22

1

CHI 107

POTRERO HILLS LANDFILL, INC.
Weighed at:
POTRERO HILLS LANDFILL, INC.
P.O. Box 68
FAIRFIELD, CA 94533

Deputy: Jaclyn Deleon
Deposit: DOMINGO R
BILL TO: 2635
CLEAN HARBORS ENVIRONMENTAL

Vehicle ID: 17019
Reference: PHL211009L
Grid: 18
HaulCust#: RICHMOND W/LINER
DriverOn?: N GENE MENOR
Route: PO#W211492706
TRLR/LP#: 0156094 105708471-002

Origin: RICHMOND
DATE IN: 03/15/2022 TIME IN: 14:06:13
DATE OUT: 03/15/2022 TIME OUT: 14:41:09

INBOUND TICKET Number: 01-01360989

SCALE 1 GROSS WT.	66320	LB
SCALE 3 TARE WT.	41220	LB
NET WEIGHT	25100	LB

Qty	Description	Amount
12.55	Profile Soil-T Disp	

X_____

WEIGHMASTER CERTIFICATE:

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code), administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

X_____
(Deputy Signature)

This is to certify that this load does not contain any hazardous materials, medical waste or liquids of any type.

X_____
(Driver Signature)

Site Address: 1301 South 46th Street
Richmond,CA 94804

SC PPW 8/1/2021

WORK ORDER NO: 105708471-002

DOCUMENT NO. 0156095

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Services, Inc. VEHICLE ID # 17019-7164

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5000

TRANSPORTER 2 _____ VEHICLE ID # _____

EPA ID # _____ TRANS. 2 PHONE _____

DESIGNATED FACILITY	SHIPPER
Waste Connections Potrero Hills LF	ATTN:Alicia Bihler University of California
FACILITY EPA ID # CAR000089466	SHIPPER EPA ID # CAD983669268
ADDRESS 3675 Potrero Hills Lane	ADDRESS University of California - Berkeley - EHandS University Hall, Room 317
CITY Suisun City STATE CA ZIP 94585	CITY Berkeley STATE CA ZIP 94720

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
01	CM		A. NON HAZARDOUS, NON D.O.T. REGULATED, (SOIL)	20	Y
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

A.PHLF-21-1009 CHHP 2679 W/LINER

EMERGENCY PHONE #: (800) 483-3718 PO# W211482706

GENERATOR: University of California

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Justin Cole		03-14-22
TRANSPORTER 1	Gene Mendr		03-14-22
TRANSPORTER 2			
RECEIVED BY			3/14/22

1

CHI 107

POTRERO HILLS LANDFILL, INC.
Weighed at:
POTRERO HILLS LANDFILL, INC.
P.O. Box 68
FAIRFIELD, CA 94533

Deputy: Jaclyn Deleon
Deposit: Natosha S
BILL TO: 2635
CLEAN HARBORS ENVIRONMENTAL

Vehicle ID: 17019
Reference: PHL211009L
Grid: 18
HaulCust#: RICHMOND W/LINER PO#W211482706
DriverOn?: N-GENE MENOR
Route: 4B21057084/1-002
TRLR/LP#: CHHP 21679

Origin: RICHMOND
DATE IN: 03/14/2022 TIME IN: 14:42:23
DATE OUT: 03/14/2022 TIME OUT: 15:09:01

INBOUND TICKET Number: 01-01360595

SCALE 1 GROSS WT.	64580	LB
SCALE 3 TARE WT.	42100	LB
NET WEIGHT	22480	LB

Qty	Description	Amount
11.24	Profile Soil-T Disp	

X_____

WEIGHMASTER CERTIFICATE:

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code), administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

X_____
(Deputy Signature)

This is to certify that this load does

Site Address: 1301 South 46th Street
Richmond, CA 94804

SC PPW 8/1/2021

WORK ORDER NO. AR 2105708471-002

DOCUMENT NO. 1482966

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors Environmental Services, Inc. VEHICLE ID # 17019 7164

EPA ID # MAD039322250 TRANS. 1 PHONE (781) 792-5000

TRANSPORTER 2 _____ VEHICLE ID # _____

EPA ID # _____ TRANS. 2 PHONE _____

DESIGNATED FACILITY		SHIPPER	
Waste Connections Potrero Hills LF		ATTN:Alicia Bihler University of California	
FACILITY EPA ID # CAR000089466		SHIPPER EPA ID # CAD983669258	
ADDRESS 3675 Potrero Hills Lane		ADDRESS University of California - Berkeley - EHandS University Hall, Room 317	
CITY Suisun City	STATE CA ZIP 94585	CITY Berkeley	STATE CA ZIP 94720

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
01	CM		A NON HAZARDOUS, NON D.O.T. REGULATED, (SOIL)	20	Y
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS A.PHLF-21-1009 L CHHP# 20315

EMERGENCY PHONE #: (800) 483-3715 PO#W211482706

GENERATOR: University of California

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Justin Cole		03/04/22
TRANSPORTER 1	GENE MENDOZA		3/4/22
TRANSPORTER 2			
RECEIVED BY			3/9/22

1

CHI 107

POTRERO HILLS LANDFILL, INC.
Weighed at:
POTRERO HILLS LANDFILL, INC.
P.O. Box 68
FAIRFIELD, CA 94533

Deputy: Jaclyn Deleon
Deposit: Natosha S
BILL TO: 2635
CLEAN HARBORS ENVIRONMENTAL

Vehicle ID: 17019
Reference:
Grid: 18
HaulCust#: TERMP TAG 21-1009
DriverOn?: N-GENE MENOR
Route: PO#W211482706
TRLR/LP#: CHHP 203145

Origin: BERKELEY
DATE IN: 03/08/2022 TIME IN: 08:23:42
DATE OUT: 03/08/2022 TIME OUT: 09:03:57

INBOUND TICKET Number: 01-01358358

SCALE 1 GROSS WT.	62600	LB
SCALE 3 TARE WT.	41280	LB
NET WEIGHT	21320	LB

Qty	Description	Amount
10.66	Profile Soil-T Disp	

X_____

WEIGHMASTER CERTIFICATE:

THIS IS TO CERTIFY that the following described commodity was weighed, measured, or counted by a weighmaster, whose signature is on this certificate, who is a recognized authority of accuracy, as prescribed by Chapter 7 (commencing with Section 12700) of Division 5 of the California Business and Professions Code), administered by the Division of Measurement Standards of the California Department of Food and Agriculture.

X_____
(Deputy Signature)

This is to certify that this load does not contain any hazardous materials, medical waste or liquids of any type.

X_____
(Driver Signature)

ATTACHMENT 5: MCCAMPBELL ANALYTICAL INC. INCREMENTAL SAMPLING METHODOLOGY (ISM) LABORATORY PROCESSING FOR PCBS AND SEMI-VOLATILE COMPOUNDS

Incremental Sampling Methodology (ISM)

Laboratory Processing For PCBs and Semi-Volatiles Compounds

Document No. Samp-ISM	**Rev No.** 02	**Effective Date:** 02/15/2021

Reviewed and Approved By: _____ 02-05-2021
Angela Rydelius — Date

Reviewed and Approved By: Theresa Johnson 02-08-2021
Theresa Johnson — Date

Disclaimer

The current TNI Standard, Volume 1, Module 2 Quality Systems General Requirements, Section 4.2.8.5 states with regard to laboratory SOPs.

a. These documents, for example, may be equipment manuals provided by the manufacturer, or internally written documents with adequate detail to allow someone similarly qualified, other than the analyst, to reproduce the procedures used to generate the test result.

b. The laboratory shall have and maintain an SOP for each accredited analyte or method.

c. The documents that contain sufficient information to perform the tests do not need to be supplemented or rewritten as internal procedures, if the documents are written in a way that they can be used as written. Any changes, including the use of a selected option must be documented and included in the laboratory's methods manual.

d. The test methods may be copies of published methods as long as any changes or selected options in the methods are documented and included in the methods manual. .

In accordance with these instructions, this SOP is an internally written document that acts as a supplement to the published method it references. This SOP does not stand alone and is to be used in conjunction with the published method. Instrument specific instructions, quality control summaries, as well as internal MAI policies are referenced in this SOP, including any deviations from the published method, if any such deviations exist. In the absence of a stated deviation, this SOP adheres strictly to all the requirements of the published method, regardless of whether or not those requirements are explicitly stated in this document.

1.0 Scope and Application

1.1 This Standard Operating Procedure describes MAI procedure and/or Guidance on handling and processing of whole soil and sediment samples for representative subsampling and analysis using the Incremental Sampling Methodology (ISM, see reference 4). The ISM method is designed to statistically reduce or limit the variability associated with discrete sampling and to generate a single representative sample for a given area (or 'decision unit').

2.0 Method Summary

2.1 All field collected incremental subsamples – representing a single unit – are combined and processed (by mixing/homogenizing) into a single sample. The composited sample is air dried under a hood to constant dryness. The dried sample then undergoes particulate size reduction by grinding using the Retsch grinder/crusher.

2.2 Sample particulate size is reduced to the level required to pass through a <2mm sieve. The homogenized sample is either: 1) systematically subsampled from a flat tray in 30 different locations (an additional multi-increment sampling) or 2) is split using a rotary sample splitter/divider.

2.3 The resulting composited aliquot is analyzed according to the required method procedure(s).

3.0 Definitions

3.1 Definitions are in the Quality Manual, section 3.3 Glossary and Acronyms.

4.0 Interferences

4.1 Not applicable to this procedure.

5.0 Safety

5.1 Proper Personal Protective Equipment (PPE) is used in all instances of laboratory practice to assure safety of laboratory personnel at all times. A laboratory coat, eye protection, and gloves are the minimum requirements.

5.2 The toxicity or carcinogenicity of each reagent used in this method has not been precisely defined however, each chemical compound should be treated as a potential health hazard, and exposure to these chemicals must be reduced to the lowest possible level by whatever means available.

6.0 Equipment & Supplies

6.1 Retsch BB50 grinder.

6.2 Sieve (2mm opening: #10 US).

6.3 Drying trays.

6.4 Dust mask (toxic dust respirator preferred, e.g., MSA Safety #817664 mask).

6.5 Sample splitter (or tray method).

7.0 Reagents & Standards

7.1 This section is not applicable to the process.

8.0 Sample Collection, Preservation, Shipment & Storage

8.1 Samples can be collected in various containers in a sealed container. Once received the samples are stored between 0-6 ºC. There is no specified hold time.

9.0 Quality Control

9.1 One Method Blank must be analyzed with each analysis batch. The results must be below the RL before continuing the analysis. If not, corrective action must be taken.

9.2 Matrix spike and Matrix spike duplicate may be analyzed with every batch of samples as required by the COC.

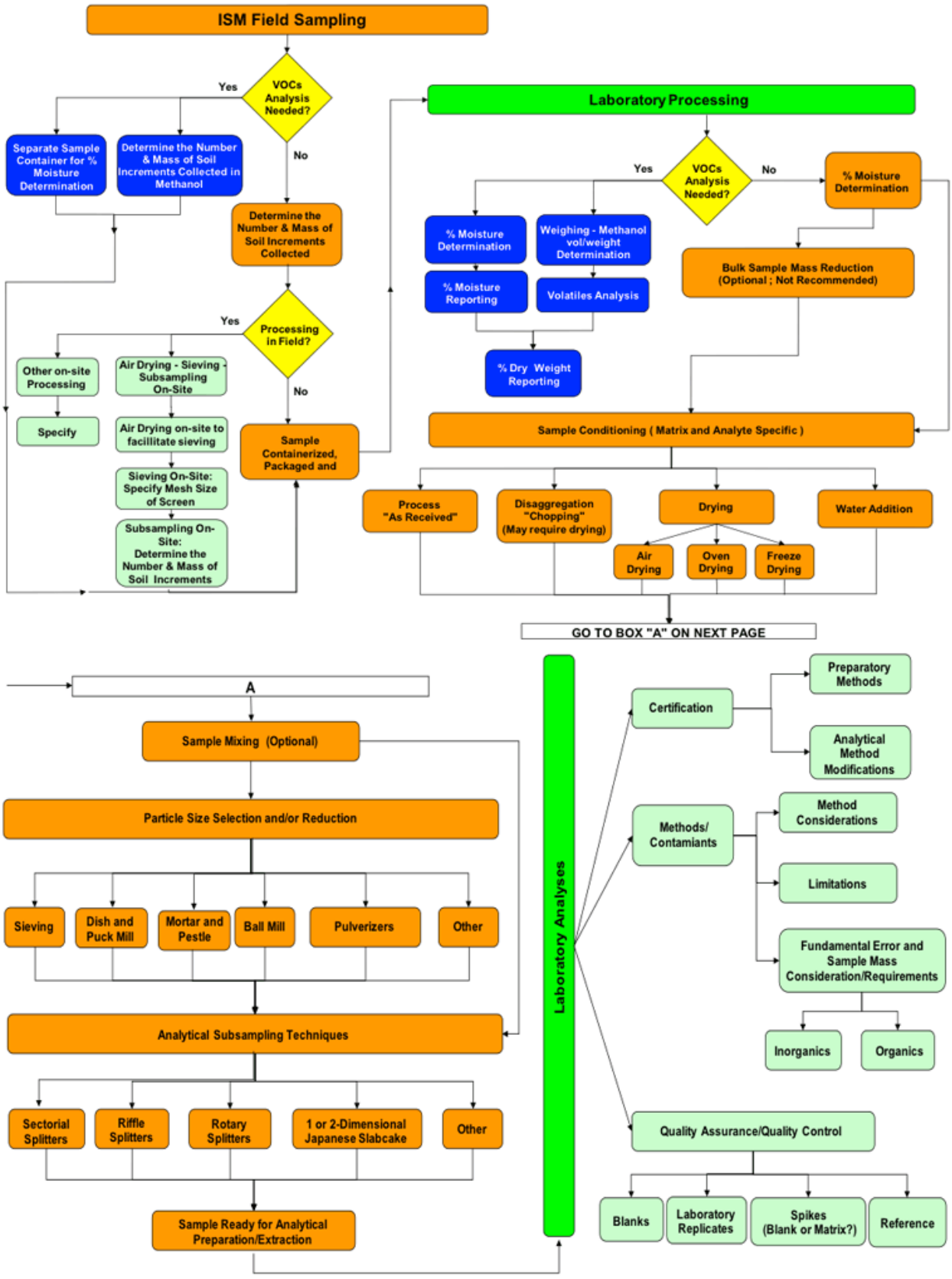
9.3 A Lab Control Sample (LCS) may be prepared and analyzed with each analysis batch as required by the COC.

10.0 Calibration & Standardization

10.1 This section is not applicable to the ISM process.

11.0 Workflow

11.1 The figure below is the official Incremental Sampling Methodology workflow as depicted in the ISM-1 published method (Interstate Technology & Regulatory Council (ITRC) 2012). This is Figure 6.1 from the ISM-1 method indicating: the state of the sample(s) upon acceptance by the laboratory, the laboratory processing required the subsampling methodology and the various laboratory analysis pathways.


ISM Field Sampling
VOCs Analysis Needed?
Yes
No
Separate Sample Container for % Moisture Determination
Determine the Number & Mass of Soil Increments Collected in Methanol
Determine the Number & Mass of Soil Increments Collected
Processing in Field?
Yes
No
Other on-site Processing
Specify
Air Drying - Sieving - Subsampling On-Site
Air Drying on-site to facillitate sieving
Sieving On-Site: Specify Mesh Size of Screen
Subsampling On-Site: Determine the Number & Mass of Soil Increments
Sample Containerized, Packaged and
Laboratory Processing
VOCs Analysis Needed?
Yes
No
% Moisture Determination
Weighing - Methanol vol/weight Determination
% Moisture Reporting
Volatiles Analysis
% Dry Weight Reporting
% Moisture Determination
Bulk Sample Mass Reduction (Optional ; Not Recommended)
Sample Conditioning (Matrix and Analyte Specific)
Process "As Received"
Disaggregation "Chopping" (May require drying)
Drying
Water Addition
Air Drying
Oven Drying
Freeze Drying
GO TO BOX "A" ON NEXT PAGE
A
Sample Mixing (Optional)
Particle Size Selection and/or Reduction
Sieving
Dish and Puck Mill
Mortar and Pestle
Ball Mill
Pulverizers
Other
Analytical Subsampling Techniques
Sectorial Splitters
Riffle Splitters
Rotary Splitters
1 or 2-Dimensional Japanese Slabcake
Other
Sample Ready for Analytical Preparation/Extraction
Laboratory Analyses
Certification
Preparatory Methods
Analytical Method Modifications
Methods/ Contamiants
Method Considerations
Limitations
Fundamental Error and Sample Mass Consideration/Requirements
Inorganics
Organics
Quality Assurance/Quality Control
Blanks
Laboratory Replicates
Spikes (Blank or Matrix?)
Reference

12.0 Procedure

12.1 Compositing

12.1.1 An ISM sample is a composite sample made up of 30+ smaller individual samples, typically core samples of uniform size and weight. If we receive a single large sample (1 kg or more) we assume that the 30+ smaller individual samples have already been combined by the client in the field. If the sample arrives at the lab as a collection of small samples (30+ tubes or cores) then the individual cores will be combined into a single sample.

12.1.2 The COC must indicate whether vegetation, oversized material, or decantable water are to be included or excluded from the sample. Decantable water can be poured off the top of the settled sample. Vegetation and oversized material can be manually removed with tweezers or spatulas but may be removed more reproducibly by sieving once the sample is dried. The excluded materials can be weighed and documented via photographs; and weight adjusted/removed when appropriate.

12.2 Sample Drying

12.2.1 The samples must be dry enough to pass through the grinder without sticking or jamming. Weigh the sample to determine initial weight of the sample. Dry the entire soil sample, including organic material, at room temperature (or less) to a constant weight, being careful not to expose the samples to direct sunlight (final weight = constant weight).

12.2.2 Use trays to dry the samples under the hood (see Figure 1). Once the entire sample is air-dried large pebbles and vegetation (sticks) should be removed prior to grinding. The drying process may take several days for wet soils.

Figure 1 - Drying the (composited) sample

12.3 Sample Grinding

12.3.1 The entire dried sample is ground using the Retsch BB50 Grinder to a final particulate size of 2 mm or less (passes through a #10 sieve). The most common sieve size for ISM samples is <2 mm (standard #10 sieve), but specific objectives may necessitate a smaller or larger sieve.

12.4 Subsampling

12.4.1 To obtain a representative subsample the entire sample should be spread out on a clean tray (use aluminum foil if Al content is unimportant) to a thickness of 1 to 2 cm. This work should take place in a fume hood designed to prevent the spread of dust and minimize possible inhalation. Mark out a grid of 30 squares on the top surface of the sample (see Figure 2, below).

12.4.2 A small sub-sample is then taken by removing material that represents the entire vertical column of the cake – a small plastic corer will work. The sub-sampled material is placed in a receiving container. This process is repeated for every grid of the entire spread-out sample. The resulting subsample is typically 10-30g in size. However, as the entire subsample should be used for an analysis the sample size collected should match the size required for that particular analysis.

12.4.2.1 This will help eliminate inhomogeneity issues arising from using only part of a sampled aliquot. 0.33g collected from 30 grids will yield a 10g sample. To further reduce the uncertainty this sample should be mixed in a bladed mixer prior to analysis – unless the entire 10-30g sample will be used for a given analysis.

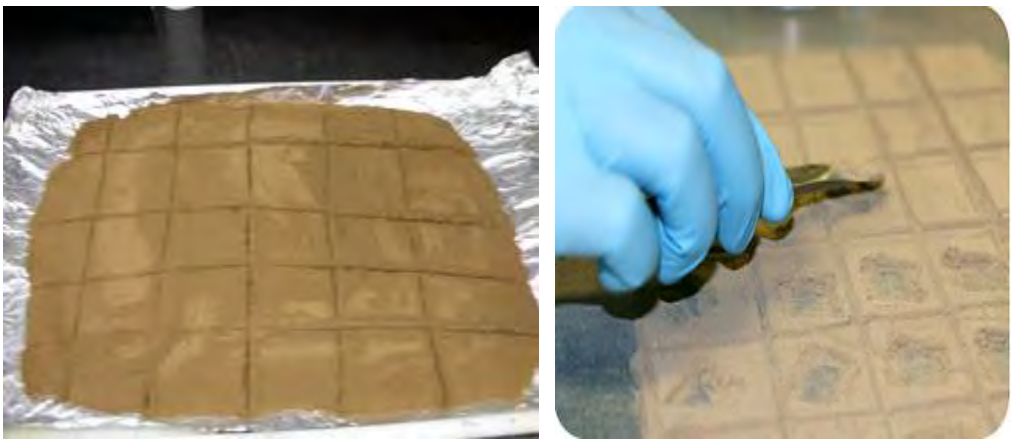


Figure 2 - 30 square grid marked on sample; sampling the grids

Note: If a rotary sample splitter is available then the entire sample is placed in the splitter hopper and one or more aliquots are collected from the entire dried sample.

12.5 **Sample Extraction**

12.5.1 The resulting 10-30g soil sample aliquots are extracted according to the particular method extraction procedure.

13.0 Data Analysis & Calculations

13.1 This section is not applicable to the ISM process.

14.0 Method Performance

14.1 True method performance can only be measured by verifying sample homogeneity between subsample aliquots. In general, multi-incremental sample replicates are usually normally distributed with very few outliers.

15.0 Pollution Prevention

15.1 This method does not contain any specific modifications that serve to minimize or prevent pollution.

15.2 The chemicals used in this method pose little threat to the environment when properly managed.

15.3 All standards and reagents should be prepared in volumes consistent with laboratory use to minimize the volume of disposable waste.

15.4 For further information on pollution prevention consult Less is Better: Laboratory Chemical Management for Waste Reduction, available from the American Chemical Society's Department of Government Relations and Science Policy, 1155 16th Street NW, Washington D.C. 20036, (202) 872-4477.

16.0 Corrective Actions for Out of Control data

16.1 Refer to Nonconformance/Corrective Action Report (NC/CAR/PR) Procedure.

17.0 Contingencies for Handling Out of Control Data or Unacceptable Data

17.1 Contact the laboratory manager or technical manager to assess out of control / unacceptable data.

18.0 Waste Management

18.1 All wastes must be disposed of safely, samples and extracts are disposed of following local, state, and federal regulations along with MAI's internal laboratory procedure, G-Waste Disposal.

19.0 References

19.1 EPA Method 8330B. Nitroaromatics, Nitramines, and Nitrate Esters by High Performance Liquid Chromatography (HPLC)

19.2 EPA Contaminated Site Clean-up Information; www.CLU-IN.org; Soil Sampling and Decision Making Using Incremental Sampling Methodology - Part 1; www.clu-in.org/conf/itrc/ISM_110612/

19.3 Test Methods for Evaluating Solid Waste SW846.

19.4 Incremental Sampling Methodology; http://www.itrcweb.org/ism-1/

19.5 Incremental Sampling Methodology, Section 6. Laboratory Sample Processing and Analysis; www.itrcweb.org/ism-1/6_LABORATORY_SAMPLE_PROCESSING_AND_ANALYSIS.html

19.6 State of Alaska Department of Environmental Conservation, Division of Spill Prevention and Response, Contaminated Sites Program, Draft Guidance on Multi-Incremental Soil Sampling, March 2009.

20.0 Revision History

20.1 Provide justification and explanation of change: *The procedure was reviewed and no changes were needed.*

ATTACHMENT 6: COMPLETE ANALYTICAL RESULTS (*Included in electronic only)*

908 North Temperance Ave. ∇ Clovis, CA 93611 ∇ Phone 559-275-2175 ∇ Fax 559-275-4422

Certification Number: CA1312
NELAP Certification number: CA00046
DoD-ELAP Certificate number: 4064.01

Data Validation Package

August 18, 2021

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, California 94612
Attn: Jason Brodersen

Title: Report of Data: Case 96645

Project: 103S582304.02

Dear Mr. Brodersen:

One soil sample was received June 23, 2021. Written results for the requested analysis are being provided on this August 18, 2021.

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

If you have any questions or require further information, please contact your APPL Project Manager, Gregory Salata, gsalata@applinc.com, at your convenience. Thank you for choosing APPL, Inc.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. These test results meet all requirements of NELAC and DoD QSM. Release of the hard copy has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

 for

Loren Portwood, Laboratory Director
APPL, Inc.

LP/gs
Enclosure
cc: File

Data Validation Package
for
103S582304.02
ARF 96645
TABLE OF CONTENTS

CASE NARRATIVE

Case Narrative

ARF: 96645

Project: 103S582304.02

Sample Receipt Information:

One soil sample was received June 23, 2021 at 4.0°C. The samples were assigned Analytical Request Form (ARF) 96645. The sample numbers and requested analyses were compared to the chain of custody and e-mail correspondence. No exceptions were encountered.

Sample Preparation and Analysis:

For the EPA 8082A analysis, the sample was purged according to EPA method 3540.

For the EPA 8015C, 8081A and 8270D analyses, the sample was purged according to EPA method 3540.

For the EPA 8260C VOA and Gasoline analysis, the sample was purged according to EPA method 5035.

For the EPA 6020A analysis, the sample was digested according to EPA method 3010A.

For the EPA 7471A analysis, the sample was digested according to the method.

Percent moisture was determined using ISM02.2, Exhibit D, section 10.0.

Only the portion of the injection log relative to these samples is included. A full sequence log is available upon request. Measurement uncertainty can be reported upon request.

Exceptions, Abnormalities and Deviations:

EPA 8151: In the 210701A LCS-1, 2,4,5-5 and 2,4,5-TP (SILVEX) recovered above their upper control limit Corrective action: None, 2,4,5-5 and 2,4,5-TP (SILVEX) was not detected in the associated sample.

The surrogate 2,4-DCAA (S) recovered above the 142% upper control limit in one sample. Corrective action: None, no target analytes were detected in the sample.

EPA 8270D: Due to the viscosity of the sample the final extract concentration was 25X higher than the standard volume. The reporting limits were raised accordingly.

Continuing calibrations have a few analytes with the % D exceeding the control limit. These were increasing in sensitivity and the samples were non-detect for these analytes.

EPA 6020A: Preparation blank 210706A has Barium and Vanadium greater than one half the LOQ. Corrective action: None. Samples have Barium and Vanadium greater than ten times the concentration in the blank.

SDG	Received	Client ID	APPL ID	Collected DateTime	Matrix	Method	Method Description	Prep DateTime	Analysis DateTime
96645	6/23/2021	20210622.B112.WP	BA35059	6/22/2021 1:00:00 PM	SOIL	6020A/3050B	EPA 6020A SOIL	7/6/2021 9:32:00 AM	8/14/2021 4:39:42 PM
96645	6/23/2021	20210622.B112.WP	BA35059	6/22/2021 1:00:00 PM	SOIL	EPA 8270D	EPA 8270D SOILS	6/28/2021 8:34:00 AM	7/28/2021 11:34:00 AM
96645	6/23/2021	20210622.B112.WP	BA35059	6/22/2021 1:00:00 PM	SOIL	EPA 8260C-M	EPA 8260C MEOH SOIL -GRO	7/6/2021 8:27:00 PM	7/6/2021 8:27:00 PM
96645	6/23/2021	20210622.B112.WP	BA35059	6/22/2021 1:00:00 PM	SOIL	EPA 7471B	MERCURY BY EPA 7471B	6/24/2021 9:25:00 AM	6/30/2021 1:23:01 PM
96645	6/23/2021	20210622.B112.WP	BA35059	6/22/2021 1:00:00 PM	SOIL	EPA 8015C-e	TPH EXTRACTABLE SOIL EPA 8015C	6/29/2021 8:30:00 AM	7/10/2021 12:11:00 AM
96645	6/23/2021	20210622.B112.WP	BA35059	6/22/2021 1:00:00 PM	SOIL	CLP MOIST	Moisture	7/2/2021 2:10:00 PM	7/3/2021 8:34:00 AM
96645	6/23/2021	20210622.B112.WP	BA35059	6/22/2021 1:00:00 PM	SOIL	EPA 8151	EPA 8151A Herbicides Soil	7/1/2021 11:40:00 AM	7/8/2021 1:34:00 PM
96645	6/23/2021	20210622.B112.WP	BA35059	6/22/2021 1:00:00 PM	SOIL	EPA 8081A	EPA 8081A OCL SOIL	6/30/2021 1:00:00 PM	8/4/2021 11:06:00 AM
96645	6/23/2021	20210622.B112.WP	BA35059	6/22/2021 1:00:00 PM	SOIL	EPA 8082A	EPA 8082A SOIL	6/30/2021 1:00:00 PM	8/2/2021 6:47:00 PM
96645	6/23/2021	20210622.B112.WP	BA35059	6/22/2021 1:00:00 PM	SOIL	EPA 8260C	EPA 8260C SOIL	7/2/2021 7:06:00 PM	7/2/2021 7:06:00 PM

APPL Inc.
Abbreviations and Flags

FLAG	DESCRIPTION
#	Recovery or RPD outside control limits
*	Recovery or RPD outside control limits
B	Analyte detected in associated method blank
C1	Reason for correction: wrote incorrect response
C2	Reason for correction: calculated incorrectly
C3	Reason for correction: needs to be rechecked
C4	Reason for correction: data not usable
DO	Diluted out
E	Exceeds linear range
F	Estimated value
G1	Includes a wide range of hydrocarbons which does not match our gasoline standard
G10	Includes a match to hydrocarbon profiles within the range of mineral spirits
G11	Includes a match to hydrocarbon profiles within the range of JP-4
G12	Pattern does not match the gasoline standard; the carbon range for this sample is consistent with JP8
G13	Closely resembles the hydrocarbon profile of aviation gasoline
G14	Analyte concentration may be biased due to carry over
G2	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G3	Includes higher boiling hydrocarbons
G4	Includes dominant peak(s) not indicative of petroleum hydrocarbons
G5	Is mainly dominant peak(s) not indicative of petroleum hydrocarbons
G6	Contains recognizable contaminant peak(s) which has been removed from quantitation
G7	Is mainly a match to hydrocarbons within the range of gasoline
G8	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G9	Includes hydrocarbons within the range of kerosene
J	Estimated value
M	Matrix effect
MI1	Manual integration: integration does not follow baseline
MI2	Manual integration: non-target peak interference
MI3	Manual integration: to split a peak that was integrated as one peak by the computer.
MI4	Manual integration: to integrate a split peak
MI5	Manual integration: the whole peak or part of the peak was not integrated
MI6	Manual integration: computer integrated wrong peak
MI7	Manual integration: other – (See case narrative)
MDL	Method detection limit
ND	Not detected
NT	Non-target
Q	Acceptance criteria not met
T1 I	Includes wide range of hydrocarbons not indicative of diesel
T1 M	Is mainly wide range of hydrocarbons not necessarily indicative of diesel
T2 I	Includes lower boiling hydrocarbons, e.g. mineral spirits, kerosene, stoddard solvent, white gas
T2 M	Is mainly lower boiling hydrocarbons, e.g. mineral spirits, kerosene, stoddard solvent, white gas
T3 I	Includes higher boiling hydrocarbons, e.g. asphaltene, waste oil, motor oil, or weathered diesel fuel
T3 M	Is mainly higher boiling hydrocarbons, e.g. asphaltene, waste oil, motor oil, or weathered diesel fuel
T4 I	Includes dominant peak(s) not indicative of hydrocarbons
T4 M	Is mainly dominant peak(s) not indicative of hydrocarbons
T5	Contains recognizable contaminant peak(s) which has been removed from quantitation
T6	Is mainly a match to hydrocarbons within range of diesel fuel
T7	Closely resembles the boiling point hydrocarbon profile consistent with diesel fuel
T8	Includes a match to hydrocarbon profiles within range of diesel and kerosene fuel
T9 I	Includes non-diesel hydrocarbons within boiling point range of diesel fuel
T9 M	Is mainly non-diesel hydrocarbons within boiling point range of diesel fuel
U	Not detected
Y	Percent difference between primary and confirmation column > 40%

SAMPLE MANAGEMENT RECORDS

CHAIN OF CUSTODY,

ARF, CRF, AND

CLIENT COMMUNICATION

APPL - Analysis Request Form 96645

Client: **Tetra Tech, Inc.**
Address: **1999 Harrison St., Suite 500**
Oakland, CA 94612
Attn: **Jason Brodersen**
Phone: **415-497-9060** Fax:
Job: **Richmond Field Station**
PO #: **103S582304.02**
Chain of Custody (Y/N): **Y** # **20190**
RAD Screen (Y/N): **Y** pH (Y/N): **N**
Turn Around Type: **2 WEEKS**

Received by: **MSA**
Date Received: **06/23/21** Time: **09:50**
Delivered by: **FEDEX**
Shuttle Custody Seals (Y/N): **Y** Time Zone: **-7**
Chest Temp(s): **4.0°C**
Color: **VFRG/A-Green**
Samples Chilled until Placed in Refrig/Freezer: **Y**
Project Manager: **Greg Salata**
QC Report Type: **DVP3/EDD/CA**
Due Date: **07/07/21**

Comments:
AN: 'U' Prints MDL report, DVP3.
Login to Jason.Brodersen@tetratech.com
Dry, sieve, and grind prior to PCB MIS (30 subsamples)
Prep using Soxhlet
FR: PDF to Jason.Broderen@tetratech.com
EDD: Excel to Jason.Brodersen@tetratech.com

Sample Distribution:
GC: 1-$8151S, 1-$81ADOD5S, 1-$82ADOD5S, 1-$87DDODV45S, 1-$PCBS, 1-$TCHLOR, 1-$TOXS, 1-$TPHDODS51
Extractions: 1-_MSE005, 1-_SON004, 1-_SON009, 1-_SOX005
VOA: 1-$86CDODV45S, 1-$GASBL, 1-$GRO86CS
Metals: 1-$62ADOD5S(CAM17), 1-$HGDOD5S
Wetlab: 1-MOIST
Other: 1-_M3050, 1-_M7471

Charges:

Invoice To:

	Client ID	APPL ID	Sampled	Analyses Requested
1.	20210622.B112.WP	BA35059S	06/22/21 13:00	$62ADOD5S(CAM17), $8151S, $81ADOD5S, $82ADOD5S, $86CDODV45S, $87DDODV45S, $GASBL, $GRO86CS, $HGDOD5S, $PCBS, $TCHLOR, $TOXS, $TPHDODS51, MOIST

Note: All times, excluding sample collection times, are Pacific Time Zone unless noted otherwise. Collection times are in: -7 UTC

APPL Sample Receipt Form

ARF# **96645**

Sample	Container Type	Count	p
BA35059	[26] Other	2	NA
	[42] 40mL VOA, MeOH prsvd	1	NA
	[45] 40mL VOA, BISULF w/stirb	2	NA

Sample	Container Type	Count	p

R3@0.0°C 4.0°C/4.0°C 96645 ~~96657~~

TETRA TECH
Oakland Office

1999 Harrison Street, Suite 500
Oakland, CA 94612-3599
Phone: 510-302-6302
Fax: 510-433-0830

Chain of Custody Record No. 20190

Project Name: Richmond Field Station	Lab PO#: MSA	Lab: APPL	
Project number: 1035582304.02	Tt technical contact: Jason B. / Mike D.	Field samplers: Mike Dahlquist	
	Tt project manager: Jason Broderson	Field samplers' signatures:	

Sample ID	Sample Location (Pt. ID)	Date	Time	Matrix	MS / MSD	40 ml VOA	1 liter Amber	500 ml Poly	Sleeve	Glass Jar	VOA (8260)	SVOA (8270)	Pest/PCBs (8081)	Metals (CAM 17)	TPH Purgeables (8015)	TPH Extractables (8015m)	PCB w/ Soxhlet	Herbicides (8151)
20210622.B112.WP		6/22/21	1300	Soil		3				2	X	X	X	X	X	X	X	X

Preservative Added

No./Container Types

Analysis Required

	Name (print)	Company Name	Date	Time
Relinquished by:	Mike Dahlquist	Tetra Tech	6/22/21	1400
Received by:				
Relinquished by:				
Received by:				
Relinquished by:				
Received by:			6/23/21	0950

Turnaround time/remarks:
2 week TAT

Fed Ex #:

WHITE-Laboratory Copy YELLOW-Sample Tracker PINK-File Copy

COOLER RECEIPT FORM **ARF: 96645**

1) Project: Richmond Field Station Date Received: 06/23/21

2) Coolers: Number of Coolers: 1

3) YES Were custody seals present and intact?
How many? 2 Name/Date on seal? SEE BELOW

4) YES Was there a shipping slip? Carrier name: FEDEX

5) Type of packing in cooler: X bubble wrap __ popcorn __ foam X plastic bags __ other
X wet ice __ dry ice __ no ice __ gel ice

6) YES Were cooler temperatures acceptable?

7) Serial number of calibrated thermometer used: R3 CF +0.0°C

8) Cooler temp(s): In °C. Thermometer Temp / Corrected Temp
1: 4.0/4.0 2: ____ 3: ____ 4: ____ 5: ____ 6: ____
7: ____ 8: ____ 9: ____ 10: ____ 11: ____ 12: ____

Chain of custody:

9) YES Was a chain of custody received?

10) NO Were the custody papers complete/signed in the appropriate places?

Sample Labels:

11) YES Were all sample labels complete (sample ID, date/time of sampling, etc.)?

12) YES Did all container labels agree with custody papers?

Sample Containers:

13) YES Were all containers sealed in separate bags?

14) YES Did all containers arrive in good condition:(unbroken, no leakage, no cracked/broken lids)?

15) YES Were correct containers and preservatives used for the tests indicated?

16) YES Was a sufficient amount of sample sent for tests indicated?

17) NA Were bubbles present in volatile samples?
If yes, the following were received with air bubbles:
Larger than a pea: ____
Smaller than a pea: ____

Preservation Hold time:

18) Yes Was a sufficient amount of holding time remaining to analyze the samples?

19) NA Was the pH taken of all non-VOA preserved samples and written on the sample container?

20) NA Was the pH of acid preserved non-VOA samples < 2?

21) NA Was the pH of the "basic" preserved samples for Cyanide > 12, Sulfide >9, Hexchrom >9?

22) NO Were unpreserved VOA Vials received for VOA Dept analysis?

23) NA If "yes", are the unpreserved VOA vials noted in the ADD TEST FIELD on the ARF?
pH strip lot number: ____
Lab notified if pH was not adequate: ____

Notes/Deficiencies:

Personnel receiving samples: CG Second reviewer: SS
Personnel labeling samples: DR
Project manager notified: ____ Date/Time of notification ____
Name of client notified: ____ Date/Time of notification ____

SAMPLE RESULTS

TPH EXTRACTABLE SOIL EPA 8015C

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Jason Brodersen

Project: Richmond Field Station

ARF: 96645

Sample ID: 20210622.B112.WP

APPL ID: BA35059

Sample Collection Date: 06/22/21

QCG: #TPHDO-210628A-265921

Method	Analyte	Result	RL	MDL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 4.2 Percent Moisture.)							
EPA 8015C-e	DIESEL RANGE ORGANICS (C10-C24	30	5.2	0.52	mg/kg	06/29/21	07/10/21
EPA 8015C-e	RESIDUAL RANGE ORGANICS (C24-	220 ++	52.0	3.70	mg/kg	06/29/21	07/10/21
EPA 8015C-e	SURROGATE: OCTACOSANE (S)	97.5	47-140		%	06/29/21	07/10/21
EPA 8015C-e	SURROGATE: ORTHO-TERPHENYL (	73.2	45-130		%	06/29/21	07/10/21

++(T3M) The analyst has noted that the chromatogram of this sample is mainly higher boiling hydrocarbons.

Quant Method: DOC0702.M
Run #: 709033
Instrument: Apollo
Sequence: 210709
Dilution Factor: 1
Initials: MBE

Printed: 07/14/21 1:47:00 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8081A OCL SOIL

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Jason Brodersen
Project: Richmond Field Station
Sample ID: 20210622.B112.WP
Sample Collection Date: 06/22/21

ARF: 96645
APPL ID: BA35059
QCG: #81ADO-210630A-266842

Method	Analyte	Result	RL	MDL	Units	Extraction Date	Analysis Date
EPA 8081A	4,4'-DDD	1.80 U	50.0	1.80	ug/kg	06/30/21	08/04/21
EPA 8081A	4,4'-DDE	1.60 U	50.0	1.60	ug/kg	06/30/21	08/04/21
EPA 8081A	4,4'-DDT	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	ALDRIN	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	ALPHA-BHC	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	ALPHA-CHLORDANE	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	BETA-BHC	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	CHLORDANE, TECHNICAL	15.0 U	1000	15.0	ug/kg	06/30/21	08/04/21
EPA 8081A	DELTA-BHC	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	DIELDRIN	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	ENDOSULFAN I	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	ENDOSULFAN II	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	ENDOSULFAN SULFATE	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	ENDRIN	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	ENDRIN ALDEHYDE	2.00 U	50.0	2.00	ug/kg	06/30/21	08/04/21
EPA 8081A	ENDRIN KETONE	2.00 U	50.0	2.00	ug/kg	06/30/21	08/04/21
EPA 8081A	GAMMA-BHC	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	GAMMA-CHLORDANE	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	HEPTACHLOR	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	HEPTACHLOR EPOXIDE	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	METHOXYCHLOR	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
EPA 8081A	TOXAPHENE	15.7 U	1000	15.7	ug/kg	06/30/21	08/04/21
EPA 8081A	SURROGATE: DECACHLOROBIPHEN	103	55-130		%	06/30/21	08/04/21
EPA 8081A	SURROGATE: TCMX (S)	95.2	42-129		%	06/30/21	08/04/21

Gamma Chlordane CAS 5566-34-7 is reported as Trans-Chlordane CAS 5103-74-2, based on CRM available for laboratory use. See most recent version of EPA 8081 for more information.

Quant Method: OCL0729.M
Run #: 0803047
Instrument: Ethel
Sequence: 210803
Dilution Factor: 1
Initials: BTI

Printed: 08/09/21 5:03:48 PM
APPL-F1-SC-NoMC-REG MDLs

EPA 8082A SOIL

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Jason Brodersen
Project: Richmond Field Station
Sample ID: 20210622.B112.WP
Sample Collection Date: 06/22/21

ARF: 96645
APPL ID: BA35059
QCG: #82ADO-210630A-266862

Method	Analyte	Result	RL	MDL	Units	Extraction Date	Analysis Date
EPA 8082A	AROCLOR 1016	10.00 U	50.0	10.00	ug/kg	06/30/21	08/02/21
EPA 8082A	AROCLOR 1221	6.00 U	50.0	6.00	ug/kg	06/30/21	08/02/21
EPA 8082A	AROCLOR 1232	3.60 U	50.0	3.60	ug/kg	06/30/21	08/02/21
EPA 8082A	AROCLOR 1242	3.60 U	50.0	3.60	ug/kg	06/30/21	08/02/21
EPA 8082A	AROCLOR 1248	3.60 U	50.0	3.60	ug/kg	06/30/21	08/02/21
EPA 8082A	AROCLOR 1254	2300	50.0	3.60	ug/kg	06/30/21	08/02/21
EPA 8082A	AROCLOR 1260	3.60 U	50.0	3.60	ug/kg	06/30/21	08/02/21
EPA 8082A	AROCLOR 1262	6.00 U	50.0	6.00	ug/kg	06/30/21	08/02/21
EPA 8082A	AROCLOR 1268	6.00 U	50.0	6.00	ug/kg	06/30/21	08/02/21
EPA 8082A	TOTAL PCBS	2300	50.0	3.60	ug/kg	06/30/21	08/02/21
EPA 8082A	SURROGATE: DECACHLOROBIPHEN	72.7	60-125		%	06/30/21	08/02/21

Quant Method: PCB0629.M
Run #: 0707278
Instrument: Lucy
Sequence: 210707
Dilution Factor: 1
Initials: BTI

Printed: 08/10/21 10:01:45 AM
APPL-F1-SC-NoMC-REG MDLs

EPA 8151A Herbicides Soil

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Jason Brodersen
Project: Richmond Field Station
Sample ID: 20210622.B112.WP
Sample Collection Date: 06/22/21

ARF: 96645
APPL ID: BA35059
QCG: #8151S-210701A-267069

Method	Analyte	Result	RL	MDL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 4.2 Percent Moisture.)							
EPA 8151	2,4,5-T	20.00 U	42.0	20.00	ug/kg	07/01/21	07/08/21
EPA 8151	2,4,5-TP (SILVEX)	14.00 U	42.0	14.00	ug/kg	07/01/21	07/08/21
EPA 8151	2,4-D	88.00 U	210.0	88.00	ug/kg	07/01/21	07/08/21
EPA 8151	2,4-DB	160.0 U	420	160.0	ug/kg	07/01/21	07/08/21
EPA 8151	DALAPON	120.0 U	2100	120.0	ug/kg	07/01/21	07/08/21
EPA 8151	DICAMBA	12.00 U	42.0	12.00	ug/kg	07/01/21	07/08/21
EPA 8151	DICHLORPROP (2,4-DP)	57.00 U	210.0	57.00	ug/kg	07/01/21	07/08/21
EPA 8151	DINOSEB (DNBP)	37.00 U	100.0	37.00	ug/kg	07/01/21	07/08/21
EPA 8151	MCPA	15000.0 U	42000	15000.0	ug/kg	07/01/21	07/08/21
EPA 8151	MCPP	12000.0 U	42000	12000.0	ug/kg	07/01/21	07/08/21
EPA 8151	SURROGATE: 2,4-DCAA (S)	151 #	45-142		%	07/01/21	07/08/21

= Recovery (or RPD) is outside QC limits.

Quant Method:	HRB0706.M
Run #:	7060016
Instrument:	Herbie
Sequence:	210706
Dilution Factor:	1
Initials:	LSI

Printed: 8/18/2021 10:32:09 AM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8270D SOILS

Tetra Tech, Inc.
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Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Jason Brodersen
Project: Richmond Field Station
Sample ID: 20210622.B112.WP
Sample Collection Date: 06/22/21

ARF: 96645
APPL ID: BA35059
QCG: #87DDO-210628A-266692

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 4.2 Percent Moisture.)							
EPA 8270D	1,2,4-TRICHLOROBENZENE	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	1,2-DICHLOROBENZENE	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	1,3-DICHLOROBENZENE	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	1,4-DICHLOROBENZENE	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	2,4,5-TRICHLOROPHENOL	Not detected	8600	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	2,4,6-TRICHLOROPHENOL	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	2,4-DICHLOROPHENOL	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	2,4-DIMETHYLPHENOL	Not detected	8600	1100.0	ug/kg	06/28/21	07/28/21
EPA 8270D	2,4-DINITROPHENOL	Not detected	17000	1400.0	ug/kg	06/28/21	07/28/21
EPA 8270D	2,4-DINITROTOLUENE	Not detected	17000	1700.0	ug/kg	06/28/21	07/28/21
EPA 8270D	2,6-DINITROTOLUENE	Not detected	17000	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	2-CHLORONAPHTHALENE	Not detected	8600	1400.0	ug/kg	06/28/21	07/28/21
EPA 8270D	2-CHLOROPHENOL	Not detected	8600	1200.0	ug/kg	06/28/21	07/28/21
EPA 8270D	2-METHYLNAPHTHALENE	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	2-METHYLPHENOL	Not detected	8600	1200.0	ug/kg	06/28/21	07/28/21
EPA 8270D	2-NITROANILINE	Not detected	17000	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	2-NITROPHENOL	Not detected	8600	1200.0	ug/kg	06/28/21	07/28/21
EPA 8270D	3,3´-DICHLOROBENZIDINE	Not detected	17000	1500.0	ug/kg	06/28/21	07/28/21
EPA 8270D	3-NITROANILINE	Not detected	17000	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	3/4-METHYLPHENOL	Not detected	8600	1200.0	ug/kg	06/28/21	07/28/21
EPA 8270D	4,6-DINITRO-2-METHYLPHENOL	Not detected	17000	1500.0	ug/kg	06/28/21	07/28/21
EPA 8270D	4-BROMOPHENYL PHENYL ETHER	Not detected	8600	1500.0	ug/kg	06/28/21	07/28/21
EPA 8270D	4-CHLORO-3-METHYLPHENOL	Not detected	8600	1500.0	ug/kg	06/28/21	07/28/21
EPA 8270D	4-CHLOROANILINE	Not detected	8600	430.0	ug/kg	06/28/21	07/28/21
EPA 8270D	4-CHLOROPHENYL PHENYL ETHER	Not detected	8600	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	4-NITROANILINE	Not detected	8600	1900.0	ug/kg	06/28/21	07/28/21
EPA 8270D	4-NITROPHENOL	Not detected	17000	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	ACENAPHTHENE	Not detected	8600	1400.0	ug/kg	06/28/21	07/28/21
EPA 8270D	ACENAPHTHYLENE	Not detected	8600	1400.0	ug/kg	06/28/21	07/28/21
EPA 8270D	ANTHRACENE	Not detected	8600	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	BENZ (A) ANTHRACENE	Not detected	8600	1500.0	ug/kg	06/28/21	07/28/21
EPA 8270D	BENZO (A) PYRENE	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	BENZO (B) FLUORANTHENE	Not detected	8600	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	BENZO (G,H,I) PERYLENE	1600 J	8600	1400.0	ug/kg	06/28/21	07/28/21
EPA 8270D	BENZO (K) FLUORANTHENE	Not detected	8600	1600.0	ug/kg	06/28/21	07/28/21

J = Estimated value.

Quant Method:	Y0721.M
Run #:	0721Y148
Instrument:	Yoda
Sequence:	Y210721
Dilution Factor:	25
Initials:	MA

Printed: 08/04/21 2:26:12 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8270D SOILS

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Jason Brodersen
Project: Richmond Field Station
Sample ID: 20210622.B112.WP
Sample Collection Date: 06/22/21

ARF: 96645
APPL ID: BA35059
QCG: #87DDO-210628A-266692

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8270D	BENZOIC ACID	Not detected	8600	770.0	ug/kg	06/28/21	07/28/21
EPA 8270D	BENZYL ALCOHOL	Not detected	8600	1500.0	ug/kg	06/28/21	07/28/21
EPA 8270D	BIS (2-CHLORETHOXY) METHANE	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	BIS (2-CHLOROETHYL) ETHER	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	BIS (2-CHLOROISOPROPYL) ETHER	Not detected	8600	1200.0	ug/kg	06/28/21	07/28/21
EPA 8270D	BIS (2-ETHYLHEXYL) PHTHALATE	Not detected	17000	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	BUTYL BENZYL PHTHALATE	Not detected	8600	1400.0	ug/kg	06/28/21	07/28/21
EPA 8270D	CARBAZOLE	Not detected	8600	2100.0	ug/kg	06/28/21	07/28/21
EPA 8270D	CHRYSENE	Not detected	8600	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	DI-N-BUTYL PHTHALATE	Not detected	8600	1700.0	ug/kg	06/28/21	07/28/21
EPA 8270D	DI-N-OCTYL PHTHALATE	Not detected	8600	1500.0	ug/kg	06/28/21	07/28/21
EPA 8270D	DIBENZ (A,H) ANTHRACENE	Not detected	8600	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	DIBENZOFURAN	Not detected	17000	1500.0	ug/kg	06/28/21	07/28/21
EPA 8270D	DIETHYL PHTHALATE	Not detected	8600	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	DIMETHYL PHTHALATE	Not detected	8600	1700.0	ug/kg	06/28/21	07/28/21
EPA 8270D	FLUORANTHENE	Not detected	8600	1700.0	ug/kg	06/28/21	07/28/21
EPA 8270D	FLUORENE	Not detected	8600	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	HEXACHLOROBENZENE	Not detected	17000	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	HEXACHLOROBUTADIENE	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	HEXACHLOROETHANE	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	INDENO (1,2,3-CD) PYRENE	Not detected	8600	1600.0	ug/kg	06/28/21	07/28/21
EPA 8270D	ISOPHORONE	Not detected	8600	1500.0	ug/kg	06/28/21	07/28/21
EPA 8270D	N-NITROSODI-N-PROPYLAMINE	Not detected	8600	1400.0	ug/kg	06/28/21	07/28/21
EPA 8270D	N-NITROSODIMETHYLAMINE	Not detected	8600	2300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	N-NITROSODIPHENYLAMINE	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	NAPHTHALENE	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	NITROBENZENE	Not detected	8600	1300.0	ug/kg	06/28/21	07/28/21
EPA 8270D	PENTACHLOROPHENOL	Not detected	17000	1500.0	ug/kg	06/28/21	07/28/21
EPA 8270D	PHENANTHRENE	Not detected	17000	1500.0	ug/kg	06/28/21	07/28/21
EPA 8270D	PHENOL	Not detected	8600	1100.0	ug/kg	06/28/21	07/28/21
EPA 8270D	PYRENE	Not detected	8600	1400.0	ug/kg	06/28/21	07/28/21
EPA 8270D	SURROGATE: 2,4,6-TRIBROMOPHEN	77.1	39-132		%	06/28/21	07/28/21
EPA 8270D	SURROGATE: 2-FLUORBIPHENYL (S)	74.8	44-115		%	06/28/21	07/28/21
EPA 8270D	SURROGATE: 2-FLUOROPHENOL (S)	94.7	35-115		%	06/28/21	07/28/21
EPA 8270D	SURROGATE: NITROBENZENE-D5 (S	83.4	37-122		%	06/28/21	07/28/21
EPA 8270D	SURROGATE: PHENOL (S)	103	33-122		%	06/28/21	07/28/21
EPA 8270D	SURROGATE: TERPHENYL-D14 (S)	80.5	54-127		%	06/28/21	07/28/21

J = Estimated value.

Quant Method: Y0721.M
Run #: 0721Y148
Instrument: Yoda
Sequence: Y210721
Dilution Factor: 25
Initials: MA

Printed: 08/04/21 2:26:12 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260C SOIL

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Jason Brodersen
Project: Richmond Field Station
Sample ID: 20210622.B112.WP
Sample Collection Date: 06/22/21

ARF: 96645
APPL ID: BA35059
QCG: #86CDO-210702AT-266881

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 4.2 Percent Moisture.)							
EPA 8260C	1,1,1,2-TETRACHLOROETHANE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,1,1-TRICHLOROETHANE	Not detected	10.0	1.70	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,1,2,2-TETRACHLOROETHANE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,1,2-TRICHLOROETHANE	Not detected	10.0	2.00	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,1-DICHLOROETHANE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,1-DICHLOROETHENE	Not detected	10.0	1.60	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,1-DICHLOROPROPENE	Not detected	10.0	1.80	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,2,3-TRICHLOROBENZENE	Not detected	10.0	1.00	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,2,3-TRICHLOROPROPANE	Not detected	42.0	2.60	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,2,4-TRICHLOROBENZENE	Not detected	10.0	1.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,2,4-TRIMETHYLBENZENE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,2-DIBROMO-3-CHLOROPROPANE	Not detected	21.0	4.60	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,2-DIBROMOETHANE	Not detected	10.0	1.30	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,2-DICHLOROBENZENE	Not detected	10.0	2.00	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,2-DICHLOROETHANE	Not detected	10.0	1.60	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,2-DICHLOROPROPANE	Not detected	10.0	1.50	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,3,5-TRIMETHYLBENZENE	Not detected	10.0	2.00	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,3-DICHLOROBENZENE	Not detected	10.0	1.30	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,3-DICHLOROPROPANE	Not detected	10.0	1.40	ug/Kg	07/02/21	07/02/21
EPA 8260C	1,4-DICHLOROBENZENE	Not detected	10.0	1.40	ug/Kg	07/02/21	07/02/21
EPA 8260C	2,2-DICHLOROPROPANE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	2-BUTANONE	64	21.0	3.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	2-CHLOROTOLUENE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	2-HEXANONE	Not detected	21.0	1.90	ug/Kg	07/02/21	07/02/21
EPA 8260C	4-CHLOROTOLUENE	Not detected	10.0	2.20	ug/Kg	07/02/21	07/02/21
EPA 8260C	4-METHYL-2-PENTANONE	Not detected	21.0	1.90	ug/Kg	07/02/21	07/02/21
EPA 8260C	ACETONE	2000	21.0	5.20	ug/Kg	07/02/21	07/02/21
EPA 8260C	BENZENE	Not detected	10.0	1.30	ug/Kg	07/02/21	07/02/21
EPA 8260C	BROMOBENZENE	Not detected	10.0	1.60	ug/Kg	07/02/21	07/02/21
EPA 8260C	BROMOCHLOROMETHANE	Not detected	21.0	1.70	ug/Kg	07/02/21	07/02/21
EPA 8260C	BROMODICHLOROMETHANE	Not detected	10.0	1.40	ug/Kg	07/02/21	07/02/21
EPA 8260C	BROMOFORM	Not detected	10.0	1.70	ug/Kg	07/02/21	07/02/21
EPA 8260C	BROMOMETHANE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	CARBON DISULFIDE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	CARBON TETRACHLORIDE	Not detected	10.0	1.70	ug/Kg	07/02/21	07/02/21

Quant Method:	T0702S.M
Run #:	0702T20
Instrument:	Thor
Sequence:	210702
Dilution Factor:	2
Initials:	DA

Printed: 8/10/2021 1:23:14 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260C SOIL

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Jason Brodersen
Project: Richmond Field Station
Sample ID: 20210622.B112.WP
Sample Collection Date: 06/22/21

ARF: 96645
APPL ID: BA35059
QCG: #86CDO-210702AT-266881

Method	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
EPA 8260C	CHLOROBENZENE	Not detected	10.0	1.00	ug/Kg	07/02/21	07/02/21
EPA 8260C	CHLOROETHANE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	CHLOROFORM	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	CHLOROMETHANE	Not detected	21.0	3.80	ug/Kg	07/02/21	07/02/21
EPA 8260C	CIS-1,2-DICHLOROETHENE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	CIS-1,3-DICHLOROPROPENE	Not detected	10.0	1.90	ug/Kg	07/02/21	07/02/21
EPA 8260C	DIBROMOCHLOROMETHANE	Not detected	10.0	1.80	ug/Kg	07/02/21	07/02/21
EPA 8260C	DIBROMOMETHANE	Not detected	10.0	1.80	ug/Kg	07/02/21	07/02/21
EPA 8260C	DICHLORODIFLUOROMETHANE	Not detected	21.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	ETHYLBENZENE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	HEXACHLOROBUTADIENE	Not detected	21.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	ISOPROPYLBENZENE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	M,P-XYLENE	Not detected	21.0	4.90	ug/Kg	07/02/21	07/02/21
EPA 8260C	METHYL TERT-BUTYL ETHER	Not detected	10.0	1.90	ug/Kg	07/02/21	07/02/21
EPA 8260C	METHYLENE CHLORIDE	Not detected	42.0	9.60	ug/Kg	07/02/21	07/02/21
EPA 8260C	N-BUTYLBENZENE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	N-PROPYLBENZENE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	NAPHTHALENE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	O-XYLENE	Not detected	10.0	2.60	ug/Kg	07/02/21	07/02/21
EPA 8260C	P-ISOPROPYLTOLUENE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	SEC-BUTYLBENZENE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	STYRENE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	TERT-BUTYLBENZENE	Not detected	10.0	1.60	ug/Kg	07/02/21	07/02/21
EPA 8260C	TETRACHLOROETHENE	Not detected	10.0	1.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	TOLUENE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	TRANS-1,2-DICHLOROETHENE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	TRANS-1,3-DICHLOROPROPENE	Not detected	10.0	1.90	ug/Kg	07/02/21	07/02/21
EPA 8260C	TRICHLOROETHENE	Not detected	10.0	2.00	ug/Kg	07/02/21	07/02/21
EPA 8260C	TRICHLOROFLUOROMETHANE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	VINYL CHLORIDE	Not detected	10.0	2.10	ug/Kg	07/02/21	07/02/21
EPA 8260C	SURROGATE: 1,2-DICHLOROETHAN	113	71-136		%	07/02/21	07/02/21
EPA 8260C	SURROGATE: 4-BROMOFLUOROBE	103	79-119		%	07/02/21	07/02/21
EPA 8260C	SURROGATE: DIBROMOFLUOROME	107	78-119		%	07/02/21	07/02/21
EPA 8260C	SURROGATE: TOLUENE-D8 (S)	106	85-116		%	07/02/21	07/02/21

Quant Method:	T0702S.M
Run #:	0702T20
Instrument:	Thor
Sequence:	210702
Dilution Factor:	2
Initials:	DA

Printed: 8/10/2021 1:23:14 PM
APPL-F1-SC-MCRes/MCPQL-REG MDLs

EPA 8260C MEOH SOIL -GRO

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Jason Brodersen

Project: Richmond Field Station

ARF: 96645

Sample ID: 20210622.B112.WP

APPL ID: BA35059

Sample Collection Date: 06/22/21

QCG: #GRO86-210706AT-267082

Method	Analyte	Result	RL	MDL	Units	Extraction Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 4.2 Percent Moisture.)							
EPA 8260C-M	GASOLINE	1.3 J	2.200	0.6600	mg/Kg	07/06/21	07/06/21
EPA 8260C-M	SURROGATE: 4-BROMOFLUOROBE	102	79-119		%	07/06/21	07/06/21

J = Estimated value.

Quant Method:	TSUR703.M
Run #:	0706T27
Instrument:	Thor
Sequence:	210703
Dilution Factor:	103
Initials:	DG

Printed: 8/18/2021 4:07:30 PM

APPL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Jason Brodersen
Project: Richmond Field Station
Sample ID: 20210622.B112.WP
Sample Collection Date: 6/22/2021

ARF: 96645
APPL ID: BA35059

Method	Analyte	Result	PQL	MDL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 4.2 Percent Moisture.)								
6020A/3050B	ANTIMONY (SB)	1.1	0.2	0.07	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	ARSENIC (AS)	9.8	0.5	0.07	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	BARIUM (BA)	191	0.26	0.073	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	BERYLLIUM (BE)	0.37 J	1.0	0.07	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	CADMIUM (CD)	0.49	0.1	0.03	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	CHROMIUM (CR)	50.4	0.5	0.07	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	COBALT (CO)	10.5	0.1	0.02	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	COPPER (CU)	132	2.6	0.04	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	LEAD (PB)	96.6	0.1	0.02	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	MOLYBDENUM (MO)	4.8	0.2	0.01	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	NICKEL (NI)	34.1	0.37	0.110	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	SELENIUM (SE)	1.0	0.5	0.05	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	SILVER (AG)	0.27	0.1	0.02	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	THALLIUM (TL)	0.41	0.1	0.02	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	VANADIUM (V)	35.0	0.5	0.05	mg/Kg	1	7/6/2021	8/14/2021
6020A/3050B	ZINC (ZN)	163	2.6	0.78	mg/Kg	1	7/6/2021	8/14/2021

J = Estimated value.

Printed: 8/17/2021 2:21:07 PM

PL-F1-SC-MCRes/MCPQL-REG MDLs

Metals Analysis

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Jason Brodersen

Project: Richmond Field Station

ARF: 96645

Sample ID: 20210622.B112.WP

APPL ID: BA35059

Sample Collection Date: 6/22/2021

Method	Analyte	Result	RL	MDL	Units	DF	Prep Date	Analysis Date
(Solid Concentrations and Limits have been adjusted to reflect 4.2 Percent Moisture.)								
EPA 7471B	MERCURY (HG)	6.3	0.10	0.010	mg/Kg	1	6/24/2021	6/30/2021

Printed: 8/17/2021 7:01:59 PM

PL-F1-SC-MCRes/MCPQL-REG MDLs

Wetlab Results

ARF: 96645

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, CA 94612

Attn: Jason Brodersen

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date
APPL ID: BA35059	-Client Sample ID: 20210622.B112.WP		-Sample Collection Date: 06/22/21		Project: Richmond Field Station		
CLP MOIST	MOISTURE	4.2	2.0		%	07/02/21	07/03/21

Printed: 07/09/21 10:00:32 AM

QC FORMS

EPA 8015C-e

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 96645

Case No: 96645 Date Analyzed: 07/09/21

Matrix: SOIL Instrument: Apollo

APPL ID.	Client Sample No.	SURROGATE: OCTACOSANE (S)			SURROGATE: ORTHO-TERPHENYL (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
210628A-BLK	Blank	47-140	103		45-130	75.2	
210628A-LCS	Lab Control Spike	47-140	104		45-130	84.7	
210628A-LCSD	Lab Control SpikeD	47-140	104		45-130	84.7	
BA35059	20210622.B112.WP	47-140	97.5		45-130	73.2	

Comments: Batch: #TPHDO-210628A

EPA 8015C-e

Form 4

Blank Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	07/09/21
Matrix:	SOIL	Instrument:	Apollo
Blank ID:	210628A-BLK	Time Analyzed:	1444

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210628A-BLK	Blank	709013	07/09/21 1444
210628A-LCS	Lab Control Spike	709014	07/09/21 1512
210628A-LCSD	Lab Control SpikeD	709015	07/09/21 1540
BA35059	20210622.B112.WP	709033	07/10/21 0011

Comments: Batch: #TPHDO-210628A

Method Blank
TPH EXTRACTABLE SOIL EPA 8015C

Blank Name/QCG: **210628S-35059 - 265921**
Batch ID: #TPHDO-210628A

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	RL	MDL	Units	Extraction Date	Analysis Date
BLANK	DIESEL RANGE ORGANICS (C10-C24	0.50 U	5.0	0.50	mg/kg	06/29/21	07/09/21
BLANK	RESIDUAL RANGE ORGANICS (C24-	3.51 U	50.0	3.51	mg/kg	06/29/21	07/09/21
BLANK	SURROGATE: OCTACOSANE (S)	103	47-140		%	06/29/21	07/09/21
BLANK	SURROGATE: ORTHO-TERPHENYL (	75.2	45-130		%	06/29/21	07/09/21

Quant Method: DOC0702.M
Run #: 709013
Instrument: Apollo
Sequence: 210709
Initials: MBE

GC SC-Blank-REG MDLs
Printed: 07/14/21 1:45:16 PM

EPA 8015C-e

Form 4

LCS Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	07/09/21
Matrix:	SOIL	Instrument:	Apollo
LCS ID:	210628A-LCS	Time Analyzed:	1512

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210628A-BLK	Blank	709013	07/09/21 1444
210628A-LCS	Lab Control Spike	709014	07/09/21 1512
210628A-LCSD	Lab Control SpikeD	709015	07/09/21 1540
BA35059	20210622.B112.WP	709033	07/10/21 0011

Comments: Batch: #TPHDO-210628A

Laboratory Control Spike Recoveries
TPH EXTRACTABLE SOIL EPA 8015C

APPL ID: **210629S-35059 LCS - 265921**
Batch ID: #TPHDO-210628A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl mg/kg	SPK Result mg/kg	DUP Result mg/kg	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
DIESEL RANGE ORGANICS (C10-C24)	200	182	181	91.0	90.5	38-132	0.55	30
RESIDUAL RANGE ORGANICS (C24-C40	200	185	186	92.5	93.0	39-106	0.54	30
SURROGATE: OCTACOSANE (S)	15.0	15.6	15.6	104	104	47-140		
SURROGATE: ORTHO-TERPHENYL (S)	15.0	12.7	12.7	84.7	84.7	45-130		

Comments:

Primary	SPK	DUP
Quant Method :	DOC0702.M	DOC0702.M
Extraction Date :	06/29/21	06/29/21
Analysis Date :	07/09/21	07/09/21
Instrument :	Apollo	Apollo
Run :	709014	709015
Initials :	MBE	

Printed: 07/14/21 1:45:06 PM
APPL Standard LCSD

EPA 8081A

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 96645

Case No: 96645 Date Analyzed: 08/04/21

Matrix: SOIL Instrument: Ethel

APPL ID.	Client Sample No.	SURROGATE: DECACHLOROBIPHENYL (S)			SURROGATE: TCMX (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
210630A-BLK	Blank	55-130	111		42-129	92.3	
210630A-LCS	Lab Control Spike	55-130	124		42-129	104	
BA35059	20210622.B112.WP	55-130	103		42-129	95.2	

Comments: Batch: #81ADO-210630A

EPA 8081A

Form 4

Blank Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	08/04/21
Matrix:	SOIL	Instrument:	Ethel
Blank ID:	210630A-BLK	Time Analyzed:	0824

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210630A-BLK	Blank	0803042	08/04/21 0824
210630A-LCS	Lab Control Spike	0803043	08/04/21 0846
BA35059	20210622.B112.WP	0803047	08/04/21 1106

Comments: Batch: #81ADO-210630A

Method Blank
EPA 8081A OCL SOIL

Blank Name/QCG: **210630S-35059 - 266842**
Batch ID: #81ADO-210630A

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	RL	MDL	Units	Extraction Date	Analysis Date
BLANK	4,4'-DDD	1.80 U	50.0	1.80	ug/kg	06/30/21	08/04/21
BLANK	4,4'-DDE	1.60 U	50.0	1.60	ug/kg	06/30/21	08/04/21
BLANK	4,4'-DDT	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	ALDRIN	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	ALPHA-BHC	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	ALPHA-CHLORDANE	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	BETA-BHC	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	CHLORDANE, TECHNICAL	15.0 U	1000	15.0	ug/kg	06/30/21	08/04/21
BLANK	DELTA-BHC	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	DIELDRIN	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	ENDOSULFAN I	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	ENDOSULFAN II	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	ENDOSULFAN SULFATE	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	ENDRIN	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	ENDRIN ALDEHYDE	2.00 U	50.0	2.00	ug/kg	06/30/21	08/04/21
BLANK	ENDRIN KETONE	2.00 U	50.0	2.00	ug/kg	06/30/21	08/04/21
BLANK	GAMMA-BHC	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	GAMMA-CHLORDANE	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	HEPTACHLOR	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	HEPTACHLOR EPOXIDE	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	METHOXYCHLOR	0.80 U	50.0	0.80	ug/kg	06/30/21	08/04/21
BLANK	TOXAPHENE	15.7 U	1000	15.7	ug/kg	06/30/21	08/04/21
BLANK	SURROGATE: DECACHLOROBIPHEN	111	55-130		%	06/30/21	08/04/21
BLANK	SURROGATE: TCMX (S)	92.3	42-129		%	06/30/21	08/04/21

Gamma Chlordane CAS 5566-34-7 is reported as Trans-Chlordane CAS 5103-74-2, based on CRM available for laboratory use. See most recent version of EPA 8081 for more information.

Quant Method:OCL0729.M
Run #:0803042
Instrument:Ethel
Sequence:210803
Initials:BTI

GC SC-Blank-REG MDLs
Printed: 08/09/21 5:03:55 PM

EPA 8081A

Form 4

LCS Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	08/04/21
Matrix:	SOIL	Instrument:	Ethel
LCS ID:	210630A-LCS	Time Analyzed:	0846

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210630A-BLK	Blank	0803042	08/04/21 0824
210630A-LCS	Lab Control Spike	0803043	08/04/21 0846
BA35059	20210622.B112.WP	0803047	08/04/21 1106

Comments: Batch: #81ADO-210630A

Laboratory Control Spike Recovery
EPA 8081A OCL SOIL

APPL ID: **210630S-35059 LCS - 266842**
Batch ID: #81ADO-210630A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/kg	SPK Result ug/kg	SPK % Recovery	Recovery Limits
4,4'-DDD	500	405	81.0	56-139
4,4'-DDE	500	430	86.0	56-134
4,4'-DDT	500	565	113	50-141
ALDRIN	500	431	86.2	45-136
ALPHA-BHC	500	446	89.2	45-137
ALPHA-CHLORDANE	500	552	110	54-133
BETA-BHC	500	447	89.4	50-136
CHLORDANE, TECHNICAL	5000	4290	85.8	43-149
DELTA-BHC	500	460	92.0	47-139
DIELDRIN	500	432	86.4	56-136
ENDOSULFAN I	500	557	111	53-132
ENDOSULFAN II	500	696	139 #	53-134
ENDOSULFAN SULFATE	500	435	87.0	55-136
ENDRIN	500	458	91.6	57-140
ENDRIN ALDEHYDE	500	409	81.8	35-137
ENDRIN KETONE	500	634	127	55-136
GAMMA-BHC	500	459	91.8	49-135
GAMMA-CHLORDANE	500	547	109	53-135
HEPTACHLOR	500	422	84.4	47-136
HEPTACHLOR EPOXIDE	500	549	110	52-136
METHOXYCHLOR	500	637	127	52-143
TOXAPHENE	5000	4250	85.0	33-141
SURROGATE: DECACHLOROBIPHENYL	500	619	124	55-130
SURROGATE: TCMX (S)	500	518	104	42-129

= Recovery is outside QC limits.

Comments:

Primary	SPK
Quant Method :	OCL0729.M
Extraction Date :	06/30/21
Analysis Date :	08/04/21
Instrument :	Ethel
Run :	0803043
Initials :	BTI

Printed: 08/09/21 5:03:19 PM
APPL Standard LCS

EPA 8082A

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 96645

Case No: 96645 Date Analyzed: 08/02/21

Matrix: SOIL Instrument: Lucy

APPL ID.	Client Sample No.	SURROGATE: DECACHLOROBIPHENYL (S)					
		Limits	Result	Qualifier	Limits	Result	Qualifier
210630A-BLK	Blank	60-125	87.7				
210630A-LCS	Lab Control Spike	60-125	84.2				
BA35059	20210622.B112.WP	60-125	72.7				

Comments: Batch: #82ADO-210630A

EPA 8082A

Form 4

Blank Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	08/02/21
Matrix:	SOIL	Instrument:	Lucy
Blank ID:	210630A-BLK	Time Analyzed:	1756

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210630A-BLK	Blank	0707275	08/02/21 1756
210630A-LCS	Lab Control Spike	0707276	08/02/21 1813
BA35059	20210622.B112.WP	0707278	08/02/21 1847

Comments: Batch: #82ADO-210630A

Method Blank
EPA 8082A SOIL

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **210630S-35059 - 266862**
Batch ID: #82ADO-210630A

Sample Type	Analyte	Result	RL	MDL	Units	Extraction Date	Analysis Date
BLANK	AROCLOR 1016	10.00 U	50.0	10.00	ug/kg	06/30/21	08/02/21
BLANK	AROCLOR 1221	6.00 U	50.0	6.00	ug/kg	06/30/21	08/02/21
BLANK	AROCLOR 1232	3.60 U	50.0	3.60	ug/kg	06/30/21	08/02/21
BLANK	AROCLOR 1242	3.60 U	50.0	3.60	ug/kg	06/30/21	08/02/21
BLANK	AROCLOR 1248	3.60 U	50.0	3.60	ug/kg	06/30/21	08/02/21
BLANK	AROCLOR 1254	3.60 U	50.0	3.60	ug/kg	06/30/21	08/02/21
BLANK	AROCLOR 1260	3.60 U	50.0	3.60	ug/kg	06/30/21	08/02/21
BLANK	AROCLOR 1262	6.00 U	50.0	6.00	ug/kg	06/30/21	08/02/21
BLANK	AROCLOR 1268	6.00 U	50.0	6.00	ug/kg	06/30/21	08/02/21
BLANK	TOTAL PCBS	3.60 U	50.0	3.60	ug/kg	06/30/21	08/02/21
BLANK	SURROGATE: DECACHLOROBIPHEN	87.7	60-125		%	06/30/21	08/02/21

Quant Method: PCB0629.M
Run #: 0707275
Instrument: Lucy
Sequence: 210707
Initials: BTI

GC SC-Blank-REG MDLs
Printed: 08/10/21 10:02:01 AM

EPA 8082A

Form 4

LCS Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	08/02/21
Matrix:	SOIL	Instrument:	Lucy
LCS ID:	210630A-LCS	Time Analyzed:	1813

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210630A-BLK	Blank	0707275	08/02/21 1756
210630A-LCS	Lab Control Spike	0707276	08/02/21 1813
BA35059	20210622.B112.WP	0707278	08/02/21 1847

Comments: Batch: #82ADO-210630A

Laboratory Control Spike Recovery
EPA 8082A SOIL

APPL ID: **210630S-35059 LCS - 266862**
Batch ID: #82ADO-210630A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/kg	SPK Result ug/kg	SPK % Recovery	Recovery Limits
AROCLOR 1016	1250	962	77.0	47-134
AROCLOR 1260	1250	1130	90.4	53-140
SURROGATE: DECACHLOROBIPHENYL	500	421	84.2	60-125

Comments:

Primary	SPK
Quant Method :	PCB0629.M
Extraction Date :	06/30/21
Analysis Date :	08/02/21
Instrument :	Lucy
Run :	0707276
Initials :	BTI

Printed: 08/10/21 10:01:37 AM
APPL Standard LCS

EPA 8151

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 96645

Case No: 96645 Date Analyzed: 7/8/2021

Matrix: SOIL Instrument: Herbie

APPL ID.	Client Sample No.	SURROGATE: 2,4-DCAA (S)					
		Limits	Result	Qualifier	Limits	Result	Qualifier
210701A-BLK	Blank	45-142	138				
210701A-LCS	Lab Control Spike	45-142	61.4				
BA35059	20210622.B112.WP	45-142	151	#			

Comments: Batch: #8151S-210701A

= Recovery outside of Control Limits on Sample.

EPA 8151

Form 4

Blank Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	7/8/2021
Matrix:	SOIL	Instrument:	Herbie
Blank ID:	210701A-BLK	Time Analyzed:	1213

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210701A-BLK	Blank	7060013	7/8/2021 1213
210701A-LCS	Lab Control Spike	7060014	7/8/2021 1235
BA35059	20210622.B112.WP	7060016	7/8/2021 1334

Comments: Batch: #8151S-210701A

Method Blank
EPA 8151A Herbicides Soil

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **210701S-35059 - 267069**
Batch ID: #8151S-210701A

Sample Type	Analyte	Result	RL	MDL	Units	Extraction Date	Analysis Date
BLANK	2,4,5-T	19.00 U	40.0	19.00	ug/kg	07/01/21	07/08/21
BLANK	2,4,5-TP (SILVEX)	13.70 U	40.0	13.70	ug/kg	07/01/21	07/08/21
BLANK	2,4-D	84.70 U	200.0	84.70	ug/kg	07/01/21	07/08/21
BLANK	2,4-DB	150.0 U	400	150.0	ug/kg	07/01/21	07/08/21
BLANK	DALAPON	115.4 U	2000	115.4	ug/kg	07/01/21	07/08/21
BLANK	DICAMBA	11.80 U	40.0	11.80	ug/kg	07/01/21	07/08/21
BLANK	DICHLORPROP (2,4-DP)	54.40 U	200.0	54.40	ug/kg	07/01/21	07/08/21
BLANK	DINOSEB (DNBP)	35.00 U	100.0	35.00	ug/kg	07/01/21	07/08/21
BLANK	MCPA	14220.4 U	40000	14220.4	ug/kg	07/01/21	07/08/21
BLANK	MCPP	11402.2 U	40000	11402.2	ug/kg	07/01/21	07/08/21
BLANK	SURROGATE: 2,4-DCAA (S)	138	45-142		%	07/01/21	07/08/21

Quant Method:HRB0706.M
Run #:7060013
Instrument:Herbie
Sequence:210706
Initials:LSI

GC SC-Blank-REG MDLs
Printed: 8/18/2021 10:32:16 AM

EPA 8151

Form 4

LCS Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	7/8/2021
Matrix:	SOIL	Instrument:	Herbie
LCS ID:	210701A-LCS	Time Analyzed:	1235

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210701A-BLK	Blank	7060013	7/8/2021 1213
210701A-LCS	Lab Control Spike	7060014	7/8/2021 1235
BA35059	20210622.B112.WP	7060016	7/8/2021 1334

Comments: Batch: #8151S-210701A

Laboratory Control Spike Recovery
EPA 8151A Herbicides Soil

APPL ID: **210701S-35059 LCS - 267069**
Batch ID: #8151S-210701A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/kg	SPK Result ug/kg	SPK % Recovery	Recovery Limits
2,4,5-T	128	234	183 #	49-150
2,4,5-TP (SILVEX)	128	224	175 #	46-143
2,4-D	1280	1130	88.3	36-177
2,4-DB	2560	2140	83.6	48-150
DALAPON	2560	2080	81.3	44-139
DICAMBA	256	210	82.0	48-141
DICHLORPROP (2,4-DP)	1280	1160	90.6	50-141
DINOSEB (DNBP)	640	548	85.6	52-134
MCPA	256000	197000	77.0	49-137
MCPP	256000	207000	80.9	73-127
SURROGATE: 2,4-DCAA (S)	1600	982	61.4	45-142

= Recovery is outside QC limits.

Comments:

Primary	SPK
Quant Method :	HRB0706.M
Extraction Date :	7/1/2021
Analysis Date :	7/8/2021
Instrument :	Herbie
Run :	7060014
Initials :	LSI

Printed: 8/18/2021 10:32:02 AM
APPL Standard LCS

EPA 8270D

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 96645

Case No: 96645 Date Analyzed: 07/27/21

Matrix: SOIL Instrument: Yoda

APPL ID.	Client Sample No.	SURROGATE: 2,4,6-TRIBROMOPHENOL (S)			SURROGATE: 2-FLUORBIPHENYL (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
210628A-BLK	Blank	39-132	110		44-115	87.9	
210628A-LCS	Lab Control Spike	39-132	114		44-115	86.5	
BA35059	20210622.B112.WP	39-132	77.1		44-115	74.8	

Comments: Batch: #87DDO-210628A

EPA 8270D

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 96645

Case No: 96645 Date Analyzed: 07/27/21

Matrix: SOIL Instrument: Yoda

APPL ID.	Client Sample No.	SURROGATE: 2-FLUOROPHENOL (S)			SURROGATE: NITROBENZENE-D5 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
210628A-BLK	Blank	35-115	103		37-122	106	
210628A-LCS	Lab Control Spike	35-115	94.6		37-122	97.9	
BA35059	20210622.B112.WP	35-115	94.7		37-122	83.4	

Comments: Batch: #87DDO-210628A

EPA 8270D

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 96645

Case No: 96645 Date Analyzed: 07/27/21

Matrix: SOIL Instrument: Yoda

APPL ID.	Client Sample No.	SURROGATE: PHENOL (S)			SURROGATE: TERPHENYL-D14 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
210628A-BLK	Blank	33-122	103		54-127	74.3	
210628A-LCS	Lab Control Spike	33-122	101		54-127	87.7	
BA35059	20210622.B112.WP	33-122	103		54-127	80.5	

Comments: Batch: #87DDO-210628A

EPA 8270D

Form 4

Blank Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	07/27/21
Matrix:	SOIL	Instrument:	Yoda
Blank ID:	210628A-BLK	Time Analyzed:	1147

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210628A-BLK	Blank	0721Y121	07/27/21 1147
210628A-LCS	Lab Control Spike	0721Y122	07/27/21 1212
BA35059	20210622.B112.WP	0721Y148	07/28/21 1134

Comments: Batch: #87DDO-210628A

Method Blank
EPA 8270D SOILS

Blank Name/QCG: **210628S-35059 - 266692**
Batch ID: #87DDO-210628A

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
BLANK	1,2,4-TRICHLOROBENZENE	Not detected	330	49.4	ug/kg	06/28/21	07/27/21
BLANK	1,2-DICHLOROBENZENE	Not detected	330	51.2	ug/kg	06/28/21	07/27/21
BLANK	1,3-DICHLOROBENZENE	Not detected	330	50.7	ug/kg	06/28/21	07/27/21
BLANK	1,4-DICHLOROBENZENE	Not detected	330	48.9	ug/kg	06/28/21	07/27/21
BLANK	2,4,5-TRICHLOROPHENOL	Not detected	330	60.1	ug/kg	06/28/21	07/27/21
BLANK	2,4,6-TRICHLOROPHENOL	Not detected	330	48.3	ug/kg	06/28/21	07/27/21
BLANK	2,4-DICHLOROPHENOL	Not detected	330	50.5	ug/kg	06/28/21	07/27/21
BLANK	2,4-DIMETHYLPHENOL	Not detected	330	43.9	ug/kg	06/28/21	07/27/21
BLANK	2,4-DINITROPHENOL	Not detected	660	53.7	ug/kg	06/28/21	07/27/21
BLANK	2,4-DINITROTOLUENE	Not detected	660	63.8	ug/kg	06/28/21	07/27/21
BLANK	2,6-DINITROTOLUENE	Not detected	660	60.6	ug/kg	06/28/21	07/27/21
BLANK	2-CHLORONAPHTHALENE	Not detected	330	52.4	ug/kg	06/28/21	07/27/21
BLANK	2-CHLOROPHENOL	Not detected	330	44.3	ug/kg	06/28/21	07/27/21
BLANK	2-METHYLNAPHTHALENE	Not detected	330	50.4	ug/kg	06/28/21	07/27/21
BLANK	2-METHYLPHENOL	Not detected	330	45.2	ug/kg	06/28/21	07/27/21
BLANK	2-NITROANILINE	Not detected	660	62.4	ug/kg	06/28/21	07/27/21
BLANK	2-NITROPHENOL	Not detected	330	47.8	ug/kg	06/28/21	07/27/21
BLANK	3,3´-DICHLOROBENZIDINE	Not detected	660	56.3	ug/kg	06/28/21	07/27/21
BLANK	3-NITROANILINE	Not detected	660	61.1	ug/kg	06/28/21	07/27/21
BLANK	3/4-METHYLPHENOL	Not detected	330	46.4	ug/kg	06/28/21	07/27/21
BLANK	4,6-DINITRO-2-METHYLPHENOL	Not detected	660	56.4	ug/kg	06/28/21	07/27/21
BLANK	4-BROMOPHENYL PHENYL ETHER	Not detected	330	56.6	ug/kg	06/28/21	07/27/21
BLANK	4-CHLORO-3-METHYLPHENOL	Not detected	330	58.8	ug/kg	06/28/21	07/27/21
BLANK	4-CHLOROANILINE	Not detected	330	16.5	ug/kg	06/28/21	07/27/21
BLANK	4-CHLOROPHENYL PHENYL ETHER	Not detected	330	60.7	ug/kg	06/28/21	07/27/21
BLANK	4-NITROANILINE	Not detected	330	72.8	ug/kg	06/28/21	07/27/21
BLANK	4-NITROPHENOL	Not detected	660	59.8	ug/kg	06/28/21	07/27/21
BLANK	ACENAPHTHENE	Not detected	330	53.8	ug/kg	06/28/21	07/27/21
BLANK	ACENAPHTHYLENE	Not detected	330	53.1	ug/kg	06/28/21	07/27/21
BLANK	ANTHRACENE	Not detected	330	61.3	ug/kg	06/28/21	07/27/21
BLANK	BENZ (A) ANTHRACENE	Not detected	330	58.0	ug/kg	06/28/21	07/27/21
BLANK	BENZO (A) PYRENE	Not detected	330	50.7	ug/kg	06/28/21	07/27/21
BLANK	BENZO (B) FLUORANTHENE	Not detected	330	60.0	ug/kg	06/28/21	07/27/21
BLANK	BENZO (G,H,I) PERYLENE	Not detected	330	55.2	ug/kg	06/28/21	07/27/21

Quant Method: Y0721.M
Run #: 0721Y121
Instrument: Yoda
Sequence: Y210721
Initials: MA

GC SC-Blank-REG MDLs
Printed: 08/04/21 2:26:22 PM

Method Blank
EPA 8270D SOILS

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **210628S-35059 - 266692**
Batch ID: #87DDO-210628A

Sample Type	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
BLANK	BENZO (K) FLUORANTHENE	Not detected	330	61.0	ug/kg	06/28/21	07/27/21
BLANK	BENZOIC ACID	Not detected	330	29.6	ug/kg	06/28/21	07/27/21
BLANK	BENZYL ALCOHOL	Not detected	330	55.8	ug/kg	06/28/21	07/27/21
BLANK	BIS (2-CHLORETHOXY) METHANE	Not detected	330	49.9	ug/kg	06/28/21	07/27/21
BLANK	BIS (2-CHLOROETHYL) ETHER	Not detected	330	50.0	ug/kg	06/28/21	07/27/21
BLANK	BIS (2-CHLOROISOPROPYL) ETHER	Not detected	330	47.3	ug/kg	06/28/21	07/27/21
BLANK	BIS (2-ETHYLHEXYL) PHTHALATE	Not detected	660	61.6	ug/kg	06/28/21	07/27/21
BLANK	BUTYL BENZYL PHTHALATE	Not detected	330	55.5	ug/kg	06/28/21	07/27/21
BLANK	CARBAZOLE	Not detected	330	81.6	ug/kg	06/28/21	07/27/21
BLANK	CHRYSENE	Not detected	330	60.6	ug/kg	06/28/21	07/27/21
BLANK	DI-N-BUTYL PHTHALATE	Not detected	330	65.9	ug/kg	06/28/21	07/27/21
BLANK	DI-N-OCTYL PHTHALATE	Not detected	330	58.4	ug/kg	06/28/21	07/27/21
BLANK	DIBENZ (A,H) ANTHRACENE	Not detected	330	59.4	ug/kg	06/28/21	07/27/21
BLANK	DIBENZOFURAN	Not detected	660	57.3	ug/kg	06/28/21	07/27/21
BLANK	DIETHYL PHTHALATE	Not detected	330	62.1	ug/kg	06/28/21	07/27/21
BLANK	DIMETHYL PHTHALATE	Not detected	330	63.3	ug/kg	06/28/21	07/27/21
BLANK	FLUORANTHENE	Not detected	330	65.4	ug/kg	06/28/21	07/27/21
BLANK	FLUORENE	Not detected	330	61.3	ug/kg	06/28/21	07/27/21
BLANK	HEXACHLOROBENZENE	Not detected	660	60.3	ug/kg	06/28/21	07/27/21
BLANK	HEXACHLOROBUTADIENE	Not detected	330	51.7	ug/kg	06/28/21	07/27/21
BLANK	HEXACHLOROETHANE	Not detected	330	49.9	ug/kg	06/28/21	07/27/21
BLANK	INDENO (1,2,3-CD) PYRENE	Not detected	330	60.4	ug/kg	06/28/21	07/27/21
BLANK	ISOPHORONE	Not detected	330	57.0	ug/kg	06/28/21	07/27/21
BLANK	N-NITROSODI-N-PROPYLAMINE	Not detected	330	54.9	ug/kg	06/28/21	07/27/21
BLANK	N-NITROSODIMETHYLAMINE	Not detected	330	87.4	ug/kg	06/28/21	07/27/21
BLANK	N-NITROSODIPHENYLAMINE	Not detected	330	50.6	ug/kg	06/28/21	07/27/21
BLANK	NAPHTHALENE	Not detected	330	50.5	ug/kg	06/28/21	07/27/21
BLANK	NITROBENZENE	Not detected	330	49.8	ug/kg	06/28/21	07/27/21
BLANK	PENTACHLOROPHENOL	Not detected	660	58.7	ug/kg	06/28/21	07/27/21
BLANK	PHENANTHRENE	Not detected	660	58.2	ug/kg	06/28/21	07/27/21
BLANK	PHENOL	Not detected	330	43.0	ug/kg	06/28/21	07/27/21
BLANK	PYRENE	Not detected	330	54.1	ug/kg	06/28/21	07/27/21
BLANK	SURROGATE: 2,4,6-TRIBROMOPHEN	110	39-132		%	06/28/21	07/27/21
BLANK	SURROGATE: 2-FLUORBIPHENYL (S)	87.9	44-115		%	06/28/21	07/27/21

Quant Method: Y0721.M
Run #: 0721Y121
Instrument: Yoda
Sequence: Y210721
Initials: MA

GC SC-Blank-REG MDLs
Printed: 08/04/21 2:26:22 PM

Method Blank
EPA 8270D SOILS

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Blank Name/QCG: **210628S-35059 - 266692**
Batch ID: #87DDO-210628A

Sample Type	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
BLANK	SURROGATE: 2-FLUOROPHENOL (S)	103	35-115		%	06/28/21	07/27/21
BLANK	SURROGATE: NITROBENZENE-D5 (S	106	37-122		%	06/28/21	07/27/21
BLANK	SURROGATE: PHENOL (S)	103	33-122		%	06/28/21	07/27/21
BLANK	SURROGATE: TERPHENYL-D14 (S)	74.3	54-127		%	06/28/21	07/27/21

Quant Method: Y0721.M
Run #: 0721Y121
Instrument: Yoda
Sequence: Y210721
Initials: MA

GC SC-Blank-REG MDLs
Printed: 08/04/21 2:26:22 PM

EPA 8270D

Form 4

LCS Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	07/27/21
Matrix:	SOIL	Instrument:	Yoda
LCS ID:	210628A-LCS	Time Analyzed:	1212

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210628A-BLK	Blank	0721Y121	07/27/21 1147
210628A-LCS	Lab Control Spike	0721Y122	07/27/21 1212
BA35059	20210622.B112.WP	0721Y148	07/28/21 1134

Comments: Batch: #87DDO-210628A

Laboratory Control Spike Recovery
EPA 8270D SOILS

APPL ID: **210628S-35059 LCS - 266692**
Batch ID: #87DDO-210628A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/kg	SPK Result ug/kg	SPK % Recovery	Recovery Limits
1,2,4-TRICHLOROBENZENE	1670	1350	80.8	34-118
1,2-DICHLOROBENZENE	1670	1410	84.4	33-117
1,3-DICHLOROBENZENE	1670	1390	83.2	30-115
1,4-DICHLOROBENZENE	1670	1390	83.2	31-115
2,4,5-TRICHLOROPHENOL	1670	1360	81.4	41-124
2,4,6-TRICHLOROPHENOL	1670	1460	87.4	39-126
2,4-DICHLOROPHENOL	1670	1420	85.0	40-122
2,4-DIMETHYLPHENOL	1670	1480	88.6	30-127
2,4-DINITROPHENOL	1670	1260	75.4	15-130
2,4-DINITROTOLUENE	1670	1500	89.8	48-126
2,6-DINITROTOLUENE	1670	1610	96.4	46-124
2-CHLORONAPHTHALENE	1670	1380	82.6	41-114
2-CHLOROPHENOL	1670	1440	86.2	34-121
2-METHYLNAPHTHALENE	1670	1380	82.6	38-122
2-METHYLPHENOL	1670	1440	86.2	32-122
2-NITROANILINE	1670	1520	91.0	44-127
2-NITROPHENOL	1670	1460	87.4	36-123
3,3´-DICHLOROBENZIDINE	1670	1480	88.6	22-121
3-NITROANILINE	1670	1520	91.0	33-119
3/4-METHYLPHENOL	3330	2870	86.2	34-119
4,6-DINITRO-2-METHYLPHENOL	1670	1570	94.0	29-132
4-BROMOPHENYL PHENYL ETHER	1670	1470	88.0	46-124
4-CHLORO-3-METHYLPHENOL	1670	1480	88.6	45-122
4-CHLOROANILINE	1670	1170	70.1	17-106
4-CHLOROPHENYL PHENYL ETHER	1670	1400	83.8	45-121
4-NITROANILINE	1670	1600	95.8	35-115
4-NITROPHENOL	1670	1490	89.2	30-132
ACENAPHTHENE	1670	1430	85.6	40-123
ACENAPHTHYLENE	1670	1450	86.8	32-132
ANTHRACENE	1670	1510	90.4	47-123
BENZ (A) ANTHRACENE	1670	1470	88.0	49-126

Primary	SPK
Quant Method :	Y0721.M
Extraction Date :	06/28/21
Analysis Date :	07/27/21
Instrument :	Yoda
Run :	0721Y122
Initials :	MA

Comments:

Printed: 08/04/21 2:25:44 PM
APPL Standard LCS

Laboratory Control Spike Recovery
EPA 8270D SOILS

APPL ID: **210628S-35059 LCS - 266692**
Batch ID: #87DDO-210628A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/kg	SPK Result ug/kg	SPK % Recovery	Recovery Limits
BENZO (A) PYRENE	1670	1420	85.0	45-129
BENZO (B) FLUORANTHENE	1670	1550	92.8	45-132
BENZO (G,H,I) PERYLENE	1670	1560	93.4	43-134
BENZO (K) FLUORANTHENE	1670	1270	76.0	47-132
BENZOIC ACID	1670	1290	77.2	10-110
BENZYL ALCOHOL	1670	1540	92.2	29-122
BIS (2-CHLORETHOXY) METHANE	1670	1530	91.6	36-121
BIS (2-CHLOROETHYL) ETHER	1670	1500	89.8	31-120
BIS (2-CHLOROISOPROPYL) ETHER	1670	1680	101	33-131
BIS (2-ETHYLHEXYL) PHTHALATE	1670	1580	94.6	51-133
BUTYL BENZYL PHTHALATE	1670	1470	88.0	48-132
CARBAZOLE	1670	1520	91.0	50-123
CHRYSENE	1670	1450	86.8	50-124
DI-N-BUTYL PHTHALATE	1670	1560	93.4	51-128
DI-N-OCTYL PHTHALATE	1670	1570	94.0	45-140
DIBENZ (A,H) ANTHRACENE	1670	1540	92.2	45-134
DIBENZOFURAN	1670	1460	87.4	44-120
DIETHYL PHTHALATE	1670	1410	84.4	50-124
DIMETHYL PHTHALATE	1670	1410	84.4	48-124
FLUORANTHENE	1670	1450	86.8	50-127
FLUORENE	1670	1450	86.8	43-125
HEXACHLOROBENZENE	1670	1510	90.4	45-122
HEXACHLOROBUTADIENE	1670	1310	78.4	32-123
HEXACHLOROETHANE	1670	1360	81.4	28-117
INDENO (1,2,3-CD) PYRENE	1670	1530	91.6	45-133
ISOPHORONE	1670	1490	89.2	30-122
N-NITROSODI-N-PROPYLAMINE	1670	1420	85.0	36-120
N-NITROSODIMETHYLAMINE	1670	1170	70.1	23-120
N-NITROSODIPHENYLAMINE	3330	2860	85.9	38-127
NAPHTHALENE	1670	1420	85.0	35-123
NITROBENZENE	1670	1520	91.0	34-122

Primary	SPK
Quant Method :	Y0721.M
Extraction Date :	06/28/21
Analysis Date :	07/27/21
Instrument :	Yoda
Run :	0721Y122
Initials :	MA

Comments:

Printed: 08/04/21 2:25:44 PM

APPL Standard LCS

Laboratory Control Spike Recovery
EPA 8270D SOILS

APPL ID: **210628S-35059 LCS - 266692**
Batch ID: #87DDO-210628A

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/kg	SPK Result ug/kg	SPK % Recovery	Recovery Limits
PENTACHLOROPHENOL	1670	1280	76.6	25-133
PHENANTHRENE	1670	1480	88.6	50-121
PHENOL	1670	1410	84.4	34-121
PYRENE	1670	1490	89.2	47-127
SURROGATE: 2,4,6-TRIBROMOPHENOL	6670	7620	114	39-132
SURROGATE: 2-FLUORBIPHENYL (S)	3330	2880	86.5	44-115
SURROGATE: 2-FLUOROPHENOL (S)	6670	6310	94.6	35-115
SURROGATE: NITROBENZENE-D5 (S)	3330	3260	97.9	37-122
SURROGATE: PHENOL (S)	6670	6740	101	33-122
SURROGATE: TERPHENYL-D14 (S)	3330	2920	87.7	54-127

Comments:

Primary	SPK
Quant Method :	Y0721.M
Extraction Date :	06/28/21
Analysis Date :	07/27/21
Instrument :	Yoda
Run :	0721Y122
Initials :	MA

Printed: 08/04/21 2:25:44 PM
APPL Standard LCS

Form 5
Tune Summary

Lab Name: APPL Inc.
Case No:
Matrix: Water
ID: 0721Y003.D

SDG No:
Date Analyzed: 07/21/21
Instrument: Yoda
Time Analyzed: 9:24

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1		4 ug/mL 07/16/21	0721Y004.D	07/21/21 9:40
2		5 ug/mL 07/16/21	0721Y005.D	07/21/21 10:06
3		10 ug/mL 07/16/21	0721Y006.D	07/21/21 10:31
4		20 ug/mL 07/16/21	0721Y007.D	07/21/21 10:57
5		40 ug/mL 07/16/21	0721Y008.D	07/21/21 11:23
6		50 ug/mL 07/16/21	0721Y009.D	07/21/21 11:48
7		60 ug/mL 07/16/21	0721Y010.D	07/21/21 12:14
8		80 ug/mL 07/16/21	0721Y011.D	07/21/21 12:40
9		100 ug/mL 07/16/21	0721Y012.D	07/21/21 13:06
10		SS 50 ug/mL 07/16/21	0721Y013.D	07/21/21 13:31
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

m/e		
51	9.95 - 80.04% of mass 198	34.9
68	0 - 2% of mass 69	0.0
70	0 - 2.4% of mass 69	0.5
127	10 - 80% of mass 198	53.6
197	0 - 2% of mass 198	0.0
198	100 - 100% of mass 198	100.0
199	5 - 9% of mass 198	6.8
275	10 - 60% of mass 198	28.1
365	1 - 100% of mass 198	3.8
441	0.01 - 24% of mass 442	16.6
442	50 - 500% of mass 198	115.8
443	15 - 24% of mass 442	19.4

Form 5
Tune Summary

Lab Name: APPL Inc.
Case No:
Matrix: Soil
ID: 0721Y119.D

SDG No:
Date Analyzed: 07/27/21
Instrument: Yoda
Time Analyzed: 10:38

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1		50 ug/mL 07/16/21 (1	0721Y120.D	07/27/21 10:53
2	Blank	210628A BLK 1/30.69	0721Y121.D	07/27/21 11:47
3	Lab Control Spike	210628A LCS-1 1/30.5	0721Y122.D	07/27/21 12:12
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

m/e		
51	9.95 - 80.04% of mass 198	32.4
68	0 - 2% of mass 69	0.0
70	0 - 2.4% of mass 69	0.4
127	10 - 80% of mass 198	49.7
197	0 - 2% of mass 198	0.0
198	100 - 100% of mass 198	100.0
199	5 - 9% of mass 198	6.6
275	10 - 60% of mass 198	31.2
365	1 - 100% of mass 198	4.1
441	0.01 - 24% of mass 442	15.9
442	50 - 500% of mass 198	139.7
443	15 - 24% of mass 442	18.4

Form 5
Tune Summary

Lab Name: APPL Inc.
Case No: 96645
Matrix: Soil
ID: 0721Y144.D

SDG No: 96645
Date Analyzed: 07/28/21
Instrument: Yoda
Time Analyzed: 9:56

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1		50 ug/mL 07/16/21 (1	0721Y145.D	07/28/21 10:11
2	20210622.B112.WP	BA35059S04 5/30.07 D	0721Y148.D	07/28/21 11:34
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

m/e		
51	9.95 - 80.04% of mass 198	32.6
68	0 - 2% of mass 69	0.0
70	0 - 2.4% of mass 69	0.0
127	10 - 80% of mass 198	50.4
197	0 - 2% of mass 198	0.0
198	100 - 100% of mass 198	100.0
199	5 - 9% of mass 198	6.6
275	10 - 60% of mass 198	31.3
365	1 - 100% of mass 198	3.8
441	0.01 - 24% of mass 442	15.5
442	50 - 500% of mass 198	138.6
443	15 - 24% of mass 442	19.4

8A
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract:

Lab Code: SDG No.:

Lab File ID (Standard): 0721Y120.D Date Analyzed: 07/27/21

Instrument ID: Yoda Time Analyzed: 10:53

GC Column: ID: Heated Purge: (Y/N)

		1,4-dichlorobenzene-D4(IS)		Napthalene-D8(IS)		Acenaphthene-D10(IS)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	1093060	5.08	4454060	6.50	2420190	8.51
	UPPER LIMIT	2186120	5.25	8908120	6.67	4840380	8.68
	LOWER LIMIT	546530	4.91	2227030	6.33	1210095	8.34
	SAMPLE NO.						
01	210628A BLK 1/30.69	1325720	5.08	5330110	6.49	3070720	8.51
02	210628A LCS-1 1/30.56	1330580	5.08	5546520	6.50	2950280	8.51
03							
04							
05							
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = -50% of internal standard area.
RT UPPER LIMIT = +0.17 minutes of internal standard RT
RT LOWER LIMIT = -0.17 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract:

Lab Code: SDG No.:

Lab File ID (Standard): 0721Y120.D Date Analyzed: 07/27/21

Instrument ID: Yoda Time Analyzed: 10:53

GC Column: ID: Heated Purge: (Y/N)

		Phenanthrene-D10(IS)		Chrysene-D12(IS)		Perylene-D12(IS)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	4423000	10.24	3712330	13.32	3921580	15.02
	UPPER LIMIT	8846000	10.41	7424660	13.49	7843160	15.19
	LOWER LIMIT	2211500	10.07	1856165	13.15	1960790	14.85
	SAMPLE NO.						
01	210628A BLK 1/30.69	5867850	10.24	5087700	13.32	5215420	15.02
02	210628A LCS-1 1/30.56	5164500	10.24	4395210	13.32	4542480	15.02
03							
04							
05							
06							
07							
08							
09							
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11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = -50% of internal standard area.
RT UPPER LIMIT = +0.17 minutes of internal standard RT
RT LOWER LIMIT = -0.17 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract:

Lab Code: SDG No.:

Lab File ID (Standard): 0721Y145.D Date Analyzed: 07/28/21

Instrument ID: Yoda Time Analyzed: 10:11

GC Column: ID: Heated Purge: (Y/N)

	1,4-dichlorobenzene-D4(IS)		Napthalene-D8(IS)		Acenaphthene-D10(IS)	
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12 HOUR STD	1103690	5.07	4553750	6.49	2449700	8.51
UPPER LIMIT	2207380	5.24	9107500	6.66	4899400	8.68
LOWER LIMIT	551845	4.90	2276875	6.32	1224850	8.34
SAMPLE NO.						
01 BA35059S04 5/30.07 DF	899425	5.08	4064990	6.49	2270820	8.51
02						
03						
04						
05						
06						
07						
08						
09						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = -50% of internal standard area.
RT UPPER LIMIT = +0.17 minutes of internal standard RT
RT LOWER LIMIT = -0.17 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

8A
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract:

Lab Code: SDG No.:

Lab File ID (Standard): 0721Y145.D Date Analyzed: 07/28/21

Instrument ID: Yoda Time Analyzed: 10:11

GC Column: ID: Heated Purge: (Y/N)

		Phenanthrene-D10(IS)		Chrysene-D12(IS)		Perylene-D12(IS)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	4304120	10.24	3703650	13.32	3841050	15.02
	UPPER LIMIT	8608240	10.41	7407300	13.49	7682100	15.19
	LOWER LIMIT	2152060	10.07	1851825	13.15	1920525	14.85
	SAMPLE NO.						
01	BA35059S04 5/30.07 DF	3934150	10.24	3400550	13.31	3416550	15.01
02							
03							
04							
05							
06							
07							
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14							
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16							
17							
18							
19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = -50% of internal standard area.
RT UPPER LIMIT = +0.17 minutes of internal standard RT
RT LOWER LIMIT = -0.17 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

EPA 8260C

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 96645

Case No: 96645 Date Analyzed: 7/2/2021

Matrix: SOIL Instrument: Thor

APPL ID.	Client Sample No.	SURROGATE: 1,2-DICHLOROETHANE-D4 (S)			SURROGATE: 4-BROMOFLUOROBENZENE (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
210702AT-LCS	Lab Control Spike	71-136	104		79-119	108	
210702AT-BLK	Blank	71-136	104		79-119	104	
BA35059	20210622.B112.WP	71-136	113		79-119	103	

Comments: Batch: #86CDO-210702AT

EPA 8260C

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 96645

Case No: 96645 Date Analyzed: 7/2/2021

Matrix: SOIL Instrument: Thor

APPL ID.	Client Sample No.	SURROGATE: DIBROMOFLUOROMETHANE (S)			SURROGATE: TOLUENE-D8 (S)		
		Limits	Result	Qualifier	Limits	Result	Qualifier
210702AT-LCS	Lab Control Spike	78-119	106		85-116	106	
210702AT-BLK	Blank	78-119	105		85-116	105	
BA35059	20210622.B112.WP	78-119	107		85-116	106	

Comments: Batch: #86CDO-210702AT

EPA 8260C

Form 4

Blank Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	7/2/2021
Matrix:	SOIL	Instrument:	Thor
Blank ID:	210702AT-BLK	Time Analyzed:	1637

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210702AT-LCS	Lab Control Spike	0702T11	7/2/2021 1522
210702AT-BLK	Blank	0702T14	7/2/2021 1637
BA35059	20210622.B112.WP	0702T20	7/2/2021 1906

Comments: Batch: #86CDO-210702AT

Method Blank
EPA 8260C SOIL

Blank Name/QCG: **210702S-35059 - 266881**
Batch ID: #86CDO-210702AT

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
BLANK	1,1,1,2-TETRACHLOROETHANE	Not detected	5.0	0.99	ug/Kg	07/02/21	07/02/21
BLANK	1,1,1-TRICHLOROETHANE	Not detected	5.0	0.81	ug/Kg	07/02/21	07/02/21
BLANK	1,1,2,2-TETRACHLOROETHANE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	1,1,2-TRICHLOROETHANE	Not detected	5.0	0.96	ug/Kg	07/02/21	07/02/21
BLANK	1,1-DICHLOROETHANE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	1,1-DICHLOROETHENE	Not detected	5.0	0.79	ug/Kg	07/02/21	07/02/21
BLANK	1,1-DICHLOROPROPENE	Not detected	5.0	0.85	ug/Kg	07/02/21	07/02/21
BLANK	1,2,3-TRICHLOROBENZENE	Not detected	5.0	0.50	ug/Kg	07/02/21	07/02/21
BLANK	1,2,3-TRICHLOROPROPANE	Not detected	20.0	1.24	ug/Kg	07/02/21	07/02/21
BLANK	1,2,4-TRICHLOROBENZENE	Not detected	5.0	0.52	ug/Kg	07/02/21	07/02/21
BLANK	1,2,4-TRIMETHYLBENZENE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	1,2-DIBROMO-3-CHLOROPROPANE	Not detected	10.0	2.19	ug/Kg	07/02/21	07/02/21
BLANK	1,2-DIBROMOETHANE	Not detected	5.0	0.60	ug/Kg	07/02/21	07/02/21
BLANK	1,2-DICHLOROBENZENE	Not detected	5.0	0.95	ug/Kg	07/02/21	07/02/21
BLANK	1,2-DICHLOROETHANE	Not detected	5.0	0.77	ug/Kg	07/02/21	07/02/21
BLANK	1,2-DICHLOROPROPANE	Not detected	5.0	0.72	ug/Kg	07/02/21	07/02/21
BLANK	1,3,5-TRIMETHYLBENZENE	Not detected	5.0	0.97	ug/Kg	07/02/21	07/02/21
BLANK	1,3-DICHLOROBENZENE	Not detected	5.0	0.60	ug/Kg	07/02/21	07/02/21
BLANK	1,3-DICHLOROPROPANE	Not detected	5.0	0.65	ug/Kg	07/02/21	07/02/21
BLANK	1,4-DICHLOROBENZENE	Not detected	5.0	0.67	ug/Kg	07/02/21	07/02/21
BLANK	2,2-DICHLOROPROPANE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	2-BUTANONE	Not detected	10.0	1.50	ug/Kg	07/02/21	07/02/21
BLANK	2-CHLOROTOLUENE	Not detected	5.0	0.99	ug/Kg	07/02/21	07/02/21
BLANK	2-HEXANONE	Not detected	10.0	0.89	ug/Kg	07/02/21	07/02/21
BLANK	4-CHLOROTOLUENE	Not detected	5.0	1.05	ug/Kg	07/02/21	07/02/21
BLANK	4-METHYL-2-PENTANONE	Not detected	10.0	0.93	ug/Kg	07/02/21	07/02/21
BLANK	ACETONE	Not detected	10.0	2.50	ug/Kg	07/02/21	07/02/21
BLANK	BENZENE	Not detected	5.0	0.63	ug/Kg	07/02/21	07/02/21
BLANK	BROMOBENZENE	Not detected	5.0	0.76	ug/Kg	07/02/21	07/02/21
BLANK	BROMOCHLOROMETHANE	Not detected	10.0	0.81	ug/Kg	07/02/21	07/02/21
BLANK	BROMODICHLOROMETHANE	Not detected	5.0	0.69	ug/Kg	07/02/21	07/02/21
BLANK	BROMOFORM	Not detected	5.0	0.80	ug/Kg	07/02/21	07/02/21
BLANK	BROMOMETHANE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	CARBON DISULFIDE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21

Quant Method: T0702S.M
Run #: 0702T14
Instrument: Thor
Sequence: 210702
Initials: DA

GC SC-Blank-REG MDLs
Printed: 8/10/2021 4:18:50 PM

Method Blank
EPA 8260C SOIL

Blank Name/QCG: **210702S-35059 - 266881**
Batch ID: #86CDO-210702AT

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
BLANK	CARBON TETRACHLORIDE	Not detected	5.0	0.80	ug/Kg	07/02/21	07/02/21
BLANK	CHLOROBENZENE	Not detected	5.0	0.49	ug/Kg	07/02/21	07/02/21
BLANK	CHLOROETHANE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	CHLOROFORM	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	CHLOROMETHANE	Not detected	10.0	1.82	ug/Kg	07/02/21	07/02/21
BLANK	CIS-1,2-DICHLOROETHENE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	CIS-1,3-DICHLOROPROPENE	Not detected	5.0	0.93	ug/Kg	07/02/21	07/02/21
BLANK	DIBROMOCHLOROMETHANE	Not detected	5.0	0.85	ug/Kg	07/02/21	07/02/21
BLANK	DIBROMOMETHANE	Not detected	5.0	0.87	ug/Kg	07/02/21	07/02/21
BLANK	DICHLORODIFLUOROMETHANE	Not detected	10.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	ETHYLBENZENE	Not detected	5.0	1.01	ug/Kg	07/02/21	07/02/21
BLANK	HEXACHLOROBUTADIENE	Not detected	10.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	ISOPROPYLBENZENE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	M,P-XYLENE	Not detected	10.0	2.35	ug/Kg	07/02/21	07/02/21
BLANK	METHYL TERT-BUTYL ETHER	Not detected	5.0	0.89	ug/Kg	07/02/21	07/02/21
BLANK	METHYLENE CHLORIDE	Not detected	20.0	4.58	ug/Kg	07/02/21	07/02/21
BLANK	N-BUTYLBENZENE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	N-PROPYLBENZENE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	NAPHTHALENE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	O-XYLENE	Not detected	5.0	1.25	ug/Kg	07/02/21	07/02/21
BLANK	P-ISOPROPYLTOLUENE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	SEC-BUTYLBENZENE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	STYRENE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	TERT-BUTYLBENZENE	Not detected	5.0	0.76	ug/Kg	07/02/21	07/02/21
BLANK	TETRACHLOROETHENE	Not detected	5.0	0.54	ug/Kg	07/02/21	07/02/21
BLANK	TOLUENE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	TRANS-1,2-DICHLOROETHENE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	TRANS-1,3-DICHLOROPROPENE	Not detected	5.0	0.93	ug/Kg	07/02/21	07/02/21
BLANK	TRICHLOROETHENE	Not detected	5.0	0.98	ug/Kg	07/02/21	07/02/21
BLANK	TRICHLOROFLUOROMETHANE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	VINYL CHLORIDE	Not detected	5.0	1.00	ug/Kg	07/02/21	07/02/21
BLANK	SURROGATE: 1,2-DICHLOROETHAN	104	71-136		%	07/02/21	07/02/21
BLANK	SURROGATE: 4-BROMOFLUOROBEN	104	79-119		%	07/02/21	07/02/21
BLANK	SURROGATE: DIBROMOFLUOROME	105	78-119		%	07/02/21	07/02/21

Quant Method: T0702S.M
Run #: 0702T14
Instrument: Thor
Sequence: 210702
Initials: DA

GC SC-Blank-REG MDLs
Printed: 8/10/2021 4:18:50 PM

Method Blank
EPA 8260C SOIL

Blank Name/QCG: **210702S-35059 - 266881**
Batch ID: #86CDO-210702AT

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	PQL	MDL	Units	Extraction Date	Analysis Date
BLANK	SURROGATE: TOLUENE-D8 (S)	105	85-116		%	07/02/21	07/02/21

Quant Method: T0702S.M
Run #: 0702T14
Instrument: Thor
Sequence: 210702
Initials: DA

GC SC-Blank-REG MDLs
Printed: 8/10/2021 4:18:50 PM

EPA 8260C

Form 4

LCS Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	7/2/2021
Matrix:	SOIL	Instrument:	Thor
LCS ID:	210702AT-LCS	Time Analyzed:	1522

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210702AT-LCS	Lab Control Spike	0702T11	7/2/2021 1522
210702AT-BLK	Blank	0702T14	7/2/2021 1637
BA35059	20210622.B112.WP	0702T20	7/2/2021 1906

Comments: Batch: #86CDO-210702AT

Laboratory Control Spike Recovery
EPA 8260C SOIL

APPL ID: **210702S-35059 LCS - 266881**
Batch ID: #86CDO-210702AT

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/Kg	SPK Result ug/Kg	SPK % Recovery	Recovery Limits
1,1,1,2-TETRACHLOROETHANE	50.0	50.3	101	78-125
1,1,1-TRICHLOROETHANE	50.0	50.5	101	73-130
1,1,2,2-TETRACHLOROETHANE	50.0	50.6	101	70-124
1,1,2-TRICHLOROETHANE	50.0	49.6	99.2	78-121
1,1-DICHLOROETHANE	50.0	49.4	98.8	76-125
1,1-DICHLOROETHENE	50.0	49.1	98.2	70-131
1,1-DICHLOROPROPENE	50.0	50.9	102	76-125
1,2,3-TRICHLOROBENZENE	50.0	47.0	94.0	66-130
1,2,3-TRICHLOROPROPANE	50.0	50.8	102	73-125
1,2,4-TRICHLOROBENZENE	50.0	45.1	90.2	67-129
1,2,4-TRIMETHYLBENZENE	50.0	50.0	100	75-123
1,2-DIBROMO-3-CHLOROPROPANE	50.0	52.8	106	61-132
1,2-DIBROMOETHANE	50.0	50.4	101	78-122
1,2-DICHLOROBENZENE	50.0	47.8	95.6	78-121
1,2-DICHLOROETHANE	50.0	49.5	99.0	73-128
1,2-DICHLOROPROPANE	50.0	48.1	96.2	76-123
1,3,5-TRIMETHYLBENZENE	50.0	52.2	104	73-124
1,3-DICHLOROBENZENE	50.0	46.9	93.8	77-121
1,3-DICHLOROPROPANE	50.0	49.7	99.4	77-121
1,4-DICHLOROBENZENE	50.0	46.0	92.0	75-120
2,2-DICHLOROPROPANE	50.0	50.0	100	67-133
2-BUTANONE	100	105	105	51-148
2-CHLOROTOLUENE	50.0	47.6	95.2	75-122
2-HEXANONE	100	98.6	98.6	53-145
4-CHLOROTOLUENE	50.0	47.6	95.2	72-124
4-METHYL-2-PENTANONE	100	96.9	96.9	65-135
ACETONE	100	99.0	99.0	36-164
BENZENE	50.0	49.4	98.8	77-121
BROMOBENZENE	50.0	48.9	97.8	78-121
BROMOCHLOROMETHANE	50.0	50.2	100	78-125
BROMODICHLOROMETHANE	50.0	50.0	100	75-127

Primary	SPK
Quant Method :	T0702S.M
Extraction Date :	7/2/2021
Analysis Date :	7/2/2021
Instrument :	Thor
Run :	0702T11
Initials :	DA

Comments:

Printed: 8/10/2021 4:16:16 PM

APPL Standard LCS

Laboratory Control Spike Recovery
EPA 8260C SOIL

APPL ID: **210702S-35059 LCS - 266881**
Batch ID: #86CDO-210702AT

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/Kg	SPK Result ug/Kg	SPK % Recovery	Recovery Limits
BROMOFORM	50.0	52.2	104	67-132
BROMOMETHANE	50.0	56.5	113	53-143
CARBON DISULFIDE	50.0	46.7	93.4	63-132
CARBON TETRACHLORIDE	50.0	48.9	97.8	70-135
CHLOROBENZENE	50.0	48.2	96.4	79-120
CHLOROETHANE	50.0	49.6	99.2	59-139
CHLOROFORM	50.0	49.7	99.4	78-123
CHLOROMETHANE	50.0	48.0	96.0	50-136
CIS-1,2-DICHLOROETHENE	50.0	48.9	97.8	77-123
CIS-1,3-DICHLOROPROPENE	50.0	50.9	102	74-126
DIBROMOCHLOROMETHANE	50.0	51.1	102	74-126
DIBROMOMETHANE	50.0	49.0	98.0	78-125
DICHLORODIFLUOROMETHANE	50.0	55.3	111	29-149
ETHYLBENZENE	50.0	49.9	99.8	76-122
HEXACHLOROBUTADIENE	50.0	46.7	93.4	61-135
ISOPROPYLBENZENE	50.0	51.1	102	68-134
M,P-XYLENE	100	98.9	98.9	77-124
METHYL TERT-BUTYL ETHER	50.0	49.8	99.6	73-125
METHYLENE CHLORIDE	50.0	49.1	98.2	70-128
N-BUTYLBENZENE	50.0	48.3	96.6	70-128
N-PROPYLBENZENE	50.0	48.9	97.8	73-125
NAPHTHALENE	50.0	51.8	104	62-129
O-XYLENE	50.0	50.3	101	77-123
P-ISOPROPYLTOLUENE	50.0	49.5	99.0	73-127
SEC-BUTYLBENZENE	50.0	50.4	101	73-126
STYRENE	50.0	52.0	104	76-124
TERT-BUTYLBENZENE	50.0	51.1	102	73-125
TETRACHLOROETHENE	50.0	48.3	96.6	73-128
TOLUENE	50.0	48.6	97.2	77-121
TRANS-1,2-DICHLOROETHENE	50.0	50.2	100	74-125
TRANS-1,3-DICHLOROPROPENE	50.0	51.2	102	71-130

Primary	SPK
Quant Method :	T0702S.M
Extraction Date :	7/2/2021
Analysis Date :	7/2/2021
Instrument :	Thor
Run :	0702T11
Initials :	DA

Comments:

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APPL Standard LCS

Laboratory Control Spike Recovery
EPA 8260C SOIL

APPL ID: **210702S-35059 LCS - 266881**
Batch ID: #86CDO-210702AT

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Level ug/Kg	SPK Result ug/Kg	SPK % Recovery	Recovery Limits
TRICHLOROETHENE	50.0	48.6	97.2	77-123
TRICHLOROFLUOROMETHANE	50.0	53.1	106	62-140
VINYL CHLORIDE	50.0	53.6	107	56-135
SURROGATE: 1,2-DICHLOROETHANE-	50.0	51.8	104	71-136
SURROGATE: 4-BROMOFLUOROBENZ	50.0	53.9	108	79-119
SURROGATE: DIBROMOFLUOROMETH	50.0	52.8	106	78-119
SURROGATE: TOLUENE-D8 (S)	50.0	53.1	106	85-116

Comments:

Primary	SPK
Quant Method :	T0702S.M
Extraction Date :	7/2/2021
Analysis Date :	7/2/2021
Instrument :	Thor
Run :	0702T11
Initials :	DA

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APPL Standard LCS

Form 5
Tune Summary

Lab Name: APPL Inc.
Case No:
Matrix: Soil
ID: 0702T00.D

SDG No:
Date Analyzed: 7/2/2021
Instrument: Thor
Time Analyzed: 10:54

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1		2ug/Kg VOC STD 7/2/2	0702T02.D	7/2/2021 11:38
2		5ug/Kg VOC STD 7/2/2	0702T03.D	7/2/2021 12:03
3		10ug/Kg VOC STD 7/2/	0702T04.D	7/2/2021 12:28
4		20ug/Kg VOC STD 7/2/	0702T05.D	7/2/2021 12:53
5		50ug/Kg VOC STD 7/2/	0702T06.D	7/2/2021 13:18
6		100ug/Kg VOC STD 7/2	0702T07.D	7/2/2021 13:42
7		150ug/Kg VOC STD 7/2	0702T08.D	7/2/2021 14:07
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

m/e		
50	15 - 40% of mass 95	20.2
75	30 - 60% of mass 95	51.0
95	100 - 100% of mass 95	100.0
96	5 - 9% of mass 95	7.0
173	0 - 2% of mass 174	1.2
174	50 - 200% of mass 95	100.8
175	5 - 9% of mass 174	6.7
176	94.9 - 100% of mass 174	96.9
177	5 - 9% of mass 176	7.9

Form 5
Tune Summary

Lab Name: APPL Inc. SDG No: 96645
Case No: 96645 Date Analyzed: 7/2/2021
Matrix: Soil Instrument: Thor
ID: 0702T09.D Time Analyzed: 14:32

	Client Sample No.	APPL ID.	File ID.	Date Analyzed
1		(SS) 50ug/Kg VOC STD	0702T10.D	7/2/2021 14:57
2	Lab Control Spike	210702A LCS 50ug/Kg	0702T11.D	7/2/2021 15:22
3	Blank	210702A BLK	0702T14.D	7/2/2021 16:37
4	20210622.B112.WP	BA35059S01 2.188g	0702T20.D	7/2/2021 19:06
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				

m/e		
50	15 - 40% of mass 95	18.5
75	30 - 60% of mass 95	50.1
95	100 - 100% of mass 95	100.0
96	5 - 9% of mass 95	6.4
173	0 - 2% of mass 174	0.9
174	50 - 200% of mass 95	101.4
175	5 - 9% of mass 174	7.2
176	94.6 - 100% of mass 174	96.5
177	5 - 9% of mass 176	6.4

8A
INTERNAL STANDARD AREA AND RT SUMMARY

Lab Name: APPL Inc. Contract:

Lab Code: SDG No.:

Lab File ID (Standard): 0702T06.D Date Analyzed: 2 Jul 21 13:18

Instrument ID: Thor Time Analyzed: 2 Jul 21 13:18

GC Column: ID: Heated Purge: (Y/N)

		Fluorobenzene (IS)		Chlorobenzene-D5 (IS)		1,4-Dichlorobenzene-D (IS)	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	1404110	6.46	1096330	9.92	618351	12.48
	UPPER LIMIT	2808220	6.63	2192660	10.09	1236702	12.65
	LOWER LIMIT	702055	6.29	548165	9.75	309176	12.31
	SAMPLE NO.						
01	(SS) 50ug/Kg VOC STD	1452960	6.46	1138690	9.92	629395	12.48
02	210702A LCS 50ug/Kg	1446900	6.46	1135070	9.92	636824	12.48
03	210702A BLK	1412870	6.46	1097150	9.92	627204	12.48
04	BA35059S01 2.188g	1166240	6.46	899228	9.92	468990	12.48
05	Ending CCV 50ug/Kg 7/	1240540	6.46	968662	9.92	550656	12.48
06							
07							
08							
09							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							

AREA UPPER LIMIT = +100% of internal standard area.
AREA LOWER LIMIT = -50% of internal standard area.
RT UPPER LIMIT = +0.17 minutes of internal standard RT
RT LOWER LIMIT = -0.17 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk.
* Values outside of QC limits.

EPA 8260C-M

Form 2 & 8

Surrogate Recovery

Lab Name: APPL, Inc. SDG No: 96645

Case No: 96645 Date Analyzed: 7/6/2021

Matrix: SOIL Instrument: Thor

APPL ID.	Client Sample No.	SURROGATE: 4-BROMOFLUOROBENZENE (S)					
		Limits	Result	Qualifier	Limits	Result	Qualifier
210706AT-LCS	Lab Control Spike	79-119	105				
210706AT-LCSD	Lab Control SpikeD	79-119	106				
210706AT-BLK	Blank	79-119	105				
BA35059	20210622.B112.WP	79-119	102				

Comments: Batch: #GRO86-210706AT

EPA 8260C-M

Form 4

Blank Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	7/6/2021
Matrix:	SOIL	Instrument:	Thor
Blank ID:	210706AT-BLK	Time Analyzed:	1349

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210706AT-LCS	Lab Control Spike	0706T09	7/6/2021 1300
210706AT-LCSD	Lab Control SpikeD	0706T10	7/6/2021 1325
210706AT-BLK	Blank	0706T11	7/6/2021 1349
BA35059	20210622.B112.WP	0706T27	7/6/2021 2027

Comments: Batch: #GRO86-210706AT

Method Blank
EPA 8260C MEOH SOIL -GRO

Blank Name/QCG: **210706S-35059 - 267082**
Batch ID: #GRO86-210706AT

APPL Inc.
908 North Temperance Avenu
Clovis, CA 93611

Sample Type	Analyte	Result	RL	MDL	Units	Extraction Date	Analysis Date
BLANK	GASOLINE	0.3030 U	1.000	0.3030	mg/Kg	07/06/21	07/06/21
BLANK	SURROGATE: 4-BROMOFLUOROBEN	105	79-119		%	07/06/21	07/06/21

Quant Method: TSUR703.M
Run #: 0706T11
Instrument: Thor
Sequence: 210703
Initials: DG

GC SC-Blank-REG MDLs
Printed: 8/18/2021 4:07:33 PM

EPA 8260C-M

Form 4

LCS Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	7/6/2021
Matrix:	SOIL	Instrument:	Thor
LCS ID:	210706AT-LCS	Time Analyzed:	1300

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210706AT-LCS	Lab Control Spike	0706T09	7/6/2021 1300
210706AT-LCSD	Lab Control SpikeD	0706T10	7/6/2021 1325
210706AT-BLK	Blank	0706T11	7/6/2021 1349
BA35059	20210622.B112.WP	0706T27	7/6/2021 2027

Comments: Batch: #GRO86-210706AT

Laboratory Control Spike Recoveries
EPA 8260C MEOH SOIL -GRO

APPL ID: **210706S-35059 LCS - 267082**
Batch ID: #GRO86-210706AT

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Compound Name	Spike Lvl mg/Kg	SPK Result mg/Kg	DUP Result mg/Kg	SPK % Recovery	DUP % Recovery	Recovery Limits	RPD %	RPD Limits
GASOLINE	30.0	24.4	24.6	81.3	82.0	79-122	0.82	20
SURROGATE: 4-BROMOFLUOROBENZE	0.025	0.0263	0.0265	105	106	79-119		

Comments:

Primary	SPK	DUP
Quant Method :	TSUR703.M	TSUR703.M
Extraction Date :	7/6/2021	7/6/2021
Analysis Date :	7/6/2021	7/6/2021
Instrument :	Thor	Thor
Run :	0706T09	0706T10
Initials :	DG	

6020A/3050B

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 96645

Case No: 96645 Date Analyzed: 8/14/2021

Matrix: SOIL Instrument: Megatron

Blank ID: 210706A1-BLK Time Analyzed: 1609

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210706A1-LCSD	Lab Control SpikeD	210814A	8/14/2021 1629
210706A1-LCS	Lab Control Spike	210814A	8/14/2021 1619
210706A1-BLK	Blank	210814A	8/14/2021 1609
BA35059	20210622.B112.WP	210814A	8/14/2021 1639

Comments: Batch: #62ADO-210706A1

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	PQL	MDL	Units	Prep Date	Analysis Date	QC Group
6020A	ANTIMONY (SB)	Not detected	0.2	0.07	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	ARSENIC (AS)	Not detected	0.5	0.07	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	BARIUM (BA)	0.59	0.25	0.070	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	BERYLLIUM (BE)	Not detected	1.0	0.07	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	CADMIUM (CD)	Not detected	0.1	0.03	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	CHROMIUM (CR)	Not detected	0.5	0.07	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	COBALT (CO)	Not detected	0.1	0.02	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	COPPER (CU)	0.089 J	2.5	0.04	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	LEAD (PB)	Not detected	0.1	0.02	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	MOLYBDENUM (MO)	0.053 J	0.2	0.01	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	NICKEL (NI)	Not detected	0.35	0.102	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	SELENIUM (SE)	0.064 J	0.5	0.05	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	SILVER (AG)	Not detected	0.1	0.02	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	THALLIUM (TL)	Not detected	0.1	0.02	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	VANADIUM (V)	0.44 J	0.5	0.05	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059
6020A	ZINC (ZN)	Not detected	2.5	0.75	mg/Kg	07/06/21	08/14/21	¥62ADO-210706A1-BA35059

J = Estimated value.

6020A/3050B

Form 4

LCS Summary

Lab Name: APPL, Inc. SDG No: 96645

Case No: 96645 Date Analyzed: 8/14/2021

Matrix: SOIL Instrument: Megatron

LCS ID: 210706A1-LCS Time Analyzed: 1619

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210706A1-LCSD	Lab Control SpikeD	210814A	8/14/2021 1629
210706A1-LCS	Lab Control Spike	210814A	8/14/2021 1619
210706A1-BLK	Blank	210814A	8/14/2021 1609
BA35059	20210622.B112.WP	210814A	8/14/2021 1639

Comments: Batch: #62ADO-210706A1

Laboratory Control Spike Recoveries

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/Kg	SPK Res mg/Kg	DUP Res mg/Kg	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group
EPA 6020A	ANTIMONY (SB)	25.0	22.5	23.6	90.0	94.4	4.8	20	72-124	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	ARSENIC (AS)	25.0	23.9	24.5	95.6	98.0	2.5	20	82-118	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	BARIUM (BA)	25.0	24.6	25.5	98.4	102	3.6	20	86-116	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	BERYLLIUM (BE)	5.00	4.1	4.4	82.0	88.0	7.1	20	80-120	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	CADMIUM (CD)	5.00	4.8	4.8	96.0	96.0	0.0	20	84-116	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	CHROMIUM (CR)	25.0	25.4	25.6	102	102	0.8	20	83-119	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	COBALT (CO)	25.0	25.7	25.7	103	103	0.0	20	84-115	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	COPPER (CU)	25.0	26.5	26.2	106	105	1.1	20	84-119	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	LEAD (PB)	25.0	23.4	23.9	93.6	95.6	2.1	20	84-118	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	MOLYBDENUM (MO)	25.0	23.3	24.1	93.2	96.4	3.4	20	83-114	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	NICKEL (NI)	25.0	24.9	25.1	99.6	100	0.8	20	84-119	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	SELENIUM (SE)	25.0	21.6	22.0	86.4	88.0	1.8	20	80-119	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	SILVER (AG)	10.00	9.4	9.8	94.0	98.0	4.2	20	83-118	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	THALLIUM (TL)	25.0	22.7	23.2	90.8	92.8	2.2	20	83-118	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	VANADIUM (V)	25.0	25.3	26.5	101	106	4.6	20	82-116	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350
EPA 6020A	ZINC (ZN)	50.0	46.4	47.6	92.8	95.2	2.6	20	82-119	07/06/21	08/14/21	07/06/21	08/14/21	#62ADO-210706A1-BA350

Comments:

US EPA Tune Check Report

Operator Name	Chemist_Metals
Acq/Data Batch	C:\Agilent\ICPMH\1\DATA\210814A.b
Acq. Date-Time	08/14/21 10:32:38 AM
Report Comment	C:\Agilent\ICPMH\Report Templates\en\Letter\Tune Report\New and Improved 200_8TuneCheckSampleReport.xltx
Instrument Name	G3281A JP12101628

[NoGas]

Sensitivity

Mass	Conc. [ug/l]	Count	CPS	Resp (Required) [cps/ug/l]	Resp (Flag)	RSD%	RSD% (Required)
9		71521	715212.40			1.101	5.000
24		209977	2099772.69			1.043	5.000
25		28291	282909.43			1.075	5.000
26		33416	334161.78			1.039	5.000
59		327817	3278168.91			1.105	5.000
115		604530	6045298.74			1.387	5.000
206		177347	1773472.31			1.483	5.000
207		159758	1597581.27			1.393	5.000
208		372328	3723280.57			1.625	5.000

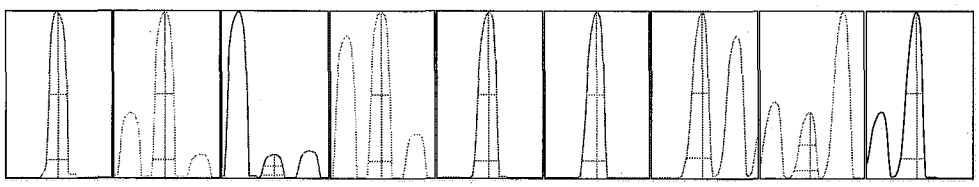
Mass	RSD% (Flag)
9	
24	
25	
26	
59	
115	
206	
207	
208	

Mass	Rep#1 Count	Rep#2 Count	Rep#3 Count	Rep#4 Count	Rep#5 Count
9	70229	72166	71347	71817	72047
24	206354	210047	210089	211462	211935
25	27801	28340	28324	28348	28641
26	32837	33643	33357	33563	33681
59	321554	329501	327879	329737	330413
115	590066	606675	606528	607432	611949
206	172659	178571	178182	178532	178792
207	155963	161059	159604	160775	161389
208	362163	373780	372183	375842	377672

Integration Time [sec] 0.1

Resolution/Axis

US EPA Tune Check Report



Mass	Peak Height	Axis	Axis (Required)	Axis (Flag)
9	136753.80	9.00	8.90 - 9.10	
24	393520.32	24.00	23.90 - 24.10	
25	54366.32	25.00	24.90 - 25.10	
26	63354.07	26.00	25.90 - 26.10	
59	644948.86	59.00	58.90 - 59.10	
115	1229147.03	115.00	114.90 - 115.10	
206	359919.48	205.95	205.90 - 206.10	
207	310218.07	206.95	206.90 - 207.10	
208	779736.95	207.95	207.90 - 208.10	

Mass	W-50%	W-10%	W-10% (Required)	W-10% (Flag)
9	0.53	0.636	0.900	
24	0.55	0.661	0.900	
25	0.54	0.656	0.900	
26	0.54	0.667	0.900	
59	0.52	0.677	0.900	
115	0.50	0.687	0.900	
206	0.49	0.712	0.900	
207	0.49	0.696	0.900	
208	0.49	0.697	0.900	

Integration Time [sec]	0.1
Acquisition Time [sec]	235
Y Axis	Linear

Tune Parameters

Plasma Parameters

Plasma Mode	---	Nebulizer Gas	0.91 L/min	Dilution Gas	0.20 L/min
RF Power	1550 W	Option Gas	0.0 %	Auxiliary Gas	---
RF Matching	1.10 V	Nebulizer Pump	0.10 rps	Plasma Gas	---
Sample Depth	8.0 mm	S/C Temp	2 °C		

Lens Parameters

Extract 1	0.0 V	Omega Lens	9.2 V	Deflect	12.6 V
Extract 2	-165.0 V	Cell Entrance	-30 V	Plate Bias	-40 V
Omega Bias	-75 V	Cell Exit	-50 V		

Cell Parameters

Use Gas	No	3rd Gas Flow	---	Energy Discrimination	5.0 V

US EPA Tune Check Report

He Flow	0.0 mL/min	OctP Bias	-8.0 V		
H2 Flow	0.0 mL/min	OctP RF	190 V		
QP Parameters					
Mass Gain	120	Axis Gain	0.9990	QP Bias	-3.0 V
Mass Offset	129	Axis Offset	0.02		
Hardware Settings					
Torch					
Torch H	-0.3 mm	Torch V	0.0 mm		
EM					
Discriminator	4.8 mV	Analog HV	1847 V	Pulse HV	1639 V

210624A1-LCSD	Lab Control SpikeD	210630S	6/30/2021	1249
210624A1-LCS	Lab Control Spike	210630S	6/30/2021	1248
BA35059	20210622.B112.WP	210630S	6/30/2021	1323
210624A1-BLK	Blank	210630S	6/30/2021	1229

Comments: Batch: #HGDOD-210624A

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	RL	MDL	Units	Prep Date	Analysis Date	QC Group
EPA 7471	MERCURY (HG)	0.010 U	0.10	0.010	mg/Kg	06/24/21	06/30/21	HGDOD-210624A1-BA35059

Metals SC-Blank-REG MDLs
Printed: 8/17/2021 7:02:15 PM

EPA 7471B

Form 4

LCS Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	6/30/2021
Matrix:	SOIL	Instrument:	Freddie
LCS ID:	210624A1-LCS	Time Analyzed:	1248

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210624A1-LCSD	Lab Control SpikeD	210630S	6/30/2021 1249
210624A1-LCS	Lab Control Spike	210630S	6/30/2021 1248
BA35059	20210622.B112.WP	210630S	6/30/2021 1323
210624A1-BLK	Blank	210630S	6/30/2021 1229

Comments: Batch: #HGDOD-210624A

Laboratory Control Spike Recoveries

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/Kg	SPK Res mg/Kg	DUP Res mg/Kg	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group
EPA 7471B	MERCURY (HG)	0.667	0.79	0.80	118	120	1.3	20	80-124	06/24/21	06/30/21	06/24/21	06/30/21	#HGDOD-210624A1-BA35

Comments:

ORGANICS

Calibration Data

TPH Extractables
DOC0702

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 07/02/21
Matrix: Water Instrument: Apollo
Initials: MB

			702005.D	702006.D	702007.D	702008 D	702009.D	702010 D	702011.D									
		Compound	1	2	3	4	5	6	7				Avg	%RSD	Type	r^2	Q
1	HATM	Diesel (C10-C24)	3016894	1951949	2014939	2067917	2039722	2119264	2139867				2192936	17	HATM		
2	HBTM	Motor Oil (C24-C40)		1676406	1491952	1522421	1492860	1546113	1554117				1547312	4.4	HBTM		
3	SA	Ortho-Terphenyl(S)	2636466	2540006	2431557	2529925	2422677	2435838	2499496				2499423	3.1	SA		
4	SA	Octacosane(S)	1728504	1650255	1588691	1695307	1644244	1699403	1705536				1673134	2.9	SA		
5																	
6																	
7																	
8																	
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0.776978

TPH Extractables
DOC0702

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 07/02/21
Instrument: Apollo
Initial Cal. Date: 07/02/21
Data File: 702012.D

		Compound	MEAN	CCRF	%D		%Drift
1	HATM	Diesel (C10-C24)	2192940	2197080	0.19	HATM	
2	HBTM	Motor Oil (C24-C40)	1547310	1697380	9.7	HBTM	
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40							
		Average			4.9		

TPH Extractables
DOC0702

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 07/09/21
Instrument: Apollo
Initial Cal. Date: 07/02/21
Data File: 709003.D

		Compound	MEAN	CCRF	%D	%Drift	
1	HATM	Diesel (C10-C24)	2192940	2372060	8.2	HATM	
2	HBTM	Motor Oil (C24-C40)	1547310	1749050	13	HBTM	
3	SA	Ortho-Terphenyl(S)	2499420	2856620	14	SA	
4	SA	Octacosane(S)	1673130	1917690	15	SA	
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40							
		Average			12.6		

TPH Extractables
DOC0702

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 07/09/21
Instrument: Apollo
Initial Cal. Date: 07/02/21
Data File: 709020.D

		Compound	MEAN	CCRF	%D	%Drift	
1	HATM	Diesel (C10-C24)	2192940	2221940	1.3	HATM	
2	HBTM	Motor Oil (C24-C40)	1547310	1653990	6.9	HBTM	
3	SA	Ortho-Terphenyl(S)	2499420	2785070	11	SA	
4	SA	Octacosane(S)	1673130	1845020	10	SA	
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		Average			7.3		

TPH Extractables
DOC0702

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 07/09/21
Instrument: Apollo
Initial Cal. Date: 07/02/21
Data File: 709031.D

		Compound	MEAN	CCRF	%D	%Drift	
1	HATM	Diesel (C10-C24)	2192940	2409010	9.9	HATM	
2	HBTM	Motor Oil (C24-C40)	1547310	1767040	14	HBTM	
3	SA	Ortho-Terphenyl(S)	2499420	2946820	18	SA	
4	SA	Octacosane(S)	1673130	1938510	16	SA	
5							
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		Average			14.5		

TPH Extractables
DOC0702

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 07/10/21
Instrument: Apollo
Initial Cal. Date: 07/02/21
Data File: 709045.D

		Compound	MEAN	CCRF	%D	%Drift	
1	HATM	Diesel (C10-C24)	2192940	2323050	5.9	HATM	
2	HBTM	Motor Oil (C24-C40)	1547310	1741480	13	HBTM	
3	SA	Ortho-Terphenyl(S)	2499420	2804430	12	SA	
4	SA	Octacosane(S)	1673130	1852770	11	SA	
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40							
		Average			10.5		

ORGANICS

Raw Data

Organic Extraction Worksheet

Method	THC Sonication Extraction 3550B	Extraction Set	210628A	Extraction Method	SON004	Units	mL

Spiked ID 1	Diesel Motor Oil Mix 6-2-21 6-2-22		Surrogate ID 1	THC Surrogate 6-23-21 6-23-22	
Spiked ID 2	Diesel Motor Oil Mix 6-28-21 6-28-22		Surrogate ID 2		
Spiked ID 3			Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	YES	
Spiked ID 7			Ext. Start Time:	06/28/21 8:45	
Spiked ID 8			Ext. End Time:	06/29/21 11:40	
			GC Requires Extract By:		

pH1			Water Bath Temp 1 °C	75/73 E-WB6 °C
pH2			Water Bath Temp 2 °C	
pH3			Water Bath Temp 3 °C	

Spiked By: KY **Date** 06/28/21 **Witnessed By:** SR **Date** 06/28/21

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	210628A Blk				0.250	1	10.02	5	NA	06/28/21 8:45	
						equip	E-S1.1 E-WB6				
2	210628A LCS-1		0.080	1	0.250	1	10.09	5	NA	06/28/21 8:45	
						equip	E-S1.2 E-WB6				
3	210628A LCSD-1		0.080	1	0.250	1	10.10	5	NA	06/28/21 8:45	
						equip	E-S2 E-WB6				
4	BA34680	BA34680S04			0.250	1	10.23	5	NA	06/28/21 8:45	96564
						equip	E-S6 E-WB6				
5	BA34681	BA34681S05			0.250	1	10.15	5	NA	06/28/21 8:45	96564
						equip	E-S7 E-WB6				
6	BA34682	BA34682S05			0.250	1	10.59	5	NA	06/28/21 8:45	96564
						equip	e-s8 E-WB6				
7	BA34683	BA34683S05			0.250	1	10.10	5	NA	06/28/21 8:45	96564
						equip	E-S1.1 E-WB6				
8	BA34684	BA34684S04			0.250	1	10.08	5	NA	06/28/21 8:45	96564
						equip	E-S1.2 E-WB6				
9	BA34685	BA34685S05			0.250	1	10.31	5	NA	06/28/21 8:45	96564
						equip	E-S2 E-WB6				
10	BA34686 MS-1	BA34686S10	0.080	1	0.250	1	10.28	5	NA	06/28/21 8:45	96564
						equip	E-S6 E-WB6				
11	BA34686 MSD-1	BA34686S10	0.080	2	0.250	1	10.08	5	NA	06/28/21 8:45	96564
						equip	E-S7 E-WB6				
12	BA34686	BA34686S10			0.250	1	10.18	5	NA	06/28/21 8:45	96564
						equip	c-s8 E-WB6				
13	BA34687	BA34687S04			0.250	1	10.15	5	NA	06/28/21 8:45	96564
						equip	E-S1.1 E-WB6				
14	BA34688	BA34688S04			0.250	1	10.36	5	NA	06/28/21 8:45	96564
						equip	E-S1.2 E-WB6				
15	BA34689	BA34689S04			0.250	1	10.05	5	NA	06/28/21 8:45	96564
						equip	E-S2 E-WB6				
16	BA34691	BA34691S04			0.250	1	10.57	5	NA	06/28/21 8:45	96565
						equip	E-S6 E-WB6				

Solvent and Lot#	
Scale Balance #	wb2
SAND	20i215202
Dicholormethane	60338
Filter Paper	1722226

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	MB
Date	
Time	
Refrigerator	HOBART

	Technician's Initials
Scanned By	CG
Sample Preparation	CG
Extraction	SR
Concentration	SR

Modified	07/07/21 10:04:56 AM

Reviewed By: KY **Date** 07/07/21

Organic Extraction Worksheet

Method	THC Sonication Extraction 3550B	Extraction Set	210628A	Extraction Method	SON004	Units	mL

Spiked ID 1	Diesel Motor Oil Mix 6-2-21 6-2-22		Surrogate ID 1	THC Surrogate 6-23-21 6-23-22	
Spiked ID 2	Diesel Motor Oil Mix 6-28-21 6-28-22		Surrogate ID 2		
Spiked ID 3			Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	YES	
Spiked ID 7			Ext. Start Time:	06/28/21 8:45	
Spiked ID 8			Ext. End Time:	06/29/21 11:40	
			GC Requires Extract By:		

pH1			Water Bath Temp 1 °C	75/73 E-WB6 °C
pH2			Water Bath Temp 2 °C	
pH3			Water Bath Temp 3 °C	

Spiked By: KY **Date** 06/28/21 **Witnessed By:** SR **Date** 06/28/21

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
17	BA34692	BA34692S05			0.250	1	10.17	5	NA	06/28/21 8:45	96565
						equip	E-S7 E-WB6				
18	BA34693	BA34693S05			0.250	1	10.63	5	NA	06/28/21 8:45	96565
						equip	e-s8 E-WB6				
19	BA35059	BA35059S04			0.250	1	10.05	5	NA	06/29/21 8:30	96645
						equip	E-S1.1 E-WB6				
20	BA35098	BA35098S13			0.250	1	10.66	5	NA	06/29/21 8:30	96655
						equip	E-S1.2 E-WB6				

Solvent and Lot#	
Scale Balance #	wb2
SAND	20i215202
Dicholormethane	60338
Filter Paper	1722226

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	MB
Date	
Time	
Refrigerator	HOBART

	Technician's Initials
Scanned By	CG
Sample Preparation	CG
Extraction	SR
Concentration	SR

Modified	07/07/21 10:04:56 AM

Reviewed By: KY **Date** 07/07/21

Injection Log

Directory: G:\APOLLO\DATA\210702\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	5	702005.D	1	DMO STD-1 07/02/21	water	7-2-21 14:35:23
2	6	702006.D	1	DMO STD-2 07/02/21	water	7-2-21 15:03:41
3	7	702007.D	1	DMO STD-3 07/02/21	water	7-2-21 15:32:00
4	8	702008.D	1	DMO STD-4 07/02/21	water	7-2-21 16:01:03
5	9	702009.D	1	DMO STD-5 07/02/21	water	7-2-21 16:29:22
6	10	702010.D	1	DMO STD-6 07/02/21	water	7-2-21 16:57:44
7	11	702011.D	1	DMO STD-7 07/02/21	water	7-2-21 17:26:03
8	12	702012.D	1	DMO STD-SS 07/02/21	water	7-2-21 17:54:24
9	3	709003.D	1	Diesel Motor Oil 06/30/21	water	7-9-21 10:00:05
10	13	709013.D	499.002	210628A BLK 5/10.02	soil	7-9-21 14:44:12
11	14	709014.D	495.54	210628A LCS-1 5/10.09	soil	7-9-21 15:12:33
12	15	709015.D	495.05	210628A LCSD-1 5/10.10	soil	7-9-21 15:40:59
13	20	709020.D	1	Diesel Motor Oil 06/30/21	water	7-9-21 18:02:45
14	31	709031.D	1	Diesel Motor Oil 06/30/21	water	7-9-21 23:14:42
15	33	709033.D	497.512	BA35059S04 5/10.05	soil	7-10-21 0:11:26
16	45	709045.D	1	Diesel Motor Oil 06/30/21	water	7-10-21 5:50:42

ORGANICS

Calibration Data

Organochlorine Pesticides Analysis by
EPA Method 608/8081 OCL0729

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 07/29/21
Matrix: Water Instrument: Ethel
Initials:

		Compound	1	2	3	4	5	6	7	8			Avg	%RSD	Type	r^2	Q
			0729002.D	0729003.D	0729004.D	0729005.D	0729006.D	0729007.D	0729008.D	0729009.D							
1	S	TCMX	139176000	133111167	167449400	139050120	140698685	144525960	146991408	144576542			144447410	7.1	S		
2	TM	HEXACHLOROBENZENE	210806000	179595833	228662500	177787760	174312285	173894480	175676910	170863116			186449861	11	TM		
3	TM	A-BHC	63299500	47851500	60590100	52726930	54952995	57688133	60640310	60940650			57336265	9.0	TM		
4	TM	B-BHC	49671500	58954667	68293200	48356520	48516850	49225227	50262770	49944186			52903115	13	TM		
5	TM	G-BHC(LINDANE)	60476500	49816000	63894200	54826970	56725305	58867753	61618970	61923078			58518597	7.8	TM		
6	TM	D-BHC	35053500	30494833	37855000	36307880	39432880	39093827	34770480	33092838			35762655	8.6	TM		
7	TM	HEPTACHLOR	96536500	97109667	125549200	105498310	107766475	108559270	112045130	110795444			107982499	8.5	TM		
8	TM	ALDRIN	177188000	170573000	222502200	214151570	230155725	235254133	243760673	241870006			216931913	13	TM		
9	TM	HEPTACHLOR EPOXIDE	155001500	146449167	190827600	157455210	161398830	161190167	165638900	163916794			162734771	7.9	TM		
10	TM	G-CHLORDANE	167084000	151674833	198365000	171384280	178444105	179572747	186408730	185093306			177253375	7.9	TM		
11	TM	A-ENDOSULFAN	134800750	120337583	155823850	139200870	142531758	140243410	143373526	140163915			139559458	7.1	TM		
12	TM	A-CHLORDANE	175572500	153205000	197037700	166973650	172210020	172743040	178204285	176676840			174077879	7.0	TM		
13	TM	P,P-DDE	148511500	128642000	168805500	158227510	169020250	173200077	181727923	180297852			163554076	11	TM		
14	TM	DIELDRIN	138414000	134881667	177675500	160264570	169150970	172207477	179566158	177732664			163736626	11	TM		
15	TM	ENDRIN	106773500	97868000	124574900	106695680	110694200	111593147	115444705	114764032			111051020	7.0	TM		
16	TM	B-ENDOSULFAN	62460500	57805167	75197000	62438320	63219105	62885270	64822950	64431322			64157454	7.7	TM		
17	TM	P,P-DDD	100390000	84805500	112553600	95889620	98688265	99150797	102537298	101824000			99479885	7.7	TM		
18	TM	ENDRIN ALDEHYDE	53214000	72583667	95906600	76949150	79632895	77953850	79383443	78121274			76718110	15	TM		
19	TM	P,P-DDT	94647000	76291000	102190400	86360070	85854175	87144487	87984035	94561668			89379104	8.7	TM		
20	TM	ENDOSULFAN SULFATE		66735000	118927300	88026260	88248750	88271550	91909983	91343264			90494587	17	TM		
21	TM	ENDRIN KETONE	42244000	41922167	58420800	47846480	47813190	47491317	48478928	48362284			47822396	11	TM		
22	TM	METHOXYCHLOR	36097500	41794333	56493000	45228630	43019795	42402590	41966845	41440732			43555428	13	TM		
23	S	DECA	296633000	220526500	285725500	212821470	207982845	197794637	198141230	193008498			226579210	18	S		
24		Signal #2											0	0			
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6.738714

Organochlorine Pesticides Analysis by
EPA Method 608/8081 OCL0729

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 07/29/21
Matrix: Water Instrument: Ethel Initials:

		Compound	1	2	3	4	5	6	7	8			Avg	%RSD	Type	r^2	Q
			0729002.D	0729003.D	0729004.D	0729005.D	0729006.D	0729007.D	0729008.D	0729009.D							
36	S	TCMX #2	227826000	222945833	250509400	194098000	191181180	192336813	183163843	188042966			206263004	12	S		
37	TM	HEXACHLOROBENZENE #2	296764000	275938333	319166100	233234660	227580710	224844133	213925013	219382004			251354369	16	TM		
38	TM	A-BHC #2	288877500	279853167	331623800	263094130	264435055	268157697	256908660	263950592			277112575	8.8	TM		
39	TM	B-BHC #2	138242000	119355500	131599500	108161110	106179945	104770817	101027610	104487260			114227968	12	TM		
40	TM	G-BHC(LINDANE) #2	280479000	254848000	293662800	234083670	234437895	234879223	226759630	235100092			249281289	10.0	TM		
41	TM	D-BHC #2	258429500	247230833	288473300	240028010	243427130	242129860	235322605	240728738			249471247	6.9	TM		
42	TM	HEPTACHLOR #2	275431500	248085167	281992600	229307580	226740710	225208607	217323973	220422054			240564024	11	TM		
43	TML	ALDRIN #2	289609000	304803667	346122500	279219690	277723890	273975933	267664505	267477276			288324558	9.2	TM	1.000	
44	TM	HEPTACHLOR EPOXIDE #2	250362000	225111167	268643100	209978340	206927535	203211733	198722170	195941996			219862255	12	TM		
45	TM	G-CHLORDANE #2	229517000	216290167	256614500	210596450	207887315	205005157	199320533	197278148			215313659	9.1	TM		
46	TM	A-ENDOSULFAN #2	228911000	206509333	233473500	197362650	192842085	190799800	184071763	183487730			202182233	9.6	TM		
47	TM	A-CHLORDANE #2	209905500	200072750	232481350	186076350	181386145	174089753	169150776	163691864			189606811	12	TM		
48	TM	P,P-DDE #2	240657000	219521833	259375000	217532220	215363265	210289757	205318445	202856856			221364297	8.7	TM		
49	TM	DIELDRIN #2	232369500	224052333	269034600	218895250	217347990	214825877	207507043	205308582			223667647	9.1	TM		
50	TM	ENDRIN #2	121479000	156341833	181191800	162069600	161834630	156806850	153243893	152247536			155651893	11	TM		
51	TM	B-ENDOSULFAN #2	279470500	199815667	226682600	191944390	191510015	185678910	179816623	178909162			204228483	17	TM		
52	TM	P,P-DDD #2	193775500	176129667	213572800	186038530	186001465	181821823	177352728	176711266			186425472	6.7	TM		
53	TM	ENDRIN ALDEHYDE #2	118427500	139201333	154552400	136965240	141415085	135752623	132881530	130916532			136264030	7.5	TM		
54	TM	P,P-DDT #2	211087500	201419500	231499100	196506110	197319925	193953680	187542443	183473346			200350200	7.5	TM		
55	TM	ENDOSULFAN SULFATE #2		185793000	221182200	180459200	178615130	173682730	167651473	165423872			181829658	10	TM		
56	TM	ENDRIN KETONE #2	163035750	173012417	206824350	175273195	172019263	168575165	164034588	161254432			173003645	8.4	TM		
57	TM	METHOXYCHLOR #2	106309000	124543333	135493900	114267820	111190595	107031023	103665023	100801062			112912720	10	TM		
58	S	DECA #2	266224500	190126167	226659900	193793560	188338430	180202890	170363520	168303118			198001511	17	S		
59																	
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6.879512

Organochlorine Pesticides Analysis by
EPA Method 608/8081 OCL0729

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 07/29/21
Instrument: Ethel
Initial Cal. Date: 07/29/21
Data File: 0729010.D

		Compound	MEAN	CCRF	%D	%Drift	
1	TM	HEXACHLOROBENZENE	186450000	182084000	2.3	TM	
2	TM	A-BHC	57336300	55065700	4.0	TM	
3	TM	B-BHC	52903100	50444400	4.6	TM	
4	TM	G-BHC(LINDANE)	58518600	58784900	0.46	TM	
5	TM	D-BHC	35762700	35292000	1.3	TM	
6	TM	HEPTACHLOR	107982000	110338000	2.2	TM	
7	TM	ALDRIN	216932000	182037000	16	TM	
8	TM	HEPTACHLOR EPOXIDE	162735000	161657000	0.66	TM	
9	TM	G-CHLORDANE	177253000	177348000	0.05	TM	
10	TM	A-ENDOSULFAN	139559000	141297000	1.2	TM	
11	TM	A-CHLORDANE	174078000	177142000	1.8	TM	
12	TM	P,P-DDE	163554000	174555000	6.7	TM	
13	TM	DIELDRIN	163737000	174123000	6.3	TM	
14	TM	ENDRIN	111051000	111278000	0.20	TM	
15	TM	B-ENDOSULFAN	64157500	64507800	0.55	TM	
16	TM	P,P-DDD	99479900	101099000	1.6	TM	
17	TM	ENDRIN ALDEHYDE	76718100	82772000	7.9	TM	
18	TM	P,P-DDT	89379100	90031700	0.73	TM	
19	TM	ENDOSULFAN SULFATE	90494600	90925700	0.48	TM	
20	TM	ENDRIN KETONE	47822400	47871800	0.10	TM	
21	TM	METHOXYCHLOR	43555400	43061900	1.1	TM	
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40							
		Average			2.9		

Organochlorine Pesticides Analysis by
EPA Method 608/8081 OCL0729

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 07/29/21
Instrument: Ethel
Cal. Date: 07/29/21
Data File: 0729010.D

		Compound	MEAN	CCRF	%D		%Drift	
41	TM	HEXACHLOROBENZENE	251354000	232725000	7.4	TM		
42	TM	A-BHC	277113000	259711000	6.3	TM		
43	TM	B-BHC	114228000	105780000	7.4	TM		
44	TM	G-BHC(LINDANE)	249281000	236109000	5.3	TM		
45	TM	D-BHC	249471000	237451000	4.8	TM		
46	TM	HEPTACHLOR	240564000	222954000	7.3	TM		
47	TML	ALDRIN	288325000	216520000	25	TML	21	*
48	TM	HEPTACHLOR EPOXIDE	219862000	198244000	9.8	TM		
49	TM	G-CHLORDANE	215314000	196896000	8.6	TM		
50	TM	A-ENDOSULFAN	202182000	179373000	11	TM		
51	TM	A-CHLORDANE	189607000	176157000	7.1	TM		
52	TM	P,P-DDE	221364000	209216000	5.5	TM		
53	TM	DIELDRIN	223668000	212049000	5.2	TM		
54	TM	ENDRIN	155652000	156008000	0.23	TM		
55	TM	B-ENDOSULFAN	204228000	182072000	11	TM		
56	TM	P,P-DDD	186425000	181413000	2.7	TM		
57	TM	ENDRIN ALDEHYDE	136264000	139050000	2.0	TM		
58	TM	P,P-DDT	200350000	186963000	6.7	TM		
59	TM	ENDOSULFAN SULFATE	181830000	170833000	6.0	TM		
60	TM	ENDRIN KETONE	173004000	165357000	4.4	TM		
61	TM	METHOXYCHLOR	112913000	105921000	6.2	TM		
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		Average			7.1			

Toxaphene analysis by
EPA Method 608/8081 TOXF0729

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 07/29/21
Matrix: Water Instrument: Ethel
Initials:

		Compound	1	2	3	4	5	6	7	8			Avg	%RSD	Type	r^2	Q
			0729012.D	0729013.D	0729014.D	0729015.D	0729016.D	0729017.D	0729018.D	0729019.D							
1	ANM	Toxaphene Total		2820390	2790325	2332980	2224355	2468452	2507619	2325609			2495676	9.3	ANM		
2	L2AK	Toxaphene	896721	698502	685121	561012	538530	602264	616526	570204			646110	18	L2AK		
3	L2AK	Toxaphene {2}		694850	635465	446328	466356	525281	539242	499588			543873	17	L2AK		
4	L2AK	Toxaphene {3}		542550	612640	580220	483425	535854	546247	503761			543528	8.0	L2AK		
5	L2AK	Toxaphene {4}		319610	292525	214606	222431	238628	219660	209766			245318	18	L2AK		
6	L2AK	Toxaphene {5}	877308	564876	564575	530815	513614	566424	585943	542291			593231	20	L2AK		
7		Signal #2											0	0			
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2.549403

Toxaphene analysis by
EPA Method 608/8081 TOXF0729

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 07/29/21
Matrix: Water Instrument: Ethel Initials:

			0729012.D	0729013.D	0729014.D	0729015.D	0729016.D	0729017.D	0729018.D	0729019.D								
		Compound	1	2	3	4	5	6	7	8			Avg	%RSD	Type	r^2	Q
36	ANM	Toxaphene Total #2	6522395	5221807	4881878	3867986	4519349	4471408	4047209	3828612			4670080	19	ANM		
37	L2AK	Toxaphene #2	705228	432191	462211	416488	644360	642702	558054	529591			548853	20	L2AK		
38	L2AK	Toxaphene {2} #2		766620	761255	602402	665181	657182	583859	581129			659661	12	L2AK		
39	L2AK	Toxaphene {3} #2		1655520	1487470	1155134	1246393	1241418	1144752	1086678			1288195	16	L2AK		
40	L2AK	Toxaphene {4} #2	1186230	1130600	1015685	820959	949907	953299	841263	777150			959386	15	L2AK		
41	L2AK	Toxaphene {5} #2		1236880	1155255	873002	1013508	976808	919281	854065			1004114	14	L2AK		
42																	
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2.754291

Toxaphene analysis by
EPA Method 608/8081 TOXF0729

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 07/29/21
Instrument: Ethel
Initial Cal. Date: 07/29/21
Data File: 0729020.D

		Compound	MEAN	CCRF	%D	%Drift	
1	ANM	Toxaphene Total	2495680	2634100	5.5	ANM	
2	L2AK	Toxaphene	646110	628856	2.7	L2AK	
3	L2AK	Toxaphene {2}	543873	559106	2.8	L2AK	
4	L2AK	Toxaphene {3}	543528	578234	6.4	L2AK	
5	L2AK	Toxaphene {4}	245318	254032	3.6	L2AK	
6	L2AK	Toxaphene {5}	593231	613876	3.5	L2AK	
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40							
		Average			4.1		

Toxaphene analysis by
EPA Method 608/8081 TOXF0729

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 07/29/21
Instrument: Ethel
Cal. Date: 07/29/21
Data File: 0729020.D

		Compound	MEAN	CCRF	%D	%Drift	
41	ANM	Toxaphene Total	4670080	4657520	0.27	ANM	
42	L2AK	Toxaphene	548853	439228	20	L2AK	
43	L2AK	Toxaphene {2}	659661	727054	10	L2AK	
44	L2AK	Toxaphene {3}	1288190	1364760	5.9	L2AK	
45	L2AK	Toxaphene {4}	959386	1017500	6.1	L2AK	
46	L2AK	Toxaphene {5}	1004110	1108970	10	L2AK	
47							
48							
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		Average			8.7		

Technical Chlordane Analysis by
EPA Method 608/8081 TCHL0729

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 07/29/21
Matrix: Water Instrument: Ethel
Initials:

			0729012.D	0729013.D	0729014.D	0729015.D	0729016.D	0729017.D									
		Compound	1	2	3	4	5	6					Avg	%RSD	Type	r^2	Q
1	ANM	T. CHLORDANE Total	15341438	14502909	14835993	13857299	13408630	15030257					14496088	5.1	ANM		
2	L2AK	T. CHLORDANE	2181294	2061523	2213535	1951402	1973694	2183460					2094151	5.5	L2AK		
3	L2AK	T. CHLORDANE {2}	1451528	1389262	1501936	1324648	1294516	1447318					1401535	5.7	L2AK		
4	L2AK	T. CHLORDANE {3}	3192414	2872001	3007752	2619079	2541434	2760128					2832135	8.6	L2AK		
5	L2AK	T. CHLORDANE {4}	5753568	5782720	5569353	5701078	5374732	6121128					5717096	4.3	L2AK		
6	L2AK	T. CHLORDANE {5}	2762635	2397402	2543418	2261092	2224254	2518223					2451170	8.2	L2AK		
7		Signal #2											0	0			
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1.068564

Technical Chlordane Analysis by
EPA Method 608/8081 TCHL0729

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 07/29/21
Matrix: Water Instrument: Ethel Initials:

			0729012.D	0729013.D	0729014.D	0729015.D	0729016.D	0729017.D									
		Compound	1	2	3	4	5	6					Avg	%RSD	Type	r^2	Q
36	ANM	T. CHLORDANE Total #2	34003685	32298516	33110052	29073528	30408590	30885147					31629920	5.8	ANM		
37	L2AK	T. CHLORDANE #2	4606176	4187257	4178763	3644315	3814172	3768027					4033118	8.9	L2AK		
38	L2AK	T. CHLORDANE {2} #2	4572750	4299134	4440229	4016832	4160816	4254591					4290725	4.6	L2AK		
39	L2AK	T. CHLORDANE {3} #2	5119306	4767885	4958498	4367959	4481654	4439733					4689172	6.6	L2AK		
40	L2AK	T. CHLORDANE {4} #2	11177517	11001168	11164923	9834509	10502995	10755380					10739415	4.8	L2AK		
41	L2AK	T. CHLORDANE {5} #2	8527937	8043072	8367639	7209914	7448954	7667415					7877488	6.6	L2AK		
42																	
43																	
44																	
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1.064608

Technical Chlordane Analysis by
EPA Method 608/8081 TCHL0729

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 07/29/21
Instrument: Ethel
Initial Cal. Date: 07/29/21
Data File: 0729020.D

		Compound	MEAN	CCRF	%D	%Drift	
1	ANM	T. CHLORDANE Total	14496100	15720800	8.4	ANM	
2	L2AK	T. CHLORDANE	2094150	2229010	6.4	L2AK	
3	L2AK	T. CHLORDANE {2}	1401530	1510090	7.7	L2AK	
4	L2AK	T. CHLORDANE {3}	2832130	2972540	5.0	L2AK	
5	L2AK	T. CHLORDANE {4}	5717100	6476740	13	L2AK	
6	L2AK	T. CHLORDANE {5}	2451170	2532390	3.3	L2AK	
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		Average			7.3		

Technical Chlordane Analysis by
EPA Method 608/8081 TCHL0729

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 07/29/21
Instrument: Ethel
Cal. Date: 07/29/21
Data File: 0729020.D

		Compound	MEAN	CCRF	%D		%Drift
41	ANM	T. CHLORDANE Total	31629900	32799100	3.7	ANM	
42	L2AK	T. CHLORDANE	4033120	4152540	3.0	L2AK	
43	L2AK	T. CHLORDANE {2}	4290730	4620340	7.7	L2AK	
44	L2AK	T. CHLORDANE {3}	4689170	4869400	3.8	L2AK	
45	L2AK	T. CHLORDANE {4}	10739400	11103500	3.4	L2AK	
46	L2AK	T. CHLORDANE {5}	7877490	8053370	2.2	L2AK	
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		Average			4.0		

Data File Name:	**0729001.D**
Data File Path:	**G:\ETHEL\DATA\210729**
Operator:	**BT**
Date Acquired:	**29 Jul 2021 13:49**
Method File:	**OCL0729.M**
Sample Name:	**OCLHX Deg Check 10/01/20**
Vial Number:	**1**
Instrument Name:	**Ethel**

#	Name	Ret Time	Target Response
1)	P,P-DDT	9.64	180826000
2)	P,P-DDD	9.17	425976
3)	P,P-DDE	8.27	465935

Breakdown **0.49**

#	Name	Ret Time	Target Response
1)	P,P-DDT #2	11.35	379798000
2)	P,P-DDD #2	10.72	941504
3)	P,P-DDE #2	9.76	758561

Breakdown **0.45**

#	Name	Ret Time	Target Response
1)	ENDRIN	9.04	120690000
2)	ENDRIN ALDEHYDE	9.86	0
3)	ENDRIN KETONE	11.44	136750

Breakdown **0.113**

#	Name	Ret Time	Target Response
1)	ENDRIN #2	10.56	158190000
2)	ENDRIN ALDEHYDE #2	11.27	181101
3)	ENDRIN KETONE #2	12.86	688042

Breakdown **0.55**

Data File Name:	**0803002.D**
Data File Path:	**G:\ETHEL\DATA\210803**
Operator:	**BT**
Date Acquired:	**03 Aug 2021 17:30**
Method File:	**OCL0729.M**
Sample Name:	**OCLHX Deg Check 10/01/20**
Vial Number:	**2**
Instrument Name:	**Ethel**

#	Name	Ret Time	Target Response
1)	P,P-DDT	9.64	187514000
2)	P,P-DDD	9.17	372609
3)	P,P-DDE	8.27	452543

Breakdown **0.44**

#	Name	Ret Time	Target Response
1)	P,P-DDT #2	11.35	295923000
2)	P,P-DDD #2	10.72	1166890
3)	P,P-DDE #2	9.76	806841

Breakdown **0.66**

#	Name	Ret Time	Target Response
1)	ENDRIN	9.04	117520000
2)	ENDRIN ALDEHYDE	9.86	0
3)	ENDRIN KETONE	11.44	283912

Breakdown **0.24**

#	Name	Ret Time	Target Response
1)	ENDRIN #2	10.56	130463000
2)	ENDRIN ALDEHYDE #2	11.27	0
3)	ENDRIN KETONE #2	12.86	954184

Breakdown **0.73**

Organochlorine Pesticides Analysis by
EPA Method 608/8081 OCL0729

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/04/21
Instrument: Ethel
Initial Cal. Date: 07/29/21
Data File: 0803028.D

		Compound	MEAN	CCRF	%D	%Drift	
1	S	TCMX	144447000	126827000	12	S	
2	TM	HEXACHLOROBENZENE	186450000	164381000	12	TM	
3	TM	A-BHC	57336300	52830100	7.9	TM	
4	TM	B-BHC	52903100	50379000	4.8	TM	
5	TM	G-BHC(LINDANE)	58518600	54865900	6.2	TM	
6	TM	D-BHC	35762700	31678400	11	TM	
7	TM	HEPTACHLOR	107982000	101269000	6.2	TM	
8	TM	ALDRIN	216932000	190214000	12	TM	
9	TM	HEPTACHLOR EPOXIDE	162735000	145938000	10	TM	
10	TM	G-CHLORDANE	177253000	156242000	12	TM	
11	TM	A-ENDOSULFAN	139559000	133260000	4.5	TM	
12	TM	A-CHLORDANE	174078000	153214000	12	TM	
13	TM	P,P-DDE	163554000	144897000	11	TM	
14	TM	DIELDRIN	163737000	147977000	9.6	TM	
15	TM	ENDRIN	111051000	101165000	8.9	TM	
16	TM	B-ENDOSULFAN	64157500	70941300	11	TM	
17	TM	P,P-DDD	99479900	93820600	5.7	TM	
18	TM	ENDRIN ALDEHYDE	76718100	86292600	12	TM	
19	TM	P,P-DDT	89379100	82553400	7.6	TM	
20	TM	ENDOSULFAN SULFATE	90494600	81841600	9.6	TM	
21	TM	ENDRIN KETONE	47822400	49251900	3.0	TM	
22	TM	METHOXYCHLOR	43555400	45230900	3.8	TM	
23	S	DECA	226579000	219643000	3.1	S	
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		Average			8.5		

Organochlorine Pesticides Analysis by
EPA Method 608/8081 OCL0729

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/04/21
Instrument: Ethel
Cal. Date: 07/29/21
Data File: 0803028.D

		Compound	MEAN	CCRF	%D		%Drift	
41	S	TCMX	206263000	189890000	7.9	S		
42	TM	HEXACHLOROBENZENE	251354000	222921000	11	TM		
43	TM	A-BHC	277113000	253106000	8.7	TM		
44	TM	B-BHC	114228000	104241000	8.7	TM		
45	TM	G-BHC(LINDANE)	249281000	223444000	10	TM		
46	TM	D-BHC	249471000	224962000	9.8	TM		
47	TM	HEPTACHLOR	240564000	205894000	14	TM		
48	TML	ALDRIN	288325000	242476000	16	TML	12	
49	TM	HEPTACHLOR EPOXIDE	219862000	182338000	17	TM		
50	TM	G-CHLORDANE	215314000	178460000	17	TM		
51	TM	A-ENDOSULFAN	202182000	165644000	18	TM		
52	TM	A-CHLORDANE	189607000	150171000	21	TM		*see front
53	TM	P,P-DDE	221364000	177880000	20	TM		
54	TM	DIELDRIN	223668000	183647000	18	TM		
55	TM	ENDRIN	155652000	134011000	14	TM		
56	TM	B-ENDOSULFAN	204228000	158793000	22	TM		*see front
57	TM	P,P-DDD	186425000	150808000	19	TM		
58	TM	ENDRIN ALDEHYDE	136264000	123538000	9.3	TM		
59	TM	P,P-DDT	200350000	156047000	22	TM		*see front
60	TM	ENDOSULFAN SULFATE	181830000	148206000	18	TM		
61	TM	ENDRIN KETONE	173004000	133001000	23	TM		*see front
62	TM	METHOXYCHLOR	112913000	88492000	22	TM		*see front
63	S	DECA	198002000	144189000	27	S		*see front
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		Average			16.2			

Organochlorine Pesticides Analysis by
EPA Method 608/8081 OCL0729

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/04/21
Instrument: Ethel
Initial Cal. Date: 07/29/21
Data File: 0803048.D

		Compound	MEAN	CCRF	%D	%Drift		
1	S	TCMX	144447000	149364000	3.4	S		
2	TM	HEXACHLOROBENZENE	186450000	193208000	3.6	TM		
3	TM	A-BHC	57336300	65299200	14	TM		
4	TM	B-BHC	52903100	65800100	24	TM		*see back
5	TM	G-BHC(LINDANE)	58518600	69174500	18	TM		
6	TM	D-BHC	35762700	35735300	0.08	TM		
7	TM	HEPTACHLOR	107982000	126159000	17	TM		
8	TM	ALDRIN	216932000	231742000	6.8	TM		
9	TM	HEPTACHLOR EPOXIDE	162735000	175806000	8.0	TM		
10	TM	G-CHLORDANE	177253000	188181000	6.2	TM		
11	TM	A-ENDOSULFAN	139559000	164125000	18	TM		
12	TM	A-CHLORDANE	174078000	182966000	5.1	TM		
13	TM	P,P-DDE	163554000	175997000	7.6	TM		
14	TM	DIELDRIN	163737000	178876000	9.2	TM		
15	TM	ENDRIN	111051000	123976000	12	TM		
16	TM	B-ENDOSULFAN	64157500	89679000	40	TM		*see back
17	TM	P,P-DDD	99479900	117627000	18	TM		
18	TM	ENDRIN ALDEHYDE	76718100	109550000	43	TM		*see back
19	TM	P,P-DDT	89379100	91793100	2.7	TM		
20	TM	ENDOSULFAN SULFATE	90494600	93886900	3.7	TM		
21	TM	ENDRIN KETONE	47822400	60933400	27	TM		*see back
22	TM	METHOXYCHLOR	43555400	56773700	30	TM		*see back
23	S	DECA	226579000	251529000	11	S		
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		Average			14.3			

Organochlorine Pesticides Analysis by
EPA Method 608/8081 OCL0729

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/04/21
Instrument: Ethel
Cal. Date: 07/29/21
Data File: 0803048.D

		Compound	MEAN	CCRF	%D		%Drift
41	S	TCMX	206263000	192828000	6.5	S	
42	TM	HEXACHLOROBENZENE	251354000	227389000	9.5	TM	
43	TM	A-BHC	277113000	259098000	6.5	TM	
44	TM	B-BHC	114228000	109994000	3.7	TM	
45	TM	G-BHC(LINDANE)	249281000	230096000	7.7	TM	
46	TM	D-BHC	249471000	238792000	4.3	TM	
47	TM	HEPTACHLOR	240564000	211305000	12	TM	
48	TML	ALDRIN	288325000	252856000	12	TML	8.5
49	TM	HEPTACHLOR EPOXIDE	219862000	190530000	13	TM	
50	TM	G-CHLORDANE	215314000	187407000	13	TM	
51	TM	A-ENDOSULFAN	202182000	172548000	15	TM	
52	TM	A-CHLORDANE	189607000	158984000	16	TM	
53	TM	P,P-DDE	221364000	187604000	15	TM	
54	TM	DIELDRIN	223668000	193382000	14	TM	
55	TM	ENDRIN	155652000	142960000	8.2	TM	
56	TM	B-ENDOSULFAN	204228000	170275000	17	TM	
57	TM	P,P-DDD	186425000	162354000	13	TM	
58	TM	ENDRIN ALDEHYDE	136264000	134882000	1.0	TM	
59	TM	P,P-DDT	200350000	165635000	17	TM	
60	TM	ENDOSULFAN SULFATE	181830000	158838000	13	TM	
61	TM	ENDRIN KETONE	173004000	145796000	16	TM	
62	TM	METHOXYCHLOR	112913000	92814500	18	TM	
63	S	DECA	198002000	158442000	20	S	
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		Average			11.8		

Toxaphene analysis by
EPA Method 608/8081 TOXF0729

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/03/21
Instrument: Ethel
Initial Cal. Date: 07/29/21
Data File: 0803012.D

		Compound	MEAN	CCRF	%D		%Drift
1	ANM	Toxaphene Total	2495680	2170890	13	ANM	
2	L2AK	Toxaphene	646110	516669	20	L2AK	
3	L2AK	Toxaphene {2}	543873	421597	22	L2AK	
4	L2AK	Toxaphene {3}	543528	537097	1.2	L2AK	
5	L2AK	Toxaphene {4}	245318	201826	18	L2AK	
6	L2AK	Toxaphene {5}	593231	493702	17	L2AK	
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		Average			15.2		

Toxaphene analysis by
EPA Method 608/8081 TOXF0729

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/03/21
Instrument: Ethel
Cal. Date: 07/29/21
Data File: 0803012.D

		Compound	MEAN	CCRF	%D	%Drift		
41	ANM	Toxaphene Total	4670080	3552450	24	ANM		*see front
42	L2AK	Toxaphene	548853	353975	36	L2AK		
43	L2AK	Toxaphene {2}	659661	565039	14	L2AK		
44	L2AK	Toxaphene {3}	1288190	1081670	16	L2AK		
45	L2AK	Toxaphene {4}	959386	757263	21	L2AK		
46	L2AK	Toxaphene {5}	1004110	794503	21	L2AK		
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		Average			22.0			

Technical Chlordane Analysis by
EPA Method 608/8081 TCHL0729

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/03/21
Instrument: Ethel
Initial Cal. Date: 07/29/21
Data File: 0803012.D

		Compound	MEAN	CCRF	%D		%Drift
1	ANM	T. CHLORDANE Total	14496100	12014800	17	ANM	
2	L2AK	T. CHLORDANE	2094150	1752160	16	L2AK	
3	L2AK	T. CHLORDANE {2}	1401530	1198140	15	L2AK	
4	L2AK	T. CHLORDANE {3}	2832130	2358170	17	L2AK	
5	L2AK	T. CHLORDANE {4}	5717100	4637360	19	L2AK	
6	L2AK	T. CHLORDANE {5}	2451170	2068920	16	L2AK	
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38							
39							
40							
		Average			16.7		

Technical Chlordane Analysis by
EPA Method 608/8081 TCHL0729

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/03/21
Instrument: Ethel
Cal. Date: 07/29/21
Data File: 0803012.D

		Compound	MEAN	CCRF	%D		%Drift
41	ANM	T. CHLORDANE Total	31629900	26614800	16	ANM	
42	L2AK	T. CHLORDANE	4033120	3453210	14	L2AK	
43	L2AK	T. CHLORDANE {2}	4290730	3815770	11	L2AK	
44	L2AK	T. CHLORDANE {3}	4689170	4054970	14	L2AK	
45	L2AK	T. CHLORDANE {4}	10739400	8729140	19	L2AK	
46	L2AK	T. CHLORDANE {5}	7877490	6561670	17	L2AK	
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		Average			15.2		

ORGANICS

Raw Data

_SOX005

Organic Extraction Worksheet

Method	OCL/OP/Triaz Sox Extra 3540C	Extraction Set	210630A	Extraction Method	SOX005	Units	mL

Spiked ID 1	OCLHX SPIKE 4-26-21 4-26-22		Surrogate ID 1	OCL/OP Soil Surrogate 6-23-21 3-22-22	
Spiked ID 2	TOX Spike 6-23-21 6-23-22		Surrogate ID 2		
Spiked ID 3	Tech Chlordane Ampule 4-19-21 4-19-22		Surrogate ID 3		
Spiked ID 4	PCB SPIKE 6-11-21 6-11-22		Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	NO	
Spiked ID 7			Ext. Start Time:	06/30/21 13:15	
Spiked ID 8			Ext. End Time:	07/01/21 7:15	
			GC Requires Extract By:		

pH1			Water Bath Temp 1 °C	40/38.5 °C
pH2			Water Bath Temp 2 °C	38/41.1
pH3			Water Bath Temp 3 °C	42/41.5 °C

Spiked By: KY **Date** 06/30/21 **Witnessed By:** CFM **Date** 06/30/21

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	210630A Blk				0.250	1	10.01	5	NA	06/30/21 13:00	
						equip	E-HP15 E-WB1				
2	210630A LCS-1		1	1	0.250	1	10.05	5	NA	06/30/21 13:00	
						equip	E-HP16 E-WB2				
3	210630A LCS-2		1,0.050	2,3	0.250	1	10.49	5	NA	06/30/21 13:00	
						equip	E-HP17 E-WB3				
4	210630A LCS-3		1	4	0.250	1	10.05	5	NA	06/30/21 13:00	
						equip	E-HP19 E-WB1				
5	210630A LCSD-1		1	1	0.250	1	10.33	5	NA	06/30/21 13:00	
						equip	E-HP20 E-WB2				
6	210630A LCSD-2		1,0.050	2,3	0.250	1	10.01	5	NA	06/30/21 13:00	
						equip	e-hp21 E-WB3				
7	210630A LCSD-3		1	4	0.250	1	10.05	5	NA	06/30/21 13:00	
						equip	E-HP22 E-WB1				
8	BA35059	BA35059S04			0.250	1	10.20	5	NA	06/30/21 13:00	96645
						equip	E-HP23 E-WB2				

Solvent and Lot#	
SCALE BALANCE ID	EB1
DCM:Acetone MIX	6/26/21
THIMBLE	1712431302
SAND	201215202
FILTER PAPER	400181
Na2SO4	2020120870
HEXANE	244808

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	CW
Date	7/12/21
Time	10:15
Refrigerator	HOBART

	Technician's Initials
Scanned By	KY
Sample Preparation	KY
Extraction	KY
Concentration	SB
Modified	07/12/21 11:14:44 AM

Reviewed By: KY **Date** 07/12/21

Injection Log

Directory: G:\ETHEL\DATA\210729\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0729001.D	1	OCLHX Deg Check 10/01/20	water	7-29-21 13:49:06
2	2	0729002.D	1	Custom 8081 Mix/HCB - 1 7/29/21	water	7-29-21 14:26:33
3	3	0729003.D	1	Custom 8081 Mix/HCB - 2 7/29/21	water	7-29-21 14:48:49
4	4	0729004.D	1	Custom 8081 Mix/HCB - 3 7/29/21	water	7-29-21 15:11:08
5	5	0729005.D	1	Custom 8081 Mix/HCB - 4 7/29/21	water	7-29-21 15:33:35
6	6	0729006.D	1	Custom 8081 Mix/HCB - 5 7/29/21	water	7-29-21 15:55:53
7	7	0729007.D	1	Custom 8081 Mix/HCB - 6 7/29/21	water	7-29-21 16:18:11
8	8	0729008.D	1	Custom 8081 Mix/HCB - 7 7/29/21	water	7-29-21 16:40:35
9	9	0729009.D	1	Custom 8081 Mix/HCB - 8 7/29/21	water	7-29-21 17:02:52
10	10	0729010.D	1	Custom 8081 Mix/HCB Second Source 7	water	7-29-21 17:25:12
11	12	0729012.D	1	TOX/TCH - 1 06/30/21	water	7-29-21 18:09:58
12	13	0729013.D	1	TOX/TCH - 2 06/30/21	water	7-29-21 18:32:16
13	14	0729014.D	1	TOX/TCH - 3 06/30/21	water	7-29-21 18:54:42
14	15	0729015.D	1	TOX/TCH - 4 06/30/21	water	7-29-21 19:17:02
15	16	0729016.D	1	TOX/TCH - 5 06/30/21	water	7-29-21 19:39:22
16	17	0729017.D	1	TOX/TCH - 6 06/30/21	water	7-29-21 20:01:46
17	18	0729018.D	1	TOX - 7 06/30/21	water	7-29-21 20:24:03
18	19	0729019.D	1	TOX - 8 06/30/21	water	7-29-21 20:46:21
19	20	0729020.D	1	TOX/TCH Second Source 04/19/21	water	7-29-21 21:08:46
20	2	0803002.D	1	OCLHX Deg Check 10/01/20	water	8-3-21 17:30:59
21	12	0803012.D	1	TOX/TCH - 4 06/30/21	water	8-3-21 21:14:17
22	28	0803028.D	1	Custom 8081 Mix/HCB - 3 7/29/21	water	8-4-21 3:11:41
23	42	0803042.D	4995.01	210630A BLK 5/10.01 DF10	soil	8-4-21 8:24:29
24	43	0803043.D	4975.12	210630A LCS-1 5/10.05 DF10	soil	8-4-21 8:46:53
25	45	0803045.D	4766.44	210630A LCS-2 5/10.49 DF10	soil	8-4-21 10:21:40
26	47	0803047.D	4901.96	BA35059S04 5/10.20 DF10	soil	8-4-21 11:06:17
27	48	0803048.D	1	Custom 8081 Mix/HCB - 3 7/29/21	water	8-4-21 11:28:42

ORGANICS

Calibration Data

EPA 8082
PCB0629

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 06/29/21
Matrix: Water Instrument: Lucy
Initials:

0629002.D 0629003.D 0629004.D 0629005.D 0629006.D 0629007.D

		Compound	1	2	3	4	5	6					Avg	%RSD	Type	r^2	Q
1	SAL	TCmX	103327484	247964556	222331426	216059538	214258876	214470544					203068737	25	SA	1.000	
2	SAL	DBC	70407897	178541090	151012868	139525409	147465802	143802244					138459218	26	SA	1.000	
3	SAL	DECA	56806497	132714217	108392606	102848726	107949845	100090514					101467067	24	SA	0.999	
4	BNMCL	Total AR1016	40693363	30263031	24928246	24343399	23926032	23515513					27944931	24	BNMC	1.000	
5	L3BKCL	AR 1016	6681470	4999382	2981974	2723951	2635132	2567432					3764890	45	L3BKC	1.000	
6	L3BKC	AR 1016 {2}	13227555	11775196	10210472	9721508	9790578	9455698					10696835	14	L3BKC		
7	L3BKC	AR 1016 {3}	6149965	6149732	5160441	4823587	4598087	4625894					5251284	14	L3BKC		
8	L3BKCL	AR 1016 {4}	9683069	2500601	2514890	3075949	3044316	3020408					3973205	71	L3BKC	1.000	
9	L3BKC	AR 1016 {5}	4951304	4838121	4060469	3998403	3857919	3846082					4258716	12	L3BKC		
10	BNMC	Total AR1260	46831329	42823677	33848319	32675856	32791497	32003624					36829050	17	BNMC		
11	L9BKCL	AR 1260	9605238	8648975	6223936	5746240	5920268	5739053					6980618	24	L9BKC	1.000	
12	L9BKCL	AR 1260 {2}	15733221	12555491	10069144	9817907	9547582	9367157					11181750	23	L9BKC	1.000	
13	L9BKCL	AR 1260 {3}	8257771	5200979	4219956	4392247	4166768	4179462					5069531	32	L9BKC	1.000	
14	L9BKC	AR 1260 {4}	10008479	11372080	10013653	9789102	9820397	9381723					10064239	6.8	L9BKC		
15	L9BKCL	AR 1260 {5}	3226619	5046152	3321630	2930360	3336482	3336230					3532912	21	L9BKC	0.999	
16		Signal #2											0	0			
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EPA 8082
PCB0629

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 06/29/21
Matrix: Water Instrument: Lucy Initials:

0629002.D 0629003.D 0629004.D 0629005.D 0629006.D 0629007.D

		Compound	1	2	3	4	5	6					Avg	%RSD	Type	r^2	Q
36	SAL	TCmX #2	453183244	1040358934	962417384	950411869	945743999	948989683					883517519	24	SA	1.00	
37	SAL	DBC #2	205710959	540756264	459209593	480964384	508306777	514519413					451577898	27	SA	1.000	
38	SAL	DECA #2	224701751	546637093	443226587	412794342	407211407	395594227					405027568	26	SA	1.000	
39	BNMC	Total AR1016 #2	65965460	88327937	72442451	70480312	68205477	66032589					71909037	12	BNMC		
40	L3BKC	AR 1016 #2	16558898	16058029	13317234	12938421	12404950	11779371					13842817	14	L3BKC		
41	L3BKC	AR 1016 {2} #2	16368412	17506529	14351072	14079091	13696117	13130443					14855277	11	L3BKC		
42	L3BKC	AR 1016 {3} #2	22130119	20384605	15858726	15515374	15190873	15195841					17379256	18	L3BKC		
43	L3BKCL	AR 1016 {4} #2	4913844	16721609	14096243	13783359	13348545	12846611					12618368	32	L3BKC	1.000	
44	L3BKCL	AR 1016 {5} #2	5994187	17657165	14819177	14164065	13564992	13080324					13213318	29	L3BKC	1.000	
45	BNMC	Total AR1260 #2	115722067	108105710	89091762	85267367	83874365	82931077					94165391	15	BNMC		
46	L9BKC	AR 1260 #2	31833785	28367440	24651030	23257911	22778404	22619848					25584736	15	L9BKC		
47	L9BKC	AR 1260 {2} #2	15597185	15269098	12109483	11196944	11475919	11266616					12819207	16	L9BKC		
48	L9BKC	AR 1260 {3} #2	13628641	12604995	9935711	9995572	9533947	9108483					10801225	17	L9BKC		
49	L9BKC	AR 1260 {4} #2	37275780	35558127	29097164	28143217	27950587	27526396					30925212	14	L9BKC		
50	L9BKC	AR 1260 {5} #2	17386676	16306050	13298373	12673723	12135508	12409735					14035011	16	L9BKC		
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8.179052

EPA 8082
PCB0629

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 06/29/21
Instrument: Lucy
Initial Cal. Date: 06/29/21
Data File: 0629008.D

		Compound	MEAN	CCRF	%D		%Drift
1	BNMC	Total AR1016	27944900	23789100	15	BNMCL	1.6
2	L3BKC	AR 1016	3764890	2640490	30	L3BKCL	3.4
3	L3BKC	AR 1016 {2}	10696800	9652090	9.8	L3BKC	
4	L3BKC	AR 1016 {3}	5251280	4784830	8.9	L3BKC	
5	L3BKC	AR 1016 {4}	3973210	2930270	26	L3BKCL	2.5
6	L3BKC	AR 1016 {5}	4258720	3781400	11	L3BKC	
7	BNMC	Total AR1260	36829100	32928600	11	BNMC	
8	L9BKC	AR 1260	6980620	5850610	16	L9BKCL	1.3
9	L9BKC	AR 1260 {2}	11181800	9896020	11	L9BKCL	2.4
10	L9BKC	AR 1260 {3}	5069530	4078800	20	L9BKCL	4.3
11	L9BKC	AR 1260 {4}	10064200	9793070	2.7	L9BKC	
12	L9BKC	AR 1260 {5}	3532910	3310110	6.3	L9BKCL	0.42
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		Average			14.0		

EPA 8082
PCB0629

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 06/29/21
Instrument: Lucy
Cal. Date: 06/29/21
Data File: 0629008.D

		Compound	MEAN	CCRF	%D		%Drift
41	BNMC	Total AR1016	71909000	69742100	3.0	BNMC	
42	L3BKC	AR 1016	13842800	12588600	9.1	L3BKC	
43	L3BKC	AR 1016 {2}	14855300	14014900	5.7	L3BKC	
44	L3BKC	AR 1016 {3}	17379300	15130000	13	L3BKC	
45	L3BKC	AR 1016 {4}	12618400	13788200	9.3	L3BKCL	3.3
46	L3BKC	AR 1016 {5}	13213300	14220400	7.6	L3BKCL	4.1
47	BNMC	Total AR1260	94165400	85195200	9.5	BNMC	
48	L9BKC	AR 1260	25584700	23372400	8.6	L9BKC	
49	L9BKC	AR 1260 {2}	12819200	11818800	7.8	L9BKC	
50	L9BKC	AR 1260 {3}	10801200	9485510	12	L9BKC	
51	L9BKC	AR 1260 {4}	30925200	27772700	10	L9BKC	
52	L9BKC	AR 1260 {5}	14035000	12745800	9.2	L9BKC	
53							
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		Average			8.7		

EPA 8082
AROCHLOR 1254 07/07/21

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 07/07/21
Matrix: Water Instrument: Lucy
Initials:

0707002.D 0707003.D 0707004.D 0707005.D 0707006.D

		Compound	1	2	3	4	5						Avg	%RSD	Type	r^2	Q
1	BNMC	Total AR1254	114658566	99434300	100828626	96724537	90679138						100465034	8.8	BNMC		
2	L3BKC	AR 1254	6731840	5968382	5600534	5450122	5351102						5820396	9.6	L3BKC		
3	L3BKC	AR 1254 {2}	24802595	21338772	22622190	20734842	19575518						21814783	9.2	L3BKC		
4	L3BKC	AR 1254 {3}	19828011	17081922	17437233	16718956	15841393						17381503	8.6	L3BKC		
5	L3BKC	AR 1254 {4}	38692566	34281508	34000643	32977494	30836420						34157726	8.4	L3BKC		
6	L3BKC	AR 1254 {5}	24603553	20763716	21168027	20843123	19074704						21290625	9.5	L3BKC		
7		Signal #2											0	0			
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EPA 8082
AROCHLOR 1254 07/07/21

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 07/07/21
Matrix: Water Instrument: Lucy Initials:

0707002.D 0707003.D 0707004.D 0707005.D 0707006.D

		Compound	1	2	3	4	5						Avg	%RSD	Type	r^2	Q
36	BNMC	Total AR1254 #2	419014902	375257268	372500411	354186393	329416617						370075118	8.9	BNMC		
37	L3BKC	AR 1254 #2	30233718	26383518	25511089	24363443	22163450						25731044	12	L3BKC		
38	L3BKC	AR 1254 {2} #2	137445723	118066641	115344918	109319915	99771729						115989785	12	L3BKC		
39	L3BKC	AR 1254 {3} #2	58129545	51071804	51679774	48281394	46630126						51158529	8.6	L3BKC		
40	L3BKC	AR 1254 {4} #2	116013181	107132855	106060825	102257806	94247207						105142375	7.5	L3BKC		
41	L3BKC	AR 1254 {5} #2	77192735	72602450	73903805	69963835	66604105						72053386	5.6	L3BKC		
42																	
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1.546304

EPA 8082
PCB0629

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/02/21
Instrument: Lucy
Initial Cal. Date: 06/29/21
Data File: 0707269.D

		Compound	MEAN	CCRF	%D	%Drift		
1	SAL	TCmX	203069000	247401000	22	SAL	15	
2	SAL	DBC	138459000	164644000	19	SAL	13	
3	SAL	DECA	101467000	115812000	14	SAL	7.8	
4	BNMC	Total AR1016	27944900	30212700	8.1	BNMCL	23	*see back
5	L3BKC	AR 1016	3764890	3726900	1.0	L3BKCL	32	
6	L3BKC	AR 1016 {2}	10696800	11723100	9.6	L3BKC		
7	L3BKC	AR 1016 {3}	5251280	5924370	13	L3BKC		
8	L3BKC	AR 1016 {4}	3973210	3934500	0.97	L3BKCL	31	
9	L3BKC	AR 1016 {5}	4258720	4903870	15	L3BKC		
10	BNMC	Total AR1260	36829100	42234200	15	BNMC		
11	L9BKC	AR 1260	6980620	7293380	4.5	L9BKCL	20	
12	L9BKC	AR 1260 {2}	11181800	14057500	26	L9BKCL	43	
13	L9BKC	AR 1260 {3}	5069530	5426130	7.0	L9BKCL	26	
14	L9BKC	AR 1260 {4}	10064200	11655700	16	L9BKC		
15	L9BKC	AR 1260 {5}	3532910	3801510	7.6	L9BKCL	16	
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40								
		Average			11.9			

EPA 8082
PCB0629

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/02/21
Instrument: Lucy
Cal. Date: 06/29/21
Data File: 0707269.D

		Compound	MEAN	CCRF	%D		%Drift
41	SAL	TCmX	883518000	914563000	3.5	SAL	3.0
42	SAL	DBC	451578000	420334000	6.9	SAL	11
43	SAL	DECA	405028000	399001000	1.5	SAL	6.0
44	BNMC	Total AR1016	71909000	74133000	3.1	BNMC	
45	L3BKC	AR 1016	13842800	13919100	0.55	L3BKC	
46	L3BKC	AR 1016 {2}	14855300	14963500	0.73	L3BKC	
47	L3BKC	AR 1016 {3}	17379300	15659900	9.9	L3BKC	
48	L3BKC	AR 1016 {4}	12618400	14738200	17	L3BKCL	6.7
49	L3BKC	AR 1016 {5}	13213300	14852200	12	L3BKCL	4.1
50	BNMC	Total AR1260	94165400	83666100	11	BNMC	
51	L9BKC	AR 1260	25584700	23637500	7.6	L9BKC	
52	L9BKC	AR 1260 {2}	12819200	11387300	11	L9BKC	
53	L9BKC	AR 1260 {3}	10801200	9858020	8.7	L9BKC	
54	L9BKC	AR 1260 {4}	30925200	27148100	12	L9BKC	
55	L9BKC	AR 1260 {5}	14035000	11635200	17	L9BKC	
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		Average			8.2		

EPA 8082
PCB0629

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/02/21
Instrument: Lucy
Initial Cal. Date: 06/29/21
Data File: 0707286.D

		Compound	MEAN	CCRF	%D		%Drift
1	SAL	TCmX	203069000	235678000	16	SAL	9.4
2	SAL	DBC	138459000	153412000	11	SAL	5.4
3	SAL	DECA	101467000	107121000	5.6	SAL	0.86
4	BNMC	Total AR1016	27944900	28614000	2.4	BNMCL	16
5	L3BKC	AR 1016	3764890	3651520	3.0	L3BKCL	29
6	L3BKC	AR 1016 {2}	10696800	10941800	2.3	L3BKC	
7	L3BKC	AR 1016 {3}	5251280	5406230	3.0	L3BKC	
8	L3BKC	AR 1016 {4}	3973210	3921210	1.3	L3BKCL	31
9	L3BKC	AR 1016 {5}	4258720	4693240	10	L3BKC	
10	BNMC	Total AR1260	36829100	38662700	5.0	BNMC	
11	L9BKC	AR 1260	6980620	6961870	0.27	L9BKCL	14
12	L9BKC	AR 1260 {2}	11181800	12971400	16	L9BKCL	32
13	L9BKC	AR 1260 {3}	5069530	4823140	4.9	L9BKCL	11
14	L9BKC	AR 1260 {4}	10064200	10226500	1.6	L9BKC	
15	L9BKC	AR 1260 {5}	3532910	3679700	4.2	L9BKCL	13
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		Average			5.8		

EPA 8082
PCB0629

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/02/21
Instrument: Lucy
Cal. Date: 06/29/21
Data File: 0707286.D

		Compound	MEAN	CCRF	%D		%Drift
41	SAL	TCmX	883518000	878694000	0.55	SAL	6.8
42	SAL	DBC	451578000	413116000	8.5	SAL	13
43	SAL	DECA	405028000	383131000	5.4	SAL	10
44	BNMC	Total AR1016	71909000	71070300	1.2	BNMC	
45	L3BKC	AR 1016	13842800	13496200	2.5	L3BKC	
46	L3BKC	AR 1016 {2}	14855300	14249500	4.1	L3BKC	
47	L3BKC	AR 1016 {3}	17379300	15000400	14	L3BKC	
48	L3BKC	AR 1016 {4}	12618400	13933100	10	L3BKCL	0.38
49	L3BKC	AR 1016 {5}	13213300	14391100	8.9	L3BKCL	0.57
50	BNMC	Total AR1260	94165400	79298300	16	BNMC	
51	L9BKC	AR 1260	25584700	21809300	15	L9BKC	
52	L9BKC	AR 1260 {2}	12819200	11361800	11	L9BKC	
53	L9BKC	AR 1260 {3}	10801200	8893840	18	L9BKC	
54	L9BKC	AR 1260 {4}	30925200	25695800	17	L9BKC	
55	L9BKC	AR 1260 {5}	14035000	11537500	18	L9BKC	
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		Average			10.0		

EPA 8082
AROCHLOR 1254 07/07/21

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/04/21
Instrument: Lucy
Initial Cal. Date: 07/07/21
Data File: 0804013.D

		Compound	MEAN	CCRF	%D		%Drift
1	BNMC	Total AR1254	100465000	91196000	9.2	BNMC	
2	L3BKC	AR 1254	5820400	5308810	8.8	L3BKC	
3	L3BKC	AR 1254 {2}	21814800	21114500	3.2	L3BKC	
4	L3BKC	AR 1254 {3}	17381500	15390700	11	L3BKC	
5	L3BKC	AR 1254 {4}	34157700	30209600	12	L3BKC	
6	L3BKC	AR 1254 {5}	21290600	19172300	9.9	L3BKC	
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		Average			9.0		

EPA 8082
AROCHLOR 1254 07/07/21

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/04/21
Instrument: Lucy
Cal. Date: 07/07/21
Data File: 0804013.D

		Compound	MEAN	CCRF	%D		%Drift
41	BNMC	Total AR1254	370075000	312031000	16	BNMC	
42	L3BKC	AR 1254	25731000	22166100	14	L3BKC	
43	L3BKC	AR 1254 {2}	115990000	99446600	14	L3BKC	
44	L3BKC	AR 1254 {3}	51158500	42784500	16	L3BKC	
45	L3BKC	AR 1254 {4}	105142000	89013800	15	L3BKC	
46	L3BKC	AR 1254 {5}	72053400	58619500	19	L3BKC	
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		Average			15.7		

EPA 8082
AROCHLOR 1254 07/07/21

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/04/21
Instrument: Lucy
Initial Cal. Date: 07/07/21
Data File: 0804026.D

		Compound	MEAN	CCRF	%D		%Drift
1	BNMC	Total AR1254	100465000	100173000	0.29	BNMC	
2	L3BKC	AR 1254	5820400	5941170	2.1	L3BKC	
3	L3BKC	AR 1254 {2}	21814800	22994200	5.4	L3BKC	
4	L3BKC	AR 1254 {3}	17381500	16555200	4.8	L3BKC	
5	L3BKC	AR 1254 {4}	34157700	33092600	3.1	L3BKC	
6	L3BKC	AR 1254 {5}	21290600	21589700	1.4	L3BKC	
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		Average			2.8		

EPA 8082
AROCHLOR 1254 07/07/21

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 08/04/21
Instrument: Lucy
Cal. Date: 07/07/21
Data File: 0804026.D

		Compound	MEAN	CCRF	%D		%Drift
41	BNMC	Total AR1254	370075000	344765000	6.8	BNMC	
42	L3BKC	AR 1254	25731000	24154800	6.1	L3BKC	
43	L3BKC	AR 1254 {2}	115990000	108021000	6.9	L3BKC	
44	L3BKC	AR 1254 {3}	51158500	48072900	6.0	L3BKC	
45	L3BKC	AR 1254 {4}	105142000	98816700	6.0	L3BKC	
46	L3BKC	AR 1254 {5}	72053400	65700300	8.8	L3BKC	
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		Average			6.8		

ORGANICS

Raw Data

Organic Extraction Worksheet

Method	OCL/OP/Triaz Sox Extra 3540C	Extraction Set	210630A	Extraction Method	SOX005	Units	mL

Spiked ID 1	OCLHX SPIKE 4-26-21 4-26-22		Surrogate ID 1	OCL/OP Soil Surrogate 6-23-21 3-22-22	
Spiked ID 2	TOX Spike 6-23-21 6-23-22		Surrogate ID 2		
Spiked ID 3	Tech Chlordane Ampule 4-19-21 4-19-22		Surrogate ID 3		
Spiked ID 4	PCB SPIKE 6-11-21 6-11-22		Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	NO	
Spiked ID 7			Ext. Start Time:	06/30/21 13:15	
Spiked ID 8			Ext. End Time:	07/01/21 7:15	
			GC Requires Extract By:		

pH1			Water Bath Temp 1 °C	40/38.5 °C
pH2			Water Bath Temp 2 °C	38/41.1
pH3			Water Bath Temp 3 °C	42/41.5 °C

Spiked By: KY **Date** 06/30/21 **Witnessed By:** CFM **Date** 06/30/21

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	210630A Blk				0.250	1	10.01	5	NA	06/30/21 13:00	
						equip	E-HP15 E-WB1				
2	210630A LCS-1		1	1	0.250	1	10.05	5	NA	06/30/21 13:00	
						equip	E-HP16 E-WB2				
3	210630A LCS-2		1,0.050	2,3	0.250	1	10.49	5	NA	06/30/21 13:00	
						equip	E-HP17 E-WB3				
4	210630A LCS-3		1	4	0.250	1	10.05	5	NA	06/30/21 13:00	
						equip	E-HP19 E-WB1				
5	210630A LCSD-1		1	1	0.250	1	10.33	5	NA	06/30/21 13:00	
						equip	E-HP20 E-WB2				
6	210630A LCSD-2		1,0.050	2,3	0.250	1	10.01	5	NA	06/30/21 13:00	
						equip	e-hp21 E-WB3				
7	210630A LCSD-3		1	4	0.250	1	10.05	5	NA	06/30/21 13:00	
						equip	E-HP22 E-WB1				
8	BA35059	BA35059S04			0.250	1	10.20	5	NA	06/30/21 13:00	96645
						equip	E-HP23 E-WB2				

Solvent and Lot#	
SCALE BALANCE ID	EB1
DCM:Acetone MIX	6/26/21
THIMBLE	1712431302
SAND	201215202
FILTER PAPER	400181
Na2SO4	2020120870
HEXANE	244808

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	CW
Date	7/12/21
Time	10:15
Refrigerator	HOBART

	Technician's Initials
Scanned By	KY
Sample Preparation	KY
Extraction	KY
Concentration	SB

Modified	07/12/21 11:14:44 AM

Reviewed By: KY **Date** 07/12/21

Injection Log

Directory: G:\LUCY\DATA\210629\

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	2	0629002.D	1	PCB - 1 6/24/21	water	6-29-21 16:53:05
2	3	0629003.D	1	PCB - 2 6/24/21	water	6-29-21 17:09:58
3	4	0629004.D	1	PCB - 3 6/23/21	water	6-29-21 17:26:52
4	5	0629005.D	1	PCB - 4 6/24/21	water	6-29-21 17:43:51
5	6	0629006.D	1	PCB - 5 6/24/21	water	6-29-21 18:00:45
6	7	0629007.D	1	PCB - 6 6/24/21	water	6-29-21 18:17:37
7	8	0629008.D	1	PCB Second Source 4/16/21	water	6-29-21 18:34:32
8	9	0629009.D	1	AR1221 5/22/20 0.100ug/mL	water	6-29-21 18:51:32
9	10	0629010.D	1	AR1232 4/23/20 0.100ug/mL	water	6-29-21 19:08:26
10	11	0629011.D	1	AR1242 2/14/19 0.100ug/mL	water	6-29-21 19:25:18
11	12	0629012.D	1	AR1248 5/28/20 0.100ug/mL	water	6-29-21 19:42:09
12	13	0629013.D	1	AR1254 8/31/20 0.100ug/mL	water	6-29-21 19:59:07
13	14	0629014.D	1	AR1262 2/14/19 0.100ug/mL	water	6-29-21 20:15:59
14	15	0629015.D	1	AR1268 5/3/21 0.100ug/mL	water	6-29-21 20:32:53
15	2	0707002.D	1	AR1254 - 1 07/07/21	water	7-7-21 15:27:58
16	3	0707003.D	1	AR1254 - 2 07/07/21	water	7-7-21 15:44:48
17	4	0707004.D	1	AR1254 - 3 07/07/21	water	7-7-21 16:01:36
18	5	0707005.D	1	AR1254 - 4 07/07/21	water	7-7-21 16:18:31
19	6	0707006.D	1	AR1254 - 5 07/07/21	water	7-7-21 16:35:18
20	69	0707269.D	1	PCB - 3 6/23/21	water	8-2-21 16:15:48
21	75	0707275.D	4995	210630A BLK 5/10.01 DF10	soil	8-2-21 17:56:56
22	76	0707276.D	4975.12	210630A LCS-3 5/10.05 DF10	soil	8-2-21 18:13:53
23	78	0707278.D	4901.96	BA35059S04 5/10.20 DF10	soil	8-2-21 18:47:33
24	86	0707286.D	1	PCB - 3 6/23/21	water	8-2-21 21:02:33
25	13	0804013.D	1	AR1254 CCV 8/4/21	water	8-4-21 14:38:04
26	14	0804014.D	49019.6	BA35059S04 5/10.20 DF100	soil	8-4-21 15:31:17
27	26	0804026.D	1	AR1254 CCV 8/4/21	water	8-4-21 18:58:58

ORGANICS

Calibration Data

EPA METHOD 8151A/515
METHOD

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 7/6/2021
Matrix: Water Instrument: Herbie
Initials: MA

		Compound	7060004.D 1	7060005.D 2	7060006.D 3	7060007.D 4	7060008.D 5	7060009.D 6					Avg	%RSD	Type	r^2	Q
1	TM	Dalapon	268372	271414	272245	260912	267318	228682					261491	6.34	TM		
2	TM	3,5-Dichlorobenzoic Acid	322711	340797	341516	326201	328678	317334.9609					329540	2.97	TM		
3	TM	4-Nitrophenol	169427	198994	197120	185958	180144	175768					184568	6.38	TM		
4	S	2, 4-DCAA (S)	261755	282642	263791	240167	238224	235237					253636	7.41	S		
5	TML	Dicamba	1890447	1078734	946617	895234	905746	910662					1104574	35.39	TM	0.999	
6	TML	MCPP	290	468	526	549	578	594					501	22.41	TM	0.9993	
7	TML	MCPA	512	693	811	885	941	926					795	20.87	TM	0.9992	
8	TM	Dichlorprop	268385	258270	254381	242047	245483	248489					252843	3.81	TM		
9	TM	2,4-D	356240	313361	312056	296091	299227	304281					313543	7.02	TM		
10	TM	Pentachlorophenol (PCP)	3832500	3909281	4120742	4116484	4280341	4342674					4100337	4.88	TM		
11	TM	2,4,5-TP (Silvex)	1772105	1727867	1763805	1714592	1769708	1806173					1759042	1.88	TM		
12	TM	Dinitro-o-cresol (DNOC)	1857895	1806605	1874551	1852937	1914331	1933616					1873322	2.44	TM		
13	TM	2,4,5-T	1665237	1592906	1639434	1596891	1613318	1636826					1624102	1.72	TM		
14	TM	Chloramben	1236807	1210236	1254430	1240877	1262751	1276593					1246949	1.85	TM		
15	TM	Dinoseb	1253115	1193694	1203323	1166679	1192301	1210690					1203300	2.38	TM		
16	TM	2,4-DB	178016	169813	172925	172981	175900	182072					175284	2.48	TM		
17	TM	Bentazon	199801.0204	178343.8	181405.5	171310.2	173765.1	177919.7					180424	5.62	TM		
18	TM	DCPA (Dacthal)	2265657.895	2218875	2304289.063	2215919.922	2279074.219	2349086.914					2272150.50	2.25	TM		
19	TM	Picloram	2422421	2443367	2328723	2287908	2350531	2417003					2374992	2.60	TM		
20	TM	Acifluorfen	2174458.333	2039084.375	2150478.125	2008553.125	2083806.25	2142063.281					2.10E+06	3.17	TM		
21		Signal #2											0	0			
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4.11

EPA METHOD 8151A/515
METHOD

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 7/6/2021
Matrix: Water Instrument: Herbie Initials: MA

7060004.D 7060005.D 7060006.D 7060007.D 7060008.D 7060009.D

		Compound	1	2	3	4	5	6					Avg	%RSD	Type	r^2	Q
36	TM	Dalapon #2	1044713.542	1096453.906	1110669.531	1058476.172	1046266.016	947579.6875					1.05E+06	5.46	TM		
37	TM	3,5-Dichlorobenzoic Acid #2	1171473.684	1110796.875	1091175.781	1004484.375	1016007.813	1010613.281					1.07E+06	6.37	TM		
38	CM	4-Nitrophenol #2	502697.9167	507546.875	526768.75	526780.4688	530633.8542	532042.1875					521078.342	2.42	CM		
39	S	2, 4-DCAA (S) #2	681989.5833	613790.625	605601.5625	571862.1094	600221.6146	589595.5078					610510.167	6.21	S		
40	TM	Dicamba #2	2378289.474	2296070.313	2320972.656	2251152.344	2487915.365	2440295.898					2.36E+06	3.81	TM		
41	TML	MCPP #2	642.317708	1237.0625	1505.429688	1592.560547	1674.789063	1774.983398					1404.52382	29.61	TM	0.9981	
42	TML	MCPA #2	899.609375	1624.351563	1995.597656	2135.337891	2227.513021	2351.792969					1872.36708	28.74	TM	0.9985	
43	TM	Dichlorprop #2	768390.625	730196.875	719480.4688	676940.625	680286.1979	770860.9375					724359.288	5.64	TM		
44	TM	2,4-D #2	958302.0833	1271279.688	904102.3438	1050433.594	978396.6146	955075.5859					1.02E+06	12.96	TM		
45	TM	Pentachlorophenol (PCP) #2	12692342.11	12788367.19	12840195.31	12281904.3	12174253.91	12331814.45					1.25E+07	2.30	TM		
46	TM	2,4,5-TP (Silvex) #2	5835447.368	5471776.042	5419764.323	5226996.094	5232184.896	5268166.341					5.41E+06	4.30	TM		
47	TM	Dinitro-o-cresol (DNOC) #2	5835447.368	5471776.042	5419764.323	5226996.094	5232184.896	5268166.341					5.41E+06	4.30	TM		
48	TM	2,4,5-T #2	6345368.421	5643109.375	5369468.75	5276953.125	5150593.75	5149751.953					5.49E+06	8.33	TM		
49	TM	Chloramben #2	4034218.75	3599387.5	3557186.719	3407537.5	3366027.083	3428655.469					3.57E+06	6.92	TM		
50	TM	Dinoseb #2	4100166.667	3802081.25	3718496.875	3496308.594	3445331.771	3468550					3.67E+06	6.95	TM		
51	TM	2,4-DB #2	499304.6875	463396.875	489236.3281	460551.5625	466417.0573	487899.8047					477801.053	3.41	TM		
52	TM	Bentazon #2	524291.6667	445589.0625	454057.8125	439467.1875	440568.4896	457875.1953					460308.236	6.99	TM		
53	TM	DCPA (Dacthal) #2	7324342.105	6906609.375	7262359.375	6859791.016	6799381.51	6950219.727					7.02E+06	3.14	TM		
54	TM	Picloram #2	7687815.789	6846890.625	7196695.313	6878009.766	6843533.854	6947259.766					7.07E+06	4.70	TM		
55	TM	Acifluorfen #2	5870635.417	6126428.125	5874643.75	5483807.813	5350383.333	5509498.828					5.70E+06	5.24	TM		
56																	
57																	
58																	
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70																	

4.51

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 7/6/2021
Instrument: Herbie
Initial Cal. Date: 7/6/2021
Data File: 7060010.D

		Compound	MEAN	CCRF	%D		%Drift
1	TM	Dalapon	261491	211099	19	TM	
2	TM	3,5-Dichlorobenzoic Acid	329540	296902	9.9	TM	
3	TM	4-Nitrophenol	184568	151214	18	TM	
4	S	2, 4-DCAA (S)	253636	231483	8.7	S	
5	TML	Dicamba	1104570	816664	26	TML	18
6	TML	MCPP	501	578	15	TML	7.4
7	TML	MCPA	795	928	17	TML	8.6
8	TM	Dichlorprop	252843	234229	7.4	TM	
9	TM	2,4-D	313543	287876	8.2	TM	
10	TM	Pentachlorophenol (PCP)	4100340	3675380	10	TM	
11	TM	2,4,5-TP (Silvex)	1759040	1677960	4.6	TM	
12	TM	Dinitro-o-cresol (DNOC)	1873320	1683110	10	TM	
13	TM	2,4,5-T	1624100	1537030	5.4	TM	
14	TM	Chloramben	1246950	1144360	8.2	TM	
15	TM	Dinoseb	1203300	1103920	8.3	TM	
16	TM	2,4-DB	175284	162203	7.5	TM	
17	TM	Bentazon	180424	163852	9.2	TM	
18	TM	DCPA (Dacthal)	2272150	2152950	5.2	TM	
19	TM	Picloram	2374990	2129090	10	TM	
20	TM	Acifluorfen	2099740	2078390	1.0	TM	
21							
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39							
40							
		Average			10.4		

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 7/6/2021
Instrument: Herbie
Cal. Date: 7/6/2021
Data File: 7060010.D

		Compound	MEAN	CCRF	%D		%Drift
41	TM	Dalapon	1050690	927029	12	TM	
42	TM	3,5-Dichlorobenzoic Acid	1067430	911039	15	TM	
43	CM	4-Nitrophenol	521078	465197	11	CM	
44	S	2, 4-DCAA (S)	610510	558696	8.5	S	
45	TM	Dicamba	2362450	2151760	8.9	TM	
46	TML	MCPP	1405	1608	15	TML	4.9
47	TML	MCPA	1872	2161	15	TML	5.7
48	TM	Dichlorprop	724359	665428	8.1	TM	
49	TM	2,4-D	1019600	949958	6.8	TM	
50	TM	Pentachlorophenol (PCP)	12518100	11181600	11	TM	
51	TM	2,4,5-TP (Silvex)	5409060	4949080	8.5	TM	
52	TM	Dinitro-o-cresol (DNOC)	5409060	4949080	8.5	TM	
53	TM	2,4,5-T	5489210	5041520	8.2	TM	
54	TM	Chloramben	3565500	3262010	8.5	TM	
55	TM	Dinoseb	3671820	3587430	2.3	TM	
56	TM	2,4-DB	477801	452089	5.4	TM	
57	TM	Bentazon	460308	431540	6.2	TM	
58	TM	DCPA (Dacthal)	7017120	7056310	0.56	TM	
59	TM	Picloram	7066700	6517320	7.8	TM	
60	TM	Acifluorfen	5702570	5659110	0.76	TM	
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78							
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80							
		Average			8.4		

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 7/8/2021
Instrument: HP G1530A
Initial Cal. Date: 6//70
Data File: 7060012.D

		Compound	MEAN	CCRF	%D	%Drift	
1	TM	Dalapon	261491	304584	16	TM	
2	TM	3,5-Dichlorobenzoic Acid	329540	366598	11	TM	
3	TM	4-Nitrophenol	184568	212747	15	TM	
4	S	2, 4-DCAA (S)	253636	282188	11	S	
5	TML	Dicamba	1104570	1010070	8.6	TML	4.1
6	TML	MCPP	501	563	12	TML	5.0
7	TML	MCPA	795	837	5.3	TML	0.88
8	TM	Dichlorprop	252843	271865	7.5	TM	
9	TM	2,4-D	313543	324712	3.6	TM	
10	TM	Pentachlorophenol (PCP)	4100340	4354930	6.2	TM	
11	TM	2,4,5-TP (Silvex)	1759040	1823850	3.7	TM	
12	TM	Dinitro-o-cresol (DNOC)	1873320	1959710	4.6	TM	
13	TM	2,4,5-T	1624100	1688450	4.0	TM	
14	TM	Chloramben	1246950	1290730	3.5	TM	
15	TM	Dinoseb	1203300	1228050	2.1	TM	
16	TM	2,4-DB	175284	179121	2.2	TM	
17	TM	Bentazon	180424	184890	2.5	TM	
18	TM	DCPA (Dacthal)	2272150	2331000	2.6	TM	
19	TM	Picloram	2374990	2374520	0.02	TM	
20	TM	Acifluorfen	2099740	2142870	2.1	TM	
21							
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		Average			6.2		

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 7/8/2021
Instrument: Herbie
Cal. Date: 7/6/2021
Data File: 7060012.D

		Compound	MEAN	CCRF	%D		%Drift
41	TM	Dalapon	1050690	1173820	12	TM	
42	TM	3,5-Dichlorobenzoic Acid	1067430	1134500	6.3	TM	
43	CM	4-Nitrophenol	521078	548281	5.2	CM	
44	S	2, 4-DCAA (S)	610510	636845	4.3	S	
45	TM	Dicamba	2362450	2416790	2.3	TM	
46	TML	MCPP	1405	1567	12	TML	2.6
47	TML	MCPA	1872	2063	10	TML	1.6
48	TM	Dichlorprop	724359	800746	11	TM	
49	TM	2,4-D	1019600	1213990	19	TM	
50	TM	Pentachlorophenol (PCP)	12518100	13451400	7.5	TM	
51	TM	2,4,5-TP (Silvex)	5409060	5691080	5.2	TM	
52	TM	Dinitro-o-cresol (DNOC)	5409060	5691080	5.2	TM	
53	TM	2,4,5-T	5489210	5731000	4.4	TM	
54	TM	Chloramben	3565500	3681390	3.3	TM	
55	TM	Dinoseb	3671820	3820600	4.1	TM	
56	TM	2,4-DB	477801	485180	1.5	TM	
57	TM	Bentazon	460308	470160	2.1	TM	
58	TM	DCPA (Dacthal)	7017120	6937470	1.1	TM	
59	TM	Picloram	7066700	7186880	1.7	TM	
60	TM	Acifluorfen	5702570	5669290	0.58	TM	
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80							
		Average			5.9		

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 7/8/2021
Instrument: Herbie
Initial Cal. Date: 7/6/2021
Data File: 7060029.D

		Compound	MEAN	CCRF	%D	%Drift	
1	TM	Dalapon	261491	249709	4.5	TM	
2	TM	3,5-Dichlorobenzoic Acid	329540	360473	9.4	TM	
3	TM	4-Nitrophenol	184568	213388	16	TM	
4	S	2, 4-DCAA (S)	253636	264694	4.4	S	
5	TML	Dicamba	1104570	1031800	6.6	TML	6.6
6	TML	MCPP	501	587	17	TML	9.0
7	TML	MCPA	795	884	11	TML	4.0
8	TM	Dichlorprop	252843	282913	12	TM	
9	TM	2,4-D	313543	349927	12	TM	
10	TM	Pentachlorophenol (PCP)	4100340	4582460	12	TM	
11	TM	2,4,5-TP (Silvex)	1759040	1981180	13	TM	
12	TM	Dinitro-o-cresol (DNOC)	1873320	2080050	11	TM	
13	TM	2,4,5-T	1624100	1831940	13	TM	
14	TM	Chloramben	1246950	1410110	13	TM	
15	TM	Dinoseb	1203300	1338890	11	TM	
16	TM	2,4-DB	175284	200264	14	TM	
17	TM	Bentazon	180424	206150	14	TM	
18	TM	DCPA (Dacthal)	2272150	2511260	11	TM	
19	TM	Picloram	2374990	2506380	5.5	TM	
20	TM	Acifluorfen	2099740	2160230	2.9	TM	
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		Average			10.7		

EPA METHOD 8151A/515
0

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 7/8/2021
Instrument: Herbie
Cal. Date: 7/6/2021
Data File: 7060029.D

		Compound	MEAN	CCRF	%D	%Drift		
41	TM	Dalapon	1050690	1075280	2.3	TM		
42	TM	3,5-Dichlorobenzoic Acid	1067430	1137570	6.6	TM		
43	CM	4-Nitrophenol	521078	576406	11	CM		
44	S	2, 4-DCAA (S)	610510	668795	9.5	S		
45	TM	Dicamba	2362450	2493240	5.5	TM		
46	TML	MCPP	1405	1636	16	TML	6.4	
47	TML	MCPA	1872	2197	17	TML	7.2	
48	TM	Dichlorprop	724359	790445	9.1	TM		
49	TM	2,4-D	1019600	1319460	29	TM		*
50	TM	Pentachlorophenol (PCP)	12518100	11363100	9.2	TM		
51	TM	2,4,5-TP (Silvex)	5409060	4682910	13	TM		
52	TM	Dinitro-o-cresol (DNOC)	5409060	4682910	13	TM		
53	TM	2,4,5-T	5489210	4399230	20	TM		
54	TM	Chloramben	3565500	3264170	8.5	TM		
55	TM	Dinoseb	3671820	4020400	9.5	TM		
56	TM	2,4-DB	477801	552528	16	TM		
57	TM	Bentazon	460308	530655	15	TM		
58	TM	DCPA (Dacthal)	7017120	7216780	2.8	TM		
59	TM	Picloram	7066700	7559180	7.0	TM		
60	TM	Acifluorfen	5702570	5198630	8.8	TM		
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80								
		Average			11.4			

ORGANICS

Raw Data

Organic Extraction Worksheet

Method	Herbicide Extraction Reduced Sam 8151A	Extraction Set	210701A	Extraction Method	MSE005	Units	mL

Spiked ID 1	Herb Spike W/ Surrogate 6-21-21 6-21-22		Surrogate ID 1	Herb Surrogate 5-13-21 5-13-22	
Spiked ID 2			Surrogate ID 2		
Spiked ID 3			Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	NO	
Spiked ID 7			Ext. Start Time:	07/01/21 11:40	
Spiked ID 8			Ext. End Time:	07/01/21 14:50	
			GC Requires Extract By:		

pH1	2	07/01/21 11:52	Water Bath Temp 1 °C	76/74 E-WB6 °C
pH2			Water Bath Temp 2 °C	
pH3			Water Bath Temp 3 °C	

Spiked By: KY **Date** 7/1/2021 **Witnessed By:** SR **Date** 7/1/2021

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	210701A Blk				0.040	1	5.86	5/5*10	NA	07/01/21 11:40	
						equip	E-WB6				
2	210701A LCS-1		0.020	1	NA	NA	5.85	5/5*10	NA	07/01/21 11:40	
						equip	E-WB6				
3	210701A LCSD-1		0.020	1	NA	NA	5.10	5/5*10	NA	07/01/21 11:40	
						equip	E-WB6				
4	BA35059	BA35059S04			0.040	1	5.34	5/5*10	NA	07/01/21 11:40	96645
						equip	E-WB6				

Solvent and Lot#	
SCALE BALANCE ID	EB1
SAND	20I215202
DI Water/1+1 H2SO4	7-1-21 / 4-7-21
pH Strip/EthylEther	HC148594 / SH
Acidified Na2SO4	2-23-21
MTBE/ Methanol	60038 / 6i042
DIAZOMETHANE	6-12-21
SILICIC ACID POWDER	142756

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	CW
Date	7/12/21
Time	10:15
Refrigerator	Hobart

	Technician's Initials
Scanned By	SR
Sample Preparation	SR
Extraction	SR
Concentration	SR

Modified	7/12/2021 11:16:16 AM

Reviewed By: KY **Date** 7/12/2021

Injection Log

Directory: G:\HERBIE\DATA\210706

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	3	7060003.D	1	Herb CCV	water	7/6/21 10:03
2	4	7060004.D	1	Herbs 1 STD 07-06-21	water	7/6/21 15:13
3	5	7060005.D	1	Herbs 2 STD 07-06-21	water	7/6/21 15:36
4	6	7060006.D	1	Herbs 3 STD 07-06-21	water	7/6/21 15:58
5	7	7060007.D	1	Herbs 4 STD 07-06-21	water	7/6/21 16:20
6	8	7060008.D	1	Herbs 5 STD 07-06-21	water	7/6/21 16:43
7	9	7060009.D	1	Herbs 6 STD 07-06-21	water	7/6/21 17:05
8	10	7060010.D	1	Herbs SS 07-06-21	water	7/6/21 17:28
9	12	7060012.D	1	Herb-3 CCV 07/06/21	water	7/8/21 11:32
10	13	7060013.D	1706.48464	210701A BLK	water	7/8/21 12:13
11	14	7060014.D	1709.40171	210701A LCS	water	7/8/21 12:35
12	16	7060016.D	1872.65918	BA35059	96645: $87DDODV45S	7/8/21 13:34
13	29	7060029.D	1	Herb CCV 07/06/21	water	7/8/21 18:27

ORGANICS

Calibration Data

Semi-Volatile Analysis by GC-MS
EPA 8270

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 07/21/21
Matrix: Instrument: Yoda Initials: MA

			0721Y004.D	0721Y005 D	0721Y006.D	0721Y007.D	0721Y008.D	0721Y009.D	0721Y010.D	0721Y011.D	0721Y012.D							
		Compound	4	5	10	20	40	50	60	80	100		Avg	%RSD	Type	r^2	Q	MRF
1	I	1,4-dichlorobenzene-D4(IS)	ISTD															
2		1,4-Dioxane		0.2859	0.2462	0.1880	0.2040	0.2110	0.2253	0.1931	0.1958		0.22	15				
3	TM	n-Nitrosodimethylamine		0.3962	0.3725	0.3345	0.3834	0.3876	0.3820	0.3555	0.3793		0.37	5.3	TM			
4	TM	Pyridine		1.008	1.003	0.8872	1.059	1.048	1.033	0.9604	1.040		1.0	5.7	TM			
5	S	2-Fluorophenol (S)		1.529	1.373	1.230	1.360	1.388	1.375	1.396	1.354		1.4	5.9	S			
6	S	Phenol-D6 (S)		1.591	1.701	1.563	1.635	1.685	1.639	1.672	1.633		1.6	2.9	S			
7	*TM	Phenol		1.970	1.909	1.849	1.988	2.020	1.992	1.950	1.991		2.0	2.8	*TM			0.800
8	TM	Aniline		1.896	1.745	1.456	1.672	1.629	1.446	1.329	1.260		1.6	14	TM			
9	TM	Bis (2-chloroethyl) ether		0.9301	0.9046	0.8232	0.9172	0.9387	0.9088	0.8799	0.9058		0.90	4.0	TM			0.700
10	TM	2-Chlorophenol		1.457	1.408	1.279	1.471	1.473	1.463	1.469	1.468		1.4	4.7	TM			0.800
11	TM	1,3-DCB		1.599	1.522	1.460	1.564	1.587	1.571	1.541	1.576		1.6	2.9	TM			
12	*TM	1,4-DCB		1.630	1.578	1.423	1.574	1.611	1.591	1.571	1.602		1.6	4.0	*TM			
13	TM	Benzyl alcohol		0.7949	0.8096	0.7597	0.8576	0.8854	0.8728	0.8848	0.8812		0.84	5.8	TM			
14	TM	1,2-DCB		1.521	1.461	1.432	1.466	1.504	1.476	1.485	1.474		1.5	1.8	TM			
15	TM	2-Methylphenol		2.940	2.913	2.619	2.986	3.084	3.030	2.883	3.051		2.9	5.0	TM			0.700
16	TM	Bis (2-chloroisopropyl) ether		1.226	1.200	1.061	1.168	1.223	1.166	1.116	1.149		1.2	4.8	TM			0.010
17	TM	Acetophenone		1.962	1.918	1.712	1.958	2.000	1.970	1.880	1.958		1.9	4.8	TM			0.010
18	TM	3&4-Methylphenol		1.470	1.457	1.310	1.493	1.542	1.515	1.442	1.525		1.5	5.0	TM			0.600
19	**TM	n-Nitrosodi-n-propylamine		1.127	1.090	0.9923	1.109	1.136	1.114	1.096	1.124		1.1	4.2	**TM			0.500
20	TM	Hexachloroethane		0.5952	0.5771	0.5327	0.6012	0.6172	0.6053	0.6028	0.6152		0.59	4.6	TM			0.300
21	I	Napthalene-D8(IS)	ISTD															
22	S	Nitrobenzene-D5(S)		0.2915	0.3072	0.3195	0.3653	0.3730	0.3722	0.3706	0.3862		0.35	10	S			
23	TM	Nitrobenzene		0.3147	0.3078	0.3296	0.3767	0.3825	0.3766	0.3830	0.3826		0.36	9.3	TM			0.200
24	TM	Isophorone		0.6100	0.5778	0.6290	0.6739	0.6805	0.6606	0.6677	0.6609		0.65	5.6	TM			0.400
25	*TML	2-Nitrophenol			0.1161	0.1251	0.1679	0.1749	0.1770	0.1711	0.1908		0.16	18	*TM	0.994		0.100
26	TM	2,4-Dimethylphenol		0.2840	0.2756	0.2590	0.3123	0.3164	0.3065	0.2921	0.3148		0.30	7.1	TM			0.200
27	TM	Benzoic acid		0.0098	0.0079	0.0095	0.0098	0.0094	0.0090	0.0095	0.0100		0.01	7.3	TM			
28	TM	Bis (2-chloroethoxy) methane		0.3890	0.4110	0.3633	0.4039	0.4061	0.3992	0.3833	0.4083		0.40	4.1	TM			0.300
29	*TM	2,4-Dichlorophenol		0.2772	0.2634	0.2662	0.2773	0.2819	0.2804	0.2700	0.2914		0.28	3.3	*TM			0.200
30	TM	1,2,4-Trichlorobenzene		0.3343	0.2791	0.2971	0.3035	0.3009	0.2957	0.2850	0.3025		0.30	5.5	TM			
31	TM	3,4-Dimethylphenol		0.4489	0.4104	0.4407	0.4418	0.4473	0.4336	0.4323	0.4451		0.44	2.8	TM			
32	TM	Naphthalene		1.123	0.9504	1.018	0.9923	1.009	0.9817	0.9253	0.9049		0.99	6.8	TM			0.700
33	TM	4-Chloroaniline		0.3911	0.3788	0.3728	0.4210	0.4204	0.4038	0.3748	0.3780		0.39	5.1	TM			0.010
34	TM	2,6-Dichlorophenol		0.2452	0.2254	0.2294	0.2693	0.2698	0.2697	0.2563	0.2770		0.26	7.8	TM			
35	TM	Hexachloropropene			0.1345	0.1450	0.1844	0.1889	0.1898	0.1813	0.2005		0.17	14	TM			

Semi-Volatile Analysis by GC-MS
EPA 8270

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 07/21/21
Matrix: Instrument: Yoda Initials: MA

		Compound	4	5	10	20	40	50	60	80	100		Avg	%RSD	Type		Q	
36	*TM	Hexachlorobutadiene		0.1690	0.1443	0.1448	0.1604	0.1603	0.1581	0.1514	0.1622		0.16	5.6	*TM			0.010
37	TM	Caprolactum		0.0086	0.0078	0.0061	0.0077	0.0068	0.0070	0.0067	0.0069		0.01	11	TM			0.010
38	*TM	4-Chloro-3-methylphenol		0.2821	0.3112	0.2639	0.3197	0.3260	0.3207	0.3124	0.3207		0.31	7.2	*TM			0.200
39	TM	2-Methylnaphthalene		0.7764	0.7316	0.5903	0.7140	0.7258	0.6971	0.6654	0.7039		0.70	7.8	TM			0.400
40	TM	1-Methylnaphthalene		0.7369	0.6372	0.5647	0.6691	0.6961	0.6704	0.6374	0.6652		0.66	7.6	TM			
41	I	Acenaphthene-D10(IS)	ISTD															
42	**TM	Hexachlorocyclopentadiene			0.2465	0.3107	0.3140	0.2957	0.3561	0.3287			0.31	12	**TM			0.050
43	TM	1,2,4,5-Tetrachlorobenzene		0.6143	0.4631	0.4910	0.5010	0.4586	0.4893	0.4697	0.5154		0.50	10.0	TM			0.010
44	*TM	2,4,6-Trichlorophenol		0.3210	0.2919	0.3336	0.3456	0.3323	0.3537	0.3598	0.3743		0.34	7.5	*TM			0.200
45	TM	2,4,5-Trichlorophenol		0.3967	0.3210	0.3703	0.3789	0.3689	0.3851	0.3706	0.3961		0.37	6.4	TM			0.200
46	S	2-Fluorobiphenyl(S)		1.414	1.427	1.340	1.322	1.225	1.302	1.290	1.306		1.3	5.0	S			
47	TM	1,1'-Biphenyl		1.647	1.598	1.552	1.513	1.445	1.492	1.517	1.510		1.5	4.1	TM			0.010
48	TM	2-Chloronaphthalene		1.298	1.212	1.275	1.168	1.090	1.150	1.176	1.173		1.2	5.7	TM			0.800
49	TM	2-Nitroaniline			0.2298	0.3557	0.3343	0.3296	0.3507	0.3556	0.3603		0.33	14	TM			0.010
50	TM	Dimethyl phthalate		1.564	1.337	1.596	1.407	1.333	1.395	1.395	1.427		1.4	6.8	TM			0.010
51	TM	2,6-DNT			0.1886	0.2660	0.2619	0.2641	0.2778	0.2714	0.2964		0.26	13	TM			0.200
52	TM	Acenaphthylene		2.152	1.629	1.978	1.876	1.817	1.900	1.784	1.763		1.9	8.4	TM			0.900
53	TM	3-Nitroaniline		0.2886	0.2786	0.3196	0.3250	0.3396	0.3319	0.3234	0.3232		0.32	6.7	TM			0.010
54	*TM	Acenaphthene		1.176	1.120	1.191	1.164	1.208	1.177	1.180	1.217		1.2	2.5	*TM			0.900
55	**TMQ	2,4-Dinitrophenol				0.0286	0.0508	0.0644	0.0734	0.0916	0.1054		0.07	40	**TM	0.999		0.010
56	**TM	4-Nitrophenol		0.0228	0.0267	0.0279	0.0288	0.0320	0.0315	0.0350	0.0329		0.03	13	**TM			0.010
57	TM	Dibenzofuran		1.614	1.445	1.641	1.581	1.660	1.571	1.586	1.606		1.6	4.1	TM			0.800
58	TML	2,4-DNT			0.2234	0.3117	0.3538	0.3790	0.3912	0.3912	0.4122		0.35	19	TM	0.999		0.200
59	TM	2,3,4,6-Tetrachlorophenol			0.2053	0.2367	0.2405	0.2561	0.2581	0.2875	0.2764		0.25	11	TM			0.010
60	TM	Diethyl phthalate		1.425	1.401	1.643	1.448	1.359	1.456	1.366	1.451		1.4	6.2	TM			0.010
61	TM	4-Chlorophenyl phenyl ether		0.6591	0.5975	0.7220	0.6204	0.5918	0.6152	0.6090	0.6366		0.63	6.7	TM			0.400
62	TM	Fluorene		1.313	1.271	1.560	1.334	1.283	1.349	1.320	1.371		1.3	6.7	TM			0.900
63	TM	4-Nitroaniline		0.2749	0.2885	0.3894	0.3416	0.3226	0.3411	0.3334	0.3442		0.33	11	TM			0.010
64	S	2,4,6-Tribromophenol(S)			0.1311	0.1249	0.1439	0.1579	0.1545	0.1666	0.1693		0.15	11	S			
65	I	Phenanthrene-D10(IS)	ISTD															
66	TMQ	4,6-Dinitro-2-methylphenol				0.0463	0.0601	0.0655	0.0788	0.0820	0.0977		0.07	25	TM	0.996		0.010
67	TM	Diphenyl amine		0.5844	0.5905	0.6576	0.6196	0.5513	0.6018	0.5955	0.5270		0.59	6.7	TM			
68	*TM	n-Nitrosodiphenylamine		0.5844	0.5905	0.6576	0.6196	0.5513	0.6018	0.5955	0.5270		0.59	6.7	*TM			0.010
69	TM	1,2-Diphenylhydrazine		0.1502	0.1469	0.1699	0.1545	0.1409	0.1553	0.1444	0.1488		0.15	5.9	TM			
70	TM	4-Bromophenyl phenyl ether		0.1974	0.2197	0.1959	0.1988	0.2091	0.1988	0.1840	0.2036		0.20	5.2	TM			0.100

Semi-Volatile Analysis by GC-MS
EPA 8270

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 07/21/21
Matrix: Instrument: Yoda Initials: MA

		Compound	4	5	10	20	40	50	60	80	100		Avg	%RSD	Type		Q	
71	TM	Hexachlorobenzene		0.1919	0.2238	0.1882	0.1911	0.2002	0.1917	0.1773	0.1959		0.20	6.9	TM			0.100
72	TM	Atrazine		0.1556	0.1978	0.1958	0.2057	0.2016	0.2027	0.1898	0.2014		0.19	8.4	TM			0.010
73	*TM	Pentachlorophenol				0.0888	0.1087	0.1221	0.1240	0.1222	0.1368		0.12	14	*TM			0.050
74	TM	Phenanthrene		1.107	1.141	1.092	1.109	1.125	1.101	1.004	1.056		1.1	4.0	TM			0.700
75	TM	Anthracene		1.121	1.072	1.123	1.160	1.050	1.153	1.051	0.9847		1.1	5.5	TM			0.700
76	TM	Carbazol		1.009	0.9481	1.033	1.061	0.9628	1.040	1.034	1.033		1.0	3.9	TM			0.010
77	TM	Di-n-butylphthalate		1.171	1.174	1.382	1.445	1.404	1.347	1.073	1.150		1.3	11	TM			0.010
78	*TM	Fluoranthene		1.316	1.012	1.113	1.171	1.189	1.126	0.9976	1.083		1.1	9.1	*TM			0.600
79	I	Chrysene-D12(IS)	ISTD															
80	TM	Benzidine				0.4047	0.4424	0.4006	0.4390	0.4376	0.4120		0.42	4.5	TM			
81	TM	Pyrene		1.386	1.345	1.394	1.427	1.232	1.408	1.414	1.237		1.4	5.8	TM			0.600
82	S	Terphenyl-D14(S)		0.9895	1.022	0.9942	1.018	0.9190	1.027	1.033	1.053		1.0	4.1	S			
83	TM	Butyl benzylphthalate			0.5736	0.6897	0.7363	0.7122	0.7605	0.7424	0.7737		0.71	9.5	TM			0.010
84	TM	3,3'-Dichlorobenzidine		0.2867	0.3351	0.4021	0.4078	0.3952	0.3989	0.3894	0.3864		0.38	11	TM			0.010
85	TM	Benz (a) anthracene		1.205	1.223	1.268	1.300	1.276	1.294	1.288	1.295		1.3	2.8	TM			0.800
86	TM	Bis (2-ethylhexyl) phthalate			0.7410	0.9042	1.008	1.002	1.024	1.038	1.059		0.97	12	TM			0.010
87	TM	Chrysene		1.235	1.177	1.210	1.255	1.237	1.219	1.292	1.152		1.2	3.6	TM			0.700
88	*TML	Di-n-octylphthalate			0.9819	1.396	1.627	1.597	1.729	1.678			1.5	19	*TM	0.998		0.010
89	I	Perylene-D12(IS)	ISTD															
90	TM	Benzo (b) fluoranthene		1.060	0.9649	1.118	1.268	1.242	1.294	1.220	1.344		1.2	11	TM			0.700
91	TM	Benzo (k) fluoranthene		1.631	1.294	1.356	1.273	1.241	1.229	1.255	1.256		1.3	10	TM			0.700
92	*TML	Benzo (a) pyrene	0.6573	0.8369	0.9426	1.096	1.153	1.203	1.197	1.182	1.224		1.1	19	*TM	1.000		0.700
93	TM	Indeno (1,2,3-cd) pyrene			0.9803	1.140	1.207	1.416	1.234	1.362	1.232		1.2	12	TM			0.500
94	TM	Dibenz (a,h) anthracene			0.8535	1.000	1.075	1.273	1.102	1.120	1.112		1.1	12	TM			0.400
95	TM	Benzo (g,h,i) perylene		0.8616	0.9360	1.050	1.077	1.263	1.096	1.058	1.085		1.1	11	TM			0.500
96																		
97																		
98																		
99																		
100																		
101																		
102																		
103																		
104																		
105																		

Semi-Volatile Analysis by GC-MS
EPA 8270

Form 7

Second Source Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Date Analyzed: 07/21/21
Matrix: Instrument: Yoda
Initial Cal. Date: 07/21/21
Data File: 0721Y013.D

		Compound	MEAN	CCRF	%D		%Drift
1		1,4-Dioxane	0.2187	0.2096	4.1		
2	TM	n-Nitrosodimethylamine	0.3739	0.3924	4.9	TM	
3	TM	Pyridine	1.005	1.047	4.2	TM	
4	*TM	Phenol	1.959	2.019	3.1	*TM	
5	TM	Aniline	1.554	1.528	1.7	TM	
6	TM	Bis (2-chloroethyl) ether	0.9010	0.9571	6.2	TM	
7	TM	2-Chlorophenol	1.436	1.483	3.3	TM	
8	TM	1,3-DCB	1.552	1.620	4.4	TM	
9	*TM	1,4-DCB	1.573	1.629	3.6	*TM	
10	TM	Benzyl alcohol	0.8433	0.9004	6.8	TM	
11	TM	1,2-DCB	1.477	1.530	3.6	TM	
12	TM	2-Methylphenol	2.938	3.140	6.9	TM	
13	TM	Bis (2-chloroisopropyl) ether	1.164	1.211	4.0	TM	
14	TM	Acetophenone	1.920	2.009	4.7	TM	
15	TM	3&4-Methylphenol	1.469	1.570	6.9	TM	
16	**TM	n-Nitrosodi-n-propylamine	1.099	1.158	5.4	**TM	
17	TM	Hexachloroethane	0.5933	0.6271	5.7	TM	
18	TM	Nitrobenzene	0.3567	0.3923	10	TM	
19	TM	Isophorone	0.6451	0.6904	7.0	TM	
20	*TML	2-Nitrophenol	0.1604	0.1800	12	*TML	3.6
21	TM	2,4-Dimethylphenol	0.2951	0.3131	6.1	TM	
22	TM	Benzoic acid	0.0094	0.0096	2.2	TM	
23	TM	Bis (2-chloroethoxy) methane	0.3955	0.4149	4.9	TM	
24	*TM	2,4-Dichlorophenol	0.2760	0.2844	3.0	*TM	
25	TM	1,2,4-Trichlorobenzene	0.2998	0.3091	3.1	TM	
26	TM	3,4-Dimethylphenol	0.4375	0.4547	3.9	TM	
27	TM	Naphthalene	0.9881	1.003	1.5	TM	
28	TM	4-Chloroaniline	0.3926	0.4207	7.2	TM	
29	TM	2,6-Dichlorophenol	0.2553	0.2766	8.4	TM	
30	TM	Hexachloropropene	0.1749	0.1922	9.9	TM	
31	*TM	Hexachlorobutadiene	0.1563	0.1618	3.5	*TM	
32	TM	Caprolactum	0.0072	0.0073	1.7	TM	
33	*TM	4-Chloro-3-methylphenol	0.3071	0.3245	5.7	*TM	
34	TM	2-Methylnaphthalene	0.7006	0.6807	2.8	TM	
35	TM	1-Methylnaphthalene	0.6596	0.7006	6.2	TM	
36	**TM	Hexachlorocyclopentadiene	0.3086	0.3641	18	**TM	
37	TM	1,2,4,5-Tetrachlorobenzene	0.5003	0.5144	2.8	TM	
38	*TM	2,4,6-Trichlorophenol	0.3390	0.3659	7.9	*TM	
39	TM	2,4,5-Trichlorophenol	0.3734	0.3991	6.9	TM	
40	TM	1,1'-Biphenyl	1.534	1.593	3.8	TM	
		Average			5.5		

Semi-Volatile Analysis by GC-MS
EPA 8270

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: 0

SDG No:
Date Analyzed: 07/21/21
Instrument: Yoda
Cal. Date: 07/21/21
Data File: 0721Y013.D

		Compound	MEAN	CCRF	%D		%Drift	
41	TM	2-Chloronaphthalene	1.193	1.217	2.0	TM		
42	TM	2-Nitroaniline	0.3308	0.3696	12	TM		
43	TM	Dimethyl phthalate	1.432	1.462	2.1	TM		
44	TM	2,6-DNT	0.2609	0.3024	16	TM		
45	TM	Acenaphthylene	1.862	1.893	1.7	TM		
46	TM	3-Nitroaniline	0.3162	0.3522	11	TM		
47	*TM	Acenaphthene	1.179	1.206	2.3	*TM		
48	**TMQ	2,4-Dinitrophenol	0.0690	0.0746	8.1	**TMQ	9.1	
49	**TM	4-Nitrophenol	0.0297	0.0338	14	**TM		
50	TM	Dibenzofuran	1.588	1.652	4.0	TM		
51	TML	2,4-DNT	0.3518	0.4153	18	TML	8.0	
52	TM	2,3,4,6-Tetrachlorophenol	0.2515	0.2754	9.5	TM		
53	TM	Diethyl phthalate	1.444	1.532	6.1	TM		
54	TM	4-Chlorophenyl phenyl ether	0.6315	0.6509	3.1	TM		
55	TM	Fluorene	1.350	1.414	4.7	TM		
56	TM	4-Nitroaniline	0.3294	0.3694	12	TM		
57	TMQ	4,6-Dinitro-2-methylphenol	0.0717	0.0815	14	TMQ	14	
58	TM	Diphenyl amine	0.5909	0.6561	11	TM		
59	*TM	n-Nitrosodiphenylamine	0.5909	0.6561	11	*TM		
60	TM	1,2-Diphenylhydrazine	0.1514	0.1647	8.8	TM		
61	TM	4-Bromophenyl phenyl ether	0.2009	0.2076	3.3	TM		
62	TM	Hexachlorobenzene	0.1950	0.2003	2.7	TM		
63	TM	Atrazine	0.1938	0.2083	7.5	TM		
64	*TM	Pentachlorophenol	0.1171	0.1281	9.4	*TM		
65	TM	Phenanthrene	1.092	1.144	4.7	TM		
66	TM	Anthracene	1.089	1.202	10	TM		
67	TM	Carbazol	1.015	1.080	6.4	TM		
68	TM	Di-n-butylphthalate	1.268	1.494	18	TM		
69	*TM	Fluoranthene	1.126	1.177	4.5	*TM		
70	TM	Benzidine	0.4227	0.5277	25	TM		*
71	TM	Pyrene	1.355	1.454	7.3	TM		
72	TM	Butyl benzylphthalate	0.7126	0.7978	12	TM		
73	TM	3,3'-Dichlorobenzidine	0.3752	0.4358	16	TM		
74	TM	Benz (a) anthracene	1.269	1.368	7.8	TM		
75	TM	Bis (2-ethylhexyl) phthalate	0.9679	1.075	11	TM		
76	TM	Chrysene	1.222	1.260	3.1	TM		
77	*TML	Di-n-octylphthalate	1.502	1.819	21	*TML	9.8	
78	TM	Benzo (b) fluoranthene	1.189	1.335	12	TM		
79	TM	Benzo (k) fluoranthene	1.317	1.203	8.6	TM		
80	*TML	Benzo (a) pyrene	1.055	1.216	15	*TML	2.5	
		Average			9.4			

Semi-Volatile Analysis by GC-MS
EPA 8270

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: 0

SDG No:
Date Analyzed: 07/21/21
Instrument: Yoda
Cal. Date: 07/21/21
Data File: 0721Y013.D

		Compound	MEAN	CCRF	%D		%Drift
81	TM	Indeno (1,2,3-cd) pyrene	1.224	1.289	5.3	TM	
82	TM	Dibenz (a,h) anthracene	1.076	1.118	3.8	TM	
83	TM	Benzo (g,h,i) perylene	1.053	1.090	3.5	TM	
84							
85							
86							
87							
88							
89							
90							
91							
92							
93							
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115							
116							
117							
118							
119							
120							
		Average			4.2		

Semi-Volatile Analysis by GC-MS
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No:
Date Analyzed: 07/27/21
Instrument: Yoda
Initial Cal. Date: 07/21/21
Data File: 0721Y120.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	1,4-dichlorobenzene-D4(IS)	ISTD			I	
2		1,4-Dioxane	0.2187	0.1750	20		
3	TM	n-Nitrosodimethylamine	0.3739	0.3240	13	TM	
4	TM	Pyridine	1.005	0.8878	12	TM	
5	S	2-Fluorophenol (S)	1.375	1.435	4.4	S	
6	S	Phenol-D6 (S)	1.640	1.740	6.1	S	
7	*TM	Phenol	1.959	2.145	9.5	*TM	
8	TM	Aniline	1.554	1.811	17	TM	
9	TM	Bis (2-chloroethyl) ether	0.9010	0.9809	8.9	TM	
10	TM	2-Chlorophenol	1.436	1.535	6.9	TM	
11	TM	1,3-DCB	1.552	1.612	3.8	TM	
12	*TM	1,4-DCB	1.573	1.607	2.2	*TM	
13	TM	Benzyl alcohol	0.8433	0.9312	10	TM	
14	TM	1,2-DCB	1.477	1.494	1.1	TM	
15	TM	2-Methylphenol	2.938	3.014	2.6	TM	
16	TM	Bis (2-chloroisopropyl) ether	1.164	1.425	22	TM	*
17	TM	Acetophenone	1.920	1.923	0.19	TM	
18	TM	3&4-Methylphenol	1.469	1.507	2.6	TM	
19	**TM	n-Nitrosodi-n-propylamine	1.099	1.119	1.9	**TM	
20	TM	Hexachloroethane	0.5933	0.6094	2.7	TM	
21	I	Napthalene-D8(IS)	ISTD			I	
22	S	Nitrobenzene-D5(S)	0.3482	0.3753	7.8	S	
23	TM	Nitrobenzene	0.3567	0.3938	10	TM	
24	TM	Isophorone	0.6451	0.7132	11	TM	
25	*TML	2-Nitrophenol	0.1604	0.1952	22	*TML	11
26	TM	2,4-Dimethylphenol	0.2951	0.3306	12	TM	
27	TM	Benzoic acid	0.0094	0.0089	4.5	TM	
28	TM	Bis (2-chloroethoxy) methane	0.3955	0.4348	9.9	TM	
29	*TM	2,4-Dichlorophenol	0.2760	0.2984	8.1	*TM	
30	TM	1,2,4-Trichlorobenzene	0.2998	0.3080	2.7	TM	
31	TM	3,4-Dimethylphenol	0.4375	0.4537	3.7	TM	
32	TM	Naphthalene	0.9881	1.038	5.0	TM	
33	TM	4-Chloroaniline	0.3926	0.4221	7.5	TM	
34	TM	2,6-Dichlorophenol	0.2553	0.2729	6.9	TM	
35	TM	Hexachloropropene	0.1749	0.1838	5.1	TM	
36	*TM	Hexachlorobutadiene	0.1563	0.1562	0.06	*TM	
37	TM	Caprolactum	0.0072	0.0069	4.2	TM	
38	*TM	4-Chloro-3-methylphenol	0.3071	0.3294	7.3	*TM	
39	TM	2-Methylnaphthalene	0.7006	0.7414	5.8	TM	
40	TM	1-Methylnaphthalene	0.6596	0.7106	7.7	TM	
		Average			7.6		

Semi-Volatile Analysis by GC-MS
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: 0

SDG No:
Date Analyzed: 07/27/21
Instrument: Yoda
Cal. Date: 07/21/21
Data File: 0721Y120.D

		Compound	MEAN	CCRF	%D		%Drift	
41	I	Acenaphthene-D10(IS)	ISTD			I		
42	**TM	Hexachlorocyclopentadiene	0.3086	0.3522	14	**TM		
43	TM	1,2,4,5-Tetrachlorobenzene	0.5003	0.5055	1.0	TM		
44	*TM	2,4,6-Trichlorophenol	0.3390	0.3739	10	*TM		
45	TM	2,4,5-Trichlorophenol	0.3734	0.3860	3.4	TM		
46	S	2-Fluorobiphenyl(S)	1.328	1.358	2.2	S		
47	TM	1,1'-Biphenyl	1.534	1.555	1.3	TM		
48	TM	2-Chloronaphthalene	1.193	1.175	1.5	TM		
49	TM	2-Nitroaniline	0.3308	0.3596	8.7	TM		
50	TM	Dimethyl phthalate	1.432	1.428	0.29	TM		
51	TM	2,6-DNT	0.2609	0.2922	12	TM		
52	TM	Acenaphthylene	1.862	1.953	4.9	TM		
53	TM	3-Nitroaniline	0.3162	0.3594	14	TM		
54	*TM	Acenaphthene	1.179	1.184	0.39	*TM		
55	**TMQ	2,4-Dinitrophenol	0.0690	0.0981	42	**TMQ	28	*
56	**TM	4-Nitrophenol	0.0297	0.0327	10	**TM		
57	TM	Dibenzofuran	1.588	1.642	3.4	TM		
58	TML	2,4-DNT	0.3518	0.3854	9.6	TML	1.1	
59	TM	2,3,4,6-Tetrachlorophenol	0.2515	0.2791	11	TM		
60	TM	Diethyl phthalate	1.444	1.419	1.7	TM		
61	TM	4-Chlorophenyl phenyl ether	0.6315	0.6211	1.6	TM		
62	TM	Fluorene	1.350	1.366	1.2	TM		
63	TM	4-Nitroaniline	0.3294	0.3845	17	TM		
64	S	2,4,6-Tribromophenol(S)	0.1497	0.1578	5.4	S		
65	I	Phenanthrene-D10(IS)	ISTD			I		
66	TMQ	4,6-Dinitro-2-methylphenol	0.0717	0.0882	23	TMQ	20	
67	TM	Diphenyl amine	0.5909	0.5682	3.9	TM		
68	*TM	n-Nitrosodiphenylamine	0.5909	0.5682	3.9	*TM		
69	TM	1,2-Diphenylhydrazine	0.1514	0.1450	4.2	TM		
70	TM	4-Bromophenyl phenyl ether	0.2009	0.2013	0.18	TM		
71	TM	Hexachlorobenzene	0.1950	0.1994	2.2	TM		
72	TM	Atrazine	0.1938	0.1971	1.7	TM		
73	*TM	Pentachlorophenol	0.1171	0.1336	14	*TM		
74	TM	Phenanthrene	1.092	1.121	2.6	TM		
75	TM	Anthracene	1.089	1.175	7.9	TM		
76	TM	Carbazol	1.015	1.073	5.7	TM		
77	TM	Di-n-butylphthalate	1.268	1.320	4.1	TM		
78	*TM	Fluoranthene	1.126	1.159	2.9	*TM		
79	I	Chrysene-D12(IS)	ISTD			I		
80	TM	Benzidine	0.4227	0.5028	19	TM		
		Average			7.3			

Semi-Volatile Analysis by GC-MS
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: 0

SDG No:
Date Analyzed: 07/27/21
Instrument: Yoda
Cal. Date: 07/21/21
Data File: 0721Y120.D

		Compound	MEAN	CCRF	%D		%Drift
81	TM	Pyrene	1.355	1.451	7.0	TM	
82	S	Terphenyl-D14(S)	1.007	1.064	5.7	S	
83	TM	Butyl benzylphthalate	0.7126	0.7200	1.0	TM	
84	TM	3,3'-Dichlorobenzidine	0.3752	0.4454	19	TM	
85	TM	Benz (a) anthracene	1.269	1.278	0.76	TM	
86	TM	Bis (2-ethylhexyl) phthalate	0.9679	0.9630	0.52	TM	
87	TM	Chrysene	1.222	1.205	1.4	TM	
88	*TML	Di-n-octylphthalate	1.502	1.670	11	*TML	1.6
89	I	Perylene-D12(IS)	ISTD			I	
90	TM	Benzo (b) fluoranthene	1.189	1.236	4.0	TM	
91	TM	Benzo (k) fluoranthene	1.317	1.211	8.0	TM	
92	*TML	Benzo (a) pyrene	1.055	1.181	12	*TML	0.33
93	TM	Indeno (1,2,3-cd) pyrene	1.224	1.289	5.3	TM	
94	TM	Dibenz (a,h) anthracene	1.076	1.161	7.9	TM	
95	TM	Benzo (g,h,i) perylene	1.053	1.165	11	TM	
96							
97							
98							
99							
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116							
117							
118							
119							
120							
		Average			6.8		

Semi-Volatile Analysis by GC-MS
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No:
Date Analyzed: 07/28/21
Instrument: Yoda
Initial Cal. Date: 07/21/21
Data File: 0721Y145.D

		Compound	MEAN	CCRF	%D	%Drift	
1	I	1,4-dichlorobenzene-D4(IS)	ISTD			I	
2		1,4-Dioxane	0.2187	0.2187	0.01		
3	TM	n-Nitrosodimethylamine	0.3739	0.3440	8.0	TM	
4	TM	Pyridine	1.005	0.9064	9.8	TM	
5	S	2-Fluorophenol (S)	1.375	1.409	2.5	S	
6	S	Phenol-D6 (S)	1.640	1.730	5.5	S	
7	*TM	Phenol	1.959	2.095	6.9	*TM	
8	TM	Aniline	1.554	1.666	7.2	TM	
9	TM	Bis (2-chloroethyl) ether	0.9010	0.9715	7.8	TM	
10	TM	2-Chlorophenol	1.436	1.537	7.1	TM	
11	TM	1,3-DCB	1.552	1.593	2.6	TM	
12	*TM	1,4-DCB	1.573	1.626	3.4	*TM	
13	TM	Benzyl alcohol	0.8433	0.9285	10	TM	
14	TM	1,2-DCB	1.477	1.520	2.9	TM	
15	TM	2-Methylphenol	2.938	3.054	3.9	TM	
16	TM	Bis (2-chloroisopropyl) ether	1.164	1.385	19	TM	
17	TM	Acetophenone	1.920	1.939	1.0	TM	
18	TM	3&4-Methylphenol	1.469	1.527	3.9	TM	
19	**TM	n-Nitrosodi-n-propylamine	1.099	1.127	2.6	**TM	
20	TM	Hexachloroethane	0.5933	0.6084	2.5	TM	
21	I	Napthalene-D8(IS)	ISTD			I	
22	S	Nitrobenzene-D5(S)	0.3482	0.3875	11	S	
23	TM	Nitrobenzene	0.3567	0.4019	13	TM	
24	TM	Isophorone	0.6451	0.6998	8.5	TM	
25	*TML	2-Nitrophenol	0.1604	0.1991	24	*TML	13
26	TM	2,4-Dimethylphenol	0.2951	0.3313	12	TM	
27	TM	Benzoic acid	0.0094	0.0092	1.7	TM	
28	TM	Bis (2-chloroethoxy) methane	0.3955	0.4186	5.8	TM	
29	*TM	2,4-Dichlorophenol	0.2760	0.2873	4.1	*TM	
30	TM	1,2,4-Trichlorobenzene	0.2998	0.3003	0.18	TM	
31	TM	3,4-Dimethylphenol	0.4375	0.4541	3.8	TM	
32	TM	Naphthalene	0.9881	1.030	4.2	TM	
33	TM	4-Chloroaniline	0.3926	0.4242	8.1	TM	
34	TM	2,6-Dichlorophenol	0.2553	0.2757	8.0	TM	
35	TM	Hexachloropropene	0.1749	0.1880	7.5	TM	
36	*TM	Hexachlorobutadiene	0.1563	0.1525	2.4	*TM	
37	TM	Caprolactum	0.0072	0.0070	3.4	TM	
38	*TM	4-Chloro-3-methylphenol	0.3071	0.3301	7.5	*TM	
39	TM	2-Methylnaphthalene	0.7006	0.7180	2.5	TM	
40	TM	1-Methylnaphthalene	0.6596	0.6914	4.8	TM	
		Average			6.3		

Semi-Volatile Analysis by GC-MS
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: 0

SDG No:
Date Analyzed: 07/28/21
Instrument: Yoda
Cal. Date: 07/21/21
Data File: 0721Y145.D

		Compound	MEAN	CCRF	%D		%Drift	
41	I	Acenaphthene-D10(IS)	ISTD			I		
42	**TM	Hexachlorocyclopentadiene	0.3086	0.3348	8.5	**TM		
43	TM	1,2,4,5-Tetrachlorobenzene	0.5003	0.5048	0.90	TM		
44	*TM	2,4,6-Trichlorophenol	0.3390	0.3773	11	*TM		
45	TM	2,4,5-Trichlorophenol	0.3734	0.3944	5.6	TM		
46	S	2-Fluorobiphenyl(S)	1.328	1.338	0.76	S		
47	TM	1,1'-Biphenyl	1.534	1.528	0.43	TM		
48	TM	2-Chloronaphthalene	1.193	1.171	1.8	TM		
49	TM	2-Nitroaniline	0.3308	0.3733	13	TM		
50	TM	Dimethyl phthalate	1.432	1.400	2.2	TM		
51	TM	2,6-DNT	0.2609	0.2961	13	TM		
52	TM	Acenaphthylene	1.862	1.935	3.9	TM		
53	TM	3-Nitroaniline	0.3162	0.3743	18	TM		
54	*TM	Acenaphthene	1.179	1.198	1.6	*TM		
55	**TMQ	2,4-Dinitrophenol	0.0690	0.0549	20	**TMQ	8.6	
56	**TM	4-Nitrophenol	0.0297	0.0352	18	**TM		
57	TM	Dibenzofuran	1.588	1.646	3.7	TM		
58	TML	2,4-DNT	0.3518	0.3985	13	TML	4.1	
59	TM	2,3,4,6-Tetrachlorophenol	0.2515	0.2875	14	TM		
60	TM	Diethyl phthalate	1.444	1.442	0.12	TM		
61	TM	4-Chlorophenyl phenyl ether	0.6315	0.6295	0.31	TM		
62	TM	Fluorene	1.350	1.388	2.8	TM		
63	TM	4-Nitroaniline	0.3294	0.3893	18	TM		
64	S	2,4,6-Tribromophenol(S)	0.1497	0.1650	10	S		
65	I	Phenanthrene-D10(IS)	ISTD			I		
66	TMQ	4,6-Dinitro-2-methylphenol	0.0717	0.0754	5.1	TMQ	7.9	
67	TM	Diphenyl amine	0.5909	0.5978	1.2	TM		
68	*TM	n-Nitrosodiphenylamine	0.5909	0.5978	1.2	*TM		
69	TM	1,2-Diphenylhydrazine	0.1514	0.1531	1.1	TM		
70	TM	4-Bromophenyl phenyl ether	0.2009	0.2074	3.2	TM		
71	TM	Hexachlorobenzene	0.1950	0.1987	1.9	TM		
72	TM	Atrazine	0.1938	0.2112	9.0	TM		
73	*TM	Pentachlorophenol	0.1171	0.1391	19	*TM		
74	TM	Phenanthrene	1.092	1.140	4.4	TM		
75	TM	Anthracene	1.089	1.189	9.2	TM		
76	TM	Carbazol	1.015	1.091	7.5	TM		
77	TM	Di-n-butylphthalate	1.268	1.363	7.5	TM		
78	*TM	Fluoranthene	1.126	1.162	3.2	*TM		
79	I	Chrysene-D12(IS)	ISTD			I		
80	TM	Benzidine	0.4227	0.5262	24	TM		*NT
		Average			7.5			

Semi-Volatile Analysis by GC-MS
EPA 8270

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: 0

SDG No:
Date Analyzed: 07/28/21
Instrument: Yoda
Cal. Date: 07/21/21
Data File: 0721Y145.D

		Compound	MEAN	CCRF	%D		%Drift	
81	TM	Pyrene	1.355	1.431	5.6	TM		
82	S	Terphenyl-D14(S)	1.007	1.028	2.1	S		
83	TM	Butyl benzylphthalate	0.7126	0.7421	4.1	TM		
84	TM	3,3'-Dichlorobenzidine	0.3752	0.4678	25	TM		*
85	TM	Benz (a) anthracene	1.269	1.285	1.3	TM		
86	TM	Bis (2-ethylhexyl) phthalate	0.9679	1.029	6.3	TM		
87	TM	Chrysene	1.222	1.214	0.65	TM		
88	*TML	Di-n-octylphthalate	1.502	1.793	19	*TML	8.4	
89	I	Perylene-D12(IS)	ISTD			I		
90	TM	Benzo (b) fluoranthene	1.189	1.281	7.8	TM		
91	TM	Benzo (k) fluoranthene	1.317	1.205	8.5	TM		
92	*TML	Benzo (a) pyrene	1.055	1.179	12	*TML	0.54	
93	TM	Indeno (1,2,3-cd) pyrene	1.224	1.260	2.9	TM		
94	TM	Dibenz (a,h) anthracene	1.076	1.140	5.9	TM		
95	TM	Benzo (g,h,i) perylene	1.053	1.134	7.7	TM		
96								
97								
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115								
116								
117								
118								
119								
120								
		Average			7.8			

ORGANICS

Raw Data

Organic Extraction Worksheet

Method	8270 Sonication Ext. Methylene c 3550	Extraction Set	210628A	Extraction Method	SON009	Units	mL

Spiked ID 1	8270T 50ug/mL Spike 6-15-21 3-25-22		Surrogate ID 1	8270 Surrogate 3-8-21 3-8-22	
Spiked ID 2			Surrogate ID 2		
Spiked ID 3			Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	YES	
Spiked ID 7			Ext. Start Time:	06/28/21 8:34	
Spiked ID 8			Ext. End Time:	06/28/21 18:48	
			GC Requires Extract By:		

pH1			Water Bath Temp 1 °C	76/74 E-WB6 °C
pH2			Water Bath Temp 2 °C	
pH3			Water Bath Temp 3 °C	

Spiked By: KY **Date** 06/28/21 **Witnessed By:** SR **Date** 06/28/21

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
1	210628A Blk				0.200	1	30.69	1	NA	06/28/21 8:34	
						equip	e-s1.1 e-wb6				
2	210628A LCS-1		1	1	0.200	1	30.56	1	NA	06/28/21 8:34	
						equip	E-S1.2 E-WB6				
3	210628A LCSD-1		1	1	0.200	1	30.08	1	NA	06/28/21 8:34	
						equip	E-S2 E-WB6				
4	BA34680	BA34680S04			0.200	1	30.33	1	NA	06/28/21 8:34	96564
						equip	E-S6 E-WB6				
5	BA34681	BA34681S05			0.200	1	30.05	1	NA	06/28/21 8:34	96564
						equip	E-S7 E-WB6				
6	BA34682	BA34682S05			0.200	1	30.76	1	NA	06/28/21 8:34	96564
						equip	e-s8 E-WB6				
7	BA34683	BA34683S05			0.200	1	30.60	1	NA	06/28/21 8:34	96564
						equip	E-S1.1 E-WB6				
8	BA34684	BA34684S04			0.200	1	30.39	1	NA	06/28/21 8:34	96564
						equip	E-S1.2 E-WB6				
9	BA34685	BA34685S05			0.200	1	30.43	1	NA	06/28/21 8:34	96564
						equip	E-S2 E-WB6				
10	BA34686 MS-1	BA34686S10	1	1	0.200	1	30.26	1	NA	06/28/21 8:34	96564
						equip	E-S7 E-WB6				
11	BA34686 MSD-1	BA34686S10	1	1	0.200	1	30.57	1	NA	06/28/21 8:34	96564
						equip	e-s8 E-WB6				
12	BA34686	BA34686S10			0.200	1	30.16	1	NA	06/28/21 8:34	96564
						equip	E-S6 E-WB6				
13	BA34687	BA34687S04			0.200	1	30.22	1	NA	06/28/21 8:34	96564
						equip	E-S1.1 E-WB6				
14	BA34688	BA34688S04			0.200	1	30.82	1	NA	06/28/21 8:34	96564
						equip	E-S1.2 E-WB6				
15	BA34689	BA34689S04			0.200	1	30.28	1	NA	06/28/21 8:34	96564
						equip	E-S2 E-WB6				
16	BA34691	BA34691S04			0.200	1	30.69	1	NA	06/28/21 8:34	96565
						equip	E-S6 E-WB6				

Solvent and Lot#	
Balance Scale ID	EB1
SAND	201215202
Dichloromethane (DCM)	60336
Filter Paper	17222226
Na2SO4	2020120870

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	CW
Date	6/30/21
Time	10:11
Refrigerator	GCC

	Technician's Initials
Scanned By	SR
Sample Preparation	SR
Extraction	SB
Concentration	SB

Modified	07/07/21 10:08:17 AM

Reviewed By: KY **Date** 07/07/21

Organic Extraction Worksheet

Method	8270 Sonication Ext. Methylene c 3550	Extraction Set	210628A	Extraction Method	SON009	Units	mL

Spiked ID 1	8270T 50ug/mL Spike 6-15-21 3-25-22		Surrogate ID 1	8270 Surrogate 3-8-21 3-8-22	
Spiked ID 2			Surrogate ID 2		
Spiked ID 3			Surrogate ID 3		
Spiked ID 4			Surrogate ID 4		
Spiked ID 5			Surrogate ID 5		
Spiked ID 6			Sufficient Vol for Matrix QC:	YES	
Spiked ID 7			Ext. Start Time:	06/28/21 8:34	
Spiked ID 8			Ext. End Time:	06/28/21 18:48	
			GC Requires Extract By:		

pH1			Water Bath Temp 1 °C	76/74 E-WB6 °C
pH2			Water Bath Temp 2 °C	
pH3			Water Bath Temp 3 °C	

Spiked By: KY **Date** 06/28/21 **Witnessed By:** SR **Date** 06/28/21

	Sample	Sample Container	Spike Amount	Spike ID	Surrogate Amount	Surrogate ID	Extract Amount	Final Volume	pH	Extract Date/Time	Comments
17	BA34692	BA34692S05			0.200	1	30.44	1	NA	06/28/21 8:34	96565
						equip	E-S7 E-WB6				
18	BA34693	BA34693S05			0.200	1	30.37	1	NA	06/28/21 8:34	96565
						equip	e-s8 E-WB6				
19	BA35059	BA35059S04			0.200	1	30.07	5	NA	06/29/21 8:30	96645 END TIME 06/29/21 11:47
						equip	E-S1.1 E-WB6				
20	BA35098	BA35098S13			0.200	1	30.63	5	NA	06/29/21 8:30	96655 END TIME 06/29/21 11:47
						equip	E-S1.2 E-WB6				

Solvent and Lot#	
Balance Scale ID	EB1
SAND	201215202
Dichloromethane (DCM)	60336
Filter Paper	17222226
Na2SO4	2020120870

Extraction COC Transfer	
Extraction lab employee Initials	KY
GC analyst's initials	CW
Date	
Time	
Refrigerator	GCC

	Technician's Initials
Scanned By	SR
Sample Preparation	SR
Extraction	SB
Concentration	SB

Modified	07/07/21 10:08:17 AM

Reviewed By: KY **Date** 07/07/21

Injection Log

Directory: M:\YODA\DATA\Y210721\

Vial	FileName	Multiplier	SampleName	Misc Info	Injected
3	0721Y003.D	1	SV TUNE 7/2/21		21 Jul 21 9:24
4	0721Y004.D	1	4 ug/mL 07/16/21		21 Jul 21 9:40
5	0721Y005.D	1	5 ug/mL 07/16/21		21 Jul 21 10:06
6	0721Y006.D	1	10 ug/mL 07/16/21		21 Jul 21 10:31
7	0721Y007.D	1	20 ug/mL 07/16/21		21 Jul 21 10:57
8	0721Y008.D	1	40 ug/mL 07/16/21		21 Jul 21 11:23
9	0721Y009.D	1	50 ug/mL 07/16/21		21 Jul 21 11:48
10	0721Y010.D	1	60 ug/mL 07/16/21		21 Jul 21 12:14
11	0721Y011.D	1	80 ug/mL 07/16/21		21 Jul 21 12:40
12	0721Y012.D	1	100 ug/mL 07/16/21		21 Jul 21 13:06
13	0721Y013.D	1	SS 50 ug/mL 07/16/21		21 Jul 21 13:31
19	0721Y119.D	1	SV TUNE 7/2/21		27 Jul 21 10:38
20	0721Y120.D	1	50 ug/mL 07/16/21 (1)	Two compounds increase se	27 Jul 21 10:53
21	0721Y121.D	32.5839	210628A BLK 1/30.69		27 Jul 21 11:47
22	0721Y122.D	32.7225	210628A LCS-1 1/30.56		27 Jul 21 12:12
44	0721Y144.D	1	SV TUNE 7/2/21		28 Jul 21 9:56
45	0721Y145.D	1	50 ug/mL 07/16/21 (1)	1 compound incresed sensit.	28 Jul 21 10:11
48	0721Y148.D	831.393	BA35059S04 5/30.07 DF5		28 Jul 21 11:34

ORGANICS

Calibration Data

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 7/2/2021
Matrix: Instrument: Thor
Initials:

		Compound	0702T02.D	0702T03.D	0702T04 D	0702T05.D	0702T06.D	0702T07.D	0702T08 D				Avg	%RSD	Type	r^2	Q	MRF
1	I	Fluorobenzene (IS)																
2	TM	Dichlorodifluoromethane		0.1454	0.1662	0.1765	0.1699	0.1573	0.1456				0.16	8.1	TM			
3	TM	Freon 114		0.0754	0.0966	0.0926	0.0878	0.0901					0.09	9.1	TM			
4	TM**	Chloromethane	0.0502	0.0619	0.0619	0.0661	0.0642	0.0625	0.0636				0.06	8.5	TM**			
5	TM*	Vinyl chloride	0.1419	0.1636	0.1698	0.1778	0.1718	0.1545	0.1487				0.16	8.2	TM*			
6	TM	Bromomethane	0.0888	0.0832	0.0806	0.0871	0.0849						0.08	3.8	TM			
7	TM	Chloroethane	0.1151	0.0994	0.0986	0.1024	0.0954	0.0887	0.0758				0.10	13	TM			
8	TM	Dichlorofluoromethane	0.1435	0.1215	0.1314	0.1229	0.1088	0.1084					0.12	11	TM			
9	TM	Trichlorofluoromethane	0.2476	0.2651	0.2897	0.2974	0.2840	0.2654	0.2730				0.27	6.2	TM			
10	TM	Acrolein	0.0049	0.0060	0.0059	0.0061	0.0063	0.0059	0.0057				0.01	7.9	TM			
11	TML	Acetone		0.0434	0.0304	0.0298	0.0268	0.0241	0.0249				0.03	24	TM	0.999		
12	TM	Freon-113		0.1058	0.1253	0.1299	0.1250	0.1477	0.1525				0.13	13	TM			
13	TM*	1,1-DCE		0.1679	0.2189	0.2089	0.2059	0.2286	0.2418				0.21	12	TM*			
14	TM	Acetonitrile	0.0039	0.0035	0.0037	0.0036	0.0037	0.0034	0.0031				0.00	7.2	TM			
15	TMQ	t-Butanol	0.0214	0.0242	0.0522	0.0506	0.1068	0.1821	0.2417				0.10	88	TM	0.996		
16	TM	Methyl Acetate	0.1137	0.1059	0.1177	0.1133	0.1232	0.1219	0.1284				0.12	6.4	TM			
17	TM	Iodomethane													TM			
18	TM	Acrylonitrile	0.0483	0.0547	0.0625	0.0594	0.0642	0.0641	0.0656				0.06	11	TM			
19	TM	Methylene chloride		0.1155	0.1052	0.1013	0.0955	0.0881	0.0854				0.10	11	TM			
20	TM	Carbon disulfide	0.1995	0.1752	0.2053	0.1921	0.1818	0.1985	0.1915				0.19	5.5	TM			
21	TM	Methyl t-butyl ether (MtBE)	0.1758	0.1762	0.1786	0.1795	0.1869	0.1837	0.1916				0.18	3.2	TM			
22	TM	Trans-1,2-DCE	0.0886	0.0707	0.0992	0.0945	0.0933	0.1023	0.1085				0.09	13	TM			
23	TM	Diisopropyl Ether	0.5592	0.5053	0.5196	0.5203	0.5329	0.5474	0.5612				0.54	4.0	TM			
24	TM**	1,1-DCA	0.3034	0.2730	0.3052	0.2930	0.2926	0.2964	0.3117				0.30	4.2	TM**			
25	TM	Vinyl Acetate	0.1192	0.1144	0.1117	0.1102	0.1062	0.1041	0.1034				0.11	5.2	TM			
26	TM	Ethyl tert Butyl Ether	0.5231	0.4731	0.4999	0.4966	0.5152	0.5245	0.5408				0.51	4.4	TM			
27	TM	MEK (2-Butanone)	0.0160	0.0140	0.0152	0.0148	0.0168	0.0167	0.0167				0.02	6.9	TM			
28	TM	Cis-1,2-DCE	0.2111	0.1793	0.1986	0.1873	0.1917	0.1926	0.2026				0.19	5.4	TM			
29	TM	2,2-Dichloropropane	0.2075	0.2182	0.2607	0.2472	0.2432	0.2643	0.2791				0.25	10	TM			
30	TM*	Chloroform	0.3200	0.3124	0.3324	0.3185	0.3180	0.3227	0.3358				0.32	2.6	TM*			
31	TM	Bromochloromethane	0.1058	0.0943	0.0937	0.0956	0.0952	0.0889	0.0923				0.10	5.5	TM			
32	S	Dibromofluoromethane(S)	0.1934	0.2265	0.2332	0.2520	0.2513	0.2609	0.2672				0.24	11	S			
33	TM	1,1,1-TCA	0.2189	0.2243	0.2715	0.2574	0.2574	0.2805	0.3008				0.26	11	TM			
34	TML	Cyclohexane	0.0553	0.0619	0.0873	0.0889	0.0856	0.1034					0.08	23	TM	0.993		
35	TM	1,1-Dichloropropene	0.1560	0.1623	0.2039	0.1970	0.1911	0.2161	0.2319				0.19	14	TM			

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: _____
Case No: _____ Initial Cal. Date: 7/2/2021
Matrix: _____ Instrument: Thor Initials: _____

		Compound	1	2	3	4	5	6	7				Avg	%RSD	Type		Q	MRF
36	TML	2,2,4-Trimethylpentane		0.1469	0.1905	0.1960	0.1952	0.2297	0.2374				0.20	16	TM	0.998		
37	S	1,2-DCA-D4(S)	0.2134	0.2474	0.2468	0.2673	0.2641	0.2732	0.2754				0.26	8.5	S			
38	TM	Carbon Tetrachloride		0.0759	0.0953	0.0919	0.0910	0.1026	0.1106				0.09	12	TM			
39	TM	Tert Amyl Methyl Ether	0.4965	0.4629	0.4936	0.4908	0.5058	0.5088	0.5312				0.50	4.2	TM			
40	TM	1,2-DCA	0.2692	0.2542	0.2578	0.2569	0.2560	0.2440	0.2588				0.26	2.9	TM			
41	TM	Benzene	0.6660	0.6155	0.6907	0.6542	0.6632	0.6719	0.7076				0.67	4.4	TM			
42	TM	TCE	0.1694	0.1587	0.1780	0.1727	0.1699	0.1793	0.1905				0.17	5.7	TM			
43	TM	2-Pentanone	0.1450	0.1497	0.1596	0.1550	0.1621	0.1587	0.1626				0.16	4.2	TM			
44	TM*	1,2-Dichloropropane	0.2056	0.1909	0.1899	0.1884	0.1868	0.1829	0.1941				0.19	3.8	TM*			
45	TM	Bromodichloromethane	0.2600	0.2469	0.2538	0.2492	0.2539	0.2491	0.2668				0.25	2.8	TM			
46	TML	Methyl Cyclohexane		0.0837	0.1069	0.1067	0.1057	0.1286	0.1340				0.11	16	TM	0.997		
47	TM	Dibromomethane	0.1288	0.1230	0.1207	0.1214	0.1223	0.1178	0.1229				0.12	2.7	TM			
48	TM	2-Chloroethyl vinyl ether													TM			
49	TM	MIBK (methyl isobutyl ketone	0.1215	0.0893	0.0915	0.0901	0.0920	0.0901	0.0928				0.10	12	TM			
50	TM	1-Bromo-2-chloroethane	0.2470	0.2442	0.2444	0.2444	0.2434	0.2422	0.2483				0.24	0.85	TM			
51	TM	Cis-1,3-Dichloropropene	0.1491	0.1478	0.1529	0.1550	0.1600	0.1583	0.1722				0.16	5.3	TM			
52	TM*	Toluene	0.4055	0.3615	0.4026	0.3863	0.3886	0.4016	0.4261				0.40	5.1	TM*			
53	TM	Trans-1,3-Dichloropropene	0.1520	0.1368	0.1510	0.1497	0.1568	0.1549	0.1648				0.15	5.6	TM			
54	TM	1,1,2-TCA	0.1565	0.1405	0.1418	0.1418	0.1423	0.1378	0.1463				0.14	4.3	TM			
55	TM	2-Hexanone	0.0822	0.0657	0.0630	0.0643	0.0644	0.0631	0.0659				0.07	10	TM			
56	I	Chlorobenzene-D5 (IS)																
57	S	Toluene-D8(S)	0.8987	1.060	1.068	1.172	1.190	1.232	1.252				1.1	11	S			
58	TM	1,2-EDB	0.2338	0.2145	0.2271	0.2289	0.2316	0.2209	0.2347				0.23	3.2	TM			
59	TM	Tetrachloroethene	0.1791	0.1826	0.2142	0.2009	0.1957	0.2075	0.2219				0.20	7.9	TM			
60	TM	1-Chlorohexane	0.1753	0.2124	0.2505	0.2437	0.2423	0.2745	0.2850				0.24	15	TM		*	
61	TM	1,1,1,2-Tetrachloroethane	0.2561	0.2497	0.2504	0.2490	0.2527	0.2461	0.2599				0.25	1.9	TM			
62	TM	m&p-Xylene	0.7370	0.6716	0.7876	0.7473	0.7557	0.7582	0.8019				0.75	5.6	TM			
63	TM	o-Xylene	0.4261	0.4011	0.4573	0.4325	0.4473	0.4390	0.4740				0.44	5.3	TM			
64	TM	Styrene	0.5770	0.5335	0.6145	0.5993	0.6330	0.6253	0.6751				0.61	7.4	TM			
65	S	4-Bromofluorobenzene(S)	0.3143	0.3678	0.3759	0.4097	0.4227	0.4267	0.4324				0.39	11	S			
66	TM	1,3-Dichloropropane	0.3890	0.3495	0.3529	0.3430	0.3609	0.3399	0.3615				0.36	4.6	TM			
67	TM	Dibromochloromethane	0.2551	0.2560	0.2649	0.2636	0.2779	0.2679	0.2914				0.27	4.8	TM			
68	TM**	Chlorobenzene	0.7122	0.6454	0.6642	0.6421	0.6436	0.6266	0.6677				0.66	4.2	TM**			
69	TM*	Ethylbenzene	0.9127	0.8760	1.015	0.9650	0.9790	0.9929	1.055				0.97	6.2	TM*			
70	TM**	Bromoform	0.1994	0.1843	0.1982	0.1957	0.2113	0.2047	0.2190				0.20	5.6	TM**			

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 7/2/2021
Matrix: Instrument: Thor Initials:

		Compound	1	2	3	4	5	6	7				Avg	%RSD	Type		Q	MRF
71	I	1,4-Dichlorobenzene-D (IS)																
72	TM	Isopropylbenzene	0.7840	0.7992	0.9698	0.9118	0.9431	1.024	1.080				0.93	12	TM			
73	TM**	1,1,2,2-Tetrachloroethane	0.5179	0.4988	0.5062	0.4909	0.5171	0.5041	0.5281				0.51	2.5	TM**			
74	TM	1,2,3-Trichloropropane	0.0953	0.0811	0.0881	0.0877	0.0905	0.0880	0.0918				0.09	5.0	TM			
75	TM	t-1,4-Dichloro-2-Butene	0.1108	0.1151	0.1222	0.1215	0.1309	0.1314	0.1375				0.12	7.7	TM			
76	TM	Bromobenzene	0.5734	0.5289	0.5332	0.5273	0.5325	0.5248	0.5531				0.54	3.3	TM			
77	TM	n-Propylbenzene	1.713	1.669	1.966	1.852	1.866	1.981	2.089				1.9	8.0	TM			
78	TM	4-Ethyltoluene	1.487	1.433	1.723	1.609	1.620	1.752	1.778				1.6	8.1	TM			
79	TM	2-Chlorotoluene	1.505	1.359	1.482	1.419	1.405	1.407	1.478				1.4	3.7	TM			
80	TM	1,3,5-Trimethylbenzene	0.7273	0.7070	0.8430	0.7737	0.8001	0.8223	0.8755				0.79	7.7	TM			
81	TM	4-Chlorotoluene	1.505	1.359	1.482	1.419	1.405	1.407	1.478				1.4	3.7	TM			
82	TM	Tert-Butylbenzene	0.5842	0.5774	0.6914	0.6599	0.6670	0.6911	0.7585				0.66	9.6	TM			
83	TM	1,2,4-Trimethylbenzene	1.394	1.281	1.478	1.433	1.458	1.464	1.557				1.4	5.9	TM			
84	TM	Sec-Butylbenzene	1.360	1.419	1.773	1.697	1.673	1.803	1.909				1.7	12	TM			
85	TM	p-Isopropyltoluene	1.351	1.302	1.619	1.504	1.514	1.598	1.692				1.5	9.4	TM			
86	TM	Benzyl Chloride	0.8479	0.8106	0.8961	0.9009	0.9420	0.9238	1.006				0.90	7.0	TM			
87	TM	1,3-DCB	1.091	0.9661	0.9653	0.9276	0.9330	0.9051	0.9530				0.96	6.3	TM			
88	TM	1,4-DCB	1.170	1.017	1.001	0.9749	0.9500	0.9157	0.9642				1.00	8.3	TM			
89	TM	n-Butylbenzene	1.116	1.103	1.366	1.282	1.270	1.371	1.449				1.3	10	TM			
90	TM	1,2-DCB	1.042	0.9272	0.9510	0.9200	0.9173	0.8848	0.9436				0.94	5.2	TM			
91	TM	Hexachloroethane	0.2962	0.2804	0.3053	0.3143	0.3228	0.3174	0.3465				0.31	6.7	TM			
92	TM	1,2-Dibromo-3-chloropropane	0.1078	0.1153	0.1205	0.1169	0.1279	0.1289	0.1427				0.12	9.3	TM			
93	TM	1,2,4-Trichlorobenzene	0.7082	0.6121	0.6415	0.6086	0.6229	0.6174	0.6704				0.64	5.8	TM			
94	TM	Hexachlorobutadiene		0.3341	0.3736	0.3666	0.3475	0.3791	0.4095				0.37	7.1	TM			
95	TM	Naphthalene	1.414	1.291	1.407	1.390	1.540	1.558	1.719				1.5	9.6	TM			
96	TM	1,2,3-Trichlorobenzene	0.6680	0.6190	0.6335	0.6242	0.6477	0.6342	0.6853				0.64	3.8	TM			
97																		
98																		
99																		
100																		
101																		
102																		
103																		
104																		
105																		

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No: _____
Case No: _____ Initial Cal. Date: 7/2/2021
Matrix: _____ Instrument: Thor

Initials: _____

		Compound	1	2	3	4	5	6	7				Avg	%RSD	Type		Q	MRF
106																		
107																		
108																		
109																		
110																		
111																		
112																		
113																		
114																		
115																		
116																		
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119																		
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135																		
136																		
137																		
138																		
139																		
140																		

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix:

SDG No:
Date Analyzed: 2 Jul 21 14:57
Instrument: Thor
Initial Cal. Date: 7/2/2021
Data File: 0702T10.D

		Compound	MEAN	CCRF	%D	%Drift	
1	TM	Dichlorodifluoromethane	0.1601	0.1919	20	TM	
2	TM	Freon 114	0.0885	0.1214	37	TM	*
3	TM**	Chloromethane	0.0615	0.0654	6.4	TM**	
4	TM*	Vinyl chloride	0.1612	0.1795	11	TM*	
5	TM	Bromomethane	0.0849	0.1021	20	TM	
6	TM	Chloroethane	0.0965	0.0966	0.11	TM	
7	TM	Dichlorofluoromethane	0.1227	0.1226	0.09	TM	
8	TM	Trichlorofluoromethane	0.2746	0.2927	6.6	TM	
9	TM	Acrolein	0.0058	0.0064	9.9	TM	
10	TML	Acetone	0.0299	0.0271	9.5	TML	4.0
11	TM	Freon-113	0.1310	0.1438	9.8	TM	
12	TM*	1,1-DCE	0.2120	0.2377	12	TM*	
13	TM	Acetonitrile	0.0036	0.0035	2.8	TM	
14	TMQ	t-Butanol	0.0970	0.1058	9.0	TMQ	4.3
15	TM	Methyl Acetate	0.1177	0.1235	4.9	TM	
16	TM	Iodomethane	0.0000	0.0002	0.00	TM	
17	TM	Acrylonitrile	0.0598	0.0633	5.9	TM	
18	TM	Methylene chloride	0.0985	0.1080	9.6	TM	
19	TM	Carbon disulfide	0.1920	0.2123	11	TM	
20	TM	Methyl t-butyl ether (MtBE)	0.1818	0.1830	0.66	TM	
21	TM	Trans-1,2-DCE	0.0939	0.1084	16	TM	
22	TM	Diisopropyl Ether	0.5351	0.5384	0.61	TM	
23	TM**	1,1-DCA	0.2965	0.3275	10	TM**	
24	TM	Vinyl Acetate	0.1099	0.1274	16	TM	
25	TM	Ethyl tert Butyl Ether	0.5104	0.5176	1.4	TM	
26	TM	MEK (2-Butanone)	0.0158	0.0162	2.6	TM	
27	TM	Cis-1,2-DCE	0.1948	0.2140	9.9	TM	
28	TM	2,2-Dichloropropane	0.2458	0.2748	12	TM	
29	TM*	Chloroform	0.3228	0.3542	9.7	TM*	
30	TM	Bromochloromethane	0.0951	0.1038	9.2	TM	
31	TM	1,1,1-TCA	0.2587	0.2880	11	TM	
32	TML	Cyclohexane	0.0804	0.1014	26	TML	3.8
33	TM	1,1-Dichloropropene	0.1940	0.2221	14	TM	
34	TML	2,2,4-Trimethylpentane	0.1993	0.2237	12	TML	1.6
35	TM	Carbon Tetrachloride	0.0946	0.1005	6.3	TM	
36	TM	Tert Amyl Methyl Ether	0.4985	0.5080	1.9	TM	
37	TM	1,2-DCA	0.2567	0.2746	7.0	TM	
38	TM	Benzene	0.6670	0.7279	9.1	TM	
39	TM	TCE	0.1741	0.1927	11	TM	
40	TM	2-Pentanone	0.1561	0.1556	0.34	TM	
		Average			9.3		

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: 0

SDG No:
Date Analyzed: 2 Jul 21 14:57
Instrument: Thor
Cal. Date: 7/2/2021
Data File: 0702T10.D

		Compound	MEAN	CCRF	%D		%Drift
41	TM*	1,2-Dichloropropane	0.1912	0.2011	5.2	TM*	
42	TM	Bromodichloromethane	0.2543	0.2746	8.0	TM	
43	TML	Methyl Cyclohexane	0.1109	0.1229	11	TML	0.25
44	TM	Dibromomethane	0.1224	0.1294	5.7	TM	
45	TM	MIBK (methyl isobutyl ketone)	0.0953	0.0905	5.0	TM	
46	TM	1-Bromo-2-chloroethane	0.2448	0.2423	1.0	TM	
47	TM	Cis-1,3-Dichloropropene	0.1565	0.1709	9.2	TM	
48	TM*	Toluene	0.3960	0.4320	9.1	TM*	
49	TM	Trans-1,3-Dichloropropene	0.1523	0.1686	11	TM	
50	TM	1,1,2-TCA	0.1439	0.1503	4.4	TM	
51	TM	2-Hexanone	0.0669	0.0631	5.7	TM	
52	TM	1,2-EDB	0.2273	0.2455	8.0	TM	
53	TM	Tetrachloroethene	0.2003	0.2214	11	TM	
54	TM	1-Chlorohexane	0.2405	0.2659	11	TM	
55	TM	1,1,1,2-Tetrachloroethane	0.2520	0.2717	7.8	TM	
56	TM	m&p-Xylene	0.7513	0.8227	9.5	TM	
57	TM	o-Xylene	0.4396	0.4782	8.8	TM	
58	TM	Styrene	0.6082	0.6821	12	TM	
59	TM	1,3-Dichloropropane	0.3566	0.3794	6.4	TM	
60	TM	Dibromochloromethane	0.2681	0.2947	9.9	TM	
61	TM**	Chlorobenzene	0.6574	0.6861	4.4	TM**	
62	TM*	Ethylbenzene	0.9707	1.077	11	TM*	
63	TM**	Bromoform	0.2018	0.2264	12	TM**	
64	TM	Isopropylbenzene	0.9303	1.033	11	TM	
65	TM**	1,1,2,2-Tetrachloroethane	0.5090	0.5514	8.3	TM**	
66	TM	1,2,3-Trichloropropane	0.0889	0.0975	9.6	TM	
67	TM	t-1,4-Dichloro-2-Butene	0.1242	0.1332	7.2	TM	
68	TM	Bromobenzene	0.5390	0.5743	6.5	TM	
69	TM	n-Propylbenzene	1.877	2.080	11	TM	
70	TM	4-Ethyltoluene	1.629	1.714	5.2	TM	
71	TM	2-Chlorotoluene	1.436	1.510	5.1	TM	
72	TM	1,3,5-Trimethylbenzene	0.7927	0.8889	12	TM	
73	TM	4-Chlorotoluene	1.436	1.510	5.1	TM	
74	TM	Tert-Butylbenzene	0.6613	0.7381	12	TM	
75	TM	1,2,4-Trimethylbenzene	1.438	1.566	8.9	TM	
76	TM	Sec-Butylbenzene	1.662	1.861	12	TM	
77	TM	p-Isopropyltoluene	1.512	1.641	8.6	TM	
78	TM	Benzyl Chloride	0.9039	0.8133	10	TM	
79	TM	1,3-DCB	0.9631	0.9790	1.7	TM	
80	TM	1,4-DCB	0.9991	0.9780	2.1	TM	
		Average			8.1		

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: 0

SDG No:
Date Analyzed: 2 Jul 21 14:57
Instrument: Thor
Cal. Date: 7/2/2021
Data File: 0702T10.D

		Compound	MEAN	CCRF	%D	%Drift	
81	TM	n-Butylbenzene	1.279	1.397	9.2	TM	
82	TM	1,2-DCB	0.9408	0.9526	1.3	TM	
83	TM	Hexachloroethane	0.3118	0.3173	1.7	TM	
84	TM	1,2-Dibromo-3-chloropropane	0.1228	0.1368	11	TM	
85	TM	1,2,4-Trichlorobenzene	0.6401	0.6273	2.0	TM	
86	TM	Hexachlorobutadiene	0.3684	0.3654	0.82	TM	
87	TM	Naphthalene	1.474	1.608	9.1	TM	
88	TM	1,2,3-Trichlorobenzene	0.6446	0.6429	0.26	TM	
89							
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119							
120							
		Average			4.4		

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Date Analyzed: 2 Jul 21 23:15
Matrix: Instrument: Thor
Initial Cal. Date: 7/2/2021
Data File: 0702T30.D

		Compound	MEAN	CCRF	%D	%Drift	
1	I	Fluorobenzene (IS)	ISTD			I	
2	TM	Dichlorodifluoromethane	0.1601	0.2003	25	TM	
3	TM	Freon 114	0.0885	0.0986	11	TM	
4	TM**	Chloromethane	0.0615	0.0689	12	TM**	
5	TM*	Vinyl chloride	0.1612	0.1907	18	TM*	
6	TM	Bromomethane	0.0849	0.0991	17	TM	
7	TM	Chloroethane	0.0965	0.1082	12	TM	
8	TM	Dichlorofluoromethane	0.1227	0.1270	3.4	TM	
9	TM	Trichlorofluoromethane	0.2746	0.3232	18	TM	
10	TM	Acrolein	0.0058	0.0061	4.5	TM	
11	TML	Acetone	0.0299	0.0278	7.1	TML	7.0
12	TM	Freon-113	0.1310	0.1384	5.6	TM	
13	TM*	1,1-DCE	0.2120	0.2249	6.1	TM*	
14	TM	Acetonitrile	0.0036	0.0039	8.8	TM	
15	TMQ	t-Butanol	0.0970	0.1113	15	TMQ	2.9
16	TM	Methyl Acetate	0.1177	0.1285	9.1	TM	
17	TM	Iodomethane	0.0000	0.0002	0.00	TM	
18	TM	Acrylonitrile	0.0598	0.0673	12	TM	
19	TM	Methylene chloride	0.0985	0.1094	11	TM	
20	TM	Carbon disulfide	0.1920	0.1986	3.4	TM	
21	TM	Methyl t-butyl ether (MtBE)	0.1818	0.1936	6.5	TM	
22	TM	Trans-1,2-DCE	0.0939	0.1036	10	TM	
23	TM	Diisopropyl Ether	0.5351	0.5585	4.4	TM	
24	TM**	1,1-DCA	0.2965	0.3131	5.6	TM**	
25	TM	Vinyl Acetate	0.1099	0.1122	2.1	TM	
26	TM	Ethyl tert Butyl Ether	0.5104	0.5334	4.5	TM	
27	TM	MEK (2-Butanone)	0.0158	0.0170	7.8	TM	
28	TM	Cis-1,2-DCE	0.1948	0.2043	4.9	TM	
29	TM	2,2-Dichloropropane	0.2458	0.2539	3.3	TM	
30	TM*	Chloroform	0.3228	0.3437	6.5	TM*	
31	TM	Bromochloromethane	0.0951	0.1011	6.3	TM	
32	S	Dibromofluoromethane(S)	0.2406	0.2547	5.8	S	
33	TM	1,1,1-TCA	0.2587	0.2809	8.6	TM	
34	TML	Cyclohexane	0.0804	0.0961	20	TML	1.3
35	TM	1,1-Dichloropropene	0.1940	0.2082	7.3	TM	
36	TML	2,2,4-Trimethylpentane	0.1993	0.2180	9.4	TML	0.72
37	S	1,2-DCA-D4(S)	0.2554	0.2625	2.8	S	
38	TM	Carbon Tetrachloride	0.0946	0.0974	3.1	TM	
39	TM	Tert Amyl Methyl Ether	0.4985	0.5203	4.4	TM	
40	TM	1,2-DCA	0.2567	0.2684	4.6	TM	
		Average			8.4		

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: 0

SDG No:
Date Analyzed: 2 Jul 21 23:15
Instrument: Thor
Cal. Date: 7/2/2021
Data File: 0702T30.D

		Compound	MEAN	CCRF	%D		%Drift
41	TM	Benzene	0.6670	0.6985	4.7	TM	
42	TM	TCE	0.1741	0.1759	1.1	TM	
43	TM	2-Pentanone	0.1561	0.1654	6.0	TM	
44	TM*	1,2-Dichloropropane	0.1912	0.1965	2.8	TM*	
45	TM	Bromodichloromethane	0.2543	0.2671	5.1	TM	
46	TML	Methyl Cyclohexane	0.1109	0.1199	8.1	TML	1.9
47	TM	Dibromomethane	0.1224	0.1270	3.8	TM	
48	TM	MIBK (methyl isobutyl ketone)	0.0953	0.0948	0.52	TM	
49	TM	1-Bromo-2-chloroethane	0.2448	0.2534	3.5	TM	
50	TM	Cis-1,3-Dichloropropene	0.1565	0.1613	3.1	TM	
51	TM*	Toluene	0.3960	0.3975	0.37	TM*	
52	TM	Trans-1,3-Dichloropropene	0.1523	0.1615	6.1	TM	
53	TM	1,1,2-TCA	0.1439	0.1491	3.6	TM	
54	TM	2-Hexanone	0.0669	0.0661	1.2	TM	
55	I	Chlorobenzene-D5 (IS)	ISTD			I	
56	S	Toluene-D8(S)	1.125	1.200	6.7	S	
57	TM	1,2-EDB	0.2273	0.2438	7.3	TM	
58	TM	Tetrachloroethene	0.2003	0.1990	0.64	TM	
59	TM	1-Chlorohexane	0.2405	0.2498	3.9	TM	
60	TM	1,1,1,2-Tetrachloroethane	0.2520	0.2640	4.8	TM	
61	TM	m&p-Xylene	0.7513	0.7403	1.5	TM	
62	TM	o-Xylene	0.4396	0.4371	0.58	TM	
63	TM	Styrene	0.6082	0.6328	4.0	TM	
64	S	4-Bromofluorobenzene(S)	0.3928	0.4209	7.2	S	
65	TM	1,3-Dichloropropane	0.3566	0.3709	4.0	TM	
66	TM	Dibromochloromethane	0.2681	0.2879	7.4	TM	
67	TM**	Chlorobenzene	0.6574	0.6429	2.2	TM**	
68	TM*	Ethylbenzene	0.9707	0.9778	0.72	TM*	
69	TM**	Bromoform	0.2018	0.2179	8.0	TM**	
70	I	1,4-Dichlorobenzene-D (IS)	ISTD			I	
71	TM	Isopropylbenzene	0.9303	0.9314	0.12	TM	
72	TM**	1,1,2,2-Tetrachloroethane	0.5090	0.5317	4.5	TM**	
73	TM	1,2,3-Trichloropropane	0.0889	0.0940	5.7	TM	
74	TM	t-1,4-Dichloro-2-Butene	0.1242	0.1234	0.61	TM	
75	TM	Bromobenzene	0.5390	0.5165	4.2	TM	
76	TM	n-Propylbenzene	1.877	1.818	3.1	TM	
77	TM	4-Ethyltoluene	1.629	1.553	4.7	TM	
78	TM	2-Chlorotoluene	1.436	1.306	9.1	TM	
79	TM	1,3,5-Trimethylbenzene	0.7927	0.7618	3.9	TM	
80	TM	4-Chlorotoluene	1.436	1.306	9.1	TM	
		Average			4.1		

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: 0

SDG No:
Date Analyzed: 2 Jul 21 23:15
Instrument: Thor
Cal. Date: 7/2/2021
Data File: 0702T30.D

		Compound	MEAN	CCRF	%D		%Drift
81	TM	Tert-Butylbenzene	0.6613	0.6483	2.0	TM	
82	TM	1,2,4-Trimethylbenzene	1.438	1.362	5.3	TM	
83	TM	Sec-Butylbenzene	1.662	1.664	0.12	TM	
84	TM	p-Isopropyltoluene	1.512	1.466	3.0	TM	
85	TM	Benzyl Chloride	0.9039	0.6851	24	TM	
86	TM	1,3-DCB	0.9631	0.8482	12	TM	
87	TM	1,4-DCB	0.9991	0.8566	14	TM	
88	TM	n-Butylbenzene	1.279	1.197	6.5	TM	
89	TM	1,2-DCB	0.9408	0.8545	9.2	TM	
90	TM	Hexachloroethane	0.3118	0.3239	3.9	TM	
91	TM	1,2-Dibromo-3-chloropropane	0.1228	0.1307	6.4	TM	
92	TM	1,2,4-Trichlorobenzene	0.6401	0.4828	25	TM	
93	TM	Hexachlorobutadiene	0.3684	0.3327	9.7	TM	
94	TM	Naphthalene	1.474	1.392	5.6	TM	
95	TM	1,2,3-Trichlorobenzene	0.6446	0.5250	19	TM	
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		Average			9.7		

ORGANICS

Raw Data

Injection Log

Directory: M:\THOR\DATA\210702

Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	1	0702T00.D	1	25ug/L BFB STD 5/3/21	2uL	07/02/2021 10:54
2	1	0702T01.D	1	blk	IS&S 02/02/21	07/02/2021 11:13
3	2	0702T02.D	1	2ug/Kg VOC STD 7/2/21	IS&S 02/02/21	07/02/2021 11:38
4	3	0702T03.D	1	5ug/Kg VOC STD 7/2/21	IS&S 02/02/21	07/02/2021 12:03
5	4	0702T04.D	1	10ug/Kg VOC STD 7/2/21	IS&S 02/02/21	07/02/2021 12:28
6	5	0702T05.D	1	20ug/Kg VOC STD 7/2/21	IS&S 02/02/21	07/02/2021 12:53
7	6	0702T06.D	1	50ug/Kg VOC STD 7/2/21	IS&S 02/02/21	07/02/2021 13:18
8	7	0702T07.D	1	100ug/Kg VOC STD 7/2/21	IS&S 02/02/21	07/02/2021 13:42
9	8	0702T08.D	1	150ug/Kg VOC STD 7/2/21	IS&S 02/02/21	07/02/2021 14:07
10	9	0702T09.D	1	25ug/L BFB STD 5/3/21	IS&S 02/02/21	07/02/2021 14:32
11	10	0702T10.D	1	(SS) 50ug/Kg VOC STD 7/2/21	IS&S 02/02/21	07/02/2021 14:57
12	11	0702T11.D	1	210702A LCS 50ug/Kg	IS&S 02/02/21	07/02/2021 15:22
13	14	0702T14.D	1	210702A BLK	IS&S 02/02/21	07/02/2021 16:37
14	20	0702T20.D	2.2852	BA35059S01 2.188g	IS&S 02/02/21	07/02/2021 19:06
15	30	0702T30.D	1	Ending CCV 50ug/Kg 7/2/21	IS&S 02/02/21	07/02/2021 23:15

ORGANICS

Calibration Data

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 7/3/2021
Matrix: water Instrument: Thor Initials: DG

			0703T13.D	0703T14.D	0703T15.D	0703T16.D	0703T17.D	0703T18.D	0703T19.D										
		Compound	1	2	3	4	5	6	7				Avg	%RSD	Type	r^2	Q	MRF
1	I	Fluorobenzene (IS)																
2	TMHBL	Gasoline C6-C10	14.0	5.869	3.305	1.553	1.141	1.048	0.9985				4.0	119	TMHB	0.999		
3	I	Chlorobenzene-D5 (IS)																
4	I	1,4-Dichlorobenzene-D (IS)																
5																		
6																		
7																		
8																		
9																		
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VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 6
Initial Calibration

Lab Name: APPL, Inc. SDG No:
Case No: Initial Cal. Date: 7/3/2021
Matrix: Water Instrument: Thor Initials: PA

		Compound	0703T02.D	0703T03.D	0703T04.D	0703T05.D	0703T06.D	0703T07.D	0703T08.D	0703T09.D	0703T10.D		Avg	%RSD	Type	r^2	Q	MRF
			1	2	3	4	5	6	7	8	9							
1	I	Fluorobenzene (IS)																
2	S	Dibromofluoromethane(S)	0.1864	0.1818	0.2291	0.2244	0.2531	0.2521	0.2670	0.2677	0.2747		0.24	15	S			
3	S	1,2-DCA-D4(S)	0.2139	0.2105	0.2569	0.2592	0.2926	0.2875	0.3025	0.3044	0.3091		0.27	14	S			
4	I	Chlorobenzene-D5 (IS)																
5	S	Toluene-D8(S)		0.8357	1.022	1.032	1.162	1.166	1.226	1.237	1.265		1.1	13	S			
6	S	4-Bromofluorobenzene(S)		0.3026	0.3658	0.3678	0.4189	0.4199	0.4532	0.4499	0.4571		0.40	14	S			
7	I	1,4-Dichlorobenzene-D (IS)																
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VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 7

Second Source Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 3 Jul 21 16:30
Instrument: Thor
Initial Cal. Date: 7/3/2021
Data File: 0703T21.D

		Compound	MEAN	CCRF	%D		%Drift
1	TMHB	Gasoline C6-C10	3.982	1.447	64	TMHBL	19
2							
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40							
		Average			64.0		

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 6 Jul 21 12:35
Instrument: Thor
Initial Cal. Date: 7/3/2021
Data File: 0706T08.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	Fluorobenzene (IS)	ISTD			I	
2	TMHB	Gasoline C6-C10	3.982	1.498	62	TMHBL	12
3	I	Chlorobenzene-D5 (IS)	ISTD			I	
4	I	1,4-Dichlorobenzene-D (IS)	ISTD			I	
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39							
40							
		Average			62.0		

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 7

Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 6 Jul 21 12:35
Instrument: Thor
Initial Cal. Date: 7/3/2021
Data File: 0706T08.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	Fluorobenzene (IS)	ISTD			I	
2	S	Dibromofluoromethane(S)	0.2374	0.2600	9.5	S	
3	S	1,2-DCA-D4(S)	0.2707	0.2961	9.4	S	
4	I	Chlorobenzene-D5 (IS)	ISTD			I	
5	S	Toluene-D8(S)	1.118	1.177	5.2	S	
6	S	4-Bromofluorobenzene(S)	0.4044	0.4266	5.5	S	
7	I	1,4-Dichlorobenzene-D (IS)	ISTD			I	
8							
9							
10							
11							
12							
13							
14							
15							
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34							
35							
36							
37							
38							
39							
40							
		Average			7.4		

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 6 Jul 21 23:20
Instrument: Thor
Initial Cal. Date: 7/3/2021
Data File: 0706T34.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	Fluorobenzene (IS)	ISTD			I	
2	TMHB	Gasoline C6-C10	3.982	1.414	64	TMHBL	23
3	I	Chlorobenzene-D5 (IS)	ISTD			I	
4	I	1,4-Dichlorobenzene-D (IS)	ISTD			I	
5							
6							
7							
8							
9							
10							
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33							
34							
35							
36							
37							
38							
39							
40							
		Average			64.0		

VOLATILE ORGANIC ANALYSIS
VOLATILE ORGANIC COMPOUNDS

Form 7

Ending Continuing Calibration

Lab Name: APPL, Inc.
Case No:
Matrix: Water

SDG No:
Date Analyzed: 6 Jul 21 23:20
Instrument: Thor
Initial Cal. Date: 7/3/2021
Data File: 0706T34.D

		Compound	MEAN	CCRF	%D		%Drift
1	I	Fluorobenzene (IS)	ISTD			I	
2	S	Dibromofluoromethane(S)	0.2374	0.2566	8.1	S	
3	S	1,2-DCA-D4(S)	0.2707	0.2866	5.9	S	
4	I	Chlorobenzene-D5 (IS)	ISTD			I	
5	S	Toluene-D8(S)	1.118	1.144	2.3	S	
6	S	4-Bromofluorobenzene(S)	0.4044	0.4182	3.4	S	
7	I	1,4-Dichlorobenzene-D (IS)	ISTD			I	
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
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29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
		Average			4.9		

ORGANICS

Raw Data

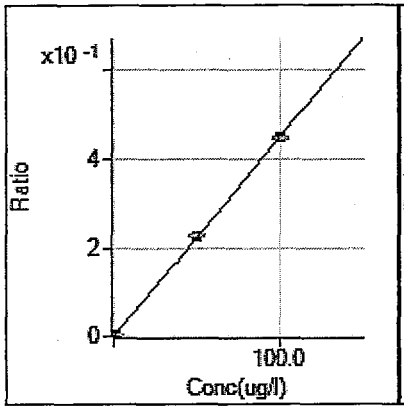
Injection Log

Directory: M:\THOR\DATA\210703\

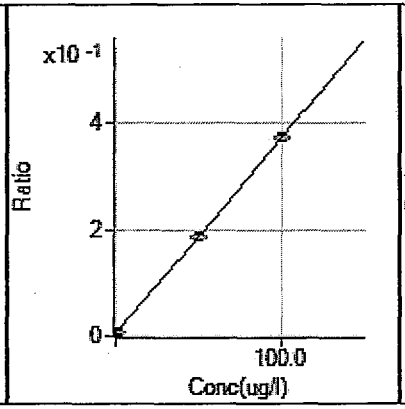
Line	Vial	FileName	Multiplier	SampleName	Misc Info	Injected
1	2	0703T02.D	1	0.3ug/L VOC STD 7/3/21	IS&S 02/02/21	3 Jul 21 8:37
2	3	0703T03.D	1	0.5ug/L VOC STD 7/3/21	IS&S 02/02/21	3 Jul 21 9:02
3	4	0703T04.D	1	1ug/L VOC STD 7/3/21	IS&S 02/02/21	3 Jul 21 9:27
4	5	0703T05.D	1	2ug/L VOC STD 7/3/21	IS&S 02/02/21	3 Jul 21 9:52
5	6	0703T06.D	1	5ug/L VOC STD 7/3/21	IS&S 02/02/21	3 Jul 21 10:17
6	7	0703T07.D	1	10ug/L VOC STD 7/3/21	IS&S 02/02/21	3 Jul 21 10:41
7	8	0703T08.D	1	20ug/L VOC STD 7/3/21	IS&S 02/02/21	3 Jul 21 11:07
8	9	0703T09.D	1	40ug/L VOC STD 7/3/21	IS&S 02/02/21	3 Jul 21 11:31
9	10	0703T10.D	1	100ug/L VOC STD 7/3/21	IS&S 02/02/21	3 Jul 21 11:56
10	13	0703T13.D	1	20ug/L GAS STD 7/3/21	IS&S 02/02/21	3 Jul 21 13:11
11	14	0703T14.D	1	50ug/L GAS STD 7/3/21	IS&S 02/02/21	3 Jul 21 13:35
12	15	0703T15.D	1	100ug/L GAS STD 7/3/21	IS&S 02/02/21	3 Jul 21 14:01
13	16	0703T16.D	1	300ug/L GAS STD 7/3/21	IS&S 02/02/21	3 Jul 21 14:26
14	17	0703T17.D	1	600ug/L GAS STD 7/3/21	IS&S 02/02/21	3 Jul 21 14:51
15	18	0703T18.D	1	800ug/L GAS STD 7/3/21	IS&S 02/02/21	3 Jul 21 15:15
16	19	0703T19.D	1	1000ug/L GAS STD 7/3/21	IS&S 02/02/21	3 Jul 21 15:40
17	21	0703T21.D	1	(SS) 300ug/L GAS STD 7/3/21	IS&S 02/02/21	3 Jul 21 16:30
18	8	0706T08.D	1	210706A CCV 300ug/L	IS&S 02/02/21	6 Jul 21 12:35
19	9	0706T09.D	50	210706A LCS 600ug/L MeOH	IS&S 02/02/21	6 Jul 21 13:00
20	10	0706T10.D	50	210706A LCSD 600ug/L MeOH	IS&S 02/02/21	6 Jul 21 13:25
21	11	0706T11.D	50	210706A BLK MeOH	IS&S 02/02/21	6 Jul 21 13:49
22	27	0706T27.D	103.178	BA35059S03 2.423g DF50	IS&S 02/02/21	6 Jul 21 20:27
23	34	0706T34.D	1	Ending CCV 300ug/L 7/6/21	IS&S 02/02/21	6 Jul 21 23:20

METALS

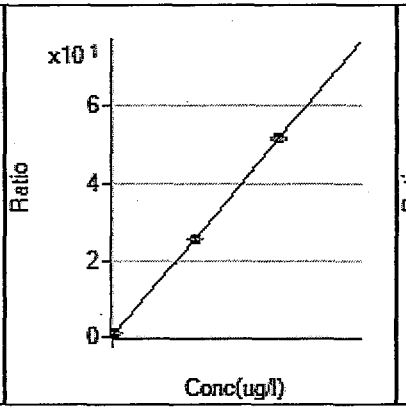
Calibration Data



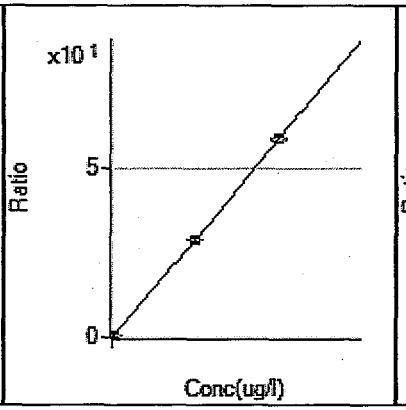
9 Be [NoGas]
ISTD: 45 Sc
y = 4.508E-3 x + 3.228E-6
R 0.9999
DL 0.00216
BEC 0.0007161



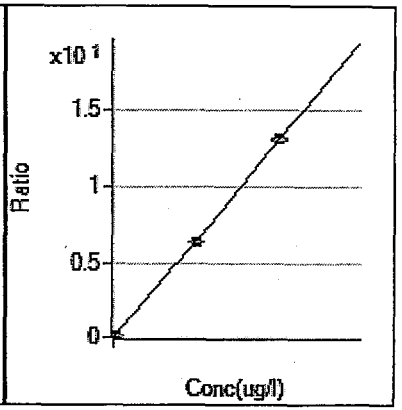
11 B [NoGas]
ISTD: 45 Sc
y = 3.668E-3 x + 5.860E-3
R 1.0000
DL 0.114
BEC 1.598



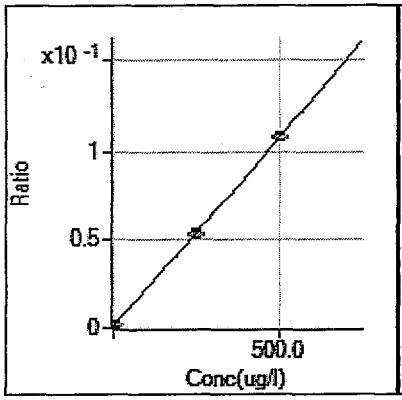
23 Na [He]
ISTD: 72 Ge
y = 2.050E-2 x + 3.790E-1
R 0.9999
DL 0.7464
BEC 18.49



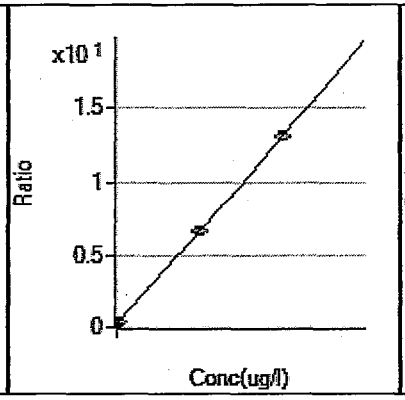
24 Mg [He]
ISTD: 72 Ge
y = 1.162E-2 x + 2.024E-3
R 1.0000
DL 0.03317
BEC 0.1741



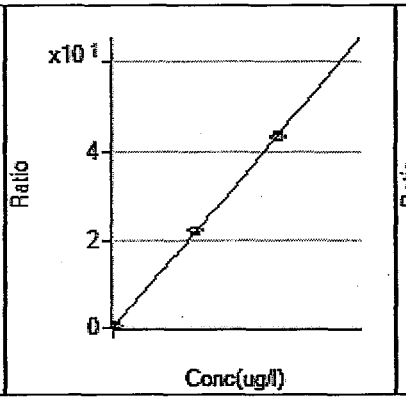
27 Al [He]
ISTD: 72 Ge
y = 6.523E-3 x + 5.582E-3
R 0.9999
DL 0.1172
BEC 0.8559



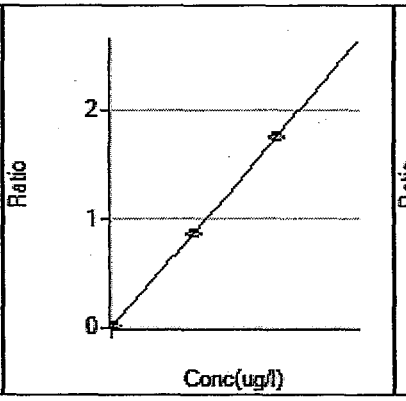
31 P [He]
ISTD: 45 Sc
y = 2.137E-4 x + 8.803E-4
R 0.9999
DL 1.311
BEC 4.12



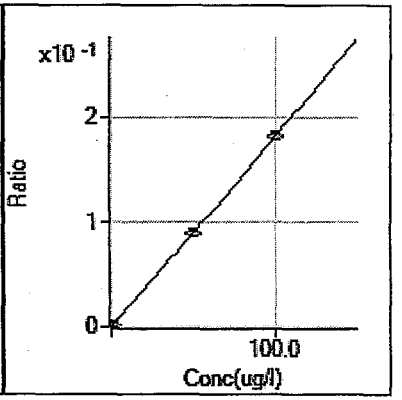
39 K [He]
ISTD: 45 Sc
y = 6.445E-3 x + 2.251E-1
R 1.0000
DL 1.102
BEC 34.93



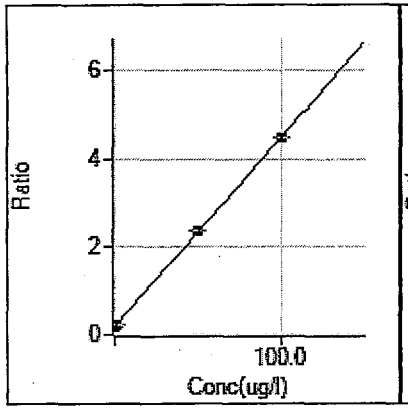
40 Ca [H2]
ISTD: 45 Sc
y = 8.725E-3 x + 3.654E-2
R 1.0000
DL 0.3664
BEC 4.188



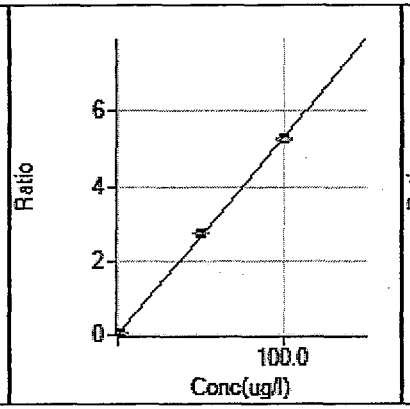
44 Ca [He]
ISTD: 45 Sc
y = 3.516E-4 x + 1.790E-3
R 1.0000
DL 1.417
BEC 5.092



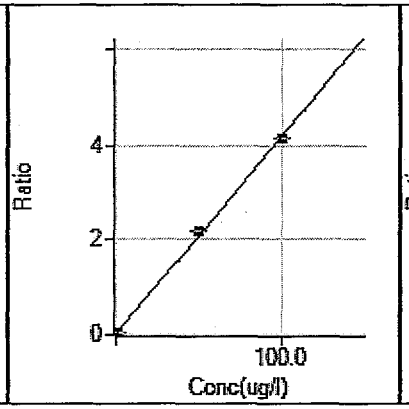
47 Ti [He]
ISTD: 45 Sc
y = 1.823E-3 x + 3.940E-5
R 1.0000
DL 0.02194
BEC 0.02161



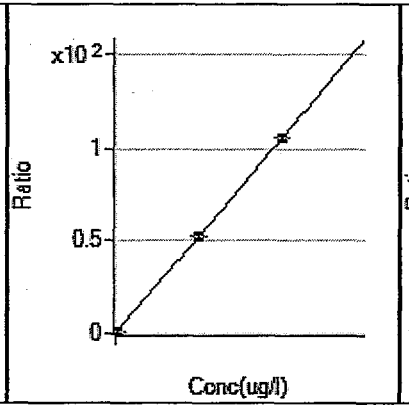
51 V [He]
ISTD: 45 Sc
y = 4.323E-2 x + 1.710E-1
R 0.9999
DL 0.1354
BEC 3.954



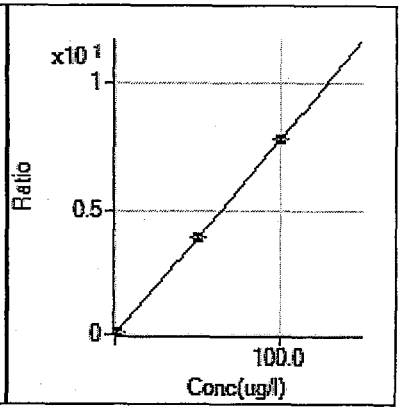
52 Cr [He]
ISTD: 45 Sc
y = 5.300E-2 x + 7.531E-3
R 0.9999
DL 0.01403
BEC 0.1421



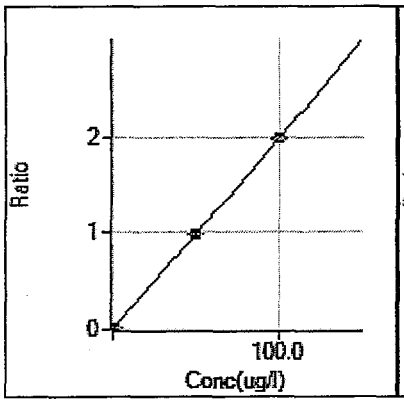
55 Mn [He]
ISTD: 45 Sc
y = 4.177E-2 x + 1.552E-3
R 0.9997
DL 0.004909
BEC 0.03715



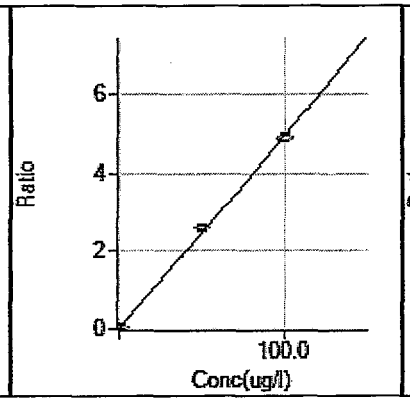
56 Fe [He]
ISTD: 45 Sc
y = 5.274E-2 x + 5.962E-2
R 1.0000
DL 0.09916
BEC 1.131



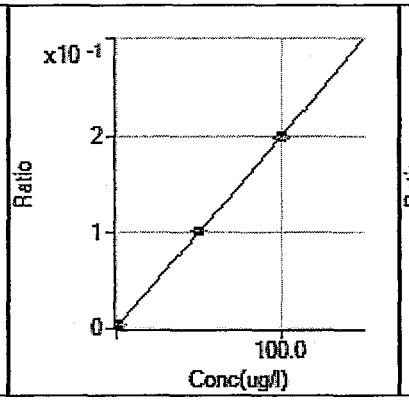
59 Co [He]
ISTD: 45 Sc
y = 7.798E-2 x + 6.263E-5
R 1.0000
DL 0.0008189
BEC 0.0008032



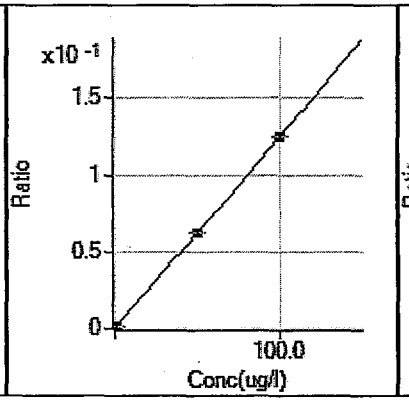
60 Ni [He]
ISTD: 45 Sc
y = 1.989E-2 x + 3.691E-4
R 1.0000
DL 0.009569
BEC 0.01856



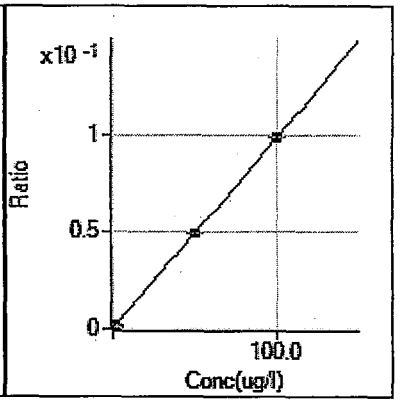
63 Cu [He]
ISTD: 45 Sc
y = 4.950E-2 x + 1.793E-3
R 0.9998
DL 0.008038
BEC 0.03621



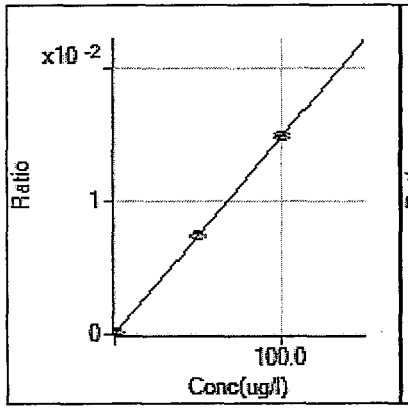
66 Zn [He]
ISTD: 115 In
y = 2.001E-3 x + 5.405E-4
R 1.0000
DL 0.06554
BEC 0.2701



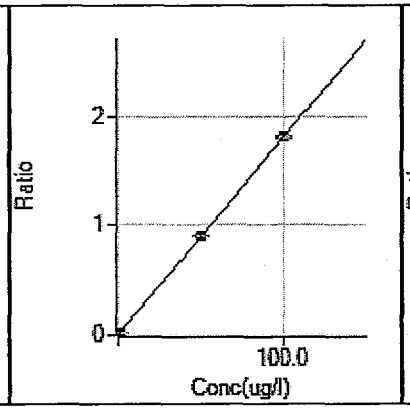
75 As [He]
ISTD: 115 In
y = 1.244E-3 x + 1.874E-4
R 1.0000
DL 0.03045
BEC 0.1507



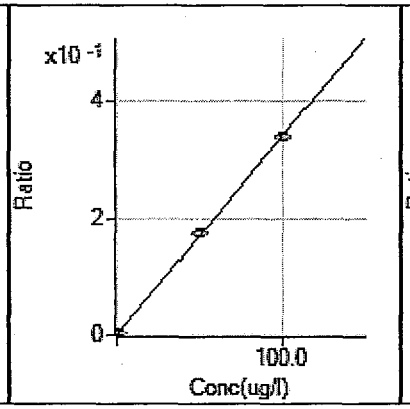
78 Se [He]
ISTD: 45 Sc
y = 9.782E-4 x + 4.032E-4
R 1.0000
DL 0.1778
BEC 0.4122



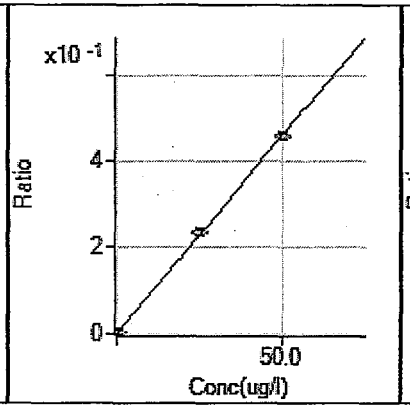
78 Se [H2]
ISTD: 115 In
y = 1.472E-4 x + 3.916E-6
R 1.0000
DL 0.02121
BEC 0.0266



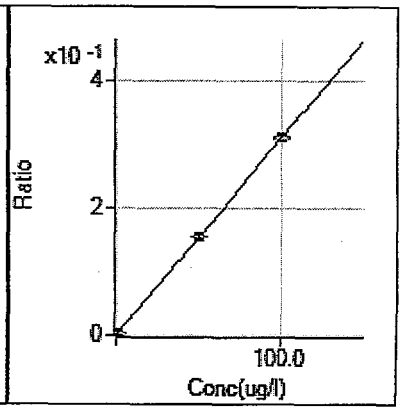
88 Sr [NoGas]
ISTD: 115 In
y = 1.806E-2 x + 9.771E-5
R 1.0000
DL 0.001881
BEC 0.00541



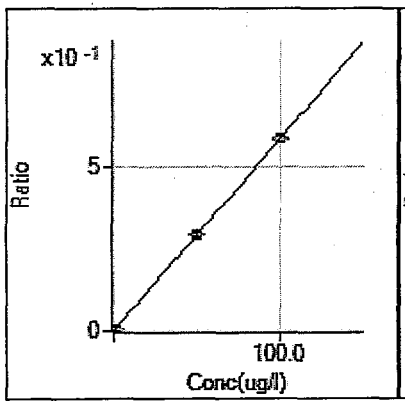
95 Mo [NoGas]
ISTD: 115 In
y = 3.414E-3 x + 5.658E-6
R 0.9999
DL 0.004301
BEC 0.001658



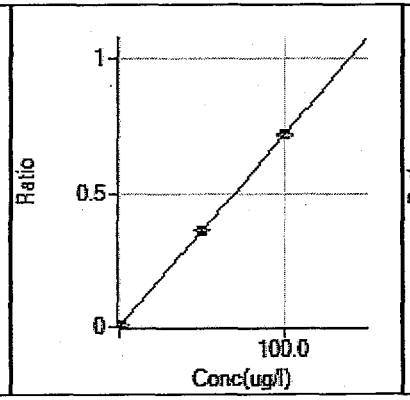
107 Ag [NoGas]
ISTD: 115 In
y = 9.183E-3 x + 1.264E-5
R 0.9999
DL 0.002129
BEC 0.001377



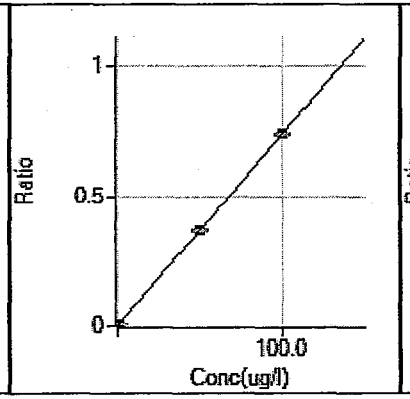
111 Cd [He]
ISTD: 115 In
y = 3.102E-3 x
R 1.0000
DL 0
BEC 0



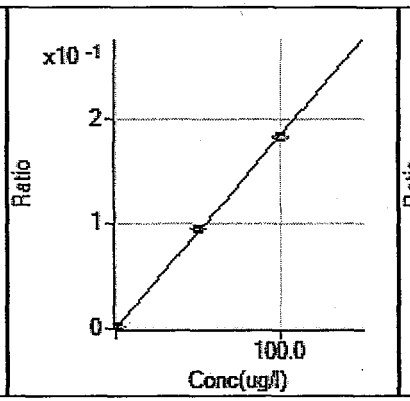
118 Sn [NoGas]
ISTD: 115 In
y = 5.865E-3 x + 5.020E-4
R 1.0000
DL 0.01076
BEC 0.08559



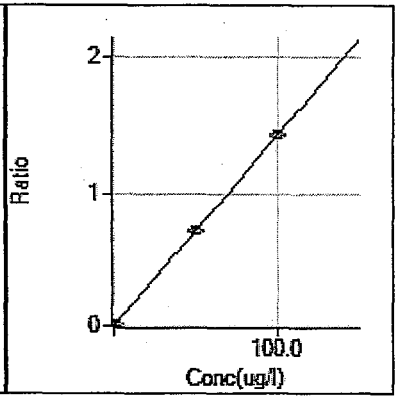
118 Sn [He]
ISTD: 115 In
y = 7.200E-3 x + 6.065E-4
R 1.0000
DL 0.01159
BEC 0.08424



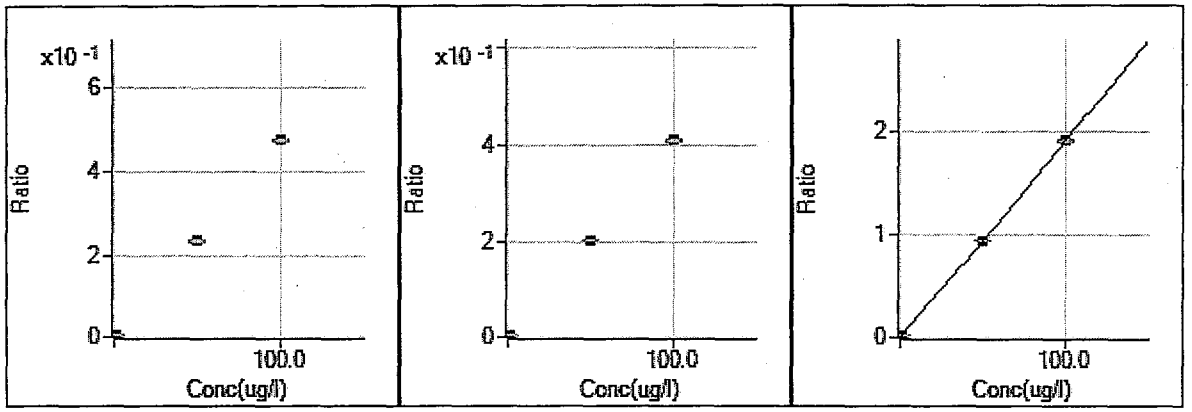
121 Sb [NoGas]
ISTD: 115 In
y = 7.361E-3 x + 6.016E-4
R 1.0000
DL 0.009722
BEC 0.08173



137 Ba [NoGas]
ISTD: 165 Ho
y = 1.850E-3 x + 1.010E-5
R 0.9999
DL 0.004175
BEC 0.005461



205 Tl [NoGas]
ISTD: 165 Ho
y = 1.426E-2 x + 5.722E-5
R 1.0000
DL 0.001257
BEC 0.004013



206 [Pb] [NoGas]
ISTD: 165 Ho
Excluded
R

207 [Pb] [NoGas]
ISTD: 165 Ho
Excluded
R

208 Pb [NoGas]
ISTD: 165 Ho
y = 1.906E-2 x + 3.240E-5
R 1.0000
DL 0.0005292
BEC 0.0017

A.P.P.L. INC.
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.
ARF No: 96645 SDG: 96645

Analysis Date: 8/14/2021 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 13:01	%R(1)	True CCV1	Found 18:58	%R(1)	True	Found	%R(1)	
Silver (Ag)	25	26.1880	105	25	24.8870	99.5				P
Arsenic (As)	50	51.8025	104	50	49.2602	98.5				P
Barium (Ba)	50	52.8192	106	50	50.3909	101				P
Beryllium (Be)	50	50.6904	101	50	44.9610	89.9				P
Cadmium (Cd)	50	49.6984	99.4	50	49.2568	98.5				P
Cobalt (Co)	50	50.5341	101	50	50.5634	101				P
Chromium (Cr)	50	52.2859	105	50	51.5833	103				P
Copper (Cu)	50	53.2470	106	50	53.2942	107				P
Molybdenum (Mo)	50	51.2738	103	50	49.5902	99.2				P
Nickel (Ni)	50	50.4650	101	50	50.8289	102				P
Lead (Pb)	50	50.3104	101	50	48.8645	97.7				P
Antimony (Sb)	50	49.2146	98.4	50	49.2878	98.6				P
Selenium (Se)	50	49.9317	99.9	50	48.0532	96.1				P
Thallium (Tl)	50	49.7536	99.5	50	48.7694	97.5				P
Vanadium (V)	50	51.4618	103	50	50.3320	101				P
Zinc (Zn)	50	50.9961	102	50	49.7498	99.5				P

(1) Control Limits: Metals 90-110 ILM02.0

A.P.P.L. INC.
3
BLANKS

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.

ARF No.: 96645 SDG: 96645

Preparation Blank Matrix (soil/water): soil

Preparation Blank Concentration Units (ug/L or mg/kg): mg/Kg

Analysis Date: 8/14/2021

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	1	C	2	C	3	C		C	
	13:10		19:08						16:09		
Silver (Ag)	.50	U	.50	U					.10	U	P
Arsenic (As)	2.50	U	2.50	U					.50	U	P
Barium (Ba)	1.25	U	1.25	U					.59	*	*
Beryllium (Be)	5.00	U	5.00	U					1.00	U	P
Cadmium (Cd)	.50	U	.50	U					.10	U	P
Cobalt (Co)	.50	U	.50	U					.10	U	P
Chromium (Cr)	2.50	U	2.50	U					.50	U	P
Copper (Cu)	12.50	U	12.50	U					.09	J	P
Molybdenum (Mo)	1.00	U	1.00	U					.05	J	P
Nickel (Ni)	1.75	U	1.75	U					.35	U	P
Lead (Pb)	.50	U	.50	U					.10	U	P
Antimony (Sb)	1.00	U	1.00	U					.20	U	P
Selenium (Se)	2.50	U	2.50	U					.06	J	P
Thallium (Tl)	.13	J	.10	J					.10	U	P
Vanadium (V)	2.50	U	2.50	U					.44	J	P
Zinc (Zn)	12.50	U	12.50	U					2.50	U	P

Low Level LOQ

Sample Name	Acq Date Time	Run Sequence	Analyte	Actual Conc (ug/L)	Spiked Conc (ug/L)	Control Limits	% Recovery	QC Flag
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Beryllium	1.054	1	80-120%	105	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Sodium	25.745	25	80-120%	103	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Magnesium	53.824	50	80-120%	108	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Aluminum	22.164	20	80-120%	111	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Potassium	22.673	20	80-120%	113	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Calcium (He)	51.768	50	80-120%	104	
20ppb LLICV	8/14/2021 13:47	210814A.b	Vanadium	18.940	20	80-120%	95	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Chromium	1.002	1	80-120%	100	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Manganese	1.078	1	80-120%	108	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Iron	20.482	20	80-120%	102	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Cobalt	1.069	1	80-120%	107	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Nickel	1.069	1	80-120%	107	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Copper	1.080	1	80-120%	108	
2.0ppb LLICV	8/14/2021 13:29	210814A.b	Zinc	2.141	2	80-120%	107	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Arsenic	0.972	1	80-120%	97	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Selenium (H2)	1.003	1	80-120%	100	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Strontium	1.019	1	80-120%	102	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Molybdenum	1.017	1	80-120%	102	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Silver	0.538	0.5	80-120%	108	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Cadmium	1.012	1	80-120%	101	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Tin (He)	0.940	1	80-120%	94	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Antimony	1.111	1	80-120%	111	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Barium	1.087	1	80-120%	109	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Thallium	1.002	1	80-120%	100	
1.0ppb LLICV	8/14/2021 13:19	210814A.b	Lead	1.030	1	80-120%	103	

Analyte	0.5ppb LLICV	1.0ppb LLICV	2.0ppb LLICV	4.0ppb LLICV	20ppb LLICV	Standard 2
Beryllium	0.5	1	2	4	20	1
Sodium	12.5	25	50	100	500	25
Magnesium	25	50	100	200	1000	50
Aluminum	10	20	40	80	400	20
Potassium	10	20	40	80	400	20
Calcium	25	50	100	200	1000	50
Vanadium	0.5	1	2	4	20	1
Chromium	0.5	1	2	4	20	1
Manganese	0.5	1	2	4	20	1
Iron	10	20	40	80	400	20
Cobalt	0.5	1	2	4	20	1
Nickel	0.5	1	2	4	20	1
Copper	0.5	1	2	4	20	1
Zinc	0.5	1	2	4	20	1
Arsenic	0.5	1	2	4	20	1
Selenium	0.5	1	2	4	20	1
Strontium	0.5	1	2	4	20	1
Molybdenum	0.5	1	2	4	20	1
Silver	0.25	0.5	1	2	10	0.5
Cadmium	0.5	1	2	4	20	1
Tin	0.5	1	2	4	20	1
Antimony	0.5	1	2	4	20	1
Barium	0.5	1	2	4	20	1
Thallium	0.5	1	2	4	20	1
Lead	0.5	1	2	4	20	1

Interference Check Solution A (ICS-A) Report

Sample Name	ICSA 08/13/2021
File Name	022ICSA.d
Data Path Name	C:\Agilent\ICPMH\1\DATA\210814A.b
Acq Time	8/14/2021 1:56:59 PM
Sample Type	ICSA
Total Dilution	1.0000
Comment	---
ISTD Ref FileName	011CALB.d
Sample QC Pass/Fial	Fail
ISTD QC Pass/Fail	Pass
Operator	**Chemist_ Metals**

QC Analyte Table

Name	Mass	ISTD	Tune	Conc.	Units	RSD	CPS	ExpVal	%Low	%High	QC Flag
Be	9	45	NoGas	0.002	ug/l	57.8	40.00	-0.1	100	100	
B	11	45	NoGas	0.252	ug/l	8.9	20578.56	-8	100	100	
Na	23	72	He	45601.029	ug/l	0.6	179261189.33	50000	80	120	
Mg	24	72	He	46015.111	ug/l	0.8	102541898.67	50000	80	120	
Al	27	72	He	46447.143	ug/l	0.8	58083484.00	50000	80	120	
P	31	45	He	45487.601	ug/l	0.3	3435556.67	50000	80	120	
K	39	45	He	46980.703	ug/l	0.5	107096818.67	50000	80	120	
Ca	40	45	H2	48222.267	ug/l	1.2	21378462.67	50000	80	120	
Ca	44	45	He	43203.205	ug/l	0.4	5369483.83	50000	80	120	
Ti	47	45	He	970.272	ug/l	0.7	625167.08	1000	80	120	
V	51	45	He	-2.060	ug/l	N/A	28950.18	-0.2	100	100	>RL
Cr	52	45	He	0.958	ug/l	1.5	20608.93	-2	80	120	
Mn	55	45	He	0.269	ug/l	3.7	4519.26	-8	100	120	
Fe	56	45	He	46793.807	ug/l	0.5	872274858.67	50000	80	120	
Co	59	45	He	0.041	ug/l	5.9	1164.05	-1	100	100	
Ni	60	45	He	0.078	ug/l	11.7	680.69	-1	100	100	
Cu	63	45	He	0.111	ug/l	3.8	2572.87	-1	100	100	
Zn	66	115	He	0.474	ug/l	9.1	2867.58	-20	100	100	
As	75	115	He	0.108	ug/l	20.5	620.01	-0.4	100	100	
Se	78	45	He	0.134	ug/l	38.0	188.67	-0.4	100	100	
Se	78	115	H2	0.108	ug/l	90.9	7.47	-0.4	100	100	
Sr	88	115	NoGas	0.535	ug/l	1.5	47230.51	-0.5	100	100	
Mo	95	115	NoGas	992.255	ug/l	1.2	16397939.76	1000	80	120	
Ag	107	115	NoGas	0.147	ug/l	5.7	6618.17	-0.5	100	100	
Cd	111	115	He	0.485	ug/l	4.7	2897.59	-0.5	100	100	
Sn	118	115	He	0.031	ug/l	28.7	1594.17	-0.5	100	100	
Sb	121	115	NoGas	0.118	ug/l	12.4	7111.71	-0.5	100	100	
Ba	137	165	NoGas	0.153	ug/l	12.8	2223.58	-1.5	100	100	
Tl	205	165	NoGas	0.048	ug/l	12.6	5651.23	-0.2	100	100	
Pb	208	165	NoGas	0.045	ug/l	1.7	6804.22	-1	100	100	

QC ISTD Table

Interference Check Solution A (ICS-A) Report

Name	Mass	Tune Mode	CPS	CPS RSD	Ref CPS	% Rec	%QC Low	%QC High	QC Flag
Li	6	NoGas	412283.71	0.8	446361.82	92.37	70	120	
Sc	45	NoGas	3032591.31	0.6	3093834.02	98.02	70	120	
Sc	45	He	353439.05	0.6	371980.37	95.02	70	120	
Sc	45	H2	50810.63	1.2	57574.8	88.25	70	120	
Ge	72	NoGas	701514.68	0.8	672113.4	104.37	70	120	
Ge	72	He	191730.07	1.1	190122.35	100.85	70	120	
Ge	72	H2	2771.57	4.4	3240.31	85.53	70	120	
In	115	NoGas	4841521.31	1.1	5255727.71	92.12	70	120	
In	115	He	1925514.71	0.8	2134618.54	90.2	70	120	
In	115	H2	375633.24	0.2	442521.96	84.88	70	120	
Tb	159	NoGas	7659694.26	0.3	8068980.3	94.93	70	120	
Tb	159	He	4551699.33	0.9	4815706.5	94.52	70	120	
Tb	159	H2	1893495.79	0.3	2121490.25	89.25	70	120	
Ho	165	NoGas	7571418.85	0.8	7925883.22	95.53	70	120	
Ho	165	He	4370268.17	0.9	4563830	95.76	70	120	
Ho	165	H2	2007439.12	0.2	2246419.33	89.36	70	120	

METALS

Raw Data

Metals Digestion Worksheet

Method Name 3050B Digestion **Prep Method** M3050 DF10 **Set** 210706A **Units** mL

Spikes	
Spiked ID 1	LCSW LOT# 10064561-19-52291 Pipette AP-21
Spiked ID 2	LCSW LOT# 10064561-18-52292
Spiked ID 3	Li HDL #AU-01003-40046
Spiked ID 4	
Spiked By	sm Date: 07/06/21 9:32:00 AM
Witnessed By	na Date: 07/06/21 9:32:00 AM

Starting Temp:	SLOT 30 THERM:9104 95C / 92C
Ending Temp:	SLOT 30 96C / 93C
Temperature Type:	Mod Block
Sufficient Vol for Matrix QC:	Yes
End Date/Time	07/06/21 14:00

	Sample	Sample Container	Spike Amount	Spike ID	Digested Amount	Final Volume	Start Date/Time	Comments
1	210706A Blk				1.01g	100mL	07/06/21 9:32	equip: Modblock4
2	210706A LCS		1mL	1+2	1.0g	100mL	07/06/21 9:32	equip: Modblock4
3	210706A LCSD		1mL	1+2	1.00g	100mL	07/06/21 9:32	equip: Modblock4
4	BA33721	BA33721S03			1.00g	100mL	07/06/21 9:32	equip: Modblock4 96402
5	BA33722	BA33722S06			1.01g	100mL	07/06/21 9:32	equip: Modblock4 96402
6	BA33724	BA33724S06			1.00g	100mL	07/06/21 9:32	equip: Modblock4 96402
7	BA33725	BA33725S06			1.00g	100mL	07/06/21 9:32	equip: Modblock4 96402
8	BA33726	BA33726S03			1.01g	100mL	07/06/21 9:32	equip: Modblock4 96402
9	BA33728	BA33728S06			1.00g	100mL	07/06/21 9:32	equip: Modblock4 96402
10	BA33729	BA33729S06			1.01g	100mL	07/06/21 9:32	equip: Modblock4 96402
11	BA33730	BA33730S06			1.00g	100mL	07/06/21 9:32	equip: Modblock4 96402
12	BA33730 MS	BA33730S06	2mL	1+2	1.01g	100mL	07/06/21 9:32	equip: Modblock4
13	BA33730 MSD	BA33730S06	2mL	1+2	1.00g	100mL	07/06/21 9:32	equip: Modblock4
14	BA33836	BA33836S01			1.03g	100mL	07/06/21 9:32	equip: Modblock4 96411
15	BA33838	BA33838S01			1.02g	100mL	07/06/21 9:32	equip: Modblock4 96411
16	BA33840	BA33840S01			1.00g	100mL	07/06/21 9:32	equip: Modblock4 96411
17	BA33842	BA33842S01			1.00g	100mL	07/06/21 9:32	equip: Modblock4 96411
18	BA33844	BA33844S01			1.00g	100mL	07/06/21 9:32	equip: Modblock4 96411
19	BA35059	BA35059S05			1.00g	100mL	07/06/21 9:32	equip: Modblock4 96645
20	BA35098	BA35098S12			1.01g	100mL	07/06/21 9:32	equip: Modblock4 96655

Solvent and Lot#
1:1 HNO3 2-16-21
HNO3 BDH 1120090 20285
H202 276731
HCL BDH 4121012 20295
100mL vessel 0180000055

Sample COC Transfer	
Sample prep employee Initials	sm
Analyst's initials	
Date	
Time	
Moved to	

Technician's Initials	
Scanned By	sm
Sample Preparation	sm
Digestion	sm
Bring up to volume	
Modified	07/06/21 4:34:12 PM

Reviewed By: **Date:**

6020A/3050B Injection Log

Directory: K:\ICP-MS Megatron\raw data output csv\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	14 Aug 2021	12:15	Calibration Blank 08/13/2021		210814A Tetr	1.
2	14 Aug 2021	12:24	Standard 1 08/13/2021		210814A Tetr	1.
3	14 Aug 2021	12:33	Standard 2 08/013/2021		210814A Tetr	1.
4	14 Aug 2021	12:42	Standard 3 08/13/2021		210814A Tetr	1.
5	14 Aug 2021	12:52	Standard 4 08/13/2021		210814A Tetr	1.
6	14 Aug 2021	13:01	ICV 08/13/2021		210814A Tetr	1.
7	14 Aug 2021	13:10	ICB 08/13/2021		210814A Tetr	1.
8	14 Aug 2021	13:19	1.0 ppb LLICV 08/13/2021		210814A Tetr	1.
9	14 Aug 2021	13:29	2.0 ppb LLICV 08/13/2021		210814A Tetr	1.
10	14 Aug 2021	13:38	4.0 ppb LLICV 08/13/2021		210814A Tetr	1.
11	14 Aug 2021	13:47	20 ppb LLICV 08/13/2021		210814A Tetr	1.
12	14 Aug 2021	13:56	ICSA 08/13/2021		210814A Tetr	1.
13	14 Aug 2021	16:09	210706A BLK		210814A Tetr	1.
14	14 Aug 2021	16:19	210706A LCS		210814A Tetr	1.
15	14 Aug 2021	16:29	210706A LCSD		210814A Tetr	1.
16	14 Aug 2021	16:39	BA35059S05		210814A Tetr	1.
18	14 Aug 2021	18:58	CCV 210813		210814A Tetr	1.
19	14 Aug 2021	19:08	CCB 210813		210814A Tetr	1.

METALS

Calibration Data

A.P.P.L. INC.
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.

ARF No: 96645 SDG: 96645

Analysis Date: 6/30/2021 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 11:02	%R(1)	True CCV1	Found 12:24	%R(1)	True CCV1	Found 13:06	%R(1)	
Mercury (Hg)	4.17	4.264	102	5.208	5.388	103	5.208	5.428	104	P

(1) Control Limits: Metals 90-110

A.P.P.L. INC.
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.

ARF No: 96645 SDG: 96645

Analysis Date: 6/30/2021 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 11:02	%R(1)	True CCV1	Found 13:33	%R(1)	True CCV1	Found 13:50	%R(1)	
Mercury (Hg)	4.17	4.264	102	5.208	5.64	108	5.208	5.641	108	P

(1) Control Limits: Metals 90-110

ILM02.0

A.P.P.L. INC.
3
BLANKS

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.

ARF No.: 96645 SDG: 96645

Preparation Blank Matrix (soil/water): soil

Preparation Blank Concentration Units (ug/L or mg/kg): mg/Kg

Analysis Date: 6/30/2021

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)								Preparation Blank		M
		C	1	C	2	C	3	C		C			
	11:04		12:25		13:08		13:35		12:29				
Mercury (Hg)	.63	U	.63	U	.63	U	.63	U	.10	U	P		

A.P.P.L. INC.
3
BLANKS

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.

ARF No.: 96645 SDG: 96645

Preparation Blank Matrix (soil/water): soil

Preparation Blank Concentration Units (ug/L or mg/kg): mg/Kg

Analysis Date: 6/30/2021

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	1	C	2	C	3	C		C	
	11:04		13:52						12:29		
Mercury (Hg)	.63	U	.63	U					.10	U	P

A.P.P.L. INC.

LLQC Check

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.

ARF No: 96645 SDG: 96645

Concentration Units: ug/L

Analysis Date: 6/30/2021

Analyte	LLQC								
	True	Found	%R(1)	True	Found	%R(1)	True	Found	%R(1)
	LLICV	11:05							
Mercury (Hg)	0.208	0.2063	99.2						

==========

Reprocessing Begun
Logged In Analyst: chemist_metals **Technique: AA FIMS-MHS**

Results Data Set (original): 210630S
Results Library (original): C:\Users\Public\PerkinElmer\AA\Data\Results\Results.mdb
Results Data Set (reprocessed):
Results Library (reprocessed):

==========

Method Loaded
Method Name: ANA 7471 **Method Last Saved: 06/29/21 12:23:01 PM**
Method Description: EPA 7471

==========

Sequence No.: 1 **Autosampler Location: 1**
Sample ID: Calib. Blank **Date Collected: 06/30/21 10:50:56 AM**
Analyst: **Data Type: Reprocessed on 06/30/21 4:23:36 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: Calib. Blank **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.00]	0.0000	-0.0004	0.0000	10:51:35 AM	No
2		[0.00]	0.0000	-0.0003	0.0000	10:51:59 AM	No
3		[0.00]	-0.0000	-0.0008	-0.0000	10:52:22 AM	No
Mean:		[0.00]	0.0000				
SD:		0.0000	0.0000				
%RSD:		0.00%	165.83				

Auto-zero performed.

==========

Sequence No.: 2 **Autosampler Location: 2**
Sample ID: ICAL 0.208ppb 210629 **Date Collected: 06/30/21 10:52:35 AM**
Analyst: **Data Type: Reprocessed on 06/30/21 4:23:36 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICAL 0.208ppb 210629 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.2083]	0.0018	0.0063	0.0018	10:53:14 AM	No
2		[0.2083]	0.0018	0.0059	0.0018	10:53:38 AM	No
3		[0.2083]	0.0017	0.0062	0.0017	10:54:01 AM	No
Mean:		[0.2083]	0.0018				
SD:		0.000000	0.0000				
%RSD:		0.00%	0.97				

Standard number 1 applied. [0.2083]
Correlation Coef.: 1.000000 Slope: 0.00844 Intercept: 0.00000

==========

Sequence No.: 3 **Autosampler Location: 3**
Sample ID: ICAL 0.521ppb 210629 **Date Collected: 06/30/21 10:54:15 AM**
Analyst: **Data Type: Reprocessed on 06/30/21 4:23:36 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICAL 0.521ppb 210629 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.5208]	0.0045	0.0165	0.0045	10:54:54 AM	No

2	[0.5208]	0.0045	0.0165	0.0045	10:55:17 AM	No
3	[0.5208]	0.0045	0.0165	0.0045	10:55:40 AM	No
Mean:	[0.5208]	0.0045				
SD:	0.000000	0.0000				
%RSD:	0.00%	0.29				

Standard number 2 applied. [0.5208]
Correlation Coef.: 0.999700 Slope: 0.00864 Intercept: 0.00000

==========

Sequence No.: 4 **Autosampler Location: 4**
Sample ID: ICAL 1.042ppb 210629 **Date Collected: 06/30/21 10:55:54 AM**
Analyst: **Data Type: Reprocessed on 06/30/21 4:23:36 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICAL 1.042ppb 210629 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	[1.0417]	0.0091		0.0342	0.0091	10:56:34 AM	No
2	[1.0417]	0.0091		0.0339	0.0091	10:56:57 AM	No
3	[1.0417]	0.0090		0.0334	0.0090	10:57:20 AM	No
Mean:	[1.0417]	0.0091					
SD:	0.000000	0.0000					
%RSD:	0.00%	0.49					

Standard number 3 applied. [1.0417]
Correlation Coef.: 0.999936 Slope: 0.00870 Intercept: 0.00000

==========

Sequence No.: 5 **Autosampler Location: 5**
Sample ID: ICAL 2.083ppb 210629 **Date Collected: 06/30/21 10:57:35 AM**
Analyst: **Data Type: Reprocessed on 06/30/21 4:23:36 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICAL 2.083ppb 210629 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	[2.083]	0.0183		0.0686	0.0183	10:58:15 AM	No
2	[2.083]	0.0182		0.0681	0.0182	10:58:39 AM	No
3	[2.083]	0.0183		0.0680	0.0183	10:59:02 AM	No
Mean:	[2.083]	0.0183					
SD:	0.00000	0.0001					
%RSD:	0.00%	0.37					

Standard number 4 applied. [2.083]
Correlation Coef.: 0.999973 Slope: 0.00875 Intercept: 0.00000

==========

Sequence No.: 6 **Autosampler Location: 6**
Sample ID: ICAL 5.21ppb 210629 **Date Collected: 06/30/21 10:59:17 AM**
Analyst: **Data Type: Reprocessed on 06/30/21 4:23:36 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICAL 5.21ppb 210629 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	[5.208]	0.0466		0.1777	0.0466	10:59:55 AM	No
2	[5.208]	0.0467		0.1756	0.0467	11:00:19 AM	No
3	[5.208]	0.0465		0.1753	0.0465	11:00:42 AM	No
Mean:	[5.208]	0.0466					
SD:	0.00000	0.0001					
%RSD:	0.00%	0.14					

Standard number 5 applied. [5.208]

Correlation Coef.: 0.999925 Slope: 0.00892 Intercept: 0.00000

Sequence No.: 7 **Autosampler Location: 7**
Sample ID: ICAL10.42ppb 210629 **Date Collected: 06/30/21 11:00:55 AM**
Analyst: **Data Type: Reprocessed on 06/30/21 4:23:36 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICAL10.42ppb 210629 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[10.417]	0.0901	0.3456	0.0901	11:01:34 AM	No
2		[10.417]	0.0901	0.3405	0.0901	11:01:57 AM	No
3		[10.417]	0.0898	0.3390	0.0898	11:02:20 AM	No
Mean:		[10.417]	0.0900				
SD:		0.00000	0.0002				
%RSD:		0.00%	0.21				

Standard number 6 applied. [10.417]
Correlation Coef.: 0.999820 Slope: 0.00870 Intercept: 0.00000

Calibration data for Hg 253.7 **Equation: Linear Through Zero**

ID	Mean Signal (Abs)	Entered Conc. ug/L	Calculated Conc. ug/L	Standard Deviation	%RSD
Calib. Blank	0.0000	0	0.0000	0.00	165.83
ICAL 0.208ppb 210629	0.0018	0.2083	0.2019	0.00	0.97
ICAL 0.521ppb 210629	0.0045	0.5208	0.5192	0.00	0.29
ICAL 1.042ppb 210629	0.0091	1.0417	1.0431	0.00	0.49
ICAL 2.083ppb 210629	0.0183	2.083	2.0981	0.00	0.37
ICAL 5.21ppb 210629	0.0466	5.208	5.3551	0.00	0.14
ICAL10.42ppb 210629	0.0900	10.417	10.3378	0.00	0.21

Correlation Coef.: 0.999820 Slope: 0.00870 Intercept: 0.00000

Sequence No.: 8 **Autosampler Location: 9**
Sample ID: ICV 210629 **Date Collected: 06/30/21 11:02:40 AM**
Analyst: **Data Type: Reprocessed on 06/30/21 4:23:37 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICV 210629 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	4.307	4.307	0.0375	0.1428	0.0375	11:03:19 AM	No
2	4.235	4.235	0.0369	0.1385	0.0369	11:03:42 AM	No
3	4.252	4.252	0.0370	0.1390	0.0370	11:04:06 AM	No
Mean:	4.264	4.264	0.0371				
SD:	0.0377	0.0377	0.0003				
%RSD:	0.88%	0.88%	0.88				

QC value within limits for Hg 253.7 Recovery = 102.26%
All analyte(s) passed QC.

Sequence No.: 9 **Autosampler Location: 1**
Sample ID: ICB 210629 **Date Collected: 06/30/21 11:04:20 AM**
Analyst: **Data Type: Reprocessed on 06/30/21 4:23:37 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICB 210629 **Analyte: Hg 253.7**

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

#	ug/L	ug/L	Signal	Area	Height		Stored
1	0.0033	0.0033	0.0000	-0.0006	0.0000	11:04:58 AM	No
2	0.0025	0.0025	0.0000	-0.0003	0.0000	11:05:22 AM	No
3	0.0029	0.0029	0.0000	-0.0002	0.0000	11:05:45 AM	No
Mean:	0.0029	0.0029	0.0000				
SD:	0.00040	0.00040	0.0000				
%RSD:	13.88%	13.88%	13.88				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

==========

Sequence No.: 10 **Autosampler Location: 2**
Sample ID: LLICV 210629 **Date Collected: 06/30/21 11:05:58 AM**
Analyst: **Data Type: Reprocessed on 06/30/21 4:23:37 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: LLICV 210629 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.2050	0.2050	0.0018	0.0063	0.0018	11:06:37 AM	No
2	0.2065	0.2065	0.0018	0.0063	0.0018	11:07:00 AM	No
3	0.2073	0.2073	0.0018	0.0063	0.0018	11:07:24 AM	No
Mean:	0.2063	0.2063	0.0018				
SD:	0.00121	0.00121	0.0000				
%RSD:	0.59%	0.59%	0.59				

QC value within limits for Hg 253.7 Recovery = 99.16%
All analyte(s) passed QC.

METALS

Raw Data

Mercury Digestion Worksheet

Method Name 7471A Mercury Digestion **Prep Method** M7471 **Set** 210624A **Units** mL

Spikes			
Spiked ID 1	Hg WORKING STANDARD PREP 6-21-21 Pipette M12		
Spiked ID 2	Hg WORKING ICV PREP 6-21-21		
Spiked ID 3	BALANCE WB2		
Spiked ID 4			
Spiked By	sm	Date:	06/24/21 9:25:00 AM
Witnessed By	nm	Date:	06/24/21 9:25:00 AM

Starting Temp:	SLOT 27 THERM:Kahn 95C
Ending Temp:	SLOT 27
Temp Type:	Modblock1
End Date/Time	06/24/21 10:19:00 AM

Mercury Calibration			
Sample	**Spike Amount**	**Spike ID**	**Final Volume**
0 ppb		1	96 ml
0.2083 ppb	0.4 ml	1	96 ml
0.5208 ppb	1 ml	1	96 ml
1.0417 ppb	2 ml	1	96 ml
2.083 ppb	4ml	1	96 ml
5.208 ppb	10 ml	1	96 ml
5.208 ppb	10 ml	1	96 ml
10.417 ppb	20 ml	1	96 ml
ICV	8 ml	2	96 ml

Start Date/Time of Calibration 06/24/21 9:25

Sufficient Vol for Matrix QC:	Yes

	Sample	Sample Container	Spike Amount	Spike ID	Digested Amount	Final Volume	Start Date/Time	Comments
1	210624A Blk					96mL	06/24/21 9:25	equip: Modblock1
2	210624A LCS		8mL	1		96mL	06/24/21 9:25	equip: Modblock1
3	210624A LCSD		8mL	1		96mL	06/24/21 9:25	equip: Modblock1
4	BA33980	BA33980S03			.61g	96mL	06/24/21 9:25	equip: Modblock1 96434
5	BA33982	BA33982S06			.60g	96mL	06/24/21 9:25	equip: Modblock1 96434
6	BA33983	BA33983S06			.61g	96mL	06/24/21 9:25	equip: Modblock1 96434
7	BA33984	BA33984S06			.60g	96mL	06/24/21 9:25	equip: Modblock1 96434
8	BA33985	BA33985S03			.60g	96mL	06/24/21 9:25	equip: Modblock1 96434
9	BA33987	BA33987S06			.60g	96mL	06/24/21 9:25	equip: Modblock1 96434
10	BA33988	BA33988S06			.61g	96mL	06/24/21 9:25	equip: Modblock1 96434
11	BA33989	BA33989S03			.60g	96mL	06/24/21 9:25	equip: Modblock1 96434
12	BA33991	BA33991S06			.60g	96mL	06/24/21 9:25	equip: Modblock1 96434
13	BA33992	BA33992S06			.60g	96mL	06/24/21 9:25	equip: Modblock1 96434
14	BA33993	BA33993S06			.61g	96mL	06/24/21 9:25	equip: Modblock1 96434
15	BA35054	BA35054S04			.62g	96mL	06/24/21 9:25	equip: Modblock1 96644
16	BA35055	BA35055S04			.60g	96mL	06/24/21 9:25	equip: Modblock1 96644
17	BA35056	BA35056S04			.60g	96mL	06/24/21 9:25	equip: Modblock1 96644
18	BA35057	BA35057S04			.60g	96mL	06/24/21 9:25	equip: Modblock1 96644
19	BA35058	BA35058S04			.61g	96mL	06/24/21 9:25	equip: Modblock1 96644
20	BA35059	BA35059S05			.61g	96mL	06/24/21 9:25	equip: Modblock1 96645
21	BA35098	BA35098S12			.61g	96mL	06/24/21 9:25	equip: Modblock1 96655

Solvent and Lot#
HNO3 BDH 1120090 20285
HCL BDH 4120012 20295
KMnO4 6-14-21
DECOLORIZER 6-21-21
100mL vessels 0090000032

Sample COC Transfer	
Sample prep employee Initials	sm
Analyst's initials	
Date	
Time	
Moved to	

Technician's Initials	
Scanned By	sm
Sample Preparation	sm
Digestion	sm
Bring up to volume	
Modified	06/24/21 9:52:34 AM

Reviewed By: **Date:**

Mercury Digestion Worksheet

Method Name 7471A Mercury Digestion **Prep Method** M7471 **Set** 210624A **Units** mL

Spikes			
Spiked ID 1	Hg WORKING STANDARD PREP 6-21-21 Pipette M12		
Spiked ID 2	Hg WORKING ICV PREP 6-21-21		
Spiked ID 3	BALANCE WB2		
Spiked ID 4			
Spiked By	sm	Date:	06/24/21 9:25:00 AM
Witnessed By	nm	Date:	06/24/21 9:25:00 AM

Starting Temp:	SLOT 27 THERM:Kahn 95C
Ending Temp:	SLOT 27
Temp Type:	Modblock1
End Date/Time	06/24/21 10:19:00 AM

Mercury Calibration

Sample	Spike Amount	Spike ID	Final Volume
0 ppb		1	96 ml
0.2083 ppb	0.4 ml	1	96 ml
0.5208 ppb	1 ml	1	96 ml
1.0417 ppb	2 ml	1	96 ml
2.083 ppb	4ml	1	96 ml
5.208 ppb	10 ml	1	96 ml
5.208 ppb	10 ml	1	96 ml
10.417 ppb	20 ml	1	96 ml
ICV	8 ml	2	96 ml

Start Date/Time of Calibration 06/24/21 9:25

Sufficient Vol for Matrix QC:	Yes

	Sample	Sample Container	Spike Amount	Spike ID	Digested Amount	Final Volume	Start Date/Time	Comments
22	BA35098 MS	BA35098S12	8mL	1	.60g	96mL	06/24/21 9:25	equip: Modblock1
23	BA35098 MSD	BA35098S12	8mL	1	.63g	96mL	06/24/21 9:25	equip: Modblock1

Solvent and Lot#
HNO3 BDH 1120090 20285
HCL BDH 4120012 20295
KMnO4 6-14-21
DECOLORIZER 6-21-21
100mL vessels 0090000032

Sample COC Transfer	
Sample prep employee Initials	sm
Analyst's initials	
Date	
Time	
Moved to	

Technician's Initials	
Scanned By	sm
Sample Preparation	sm
Digestion	sm
Bring up to volume	
Modified	06/24/21 9:52:34 AM

Reviewed By: **Date:**

EPA 7471B Injection Log

Directory: K:\FIMS Freddie\Backup Excel\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	30 Jun 2021	10:50	Calib. Blank		210630S Cop	1.
2	30 Jun 2021	10:52	ICAL 0.208ppb 210629		210630S Cop	1.
3	30 Jun 2021	10:54	ICAL 0.521ppb 210629		210630S Cop	1.
4	30 Jun 2021	10:55	ICAL 1.042ppb 210629		210630S Cop	1.
5	30 Jun 2021	10:57	ICAL 2.083ppb 210629		210630S Cop	1.
6	30 Jun 2021	10:59	ICAL 5.21ppb 210629		210630S Cop	1.
7	30 Jun 2021	11:00	ICAL10.42ppb 210629		210630S Cop	1.
8	30 Jun 2021	11:02	ICV 210629		210630S Cop	1.
9	30 Jun 2021	11:04	ICB 210629		210630S Cop	1.
10	30 Jun 2021	11:05	LLICV 210629		210630S Cop	1.
36	30 Jun 2021	12:24	CCV 210629		210630S Cop	1.
37	30 Jun 2021	12:25	CCB 210629		210630S Cop	1.
39	30 Jun 2021	12:29	210624A BLK		210630S Cop	1.
40	30 Jun 2021	12:48	210624A LCS		210630S Cop	1.
41	30 Jun 2021	12:49	210624A LCSD		210630S Cop	1.
51	30 Jun 2021	13:06	CCV 210629		210630S Cop	1.
52	30 Jun 2021	13:08	CCB 210629		210630S Cop	1.
61	30 Jun 2021	13:23	BA35059S05		210630S Cop	1.
65	30 Jun 2021	13:33	CCV 210629		210630S Cop	1.
66	30 Jun 2021	13:35	CCB 210629		210630S Cop	1.
67	30 Jun 2021	13:45	BA35059S05 DF 10		210630S Cop	10.
70	30 Jun 2021	13:50	CCV 210629		210630S Cop	1.
71	30 Jun 2021	13:52	CCB 210629		210630S Cop	1.

INORGANIC ANALYSIS
Calibration and Raw Data

% Moisture

Batch: QCG 210702-M008701

Method: CLP 4.0

Date: 07/02/21 14:09

Sample	Container	Pan (g)	Pan+Wet (g)	Pan+Dry 1 (g)	Pan+Dry 2 (g)	Moisture (%)	Comments
BA34806	S01	0.8405	7.9525	7.7166	7.7172	3.308	
		07/02/21 14:09	07/02/21 14:10		07/03/21 08:34		
BA34688D	S05	0.8400	8.9392	7.2156	7.2156	21.281	
		07/02/21 13:59	07/02/21 13:59	07/03/21 08:30	07/03/21 08:30		
BA34689	S05	0.8393	7.5589	6.6031	6.6032	14.223	
		07/02/21 14:00	07/02/21 14:00	07/03/21 08:30			
BA34691	S04	0.8389	8.0761	8.0494	8.0494	0.369	
		07/02/21 14:00	07/02/21 14:01	07/03/21 08:31			
BA34692	S05	0.8321	8.9450	8.7259	8.7259	2.701	
		07/02/21 14:01	07/02/21 14:02	07/03/21 08:32	07/03/21 08:32		
BA34693	S05	0.8350	8.7997	7.2879	7.2879	18.981	
		07/02/21 14:02	07/02/21 14:03	07/03/21 08:32	07/03/21 08:32		
BA34725	S06	0.8409	7.1118	7.0874	7.0877	0.384	
		07/02/21 14:04	07/02/21 14:05		07/03/21 08:33		
BA34761	S01	0.8286	7.1132	6.9963	6.9964	1.859	
		07/02/21 14:05	07/02/21 14:06	07/03/21 08:33	07/03/21 08:33		
BA34688	S05	0.8385	6.1776	5.0866	5.0868	20.430	
		07/02/21 13:58	07/02/21 13:58	07/03/21 08:30			
BA34763	S01	0.8378	6.4902	5.7699	5.7699	12.743	
		07/02/21 14:08	07/02/21 14:09	07/03/21 08:34	07/03/21 08:34		
BA35199	S01	0.8421	6.8778	6.0320	6.0325	14.005	
		07/02/21 14:20	07/02/21 14:21		07/03/21 08:41		
BA34807	S01	0.8524	8.9049	8.7740	8.7740	1.626	
		07/02/21 14:10	07/02/21 14:11	07/03/21 08:34	07/03/21 08:34		
BA34808	S01	0.8512	9.2012	8.3275	8.3278	10.460	
		07/02/21 14:11	07/02/21 14:12		07/03/21 08:35		
BA34809	S01	0.8374	9.8607	9.7813	9.7812	0.881	
		07/02/21 14:12	07/02/21 14:13	07/03/21 08:35	07/03/21 08:35		
BA34917	S01	0.8324	8.5783	6.8010	6.8010	22.945	
		07/02/21 14:14	07/02/21 14:14	07/03/21 08:35			
BA34918	S01	0.8276	7.5538	6.0769	6.0770	21.956	
		07/02/21 14:15	07/02/21 14:15	07/03/21 08:36	07/03/21 08:36		
BA35059	S04	0.8359	6.9928	6.7317	6.7321	4.234	
		07/02/21 14:16	07/02/21 14:16		07/03/21 08:36		
BA35198	S01	0.8479	6.1334	5.9851	5.9851	2.806	
		07/02/21 14:18	07/02/21 14:19	07/03/21 08:40	07/03/21 08:40		
BA34762	S01	0.8334	8.1601	7.9872	7.9872	2.360	
		07/02/21 14:07	07/02/21 14:08	07/03/21 08:33	07/03/21 08:33		

Date/Time InOven@104ºC	Date/Time OutOven@104ºC	Date/Time InOven@104ºC	Date/Time OutOven@104ºC
07/02/21 2:10:00 PM	07/03/21 8:34:00 AM		

908 North Temperance Ave. ∇ Clovis, CA 93611 ∇ Phone 559-275-2175 ∇ Fax 559-275-4422

Certification Number: CA1312
NELAP Certification number: CA00046
DoD-ELAP Certificate number: 4064.01

Addendum Data Validation Package

October 7, 2021

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, California 94612
Attn: Jason Brodersen

Title: Report of Data: Case 96645

Project: 103S582304.02

Dear Mr. Brodersen:

One soil sample was received June 23, 2021. Written results for the requested analysis are being provided on this October 7, 2021.

Results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

If you have any questions or require further information, please contact your APPL Project Manager, Gregory Salata, gsalata@applinc.com, at your convenience. Thank you for choosing APPL, Inc.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. These test results meet all requirements of NELAC and DoD QSM. Release of the hard copy has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

for

Loren Portwood, Laboratory Director
APPL, Inc.

LP/gs
Enclosure
cc: File

Data Validation Package
for

103S582304.02

ARF 96645

TABLE OF CONTENTS

CASE NARRATIVE

Addendum Case Narrative

ARF: 96645

Project: 103S582304.02

Sample Receipt Information:

One soil sample was received June 23, 2021 at 4.0°C. The samples were assigned Analytical Request Form (ARF) 96645. The sample numbers and requested analyses were compared to the chain of custody and e-mail correspondence. No exceptions were encountered. Additional analyses for WET and TCLP metals were requested on August 19, 2021.

Sample Preparation and Analysis:

For the EPA 6010B and EPA 7470 DI-WET analysis, the sample was leached according to California Title 22 guidelines using DI water and the leachate was digested according to EPA method 3010A and EPA 7470A.

For the EPA 7470A analysis, the samples were leached according to EPA method 1311 and the leachate was digested and analyzed according to the method.

Only the portion of the injection log relative to these samples is included. A full sequence log is available upon request. Measurement uncertainty can be reported upon request.

Exceptions, Abnormalities and Deviations:

None.

SDG	Received	Client ID	APPL ID	Collected DateTime	Matrix	Method	Method Description	Prep DateTime	Analysis DateTime
96645	6/23/2021	20210622.B112.WP	BA35059	6/22/2021 1:00:00 PM	SOIL	7470A/DIWET	MERCURY (HG) BY EPA 7470A DI-WET	9/16/2021 8:47:00 AM	10/4/2021 4:13:10 PM
96645	6/23/2021	20210622.B112.WP	BA35059	6/22/2021 1:00:00 PM	SOIL	6010B/DIWET	ICAP 6010B H2O DI-W.E.T.	9/4/2021 10:36:00 AM	9/4/2021 7:48:27 PM
96645	6/23/2021	20210622.B112.WP	BA35059	6/22/2021 1:00:00 PM	SOIL	7470A/TCLP	TCLP MERCURY 7470A	9/16/2021 8:47:00 AM	10/4/2021 4:28:09 PM

APPL Inc.
Abbreviations and Flags

FLAG	DESCRIPTION
#	Recovery or RPD outside control limits
*	Recovery or RPD outside control limits
B	Analyte detected in associated method blank
C1	Reason for correction: wrote incorrect response
C2	Reason for correction: calculated incorrectly
C3	Reason for correction: needs to be rechecked
C4	Reason for correction: data not usable
DO	Diluted out
E	Exceeds linear range
F	Estimated value
G1	Includes a wide range of hydrocarbons which does not match our gasoline standard
G10	Includes a match to hydrocarbon profiles within the range of mineral spirits
G11	Includes a match to hydrocarbon profiles within the range of JP-4
G12	Pattern does not match the gasoline standard; the carbon range for this sample is consistent with JP8
G13	Closely resembles the hydrocarbon profile of aviation gasoline
G14	Analyte concentration may be biased due to carry over
G2	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G3	Includes higher boiling hydrocarbons
G4	Includes dominant peak(s) not indicative of petroleum hydrocarbons
G5	Is mainly dominant peak(s) not indicative of petroleum hydrocarbons
G6	Contains recognizable contaminant peak(s) which has been removed from quantitation
G7	Is mainly a match to hydrocarbons within the range of gasoline
G8	Closely resembles the boiling point hydrocarbon profile consistent with weathered gasoline
G9	Includes hydrocarbons within the range of kerosene
J	Estimated value
M	Matrix effect
MI1	Manual integration: integration does not follow baseline
MI2	Manual integration: non-target peak interference
MI3	Manual integration: to split a peak that was integrated as one peak by the computer.
MI4	Manual integration: to integrate a split peak
MI5	Manual integration: the whole peak or part of the peak was not integrated
MI6	Manual integration: computer integrated wrong peak
MI7	Manual integration: other – (See case narrative)
MDL	Method detection limit
ND	Not detected
NT	Non-target
Q	Acceptance criteria not met
T1 I	Includes wide range of hydrocarbons not indicative of diesel
T1 M	Is mainly wide range of hydrocarbons not necessarily indicative of diesel
T2 I	Includes lower boiling hydrocarbons, e.g. mineral spirits, kerosene, stoddard solvent, white gas
T2 M	Is mainly lower boiling hydrocarbons, e.g. mineral spirits, kerosene, stoddard solvent, white gas
T3 I	Includes higher boiling hydrocarbons, e.g. asphaltene, waste oil, motor oil, or weathered diesel fuel
T3 M	Is mainly higher boiling hydrocarbons, e.g. asphaltene, waste oil, motor oil, or weathered diesel fuel
T4 I	Includes dominant peak(s) not indicative of hydrocarbons
T4 M	Is mainly dominant peak(s) not indicative of hydrocarbons
T5	Contains recognizable contaminant peak(s) which has been removed from quantitation
T6	Is mainly a match to hydrocarbons within range of diesel fuel
T7	Closely resembles the boiling point hydrocarbon profile consistent with diesel fuel
T8	Includes a match to hydrocarbon profiles within range of diesel and kerosene fuel
T9 I	Includes non-diesel hydrocarbons within boiling point range of diesel fuel
T9 M	Is mainly non-diesel hydrocarbons within boiling point range of diesel fuel
U	Not detected
Y	Percent difference between primary and confirmation column > 40%

SAMPLE MANAGEMENT RECORDS

CHAIN OF CUSTODY,

ARF, CRF, AND

CLIENT COMMUNICATION

APPL - Analysis Request Form 96645

Client: **Tetra Tech, Inc.**
Address: **1999 Harrison St., Suite 500**
Oakland, CA 94612
Attn: **Jason Brodersen**
Phone: **415-497-9060** Fax:
Job: **Richmond Field Station**
PO #: **103S582304.02**
Chain of Custody (Y/N): **Y** # **20190**
RAD Screen (Y/N): **Y** pH (Y/N): **N**
Turn Around Type: **2 WEEKS**

Received by: **MSA**
Date Received: **06/23/21** Time: **09:50**
Delivered by: **FEDEX**
Shuttle Custody Seals (Y/N): **Y** Time Zone: **-7**
Chest Temp(s): **4.0℃**
Color: **VFRG/A-Green**
Samples Chilled until Placed in Refrig/Freezer: **Y**
Project Manager: **Greg Salata**
QC Report Type: **DVP3/EDD/CA**
Due Date: **07/07/21**

Comments:
AN: 'U' Prints MDL report, DVP3.
Login to Jason.Brodersen@tetratech.com
Dry, sieve, and grind prior to PCB MIS (30 subsamples)
Prep using Soxhlet
WET: Report Cr,Pb
FR: PDF to Jason.Broderen@tetratech.com
EDD: Excel to Jason.Brodersen@tetratech.com

Sample Distribution:
GC: 1-$8151S, 1-$81ADOD5S, 1-$82ADOD5S, 1-$87DDODV45S, 1-$PCBS, 1-$TCHLOR, 1-$TOXS, 1-$TPHDODS51
Extractions: 1-_MSE005, 1-_SON004, 1-_SON009, 1-_SOX005
VOA: 1-$86CDODV45S, 1-$GASBL, 1-$GRO86CS
Metals: 1-$62ADOD5S(CAM17), 1-$HGDIDOD5, 1-$HGDOD5S, 1-$MTL6(Cr,Pb), 1-$TCLPHG
Wetlab: 1-MOIST
Other: 1-_M3010DI, 1-_M3050, 1-_M7470DI, 1-_M7470TCLP, 1-_M7471

Charges:

Invoice To:

	Client ID	APPL ID	Sampled	Analyses Requested
1.	20210622.B112.WP	BA35059S	06/22/21 13:00	$62ADOD5S(CAM17), $8151S, $81ADOD5S, $82ADOD5S, $86CDODV45S, $87DDODV45S, $GASBL, $GRO86CS, $HGDIDOD5, $HGDOD5S, $MTL6(Cr,Pb), $PCBS, $TCHLOR, $TCLPHG, $TOXS, $TPHDODS51, MOIST

Note: All times, excluding sample collection times, are Pacific Time Zone unless noted otherwise. Collection times are in: -7 UTC

APPL Sample Receipt Form

ARF# **96645**

Sample	Container Type	Count	p
BA35059	[26] Other	2	NA
	[42] 40mL VOA, MeOH prsvd	1	NA
	[45] 40mL VOA, BISULF w/stirb	2	NA

Sample	Container Type	Count	p

R3@0.0°C 4.0°C/4.0°C 96645 ~~96657~~

TETRA TECH
Oakland Office

1999 Harrison Street, Suite 500
Oakland, CA 94612-3599
Phone: 510-302-6302
Fax: 510-433-0830

Chain of Custody Record No. 20190

Project Name: Richmond Field Station	Lab PO#: MSA	Lab: APPL	
Project number: 1035582304.02	Tt technical contact: Jason B. / Mike D.	Field samplers: Mike Dahlquist	
	Tt project manager: Jason Broderson	Field samplers' signatures:	

Sample ID	Sample Location (Pt. ID)	Date	Time	Matrix	MS / MSD	40 ml VOA	1 liter Amber	500 ml Poly	Sleeve	Glass Jar	VOA (8260)	SVOA (8270)	Pest/PCBs (8081)	Metals (CAM 17)	TPH Purgeables (8015)	TPH Extractables (8015m)	PCB w/ Soxhlet	Herbicides (8151)
20210622.B112.WP		6/22/21	1300	Soil		3				2	X	X	X	X	X	X	X	X

Preservative Added

No./Container Types

Analysis Required

	Name (print)	Company Name	Date	Time
Relinquished by:	Mike Dahlquist	Tetra Tech	6/22/21	1400
Received by:				
Relinquished by:				
Received by:				
Relinquished by:				
Received by:			6/23/21	0950

Turnaround time/remarks:
2 week TAT

Fed Ex #:

WHITE-Laboratory Copy YELLOW-Sample Tracker PINK-File Copy

Greg Salata

From: Brodersen, Jason <Jason.Brodersen@tetratech.com>
Sent: Thursday, August 19, 2021 10:20 AM
To: Diane Anderson; 'Greg Salata'; 'Libby Cheeseborough'
Cc: Greg Haet (gjhaet@berkeley.edu)
Subject: RE: SDG 96645 very late

Thank you for getting this completed.

Based on my review of the data, we now need the following:

WET Test for chromium, lead, mercury
TCLP Test for mercury

Can you provide a date for these results?

Jason Brodersen, PG, QSD | **Program Manager**
Cell: 415.497.9060

Tetra Tech, Inc.
1999 Harrison St., Suite 500 | Oakland, CA 94612 | www.tetratech.com

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From: Diane Anderson <danderson@applinc.com>
Sent: Tuesday, August 17, 2021 1:20 PM
To: 'Greg Salata' <gsalata@applinc.com>; Brodersen, Jason <Jason.Brodersen@tetratech.com>; 'Libby Cheeseborough' <libby@applinc.com>
Subject: RE: SDG 96645 very late

Jason,
This report will be sent out tomorrow. It is ready but we had a system failure that will be corrected late today.

I apologize for the delay.
Thanks
Diane

Diane Anderson
President

COOLER RECEIPT FORM **ARF: 96645**

1) Project: Richmond Field Station Date Received: 06/23/21

2) Coolers: Number of Coolers: 1

3) YES Were custody seals present and intact?
How many? 2 Name/Date on seal? SEE BELOW

4) YES Was there a shipping slip? Carrier name: FEDEX

5) Type of packing in cooler: X bubble wrap __ popcorn __ foam X plastic bags __ other
X wet ice __ dry ice __ no ice __ gel ice

6) YES Were cooler temperatures acceptable?

7) Serial number of calibrated thermometer used: R3 CF +0.0°C

8) Cooler temp(s): In °C. Thermometer Temp / Corrected Temp
1: 4.0/4.0 2: ____ 3: ____ 4: ____ 5: ____ 6: ____
7: ____ 8: ____ 9: ____ 10: ____ 11: ____ 12: ____

Chain of custody:

9) YES Was a chain of custody received?

10) NO Were the custody papers complete/signed in the appropriate places?

Sample Labels:

11) YES Were all sample labels complete (sample ID, date/time of sampling, etc.)?

12) YES Did all container labels agree with custody papers?

Sample Containers:

13) YES Were all containers sealed in separate bags?

14) YES Did all containers arrive in good condition:(unbroken, no leakage, no cracked/broken lids)?

15) YES Were correct containers and preservatives used for the tests indicated?

16) YES Was a sufficient amount of sample sent for tests indicated?

17) NA Were bubbles present in volatile samples?
If yes, the following were received with air bubbles:
Larger than a pea: ____
Smaller than a pea: ____

Preservation Hold time:

18) Yes Was a sufficient amount of holding time remaining to analyze the samples?

19) NA Was the pH taken of all non-VOA preserved samples and written on the sample container?

20) NA Was the pH of acid preserved non-VOA samples < 2?

21) NA Was the pH of the "basic" preserved samples for Cyanide > 12, Sulfide >9, Hexchrom >9?

22) NO Were unpreserved VOA Vials received for VOA Dept analysis?

23) NA If "yes", are the unpreserved VOA vials noted in the ADD TEST FIELD on the ARF?
pH strip lot number: ____
Lab notified if pH was not adequate: ____

Notes/Deficiencies:

Personnel receiving samples: CG Second reviewer: SS
Personnel labeling samples: DR
Project manager notified: ____ Date/Time of notification ____
Name of client notified: ____ Date/Time of notification ____

SAMPLE RESULTS

Metals Analysis

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Jason Brodersen
Project: Richmond Field Station
Sample ID: 20210622.B112.WP
Sample Collection Date: 6/22/2021

ARF: 96645
APPL ID: BA35059

Method	Analyte	Result	RL	MDL	Units	DF	Prep Date	Analysis Date
6010B/DIWE	CHROMIUM (CR)	1.37 U	50.0	1.37	ug/L	1	9/4/2021	9/4/2021
6010B/DIWE	LEAD (PB)	1.85 U	30.0	1.85	ug/L	1	9/4/2021	9/4/2021

Printed: 9/15/2021 11:35:09 AM
APPL-F1-SC-NoMC-REG MDLs

Metals Analysis

Tetra Tech, Inc.
1999 Harrison St., Suite 500
Oakland, CA 94612

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Attn: Jason Brodersen
Project: Richmond Field Station
ARF: 96645
Sample ID: 20210622.B112.WP
APPL ID: BA35059
Sample Collection Date: 6/22/2021

Method	Analyte	Result	LOQ	LOD	DL	Units	DF	Prep Date	Analysis Date
7470A/DIWE	MERCURY (HG)	0.23	0.2	0.12	0.06	ug/L	1	9/16/2021	10/4/2021
7470A/TCLP	MERCURY (HG)	0.00065 J	0.002	0.0002	0.0001	mg/L	1	9/16/2021	10/4/2021

J = Estimated value.

QC FORMS

6010B/DIWET

Form 4

Blank Summary

Lab Name: APPL, Inc. SDG No: 96645

Case No: 96645 Date Analyzed: 9/4/2021

Matrix: SOIL Instrument: Cyrus

Blank ID: 210904A2-BLK Time Analyzed: 1921

APPL ID.	Client Sample No.	File ID.	Date Analyzed
BA35059	20210622.B112.WP	210904A	9/4/2021 1948
210904A2-LCSD	Lab Control SpikeD	210904A	9/4/2021 1930
210904A2-LCS	Lab Control Spike	210904A	9/4/2021 1926
210904A2-BLK	Blank	210904A	9/4/2021 1921

Comments: Batch: #MTL6-210904A2

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	RL	MDL	Units	Prep Date	Analysis Date	QC Group
6010B	CHROMIUM (CR)	1.37 U	50.0	1.37	ug/L	09/04/21	09/04/21	#MTL6-210904A2-BA35059
6010B	LEAD (PB)	1.85 U	30.0	1.85	ug/L	09/04/21	09/04/21	#MTL6-210904A2-BA35059

Metals SC-Blank-REG MDLs
Printed: 9/15/2021 11:35:12 AM

6010B/DIWET

Form 4

LCS Summary

Lab Name: APPL, Inc. SDG No: 96645

Case No: 96645 Date Analyzed: 9/4/2021

Matrix: SOIL Instrument: Cyrus

LCS ID: 210904A2-LCS Time Analyzed: 1926

APPL ID.	Client Sample No.	File ID.	Date Analyzed
BA35059	20210622.B112.WP	210904A	9/4/2021 1948
210904A2-LCSD	Lab Control SpikeD	210904A	9/4/2021 1930
210904A2-LCS	Lab Control Spike	210904A	9/4/2021 1926
210904A2-BLK	Blank	210904A	9/4/2021 1921

Comments: Batch: #MTL6-210904A2

Laboratory Control Spike Recoveries

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Lvl ug/L	SPK Res ug/L	DUP Res ug/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group
EPA 6010B	CHROMIUM (CR)	2.5	2.3	2.3	92.0	92.0	0.0	20	80-120	09/04/21	09/04/21	09/04/21	09/04/21	#MTL6-210904A2-BA35059
EPA 6010B	LEAD (PB)	2.5	2.2	2.2	88.0	88.0	0.0	20	80-120	09/04/21	09/04/21	09/04/21	09/04/21	#MTL6-210904A2-BA35059

Comments:

7470A/DIWET

Form 4

Blank Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	10/4/2021
Matrix:	SOIL	Instrument:	Freddie
Blank ID:	210916A-BLK	Time Analyzed:	1608

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210916A-MSD	Matrix SpikeD	211004W	10/4/2021 1616
210916A-MS	Matrix Spike	211004W	10/4/2021 1614
210916A-LCSD	Lab Control SpikeD	211004W	10/4/2021 1611
210916A-LCS	Lab Control Spike	211004W	10/4/2021 1609
BA35059	20210622.B112.WP	211004W	10/4/2021 1613
210916A-BLK	Blank	211004W	10/4/2021 1608

Comments: Batch: #HGDID-210916A

7470A/TCLP

Form 4

Blank Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	10/4/2021
Matrix:	SOIL	Instrument:	Freddie
Blank ID:	210916A-BLK	Time Analyzed:	1618

APPL ID.	Client Sample No.	File ID.	Date Analyzed
BA35059	20210622.B112.WP	211004W	10/4/2021 1628
210916A-MSD	Matrix SpikeD	211004W	10/4/2021 1631
210916A-MS	Matrix Spike	211004W	10/4/2021 1629
210916A-LCSD	Lab Control SpikeD	211004W	10/4/2021 1626
210916A-LCS	Lab Control Spike	211004W	10/4/2021 1622
210916A-BLK	Blank	211004W	10/4/2021 1618

Comments: Batch: #TCLPH-210916A

METALS BLANK

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Analyte	Result	LOQ	LOD	DL	Units	Prep Date	Analysis Date	QC Group
7470A	MERCURY (HG)	0.12 U	0.2	0.12	0.06	ug/L	09/16/21	10/04/21	#HGDID-210916A-BA35059
7470A	MERCURY (HG)	0.0002 U	0.002	0.0002	0.0001	mg/L	09/16/21	10/04/21	#TCLPH-210916A-BA35059

7470A/DIWET

Form 4

LCS Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	10/4/2021
Matrix:	SOIL	Instrument:	Freddie
LCS ID:	210916A-LCS	Time Analyzed:	1609

APPL ID.	Client Sample No.	File ID.	Date Analyzed
210916A-MSD	Matrix SpikeD	211004W	10/4/2021 1616
210916A-MS	Matrix Spike	211004W	10/4/2021 1614
210916A-LCSD	Lab Control SpikeD	211004W	10/4/2021 1611
210916A-LCS	Lab Control Spike	211004W	10/4/2021 1609
BA35059	20210622.B112.WP	211004W	10/4/2021 1613
210916A-BLK	Blank	211004W	10/4/2021 1608

Comments: Batch: #HGDID-210916A

7470A/TCLP

Form 4

LCS Summary

Lab Name:	APPL, Inc.	SDG No:	96645
Case No:	96645	Date Analyzed:	10/4/2021
Matrix:	SOIL	Instrument:	Freddie
LCS ID:	210916A-LCS	Time Analyzed:	1622

APPL ID.	Client Sample No.	File ID.	Date Analyzed
BA35059	20210622.B112.WP	211004W	10/4/2021 1628
210916A-MSD	Matrix SpikeD	211004W	10/4/2021 1631
210916A-MS	Matrix Spike	211004W	10/4/2021 1629
210916A-LCSD	Lab Control SpikeD	211004W	10/4/2021 1626
210916A-LCS	Lab Control Spike	211004W	10/4/2021 1622
210916A-BLK	Blank	211004W	10/4/2021 1618

Comments: Batch: #TCLPH-210916A

Laboratory Control Spike Recoveries

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Lvl mg/L	SPK Res mg/L	DUP Res mg/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group
EPA 7470A	MERCURY (HG)	0.004	0.0041	0.0042	103	105	2.4	15	85-115	09/16/21	10/04/21	09/16/21	10/04/21	#TCLPH-210916A-BA3505

Comments:

Laboratory Control Spike Recoveries

METALS

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Lvl ug/L	SPK Res ug/L	DUP Res ug/L	SPK % Recov	DUP % Recov	RPD	RPD Max	QC Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group
EPA 7470A	MERCURY (HG)	4.00	3.9	3.6	97.5	90.0	8.0	15	82-119	09/16/21	10/04/21	09/16/21	10/04/21	#HGDID-210916A-BA3505

Comments:

Matrix Spike Recoveries

METALS

APPL ID: **210916S-35059 MS - 268615**

Sample ID: BA35059

Client ID: 20210622.B112.WP

APPL Inc.
908 North Temperance Avenue
Clovis, CA 93611

Method	Compound Name	Spike Lvl ug/L	Matrix Res ug/L	SPK Res ug/L	DUP Res ug/L	SPK % Recovery	DUP % Recovery	RPD	RPD Max	Recovery Limits	Extract Date-Spk	Analysis Date-Spk	Extract Date-Dup	Analysis Date-Dup	QC Group	QC Sample
EPA 7470A	MERCURY (HG)	4.00	0.23	3.5	4.2	81.8 #	99.3	18.2 #	15	82-119	9/16/2021	10/4/2021	9/16/2021	10/4/2021	268615	BA35059
EPA 7470A	MERCURY (HG)	0.004	0.00065	0.0048	0.0046	104	98.8	4.3	15	85-115	9/16/2021	10/4/2021	9/16/2021	10/4/2021	268616	BA35059

= Recovery is outside QC limits.

Comments:

Mercury Post Digestion Spike

Sample ID	Parent Concentration	Post Spike Concentration	Spike Amount	Post Spike Recovery	QC Flag
BA35059 PDS	0.2265	5.311	4	127%	*

Date: 10/05/21
Units: ug/L
CL: 80-120%

METALS

Calibration Data

A.P.P.L. INC.
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.
ARF No: 96645 SDG: 96645

Analysis Date: 9/4/2021 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 9:42	%R(1)	True CCV1	Found 19:13	%R(1)	True CCV1	Found 20:01	%R(1)	
Chromium (Cr)	500	510	102	500	490	98.0	500	500	100	P
Lead (Pb)	500	500	100	500	490	98.0	500	500	100	P

(1) Control Limits: Metals 90-110

A.P.P.L. INC.
3
BLANKS

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.

ARF No.: 96645 SDG: 96645

Preparation Blank Matrix (soil/water): water

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analysis Date: 9/4/2021

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)								Preparation Blank		M
		C	1	C	2	C	3	C		C			
	09:47		19:17		20:06						19:21		
Chromium (Cr)	50.00	U	50.00	U	50.00	U					50.00	U	P
Lead (Pb)	30.00	U	30.00	U	30.00	U					30.00	U	P

A.P.P.L. INC.
4
ICP INTERFERENCE CHECK SAMPLE

Lab Name:	A.P.P.L. INC.	Contract:	Tetra Tech, Inc.
ARF No.:	96645	SDG:	96645
ICP ID Number:	Cyrus	ICS Source:	Environmental Express

Analysis Date: 9/4/2021 Concentration Units: ug/L

Analyte	True		Initial Found		
	Sol A	Sol AB	Sol A 10:09	Sol AB 10:13	%R(1)
Chromium (Cr)		250	0	250	100
Lead (Pb)		500	0	490	98.0

(1) Control Limits: Metals 80-120

Low Level ICV

Sample Name	Acq Date Time	Run Sequence	Analyte	Actual Conc (ug/L)	Spiked Conc (ug/L)	Control Limits	% Recovery	QC Flag
LLICVX2	9/4/21 9:55 AM	210904A	Silver	0.85	1	80-120%	85	
LLICV	9/4/21 9:51 AM	210904A	Aluminum	52.39	50	80-120%	105	
LLICVX6	9/4/21 10:00 AM	210904A	Arsenic	12.08	12	80-120%	101	
LLICV	9/4/21 9:51 AM	210904A	Boron	26.22	25	80-120%	105	
LLICV	9/4/21 9:51 AM	210904A	Barium	1.570	1.5	80-120%	105	
LLICV	9/4/21 9:51 AM	210904A	Beryllium	1.050	1	80-120%	105	
LLICV	9/4/21 9:51 AM	210904A	Calcium	49.13	50	80-120%	98	
LLICV	9/4/21 9:51 AM	210904A	Cadmium	0.30	0.25	80-120%	120	
LLICV	9/4/21 9:51 AM	210904A	Cobalt	2.550	2.5	80-120%	102	
LLICVX2	9/4/21 9:55 AM	210904A	Chromium	0.91	1	80-120%	91	
LLICV	9/4/21 9:51 AM	210904A	Copper	2.63	2.5	80-120%	105	
LLICV	9/4/21 9:51 AM	210904A	Iron	27.27	25	80-120%	109	
LLICV	9/4/21 9:51 AM	210904A	Potassium	511.0	500	80-120%	102	
LLICV	9/4/21 9:51 AM	210904A	Magnesium	22.17	25	80-120%	89	
LLICV	9/4/21 9:51 AM	210904A	Manganese	1.07	1	80-120%	107	
LLICVX2	9/4/21 9:55 AM	210904A	Molybdenum	1.65	2	80-120%	83	
LLICV	9/4/21 9:51 AM	210904A	Sodium	514.27	500	80-120%	103	
LLICVX2	9/4/21 9:55 AM	210904A	Nickel	2.200	2	80-120%	110	
LLICV	9/4/21 9:51 AM	210904A	Phosphorus	12.31	12.5	80-120%	98	
LLICVX2	9/4/21 9:55 AM	210904A	Lead	2.92	3	80-120%	97	
LLICVX2	9/4/21 9:55 AM	210904A	Antimony	3.26	4	80-120%	82	
LLICVX6	9/4/21 10:00 AM	210904A	Selenium	12.95	12	80-120%	108	
LLICV	9/4/21 9:51 AM	210904A	Tin	2.900	3	80-120%	97	
LLICV	9/4/21 9:51 AM	210904A	Strontium	1.130	1	80-120%	113	
LLICV	9/4/21 9:51 AM	210904A	Titanium	2.60	2.5	80-120%	104	
LLICV	9/4/21 9:51 AM	210904A	Thallium	2.03	2	80-120%	102	
LLICVX2	9/4/21 9:55 AM	210904A	Vanadium	0.99	1	80-120%	99	
LLICV	9/4/21 9:51 AM	210904A	Zinc	27.46	25	80-120%	110	

METALS

Raw Data

ICP-OES Calibration Standard Prep

Prepared: 9/3/2021
Expires: 9/10/2021
1% HNO3 / 5% HCl Prep: 9/3/2021
Prepared By (Initials): PW

Calibration Standard 6

Initial Standard Information						Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. Range (ug/mL)	Lot Number - QA Number/ APPL Prep Date	Exp Date	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. Range (ug/L)
Solution A	Inorganic Ventures	HP1810-250	200 - 5,000	m2meb662248-38391	9/4/2024	500uL	100mL	1% HNO3 / 5% HCl	1000 - 25,000
Solution B	Inorganic Ventures	HP1810-250	4000 - 10,000	m2meb662249-38389	9/4/2024	500uL			2000 - 50,000
Solution C	Inorganic Ventures	HP1810-250	100 - 200	m2meb662250-38394	9/4/2024	500uL			500 - 1000
Calibration Standard 5									
ICP-OES Calib Standard 3	Inorganic Ventures	Standard 2/CCV1	0.5 - 50	Prepared 09/03/21	9/10/2021	25mL	50mL	1% HNO3 / 5% HCl	250 - 25,000
Calibration Standard 1									
200.7 LDL	O2SI	160634-01-01	0.05 - 100	10080366-3-41267	3/18/2022	250uL	50mL	1% HNO3 / 5% HCl	0.25 - 200

ICP-OES ICV (SS)

Prepared: 9/1/2021
Expires: 9/15/2021
1% HNO3 / 5% HCl Prep: 9/1/2021
Prepared By (Initials): PW

ICP-OES ICV 1

Initial Standard Information						Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. Range (ug/mL)	Lot Number - QA Number	Exp Date	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. Range (ug/mL)
QCS ICV Soln A	CPI	4400-070615RH01	50 - 500	10062445-13-52340	11/11/2022	250uL	50mL	1% HNO3 / 5% HCl	0.25 - 2.5
QCS ICV Soln B	CPI	4400-070615RH01	2,500	10062445-14-52341	11/11/2022	250uL			12.5

ICP-OES CCV2

Initial Standard Information						Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. Range (ug/mL)	APPL Prep Date	Exp Date	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. Range (ug/mL)
ICP-OES Calib Standard 3	Inorganic Ventures	CCV2	0.5 - 50	Prepared 09/03/21	9/10/2021	15mL	40mL	1% HNO3 / 5% HCl	0.15 - 15

ICP-OES Low Levels (LLICV)

Prepared: 9/3/2021
Expires: 9/17/2021
1% HNO3 / 5% HCl Prep: 9/3/2021
Prepared By (Initials): PW

LLICV

Initial Standard Information						Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. Range ug/mL	Lot Number - QA Number	Exp Date	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. Range (ug/L)
200.7 LDL	O2SI	160634-01-01	0.05 - 100	10080366-3-41267	3/18/2022	250uL	50mL	1% HNO3 / 5% HCl	0.25 - 200
LLICVX2 / Standard 2									
200.7 LDL	O2SI	160634-01-01	0.05 - 100	10080366-3-41267	3/18/2022	500uL	50mL	1% HNO3 / 5% HCl	0.50 - 400
LLICVX6 / Standard 3									
200.7 LDL	O2SI	160634-01-01	0.05 - 100	10080366-3-41267	3/18/2022	1.5mL	50mL	1% HNO3 / 5% HCl	1.5 - 1,200
LLICVX10 / Standard 4									
200.7 LDL	O2SI	160634-01-01	0.05 - 100	10080366-3-41267	3/18/2022	2.5mL	50mL	1% HNO3 / 5% HCl	2.5 - 2,000
LLICV 10									
ICP-OES Calib Standard 3	Inorganic Ventures	HP1810-250	0.5 - 50	10080366-3-41267	9/10/2021	500uL	50mL	1% HNO3 / 5% HCl	5 - 500
LLICV 50									
ICP-OES Calib Standard 3	Inorganic Ventures	HP1810-250	0.5 - 50	10080366-3-41267	9/10/2021	2.5mL	50mL	1% HNO3 / 5% HCl	25 - 2,500

ICP-OES Interference Check Solution A

Prepared: 9/1/2021
Expires: 7/13/2021
1% HNO3 / 5% HCl Prep: 9/1/2021

Prepared By (Initials): PW

Initial Standard Information						Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (ug/mL)	Lot Number - QA Number	Exp Date	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (ug/mL)
Aluminum	Inorganic Ventures	35-APPLTSP-6010ICSA	10,000	N2-MEB670092-39414	7/25/2022	500uL	50mL	1% HNO3 / 5% HCl	100
Calcium			10,000						100
Magnesium			10,000						100
Iron			10,000						100
ICP-OES Interference Check Solution AB									
Aluminum	Inorganic Ventures	35-APPLTSP-6010ICSA	10,000	N2-MEB670092-39414	7/25/2022	500uL	50mL	1% HNO3 / 5% HCl	100
Calcium			10,000						100
Magnesium			10,000						100
Iron			10,000						100
Special Mix (Interference)	O2SI	160495-01-01	100	10081266-2-49725	7/13/2021	250uL			0.5

ICP-OES Internal Standards

Prepared: 8/27/2021
Expires: 7/13/2021
1% HNO3 / 5% HCl Prep: 8/27/2021

Prepared By (Initials): PW

Initial Standard Information						Final Standard Information			
Name of Initial Standard (QAU Label)	Supplier	Supplier Part No.	Conc. (mg/L)	Lot Number - QA Number	Exp Date	Aliquot From Stock	Final Volume	Solvent	Final Standard Conc. (mg/L)
Yttrium	O2SI	060039-04-03	1,000	10083563-2-49726	7/13/2021	4mL	2L	1% HNO3 / 5% HCl	2

Metals Digestion Worksheet

Method Name 3010A Digestion (DI-WET) **Prep Method** M3010DI **Set** 210904A **Units** mL

Spikes	
Spiked ID 1	LCSW LOT# 10064561-19-52700 Pipette AP-21
Spiked ID 2	LCSW LOT# 10064561-18-52699
Spiked ID 3	
Spiked ID 4	
Spiked By	sm Date: 9/4/2021 10:36:00 AM
Witnessed By	na Date: 9/4/2021 10:36:00 AM

Starting Temp:	SLOT 18 THERM:9104 99C / 96C
Ending Temp:	SLOT 18 97C / 94C
Temperature Type:	Mod Block
Sufficient Vol for Matrix QC:	Yes
End Date/Time	09/04/21 15:05

	Sample	Sample Container	Spike Amount	Spike ID	Digested Amount	Final Volume	Start Date/Time	Comments
1	210904A Blk				5mL	50mL	09/04/21 10:36	equip: Modblock4 Tumble Start Time: 9/1/21 @ 16:40
2	210904A LCS		500uL	1+2	5mL	50mL	09/04/21 10:36	equip: Modblock4 Tumble End Time: 9/3/21 @ 16:40
3	210904A LCSD		500uL	1+2	5mL	50mL	09/04/21 10:36	equip: Modblock4
4	BA33587	BA33587S01			5mL	50mL	09/04/21 10:36	equip: Modblock4 96383 DF10
5	BA33588	BA33588S01			5mL	50mL	09/04/21 10:36	equip: Modblock4 96383 DF10
6	BA34685	BA34685S01			5mL	50mL	09/04/21 10:36	equip: Modblock4 96564 DF10
7	BA35059	BA35059S01			5mL	50mL	09/04/21 10:36	equip: Modblock4 96645 DF10
8	BA35059 MS	BA35059S01	500uL	1+2	5mL	50mL	09/04/21 10:36	equip: Modblock4 DF10
9	BA35059 MSD	BA35059S01	500uL	1+2	5mL	50mL	09/04/21 10:36	equip: Modblock4 DF10

Solvent and Lot#
HNO3 BDH 1121020 20501
1:1 HCL 9-4-21
100mL vessel 0330000064

Sample COC Transfer	
Sample prep employee Initials	sm
Analyst's initials	PW
Date	9/7/21
Time	1035
Moved to	rack 5

Technician's Initials	
Scanned By	sm
Sample Preparation	sm
Digestion	sm
Bring up to volume	
Modified	9/4/2021 2:43:25 PM

Reviewed By: PW **Date:** 9/7/21

6010B/DIWET Injection Log

Directory: K:\ICP-OES Cyrus\Backup Excel\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	04 Sep 2021	09:11	CalBlk 210904		210904A200	1.
2	04 Sep 2021	09:16	STD1 210904		210904A200	1.
3	04 Sep 2021	09:20	STD2 210904		210904A200	1.
4	04 Sep 2021	09:25	STD3 210904		210904A200	1.
5	04 Sep 2021	09:29	STD4 210904		210904A200	1.
6	04 Sep 2021	09:33	STD5 210904		210904A200	1.
7	04 Sep 2021	09:38	STD6 210904		210904A200	1.
8	04 Sep 2021	09:42	ICV 210904		210904A200	1.
9	04 Sep 2021	09:47	ICB 210904		210904A200	1.
11	04 Sep 2021	09:55	LLLOQX2 210904		210904A200	1.
14	04 Sep 2021	10:09	ICSA 210904		210904A200	1.
15	04 Sep 2021	10:13	ICSAB 210904		210904A200	1.
121	04 Sep 2021	19:13	CCV 210904		210904A200	1.
122	04 Sep 2021	19:17	CCB 210904		210904A200	1.
123	04 Sep 2021	19:21	210904A BLK		210904A200	1.
124	04 Sep 2021	19:26	210904A LCS		210904A200	1.
125	04 Sep 2021	19:30	210904A LCSD		210904A200	1.
129	04 Sep 2021	19:48	BA35059S01		210904A200	1.
132	04 Sep 2021	20:01	CCV 210904		210904A200	1.
133	04 Sep 2021	20:06	CCB 210904		210904A200	1.

METALS

Calibration Data

A.P.P.L. INC.
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.

ARF No: 96645 SDG: 96645

Analysis Date: 10/4/2021 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 16:03	%R(1)	True CCV1	Found 16:33	%R(1)	True CCV1	Found 16:57	%R(1)	
Mercury (Hg)	4	4.08	102	5	5.121	102	5	4.993	99.9	P

(1) Control Limits: Metals 90-110

A.P.P.L. INC.
2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.
ARF No: 96645 SDG: 96645

Analysis Date: 10/4/2021 Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration						M
	True	Found 16:03	%R(1)	True CCV1	Found 16:33	%R(1)	True	Found	%R(1)	
Mercury (Hg)	4	4.08	102	5	5.121	102				P

(1) Control Limits: Metals 90-110

A.P.P.L. INC.
3
BLANKS

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.

ARF No.: 96645 SDG: 96645

Preparation Blank Matrix (soil/water): water

Preparation Blank Concentration Units (ug/L or mg/kg): ug/L

Analysis Date: 10/4/2021

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	1	C	2	C	3	C		C	
	16:04		16:34		16:59				16:08		
Mercury (Hg)	.20	U	.20	U	.20	U			.20	U	P

A.P.P.L. INC.
3
BLANKS

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.

ARF No.: 96645 SDG: 96645

Preparation Blank Matrix (soil/water): water

Preparation Blank Concentration Units (ug/L or mg/kg): mg/L

Analysis Date: 10/4/2021

Analyte	Initial Calibration Blank (ug/L)		Continuing Calibration Blank (ug/L)						Preparation Blank		M
		C	1	C	2	C	3	C		C	
	16:04		16:34						16:18		
Mercury (Hg)	2.00	U	2.00	U					.0020	U	P

A.P.P.L. INC.

LLQC Check

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.

ARF No: 96645 SDG: 96645

Concentration Units: ug/L

Analysis Date: 10/4/2021

Analyte	LLQC								
	True	Found	%R(1)	True	Found	%R(1)	True	Found	%R(1)
	LLQC	16:06							
Mercury (Hg)	0.2	0.2054	103						

A.P.P.L. INC.

LLQC Check

Lab Name: A.P.P.L. INC. Contract: Tetra Tech, Inc.

ARF No: 96645 SDG: 96645

Concentration Units: ug/L

Analysis Date: 10/4/2021

Analyte	LLQC								
	True	Found	%R(1)	True	Found	%R(1)	True	Found	%R(1)
	LLQC	16:06							
Mercury (Hg)	0.2	0.2054	103						

==========

Reprocessing Begun
Logged In Analyst: chemist_metals **Technique: AA FIMS-MHS**

Results Data Set (original): 211004W
Results Library (original): C:\Users\Public\PerkinElmer\AA\Data\Results\Results.mdb
Results Data Set (reprocessed):
Results Library (reprocessed):

==========

Method Loaded
Method Name: ANA 7470 **Method Last Saved: 9/29/2021 5:19:21 PM**
Method Description: EPA 7470A

==========

Sequence No.: 1 **Autosampler Location: 1**
Sample ID: Calib. Blank **Date Collected: 10/4/2021 3:37:27 PM**
Analyst: **Data Type: Reprocessed on 10/4/2021 5:53:09 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: Calib. Blank **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.00]	0.0000	-0.0012	0.0000	3:38:08 PM	No
2		[0.00]	0.0001	-0.0010	0.0001	3:38:31 PM	No
3		[0.00]	0.0001	0.0002	0.0001	3:38:55 PM	No
Mean:		[0.00]	0.0001				
SD:		0.0000	0.0000				
%RSD:		0.00%	46.29				

Auto-zero performed.

==========

Sequence No.: 2 **Autosampler Location: 2**
Sample ID: ICAL 0.2ppb 211004 **Date Collected: 10/4/2021 3:53:13 PM**
Analyst: **Data Type: Reprocessed on 10/4/2021 5:53:10 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICAL 0.2ppb 211004 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.2]	0.0014	0.0042	0.0015	3:53:51 PM	No
2		[0.2]	0.0014	0.0049	0.0015	3:54:15 PM	No
3		[0.2]	0.0014	0.0047	0.0015	3:54:38 PM	No
Mean:		[0.2]	0.0014				
SD:		0.000	0.0000				
%RSD:		0.00%	2.13				

Standard number 1 applied. [0.2]
Correlation Coef.: 1.000000 Slope: 0.00709 Intercept: 0.00000

==========

Sequence No.: 3 **Autosampler Location: 3**
Sample ID: ICAL 0.5ppb 211004 **Date Collected: 10/4/2021 3:54:52 PM**
Analyst: **Data Type: Reprocessed on 10/4/2021 5:53:10 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICAL 0.5ppb 211004 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[0.5]	0.0034	0.0112	0.0035	3:55:31 PM	No

2	[0.5]	0.0034	0.0109	0.0035	3:55:54 PM	No
3	[0.5]	0.0033	0.0106	0.0034	3:56:18 PM	No
Mean:	[0.5]	0.0034				
SD:	0.000	0.0000				
%RSD:	0.00%	0.62				

Standard number 2 applied. [0.5]
Correlation Coef.: 0.999007 Slope: 0.00679 Intercept: 0.00000

Sequence No.: 4 **Autosampler Location: 4**
Sample ID: ICAL 1ppb 211004 **Date Collected: 10/4/2021 3:56:32 PM**
Analyst: **Data Type: Reprocessed on 10/4/2021 5:53:10 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICAL 1ppb 211004 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[1]	0.0066	0.0224	0.0067	3:57:11 PM	No
2		[1]	0.0066	0.0218	0.0067	3:57:34 PM	No
3		[1]	0.0067	0.0225	0.0068	3:57:57 PM	No
Mean:		[1]	0.0067				
SD:		0.00	0.0000				
%RSD:		0.00%	0.72				

Standard number 3 applied. [1]
Correlation Coef.: 0.999709 Slope: 0.00668 Intercept: 0.00000

Sequence No.: 5 **Autosampler Location: 5**
Sample ID: ICAL 2ppb 211004 **Date Collected: 10/4/2021 3:58:12 PM**
Analyst: **Data Type: Reprocessed on 10/4/2021 5:53:10 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICAL 2ppb 211004 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[2]	0.0141	0.0492	0.0142	3:58:52 PM	No
2		[2]	0.0141	0.0471	0.0142	3:59:15 PM	No
3		[2]	0.0142	0.0502	0.0143	3:59:39 PM	No
Mean:		[2]	0.0141				
SD:		0.00	0.0001				
%RSD:		0.00%	0.42				

Standard number 4 applied. [2]
Correlation Coef.: 0.999165 Slope: 0.00698 Intercept: 0.00000

Sequence No.: 6 **Autosampler Location: 6**
Sample ID: ICAL 5ppb 211004 **Date Collected: 10/4/2021 3:59:54 PM**
Analyst: **Data Type: Reprocessed on 10/4/2021 5:53:10 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICAL 5ppb 211004 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[5]	0.0355	0.1242	0.0356	4:00:32 PM	No
2		[5]	0.0355	0.1213	0.0356	4:00:56 PM	No
3		[5]	0.0356	0.1208	0.0357	4:01:19 PM	No
Mean:		[5]	0.0356				
SD:		0.00	0.0000				
%RSD:		0.00%	0.09				

Standard number 5 applied. [5]

Correlation Coef.: 0.999844 Slope: 0.00709 Intercept: 0.00000

Sequence No.: 7 **Autosampler Location: 7**
Sample ID: ICAL 10ppb 211004 **Date Collected: 10/4/2021 4:01:32 PM**
Analyst: **Data Type: Reprocessed on 10/4/2021 5:53:10 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICAL 10ppb 211004 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1		[10]	0.0701	0.2401	0.0702	4:02:11 PM	No
2		[10]	0.0690	0.2338	0.0691	4:02:34 PM	No
3		[10]	0.0697	0.2359	0.0698	4:02:57 PM	No
Mean:		[10]	0.0696				
SD:		0.00	0.0006				
%RSD:		0.00%	0.82				

Standard number 6 applied. [10]
Correlation Coef.: 0.999911 Slope: 0.00699 Intercept: 0.00000

Calibration data for Hg 253.7 **Equation: Linear Through Zero**

ID	Mean Signal (Abs)	Entered Conc. ug/L	Calculated Conc. ug/L	Standard Deviation	%RSD
Calib. Blank	0.0000	0	0.0000	0.00	46.29
ICAL 0.2ppb 211004	0.0014	0.2	0.2028	0.00	2.13
ICAL 0.5ppb 211004	0.0034	0.5	0.4824	0.00	0.62
ICAL 1ppb 211004	0.0067	1.0	0.9516	0.00	0.72
ICAL 2ppb 211004	0.0141	2.0	2.0218	0.00	0.42
ICAL 5ppb 211004	0.0356	5.0	5.0882	0.00	0.09
ICAL 10ppb 211004	0.0696	10.0	9.9559	0.00	0.82

Correlation Coef.: 0.999911 Slope: 0.00699 Intercept: 0.00000

Sequence No.: 8 **Autosampler Location: 9**
Sample ID: ICV 211004 **Date Collected: 10/4/2021 4:03:12 PM**
Analyst: **Data Type: Reprocessed on 10/4/2021 5:53:10 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICV 211004 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	4.086	4.086	0.0286	0.0974	0.0286	4:03:51 PM	No
2	4.067	4.067	0.0284	0.0975	0.0285	4:04:15 PM	No
3	4.088	4.088	0.0286	0.0972	0.0287	4:04:38 PM	No
Mean:	4.080	4.080	0.0285				
SD:	0.0117	0.0117	0.0001				
%RSD:	0.29%	0.29%	0.29				

QC value within limits for Hg 253.7 Recovery = 102.00%
All analyte(s) passed QC.

Sequence No.: 9 **Autosampler Location: 1**
Sample ID: ICB 211004 **Date Collected: 10/4/2021 4:04:53 PM**
Analyst: **Data Type: Reprocessed on 10/4/2021 5:53:10 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: ICB 211004 **Analyte: Hg 253.7**

Repl	SampleConc	StndConc	BlnkCorr	Peak	Peak	Time	Peak

#	ug/L	ug/L	Signal	Area	Height		Stored
1	0.0025	0.0025	0.0000	0.0000	0.0001	4:05:31 PM	No
2	-0.0068	-0.0068	-0.0000	-0.0008	0.0000	4:05:54 PM	No
3	-0.0036	-0.0036	-0.0000	-0.0007	0.0001	4:06:17 PM	No
Mean:	-0.0026	-0.0026	-0.0000				
SD:	0.00471	0.00471	0.0000				
%RSD:	179.75%	179.75%	179.75				

QC value within limits for Hg 253.7 Recovery = Not calculated
All analyte(s) passed QC.

==========

Sequence No.: 10 **Autosampler Location: 2**
Sample ID: LLQC 211004 **Date Collected: 10/4/2021 4:06:31 PM**
Analyst: **Data Type: Reprocessed on 10/4/2021 5:53:10 PM**
Logged In Analyst (Original) : chemist_metals
Initial Sample Wt: **Initial Sample Vol:**
Dilution: **Sample Prep Vol:**

Replicate Data: LLQC 211004 **Analyte: Hg 253.7**

Repl #	SampleConc ug/L	StndConc ug/L	BlnkCorr Signal	Peak Area	Peak Height	Time	Peak Stored
1	0.2078	0.2078	0.0015	0.0048	0.0015	4:07:10 PM	No
2	0.2026	0.2026	0.0014	0.0044	0.0015	4:07:33 PM	No
3	0.2057	0.2057	0.0014	0.0045	0.0015	4:07:56 PM	No
Mean:	0.2054	0.2054	0.0014				
SD:	0.00261	0.00261	0.0000				
%RSD:	1.27%	1.27%	1.27				

QC value within limits for Hg 253.7 Recovery = 102.68%
All analyte(s) passed QC.

METALS

Raw Data

Mercury Digestion Worksheet

Method Name 7470 Mercury Digestion (DI-WET) **Prep Method** M7470DI **Set** 210916A **Units** mL

Spikes			
Spiked ID 1	Hg WORKING STANDARD prep:9-16-21 Pipette M12		
Spiked ID 2	Hg WORKING ICV prep: 9-16-21		
Spiked ID 3	100mL vessel 0330000072		
Spiked ID 4			
Spiked By	NM	Date:	9/16/2021 8:47:00 AM
Witnessed By	NA	Date:	9/16/2021 8:47:00 AM

Starting Temp:	SLOT 9 THERM:KAHN 92C
Ending Temp:	SLOT 9 91C
Temp Type:	Modblock1 Tumble Start Time 9/1/21@16:40
End Date/Time	9/16/2021 10:57:00 AM

Mercury Calibration			
Sample	**Spike Amount**	**Spike ID**	**Final Volume**
0 ppb		1	72.25 ml
0.2 ppb	0.2 ml	1	72.25 ml
0.5 ppb	0.5 ml	1	72.25 ml
1 ppb	1 ml	1	72.25 ml
2 ppb	2 ml	1	72.25 ml
5 ppb	5 ml	1	72.25 ml
5 ppb	5 ml	1	72.25 ml
10 ppb	10 ml	1	72.25 ml
ICV	4 ml	2	72.25 ml

Start Date/Time of Calibration 09/16/21 8:47

Sufficient Vol for Matrix QC:	YES

	Sample	Sample Container	Spike Amount	Spike ID	Digested Amount	Final Volume	Start Date/Time	Comments
1	210916A Blk				5mL	72.25mL	09/16/21 8:47	equip: Modblock1 Tumble Start Time 9/1/21@16:40
2	210916A LCS		4mL	1	5mL	72.25mL	09/16/21 8:47	equip: Modblock1 Tumble End Time 9/3/21@16:40
3	210916A LCSD		4mL	1	5mL	72.25mL	09/16/21 8:47	equip: Modblock1
4	BA35059	BA35059S04			5mL	72.25mL	09/16/21 8:47	equip: Modblock1 96645 DF10
5	BA35059 MS	BA35059S04	4mL	1	5mL	72.25mL	09/16/21 8:47	equip: Modblock1 96645 DF10
6	BA35059 MSD	BA35059S04	4mL	1	5mL	72.25mL	09/16/21 8:47	equip: Modblock1 96645 DF10

Solvent and Lot#
HNO3 BDH 1120120 20945
H2SO4 J.T.B. 268820 19610
KMnO4 9-10-21
k2S2O8 8-23-21
Decolorizer 9-10-21

Sample COC Transfer	
Sample prep employee Initials	nm
Analyst's initials	
Date	
Time	
Moved to	

Technician's Initials	
Scanned By	nm
Sample Preparation	nm
Digestion	nm
Bring up to volume	
Modified	9/16/2021 8:16:47 AM

Reviewed By: **Date:**

Mercury Digestion Worksheet

Method Name 7470 Mercury Digestion (TCLP) **Prep Method** M7470TCLP **Set** 210916A **Units** mL

Spikes			
Spiked ID 1	Hg WORKING STANDARD prep 9-16-21 Pipette M33		
Spiked ID 2	Hg WORKING ICV prep 9-16-21		
Spiked ID 3	100mL vessel 0330000072		
Spiked ID 4			
Spiked By	NM	Date:	9/16/2021 8:47:00 AM
Witnessed By	NA	Date:	9/16/2021 8:47:00 AM

Starting Temp:	SLOT 9 THERM:Kahn 92C
Ending Temp:	SLOT 9 91C
Temp Type:	Modblock1 Tumble Start Time 8/31/21@12:02
End Date/Time	9/16/2021 10:57:00 AM

Mercury Calibration			
Sample	**Spike Amount**	**Spike ID**	**Final Volume**
0 ppb		1	72.25 ml
0.2 ppb	0.2 ml	1	72.25 ml
0.5 ppb	0.5 ml	1	72.25 ml
1 ppb	1 ml	1	72.25 ml
2 ppb	2 ml	1	72.25 ml
5 ppb	5 ml	1	72.25 ml
5 ppb	5 ml	1	72.25 ml
10 ppb	10 ml	1	72.25 ml
ICV	4 ml	2	72.25 ml

Start Date/Time of Calibration 09/16/21 8:47

Sufficient Vol for Matrix QC:	YES

	Sample	Sample Container	Spike Amount	Spike ID	Digested Amount	Final Volume	Start Date/Time	Comments
1	210916A Blk				50mL	72.25mL	09/16/21 8:47	equip: Modblock1 Tumble Start Time 8/31/21@12:02
2	210916A LCS		4mL	1	50mL	72.25mL	09/16/21 8:47	equip: Modblock1 Tumble End Time 9/1/21@07:35
3	210916A LCSD		4mL	1	50mL	72.25mL	09/16/21 8:47	equip: Modblock1 Fluid #1
4	BA35059	BA35059S04			50mL	72.25mL	09/16/21 8:47	equip: Modblock1 96645 Fluid #1
5	BA35059 MS	BA35059S04	4mL	1	50mL	72.25mL	09/16/21 8:47	equip: Modblock1 96645 Fluid #1
6	BA35059 MSD	BA35059S04	4mL	1	50mL	72.25mL	09/16/21 8:47	equip: Modblock1 96645 Fluid #1

Solvent and Lot#
HNO3 BDH 1120120 20945
H2SO4 J.T.B. 268820 19610
KMnO4 9-10-21
K2S2O8 8-23-21
Decolorizer 9-10-21

Sample COC Transfer	
Sample prep employee Initials	nm
Analyst's initials	
Date	
Time	
Moved to	

Technician's Initials	
Scanned By	nm
Sample Preparation	nm
Digestion	nm
Bring up to volume	
Modified	9/16/2021 8:11:21 AM

Reviewed By: **Date:**

7470A/DIWET Injection Log

Directory: K:\FIMS Freddie\Backup Excel\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	04 Oct 2021	15:37	Calib. Blank		211004W Co	1.
2	04 Oct 2021	15:53	ICAL 0.2ppb 211004		211004W Co	1.
3	04 Oct 2021	15:54	ICAL 0.5ppb 211004		211004W Co	1.
4	04 Oct 2021	15:56	ICAL 1ppb 211004		211004W Co	1.
5	04 Oct 2021	15:58	ICAL 2ppb 211004		211004W Co	1.
6	04 Oct 2021	15:59	ICAL 5ppb 211004		211004W Co	1.
7	04 Oct 2021	16:01	ICAL 10ppb 211004		211004W Co	1.
8	04 Oct 2021	16:03	ICV 211004		211004W Co	1.
9	04 Oct 2021	16:04	ICB 211004		211004W Co	1.
10	04 Oct 2021	16:06	LLQC 211004		211004W Co	1.
11	04 Oct 2021	16:08	210916A BLK		211004W Co	1.
12	04 Oct 2021	16:09	210916A LCS		211004W Co	1.
13	04 Oct 2021	16:11	210916A LCSD		211004W Co	1.
14	04 Oct 2021	16:13	BA35059S04		211004W Co	1.
15	04 Oct 2021	16:14	BA35059S04 MS		211004W Co	1.
16	04 Oct 2021	16:16	BA35059S04 MSD		211004W Co	1.
23	04 Oct 2021	16:33	CCV 211004		211004W Co	1.
24	04 Oct 2021	16:34	CCB 211004		211004W Co	1.
32	04 Oct 2021	16:52	BA35059S04 PDS		211004W Co	1.
35	04 Oct 2021	16:57	CCV 211004		211004W Co	1.
36	04 Oct 2021	16:59	CCB 211004		211004W Co	1.

7470A/TCLP Injection Log

Directory: K:\FIMS Freddie\Backup Excel\

RunID	Injected		Sample Name	Misc Info	FileName	Multiplier
1	04 Oct 2021	15:37	Calib. Blank		211004W Co	1.
2	04 Oct 2021	15:53	ICAL 0.2ppb 211004		211004W Co	1.
3	04 Oct 2021	15:54	ICAL 0.5ppb 211004		211004W Co	1.
4	04 Oct 2021	15:56	ICAL 1ppb 211004		211004W Co	1.
5	04 Oct 2021	15:58	ICAL 2ppb 211004		211004W Co	1.
6	04 Oct 2021	15:59	ICAL 5ppb 211004		211004W Co	1.
7	04 Oct 2021	16:01	ICAL 10ppb 211004		211004W Co	1.
8	04 Oct 2021	16:03	ICV 211004		211004W Co	1.
9	04 Oct 2021	16:04	ICB 211004		211004W Co	1.
10	04 Oct 2021	16:06	LLQC 211004		211004W Co	1.
17	04 Oct 2021	16:18	210916A BLK		211004W Co	1.
18	04 Oct 2021	16:22	210916A LCS		211004W Co	1.
19	04 Oct 2021	16:26	210916A LCSD		211004W Co	1.
20	04 Oct 2021	16:28	BA35059S04		211004W Co	1.
21	04 Oct 2021	16:29	BA35059S04 MS		211004W Co	1.
22	04 Oct 2021	16:31	BA35059S04 MSD		211004W Co	1.
23	04 Oct 2021	16:33	CCV 211004		211004W Co	1.
24	04 Oct 2021	16:34	CCB 211004		211004W Co	1.

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"When Quality Counts"

Analytical Report

WorkOrder:	2112D59	**Amended:**	01/19/2022
		Revision:	1
Report Created for:	Tetra Tech Inc.		
	1999 Harrison Street, Suite 500 Oakland, CA 94612		
Project Contact:	Jason Brodersen		
Project P.O.:			
Project:	1035582304.02; Richmond Field Station		
Project Received:	12/22/2021		

Analytical Report reviewed & approved for release on 01/13/2022 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 a case narrative.

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CA ELAP 1644 ♦ NELAP 4033 ORELAP

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Revision History

Client: Tetra Tech Inc. **WorkOrder:** 2112D59

Project: 1035582304.02; Richmond Field Station

Date	Revision	Reason
01/19/2022	1	Include MS/MSD data in Quality Control and Associated Narrative

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Glossary of Terms & Qualifier Definitions

Client: Tetra Tech Inc. **WorkOrder:** 2112D59

Project: 1035582304.02; Richmond Field Station

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CPT	Consumer Product Testing not NELAP Accredited
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
LQL	Lowest Quantitation Level
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
NA	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
TZA	TimeZone Net Adjustment for sample collected outside of MAI's UTC.
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Glossary of Terms & Qualifier Definitions

Client: Tetra Tech Inc. **WorkOrder:** 2112D59

Project: 1035582304.02; Richmond Field Station

Analytical Qualifiers

A	The reported value is determined using a "single point" calibration by GC-ECD as allowed by the method.
a3	Sample diluted due to high organic content interfering with quantitative/or qualitative analysis.
h7	Copper (EPA 3660B) cleanup
j1	See attached narrative
j2	See attached narrative

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria; LCS validates the prep batch.

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Case Narrative

Client: Tetra Tech Inc.
Project: 1035582304.02; Richmond Field Station

Work Order: 2112D59
January 13, 2022

j1

Samples prepared per the Interstate Technology & Regulatory Council (ITRC). 2012. Incremental Sampling Methodology. ISM-1. Washington, D.C.: Interstate Technology & Regulatory Council, Incremental Sampling Methodology Team. Www.itrcweb.org.

Sample aliquots were weighed for extraction after the air-drying step outlined in the ISM method; therefore PCB data is reported on an "air dried" basis.

Sample 2112D59-003 (B112-PCBRA-DU01-R3) was analyzed in triplicate after the ISM preparation method. The three separate aliquots were sub-labeled with the sufifx A, B, and C on both the Client and MAI sample IDs.

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Case Narrative

Client: Tetra Tech Inc.
Project: 1035582304.02; Richmond Field Station

Work Order: 2112D59
January 13, 2022

j2

Percent Moisture: In accordance with SW-846, 8000, percent moisture is reported as:

[Moisture Weight (g)] / [Sample Wet Weight (g)] x 100

Percent Moisture was determined on the native samples as received.

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Case Narrative

Client: Tetra Tech Inc.
Project: 1035582304.02; Richmond Field Station

Work Order: 2112D59
January 19, 2022

Quality Control: MS/MSD for Polychlorinated Biphenyls (PCBs) Aroclors w/Soxhlet Extraction

The percent recoveries for Aroclors 1016 and 1260 were above the established control limits in the matrix spike and matrix spike duplicate (MS/MSD) analysis of sample 2112D59-001A due to interference from measureable Aroclors 1248 and 1254 in the native sample. Since there were no measurable results for Aroclor 1016 and 1260 in the unfortified analysis of 2112D59-001A, no qualification to the data is necessary.

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Analytical Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2112D59
Date Received:	12/22/2021 14:40	**Extraction Method:**	SW3540C
Date Prepared:	01/10/2022	**Analytical Method:**	SW8082
Project:	1035582304.02; Richmond Field Station	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors w/ Soxhlet Extraction

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU01-R1	2112D59-001A	Soil	12/22/2021 12:30	GC40 01112212.d	237098

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.50	0.50	10	01/11/2022 17:49
Aroclor1221	ND		0.50	0.50	10	01/11/2022 17:49
Aroclor1232	ND		0.50	0.50	10	01/11/2022 17:49
Aroclor1242	ND		0.50	0.50	10	01/11/2022 17:49
Aroclor1248	**2.3**	A	0.50	0.50	10	01/11/2022 17:49
Aroclor1254	**1.3**	A	0.50	0.50	10	01/11/2022 17:49
Aroclor1260	ND		0.50	0.50	10	01/11/2022 17:49
Aroclor1262	ND		0.50	0.50	10	01/11/2022 17:49
Aroclor1268	ND		0.50	0.50	10	01/11/2022 17:49
PCBs, total	**3.6**		NA	0.50	10	01/11/2022 17:49

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	82	50-150	01/11/2022 17:49

Analyst(s): CN Analytical Comments: a3,h7,j1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU01-R2	2112D59-002A	Soil	12/22/2021 12:40	GC40 01102209.d	237098

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.50	0.50	10	01/10/2022 14:04
Aroclor1221	ND		0.50	0.50	10	01/10/2022 14:04
Aroclor1232	ND		0.50	0.50	10	01/10/2022 14:04
Aroclor1242	ND		0.50	0.50	10	01/10/2022 14:04
Aroclor1248	**2.5**	A	0.50	0.50	10	01/10/2022 14:04
Aroclor1254	**1.4**	A	0.50	0.50	10	01/10/2022 14:04
Aroclor1260	ND		0.50	0.50	10	01/10/2022 14:04
Aroclor1262	ND		0.50	0.50	10	01/10/2022 14:04
Aroclor1268	ND		0.50	0.50	10	01/10/2022 14:04
PCBs, total	**3.9**		NA	0.50	10	01/10/2022 14:04

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	81	50-150	01/10/2022 14:04

Analyst(s): CN Analytical Comments: a3,j1

(Cont.)

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Analytical Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2112D59
Date Received:	12/22/2021 14:40	**Extraction Method:**	SW3540C
Date Prepared:	01/10/2022	**Analytical Method:**	SW8082
Project:	1035582304.02; Richmond Field Station	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors w/ Soxhlet Extraction

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU01-R3A	2112D59-003A	Soil	12/22/2021 12:45	GC40 01102210.d	237098

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.50	0.50	10	01/10/2022 14:18
Aroclor1221	ND		0.50	0.50	10	01/10/2022 14:18
Aroclor1232	ND		0.50	0.50	10	01/10/2022 14:18
Aroclor1242	ND		0.50	0.50	10	01/10/2022 14:18
Aroclor1248	**2.9**	A	0.50	0.50	10	01/10/2022 14:18
Aroclor1254	**2.0**	A	0.50	0.50	10	01/10/2022 14:18
Aroclor1260	ND		0.50	0.50	10	01/10/2022 14:18
Aroclor1262	ND		0.50	0.50	10	01/10/2022 14:18
Aroclor1268	ND		0.50	0.50	10	01/10/2022 14:18
PCBs, total	**4.9**		NA	0.50	10	01/10/2022 14:18

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	81	50-150	01/10/2022 14:18

Analyst(s): CN Analytical Comments: a3,j1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU01-R3B	2112D59-003B	Soil	12/22/2021 12:45	GC40 01112210.d	237098

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.50	0.50	10	01/11/2022 17:21
Aroclor1221	ND		0.50	0.50	10	01/11/2022 17:21
Aroclor1232	ND		0.50	0.50	10	01/11/2022 17:21
Aroclor1242	ND		0.50	0.50	10	01/11/2022 17:21
Aroclor1248	**2.8**	A	0.50	0.50	10	01/11/2022 17:21
Aroclor1254	**1.6**	A	0.50	0.50	10	01/11/2022 17:21
Aroclor1260	ND		0.50	0.50	10	01/11/2022 17:21
Aroclor1262	ND		0.50	0.50	10	01/11/2022 17:21
Aroclor1268	ND		0.50	0.50	10	01/11/2022 17:21
PCBs, total	**4.4**		NA	0.50	10	01/11/2022 17:21

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	85	50-150	01/11/2022 17:21

Analyst(s): CN Analytical Comments: a3,h7,j1

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Analytical Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2112D59
Date Received:	12/22/2021 14:40	**Extraction Method:**	SW3540C
Date Prepared:	01/10/2022	**Analytical Method:**	SW8082
Project:	1035582304.02; Richmond Field Station	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors w/ Soxhlet Extraction

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU01-R3C	2112D59-003C	Soil	12/22/2021 12:45	GC40 01112209.d	237098

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.50	0.50	10	01/11/2022 17:08
Aroclor1221	ND		0.50	0.50	10	01/11/2022 17:08
Aroclor1232	ND		0.50	0.50	10	01/11/2022 17:08
Aroclor1242	ND		0.50	0.50	10	01/11/2022 17:08
Aroclor1248	**3.2**	A	0.50	0.50	10	01/11/2022 17:08
Aroclor1254	**1.8**	A	0.50	0.50	10	01/11/2022 17:08
Aroclor1260	ND		0.50	0.50	10	01/11/2022 17:08
Aroclor1262	ND		0.50	0.50	10	01/11/2022 17:08
Aroclor1268	ND		0.50	0.50	10	01/11/2022 17:08
PCBs, total	**5.0**		NA	0.50	10	01/11/2022 17:08

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	87	50-150	01/11/2022 17:08

Analyst(s): CN Analytical Comments: a3,h7,j1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU02	2112D59-004A	Soil	12/22/2021 12:50	GC40 01102221.d	237098

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.50	0.50	10	01/10/2022 16:51
Aroclor1221	ND		0.50	0.50	10	01/10/2022 16:51
Aroclor1232	ND		0.50	0.50	10	01/10/2022 16:51
Aroclor1242	ND		0.50	0.50	10	01/10/2022 16:51
Aroclor1248	**1.6**	A	0.50	0.50	10	01/10/2022 16:51
Aroclor1254	**0.99**	A	0.50	0.50	10	01/10/2022 16:51
Aroclor1260	ND		0.50	0.50	10	01/10/2022 16:51
Aroclor1262	ND		0.50	0.50	10	01/10/2022 16:51
Aroclor1268	ND		0.50	0.50	10	01/10/2022 16:51
PCBs, total	**2.6**		NA	0.50	10	01/10/2022 16:51

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	84	50-150	01/10/2022 16:51

Analyst(s): CN Analytical Comments: a3,j1

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Analytical Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2112D59
Date Received:	12/22/2021 14:40	**Extraction Method:**	SW3540C
Date Prepared:	01/10/2022	**Analytical Method:**	SW8082
Project:	1035582304.02; Richmond Field Station	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors w/ Soxhlet Extraction

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU03	2112D59-005A	Soil	12/22/2021 12:55	GC40 01102222.d	237098

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.50	0.50	10	01/10/2022 17:05
Aroclor1221	ND		0.50	0.50	10	01/10/2022 17:05
Aroclor1232	ND		0.50	0.50	10	01/10/2022 17:05
Aroclor1242	ND		0.50	0.50	10	01/10/2022 17:05
Aroclor1248	**3.0**	A	0.50	0.50	10	01/10/2022 17:05
Aroclor1254	**1.6**	A	0.50	0.50	10	01/10/2022 17:05
Aroclor1260	ND		0.50	0.50	10	01/10/2022 17:05
Aroclor1262	ND		0.50	0.50	10	01/10/2022 17:05
Aroclor1268	ND		0.50	0.50	10	01/10/2022 17:05
PCBs, total	**4.6**		NA	0.50	10	01/10/2022 17:05

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	93	50-150	01/10/2022 17:05

Analyst(s): CN Analytical Comments: a3,j1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU04	2112D59-006A	Soil	12/22/2021 13:00	GC40 01102223.d	237098

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.50	0.50	10	01/10/2022 17:19
Aroclor1221	ND		0.50	0.50	10	01/10/2022 17:19
Aroclor1232	ND		0.50	0.50	10	01/10/2022 17:19
Aroclor1242	ND		0.50	0.50	10	01/10/2022 17:19
Aroclor1248	**2.5**	A	0.50	0.50	10	01/10/2022 17:19
Aroclor1254	**1.2**	A	0.50	0.50	10	01/10/2022 17:19
Aroclor1260	ND		0.50	0.50	10	01/10/2022 17:19
Aroclor1262	ND		0.50	0.50	10	01/10/2022 17:19
Aroclor1268	ND		0.50	0.50	10	01/10/2022 17:19
PCBs, total	**3.7**		NA	0.50	10	01/10/2022 17:19

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	90	50-150	01/10/2022 17:19

Analyst(s): CN Analytical Comments: a3,j1

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Analytical Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2112D59
Date Received:	12/22/2021 14:40	**Extraction Method:**	SW3540C
Date Prepared:	01/10/2022	**Analytical Method:**	SW8082
Project:	1035582304.02; Richmond Field Station	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors w/ Soxhlet Extraction

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU05	2112D59-007A	Soil	12/22/2021 13:05	GC40 01112211.d	237098

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		1.0	1.0	20	01/11/2022 17:35
Aroclor1221	ND		1.0	1.0	20	01/11/2022 17:35
Aroclor1232	ND		1.0	1.0	20	01/11/2022 17:35
Aroclor1242	ND		1.0	1.0	20	01/11/2022 17:35
Aroclor1248	**5.3**	A	1.0	1.0	20	01/11/2022 17:35
Aroclor1254	**2.9**	A	1.0	1.0	20	01/11/2022 17:35
Aroclor1260	ND		1.0	1.0	20	01/11/2022 17:35
Aroclor1262	ND		1.0	1.0	20	01/11/2022 17:35
Aroclor1268	ND		1.0	1.0	20	01/11/2022 17:35
PCBs, total	**8.2**		NA	1.0	20	01/11/2022 17:35

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	104	50-150	01/11/2022 17:35

Analyst(s): CN Analytical Comments: a3,j1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU06	2112D59-008A	Soil	12/22/2021 13:10	GC40 01102225.d	237098

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.50	0.50	10	01/10/2022 17:47
Aroclor1221	ND		0.50	0.50	10	01/10/2022 17:47
Aroclor1232	ND		0.50	0.50	10	01/10/2022 17:47
Aroclor1242	ND		0.50	0.50	10	01/10/2022 17:47
Aroclor1248	**1.4**	A	0.50	0.50	10	01/10/2022 17:47
Aroclor1254	**0.77**	A	0.50	0.50	10	01/10/2022 17:47
Aroclor1260	ND		0.50	0.50	10	01/10/2022 17:47
Aroclor1262	ND		0.50	0.50	10	01/10/2022 17:47
Aroclor1268	ND		0.50	0.50	10	01/10/2022 17:47
PCBs, total	**2.2**		NA	0.50	10	01/10/2022 17:47

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	81	50-150	01/10/2022 17:47

Analyst(s): CN Analytical Comments: a3,j1

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Analytical Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2112D59
Date Received:	12/22/2021 14:40	**Extraction Method:**	SW3540C
Date Prepared:	01/10/2022	**Analytical Method:**	SW8082
Project:	1035582304.02; Richmond Field Station	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors w/ Soxhlet Extraction

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU07	**2112D59-009A**	**Soil**	**12/22/2021 13:15**	**GC40 01102226.d**	**237098**

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.50	0.50	10	01/10/2022 18:01
Aroclor1221	ND		0.50	0.50	10	01/10/2022 18:01
Aroclor1232	ND		0.50	0.50	10	01/10/2022 18:01
Aroclor1242	ND		0.50	0.50	10	01/10/2022 18:01
Aroclor1248	**2.0**	A	0.50	0.50	10	01/10/2022 18:01
Aroclor1254	**1.6**	A	0.50	0.50	10	01/10/2022 18:01
Aroclor1260	ND		0.50	0.50	10	01/10/2022 18:01
Aroclor1262	ND		0.50	0.50	10	01/10/2022 18:01
Aroclor1268	ND		0.50	0.50	10	01/10/2022 18:01
PCBs, total	**3.6**		NA	0.50	10	01/10/2022 18:01

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	76	50-150	01/10/2022 18:01

Analyst(s): CN

Analytical Comments: a3,j1

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Analytical Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2112D59
Date Received:	12/22/2021 14:40	**Extraction Method:**	ASTM D2216
Date Prepared:	01/11/2022	**Analytical Method:**	SW8000
Project:	1035582304.02; Richmond Field Station	**Unit:**	wet wt%

Percent Moisture

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU01-R1	2112D59-001A	Soil	12/22/2021 12:30	WetChem	237204

Analytes	Result	MDL	RL	DF	Date Analyzed
% Moisture	**1.71**	0.100	0.100	1	01/12/2022 13:05

Analyst(s): MGO Analytical Comments: j2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU01-R2	2112D59-002A	Soil	12/22/2021 12:40	WetChem	237204

Analytes	Result	MDL	RL	DF	Date Analyzed
% Moisture	**1.63**	0.100	0.100	1	01/12/2022 13:10

Analyst(s): MGO Analytical Comments: j2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU01-R3A	2112D59-003A	Soil	12/22/2021 12:45	WetChem	237204

Analytes	Result	MDL	RL	DF	Date Analyzed
% Moisture	**1.38**	0.100	0.100	1	01/12/2022 13:15

Analyst(s): MGO Analytical Comments: j2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU01-R3B	2112D59-003B	Soil	12/22/2021 12:45	WetChem	237204

Analytes	Result	MDL	RL	DF	Date Analyzed
% Moisture	**1.53**	0.100	0.100	1	01/12/2022 13:20

Analyst(s): MGO Analytical Comments: j2

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Analytical Report

Client: Tetra Tech Inc.
Date Received: 12/22/2021 14:40
Date Prepared: 01/11/2022
Project: 1035582304.02; Richmond Field Station

WorkOrder: 2112D59
Extraction Method: ASTM D2216
Analytical Method: SW8000
Unit: wet wt%

Percent Moisture

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU01-R3C	2112D59-003C	Soil	12/22/2021 12:45	WetChem	237204

Analytes	Result	MDL	RL	DF	Date Analyzed
% Moisture	**1.57**	0.100	0.100	1	01/12/2022 13:25

Analyst(s): MGO Analytical Comments: j2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU02	2112D59-004A	Soil	12/22/2021 12:50	WetChem	237204

Analytes	Result	MDL	RL	DF	Date Analyzed
% Moisture	**2.00**	0.100	0.100	1	01/12/2022 13:30

Analyst(s): MGO Analytical Comments: j2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU03	2112D59-005A	Soil	12/22/2021 12:55	WetChem	237204

Analytes	Result	MDL	RL	DF	Date Analyzed
% Moisture	**1.57**	0.100	0.100	1	01/12/2022 13:35

Analyst(s): MGO Analytical Comments: j2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU04	2112D59-006A	Soil	12/22/2021 13:00	WetChem	237204

Analytes	Result	MDL	RL	DF	Date Analyzed
% Moisture	**1.73**	0.100	0.100	1	01/12/2022 13:40

Analyst(s): MGO Analytical Comments: j2

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Analytical Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2112D59
Date Received:	12/22/2021 14:40	**Extraction Method:**	ASTM D2216
Date Prepared:	01/11/2022	**Analytical Method:**	SW8000
Project:	1035582304.02; Richmond Field Station	**Unit:**	wet wt%

Percent Moisture

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU05	2112D59-007A	Soil	12/22/2021 13:05	WetChem	237204

Analytes	Result	MDL	RL	DF	Date Analyzed
% Moisture	**1.73**	0.100	0.100	1	01/12/2022 13:45

Analyst(s): MGO Analytical Comments: j2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU06	2112D59-008A	Soil	12/22/2021 13:10	WetChem	237204

Analytes	Result	MDL	RL	DF	Date Analyzed
% Moisture	**1.51**	0.100	0.100	1	01/12/2022 13:50

Analyst(s): MGO Analytical Comments: j2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA-DU07	2112D59-009A	Soil	12/22/2021 13:15	WetChem	237205

Analytes	Result	MDL	RL	DF	Date Analyzed
% Moisture	**1.74**	0.100	0.100	1	01/12/2022 14:00

Analyst(s): MGO Analytical Comments: j2

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Quality Control Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2112D59
Date Prepared:	01/10/2022	**BatchID:**	237098
Date Analyzed:	01/10/2022 - 01/11/2022	**Extraction Method:**	SW3540C
Instrument:	GC40	**Analytical Method:**	SW8082
Matrix:	Soil	**Unit:**	mg/kg
Project:	1035582304.02; Richmond Field Station	**Sample ID:**	MB/LCS/LCSD-237098 2112D59-001AMS/MSD

QC Summary Report for SW8082

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Aroclor1016	ND	0.0500	0.0500	-	-	-
Aroclor1221	ND	0.0500	0.0500	-	-	-
Aroclor1232	ND	0.0500	0.0500	-	-	-
Aroclor1242	ND	0.0500	0.0500	-	-	-
Aroclor1248	ND	0.0500	0.0500	-	-	-
Aroclor1254	ND	0.0500	0.0500	-	-	-
Aroclor1260	ND	0.0500	0.0500	-	-	-
Aroclor1262	ND	0.0500	0.0500	-	-	-
Aroclor1268	ND	0.0500	0.0500	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.0410			0.05	82	50-150

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aroclor1016	0.134	0.140	0.15	89	93	60-140	4.18	20
Aroclor1260	0.138	0.147	0.15	92	98	60-140	6.89	20
Surrogate Recovery								
Decachlorobiphenyl	0.0448	0.0458	0.050	90	92	50-150	2.42	20

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Aroclor1016	10	0.525	0.540	0.15	ND<0.50	350,F1	360,F1	60-140	2.91	20
Aroclor1260	10	0.860	0.901	0.15	ND<0.50	574,F1	600,F1	60-140	4.59	20
Surrogate Recovery										
Decachlorobiphenyl	10	0.0384	0.0390	0.050		77	78	50-150	1.61	20

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Quality Control Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2112D59
Date Prepared:	01/11/2022	**BatchID:**	237204
Date Analyzed:	01/12/2022	**Extraction Method:**	ASTM D2216
Instrument:	WetChem	**Analytical Method:**	SW8000
Matrix:	Soil	**Unit:**	wet wt%
Project:	1035582304.02; Richmond Field Station	**Sample ID:**	MB-237204 2112D59-001A

QC Summary Report for Percent Moisture

Analyte	MB Result	MDL	RL			
% Moisture	ND	0.100	0.100	-	-	-

Analyte	SAMP Result	DUP Result	RPD	RPD Limit
% Moisture	1.71	1.55	9.57	15

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Quality Control Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2112D59
Date Prepared:	01/11/2022	**BatchID:**	237205
Date Analyzed:	01/12/2022	**Extraction Method:**	ASTM D2216
Instrument:	WetChem	**Analytical Method:**	SW8000
Matrix:	Soil	**Unit:**	wet wt%
Project:	1035582304.02; Richmond Field Station	**Sample ID:**	MB-237205 2112D59-009A

QC Summary Report for Percent Moisture

Analyte	MB Result	MDL	RL			
% Moisture	ND	0.100	0.100	-	-	-

Analyte	SAMP Result	DUP Result	RPD	RPD Limit
% Moisture		1.63	0	15

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 2112D59 **ClientCode: TTIO** **QuoteID: 213387**

☐ WaterTrax ☐ CLIP ☐ EDF ☑ EQuIS ☑ Dry-Weight ☑ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag
☑ Detection Summary ☑ Excel [FormatA]

Report to:
Jason Brodersen
Tetra Tech Inc.
1999 Harrison Street, Suite 500
Oakland, CA 94612
(415) 497-9060 FAX: (510) 433-0830

Email: Jason.brodersen@tetratech.com
cc/3rd Party:
PO:
Project: 1035582304.02; Richmond Field Station

Bill to:
Accounts Payable
Tetra Tech Inc.
1999 Harrison Street, Suite 500
Oakland, CA 94612

Requested TAT: **10 days;**

Date Received: **12/22/2021**
Date Logged: **12/23/2021**

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
2112D59-001	B112-PCBRA-DU01-R1	Soil	12/22/2021 12:30	☐	A	A	A	A								
2112D59-002	B112-PCBRA-DU01-R2	Soil	12/22/2021 12:40	☐	A	A	A									
2112D59-003	B112-PCBRA-DU01-R3A	Soil	12/22/2021 12:45	☐	A	A	A									
2112D59-003	B112-PCBRA-DU01-R3B	Soil	12/22/2021 12:45	☐	B		B									
2112D59-003	B112-PCBRA-DU01-R3C	Soil	12/22/2021 12:45	☐	C		C									
2112D59-004	B112-PCBRA-DU02	Soil	12/22/2021 12:50	☐	A	A	A									
2112D59-005	B112-PCBRA-DU03	Soil	12/22/2021 12:55	☐	A	A	A									
2112D59-006	B112-PCBRA-DU04	Soil	12/22/2021 13:00	☐	A	A	A									
2112D59-007	B112-PCBRA-DU05	Soil	12/22/2021 13:05	☐	A	A	A									
2112D59-008	B112-PCBRA-DU06	Soil	12/22/2021 13:10	☐	A	A	A									
2112D59-009	B112-PCBRA-DU07	Soil	12/22/2021 13:15	☐	A	A	A									

Test Legend:

1	8082_Soxhlet_S	2	PRDisposal Fee	3	PRISM	4	PRL4QC
5		6		7		8	
9		10		11		12	

Project Manager: Rosa Venegas **Prepared by: Cassandra Gallegos**

Comments: Client has been advised the fastest TAT for the RUSH data is 1 week considering the drying time required by ISM. Samples will be silt/ clay like matrix

NOTE: Soil samples are discarded 60 days after receipt 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: TETRA TECH INC.
Client Contact: Jason Brodersen
Contact's Email: Jason.brodersen@tetratech.com

Project: 1035582304.02; Richmond Field Station
Comments: Client has been advised the fastest TAT for the RUSH data is 1 week considering the drying time required by ISM. Samples will be silt/ clay like matrix

Work Order: 2112D59
QC Level: LEVEL4
Date Logged: 12/23/2021

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

LabID	ClientSampID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	U**	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	Sub Out
001A	B112-PCBRA-DU01-R1	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	1LA, Unpres	☐	☐	☐	12/22/2021 12:30	10 days	1/6/2022		☐	☐
002A	B112-PCBRA-DU01-R2	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	1LA, Unpres	☐	☐	☐	12/22/2021 12:40	10 days	1/6/2022		☐	☐
003A	B112-PCBRA-DU01-R3A	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	1LA, Unpres	☐	☐	☐	12/22/2021 12:45	10 days	1/6/2022		☐	☐
003B	B112-PCBRA-DU01-R3B	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	1LA, Unpres	☐	☐	☐	12/22/2021 12:45	10 days	1/6/2022		☐	☐
003C	B112-PCBRA-DU01-R3C	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	1LA, Unpres	☐	☐	☐	12/22/2021 12:45	10 days	1/6/2022		☐	☐
004A	B112-PCBRA-DU02	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	1LA, Unpres	☐	☐	☐	12/22/2021 12:50	10 days	1/6/2022		☐	☐
005A	B112-PCBRA-DU03	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	1LA, Unpres	☐	☐	☐	12/22/2021 12:55	10 days	1/6/2022		☐	☐
006A	B112-PCBRA-DU04	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	1LA, Unpres	☐	☐	☐	12/22/2021 13:00	10 days	1/6/2022		☐	☐
007A	B112-PCBRA-DU05	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	1LA, Unpres	☐	☐	☐	12/22/2021 13:05	10 days	1/6/2022		☐	☐
008A	B112-PCBRA-DU06	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	1LA, Unpres	☐	☐	☐	12/22/2021 13:10	10 days	1/6/2022		☐	☐
009A	B112-PCBRA-DU07	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	1LA, Unpres	☐	☐	☐	12/22/2021 13:15	10 days	1/6/2022		☐	☐

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.

U = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.**

General COC

MAI Work Order # 2112D59

7

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CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush | 2 Day Rush | 3 Day Rush | STD X | Quote # 213387
J-Flag / MDL | ESL | Cleanup Approved | Dry Weight | Bottle Order #
Delivery Format: PDF X | GeoTracker EDF | EDD X | Write On (DW) | Detect Summary

Report To: Jason Broderson Bill To: Jason Broderson
Company: Tetra Tech, Inc.
Address: 1999 Harrison St. Oakland, CA
Email: Jason.Broderson@TetraTech.com Tele: (415) 497-9060
Project Name: Richmond Field station Project #: 103582304.02
Project Location: B12, PCB RA PO #
Sampler Signature: Christine Phillips / christine Phillips

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	Multi Range as Gas, Diesel, and Motor Oil (8021/8015)	BTEX & TPH as Gas (8021/8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silica Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)*	Baylands Requirements	Lab to filter sample for dissolved metals analysis	ISM Preparation	SOXHLET extraction	EPA 3540 C
B12-PCBRA-DUP1-R1	10/22/21 (#)	1230	1	Soil	NA									X								X	X	
B12-PCBRA-DUP1-R2	10/22/21	1240	1	Soil	NA									X								X	X	
* B12-PCBRA-DUP1-R3	10/22/21	1245	1	Soil	NA									X								X	X	
B12-PCBRA-DUP2	10/22/21	1250	1	Soil	NA									X								X	X	
B12-PCBRA-DUP3	10/22/21	1255	1	Soil	NA									X								X	X	
B12-PCBRA-DUP4	10/22/21	1300	1	Soil	NA									X								X	X	
B12-PCBRA-DUP5	10/22/21	1305	1	Soil	NA									X								X	X	
B12-PCBRA-DUP6	10/22/21	1310	1	Soil	NA									X								X	X	
B12-PCBRA-DUP7	10/22/21	1315	1	Soil	NA									X								X	X	
														X								X	X	

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Christine Phillips / Tetra Tech, Inc.	10/22/21	1440		10/22/21	1440
Christine Phillips					

Comments / Instructions

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other
Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 11.8 °C Initial

standard 10-day TAT
* Analyze 3 times as triplicate
(#) confirmed date is 12/22/21 per phone call w/ Jason. CA 12/23/21

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Sample Receipt Checklist

Client Name:	**Tetra Tech Inc.**	Date and Time Received:	**12/22/2021 14:40**
Project:	**1035582304.02; Richmond Field Station**	Date Logged:	**12/23/2021**
		Received by:	Lilly Ortiz
WorkOrder №:	**2112D59** Matrix: Soil	Logged by:	Cassandra Gallegos
Carrier:	Client Drop-In		

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	☑
Custody seals intact on sample bottles?	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	☑		
Sample/Temp Blank temperature	Temp: 11.8°C				NA	☐
ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2; Nitrate 353.2/4500NO3: <2; 522: <4; 218.7: >8)?	Yes	☐	No	☐	NA	☑
UCMR Samples:						
pH tested and acceptable upon receipt (200.7: ≤2; 533: 6 - 8; 537.1: 6 - 8)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L) [not applicable to 200.7]?	Yes	☐	No	☐	NA	☑

Comments:

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Analytical Report

WorkOrder:	2202654	**Amended:**	03/15/2022
		Revision:	1
Report Created for:	Tetra Tech Inc.		
	1999 Harrison Street, Suite 500 Oakland, CA 94612		
Project Contact:	Jason Brodersen		
Project P.O.:			
Project:	1035582304.02; Richmond Field Station		
Project Received:	02/11/2022		

Analytical Report reviewed & approved for release on 02/22/2022 by:

Susan Thompson
Project Manager

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CA ELAP 1644 ♦ NELAP 4033 ORELAP

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Revision History

Client: Tetra Tech Inc. **WorkOrder:** 2202654

Project: 1035582304.02; Richmond Field Station

Date	Revision	Reason
03/15/2022	1	Provide revised PCB data and narrative.

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Glossary of Terms & Qualifier Definitions

Client: Tetra Tech Inc. **WorkOrder:** 2202654

Project: 1035582304.02; Richmond Field Station

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CPT	Consumer Product Testing not NELAP Accredited
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
LQL	Lowest Quantitation Level
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
NA	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
TZA	TimeZone Net Adjustment for sample collected outside of MAI's UTC.
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Glossary of Terms & Qualifier Definitions

Client: Tetra Tech Inc. **WorkOrder:** 2202654

Project: 1035582304.02; Richmond Field Station

Analytical Qualifiers

A	The reported value is determined using a "single point" calibration by GC-ECD as allowed by the method.
P	Agreement between quantitative confirmation results exceed method recommended limits
a2	Sample diluted due to cluttered chromatogram.

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria; LCS validates the prep batch.

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Case Narrative

Client: Tetra Tech Inc.
Project: 1035582304.02; Richmond Field Station

Work Order: 2202654
February 22, 2022

Sample prepared per the Interstate Technology & Regulatory Council (ITRC). 2012. Incremental Sampling Methodology. ISM-1. Washington, D.C.: Interstate Technology & Regulatory Council, Incremental Sampling Methodology Team. Www.itrcweb.org.

Sample aliquots are weighed for extraction after the air-drying step outlined in the ISM method; therefore all associated data is reported on an "air dried" basis.

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Case Narrative

Client: Tetra Tech Inc.
Project: 1035582304.02; Richmond Field Station

Work Order: 2202654
March 15, 2022

Polychlorinated Biphenyls (PCBs) Aroclors by SW8082:

The reported values have been revised after a re-evaluation of the initial chromatograms and data set. Data for Aroclor 1248 is now included in your report.

Identifying aroclors for quantitation relies on pattern recognition in the chromatograms within the elution range for each arclor, and this can be ambiguous and subjective. The pattern for Aroclor 1248 in the samples received shows evidence of possible heavily-aged degradation products, but the pattern is borderline for identification. Many non-target organic compounds can survive the extraction process for PCBs, which can create interferences when evaluating the final chromatograms. The analyst initially rejected the evaluation of Aroclor 1248 in these samples due to the ambiguity of the observed pattern. However, after comparing the current data set with the prior set reported for this project site (were the values for Aroclor 1248 were selected for evaluation), it was decided that providing consistency was necessary, despite the ambiguity of the identification.

There is also a pattern set overlap between Aroclor 1254 and 1248, so the quantified values for Aroclor 1254 has also changed.

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Analytical Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2202654
Date Received:	02/11/2022 13:32	**Extraction Method:**	SW3540C
Date Prepared:	02/15/2022	**Analytical Method:**	SW8082
Project:	1035582304.02; Richmond Field Station	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors w/ Soxhlet Extraction

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA2-DU01	2202654-001A	Soil	02/11/2022 10:25	GC40 02162249.d	239547

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.050	0.050	1	02/16/2022 18:48
Aroclor1221	ND		0.050	0.050	1	02/16/2022 18:48
Aroclor1232	ND		0.050	0.050	1	02/16/2022 18:48
Aroclor1242	ND		0.050	0.050	1	02/16/2022 18:48
Aroclor1248	**0.48**	A	0.050	0.050	1	02/16/2022 18:48
Aroclor1254	**0.31**	A	0.050	0.050	1	02/16/2022 18:48
Aroclor1260	ND		0.050	0.050	1	02/16/2022 18:48
Aroclor1262	ND		0.050	0.050	1	02/16/2022 18:48
Aroclor1268	ND		0.050	0.050	1	02/16/2022 18:48
PCBs, total	**0.79**		NA	0.050	1	02/16/2022 18:48

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	62	50-150	02/16/2022 18:48

Analyst(s): CN

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA2-DU02	2202654-002A	Soil	02/11/2022 10:37	GC40 02172231.d	239547

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.050	0.050	1	02/17/2022 15:16
Aroclor1221	ND		0.050	0.050	1	02/17/2022 15:16
Aroclor1232	ND		0.050	0.050	1	02/17/2022 15:16
Aroclor1242	ND		0.050	0.050	1	02/17/2022 15:16
Aroclor1248	**0.16**	A	0.050	0.050	1	02/17/2022 15:16
Aroclor1254	**0.084**	A	0.050	0.050	1	02/17/2022 15:16
Aroclor1260	ND		0.050	0.050	1	02/17/2022 15:16
Aroclor1262	ND		0.050	0.050	1	02/17/2022 15:16
Aroclor1268	ND		0.050	0.050	1	02/17/2022 15:16
PCBs, total	**0.24**		NA	0.050	1	02/17/2022 15:16

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	96	50-150	02/17/2022 15:16

Analyst(s): CN

(Cont.)

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Analytical Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2202654
Date Received:	02/11/2022 13:32	**Extraction Method:**	SW3540C
Date Prepared:	02/15/2022	**Analytical Method:**	SW8082
Project:	1035582304.02; Richmond Field Station	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors w/ Soxhlet Extraction

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA2-DU03-R1	2202654-003A	Soil	02/11/2022 10:45	GC40 02172232.d	239547

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.25	0.25	5	02/17/2022 15:30
Aroclor1221	ND		0.25	0.25	5	02/17/2022 15:30
Aroclor1232	ND		0.25	0.25	5	02/17/2022 15:30
Aroclor1242	ND		0.25	0.25	5	02/17/2022 15:30
Aroclor1248	**0.90**	A	0.25	0.25	5	02/17/2022 15:30
Aroclor1254	**0.35**	A	0.25	0.25	5	02/17/2022 15:30
Aroclor1260	ND		0.25	0.25	5	02/17/2022 15:30
Aroclor1262	ND		0.25	0.25	5	02/17/2022 15:30
Aroclor1268	ND		0.25	0.25	5	02/17/2022 15:30
PCBs, total	**1.2**		NA	0.25	5	02/17/2022 15:30

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	78	50-150	02/17/2022 15:30

Analyst(s): CN Analytical Comments: a2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA2-DU03-R2	2202654-004A	Soil	02/11/2022 10:49	GC40 02172233.d	239547

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.050	0.050	1	02/17/2022 15:43
Aroclor1221	ND		0.050	0.050	1	02/17/2022 15:43
Aroclor1232	ND		0.050	0.050	1	02/17/2022 15:43
Aroclor1242	ND		0.050	0.050	1	02/17/2022 15:43
Aroclor1248	**0.35**	A	0.050	0.050	1	02/17/2022 15:43
Aroclor1254	**0.24**	A	0.050	0.050	1	02/17/2022 15:43
Aroclor1260	ND		0.050	0.050	1	02/17/2022 15:43
Aroclor1262	ND		0.050	0.050	1	02/17/2022 15:43
Aroclor1268	ND		0.050	0.050	1	02/17/2022 15:43
PCBs, total	**0.59**		NA	0.050	1	02/17/2022 15:43

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	96	50-150	02/17/2022 15:43

Analyst(s): CN

(Cont.)

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Analytical Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2202654
Date Received:	02/11/2022 13:32	**Extraction Method:**	SW3540C
Date Prepared:	02/15/2022	**Analytical Method:**	SW8082
Project:	1035582304.02; Richmond Field Station	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors w/ Soxhlet Extraction

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA2-DU03-R3 1st	2202654-005A	Soil	02/11/2022 10:51	GC40 02162248.d	239547

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.050	0.050	1	02/16/2022 18:35
Aroclor1221	ND		0.050	0.050	1	02/16/2022 18:35
Aroclor1232	ND		0.050	0.050	1	02/16/2022 18:35
Aroclor1242	ND		0.050	0.050	1	02/16/2022 18:35
Aroclor1248	**0.15**	A	0.050	0.050	1	02/16/2022 18:35
Aroclor1254	**0.077**	A	0.050	0.050	1	02/16/2022 18:35
Aroclor1260	ND		0.050	0.050	1	02/16/2022 18:35
Aroclor1262	ND		0.050	0.050	1	02/16/2022 18:35
Aroclor1268	ND		0.050	0.050	1	02/16/2022 18:35
PCBs, total	**0.23**		NA	0.050	1	02/16/2022 18:35

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	72	50-150	02/16/2022 18:35

Analyst(s): CN

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA2-DU03-R3 2nd	2202654-005B	Soil	02/11/2022 10:51	GC40 02162252.d	239547

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.050	0.050	1	02/16/2022 19:30
Aroclor1221	ND		0.050	0.050	1	02/16/2022 19:30
Aroclor1232	ND		0.050	0.050	1	02/16/2022 19:30
Aroclor1242	ND		0.050	0.050	1	02/16/2022 19:30
Aroclor1248	**0.13**	A	0.050	0.050	1	02/16/2022 19:30
Aroclor1254	**0.070**	A	0.050	0.050	1	02/16/2022 19:30
Aroclor1260	ND		0.050	0.050	1	02/16/2022 19:30
Aroclor1262	ND		0.050	0.050	1	02/16/2022 19:30
Aroclor1268	ND		0.050	0.050	1	02/16/2022 19:30
PCBs, total	**0.20**		NA	0.050	1	02/16/2022 19:30

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	66	50-150	02/16/2022 19:30

Analyst(s): CN

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Analytical Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2202654
Date Received:	02/11/2022 13:32	**Extraction Method:**	SW3540C
Date Prepared:	02/15/2022	**Analytical Method:**	SW8082
Project:	1035582304.02; Richmond Field Station	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors w/ Soxhlet Extraction

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA2-DU03-R3 3rd	2202654-005C	Soil	02/11/2022 10:51	GC40 02162253.d	239547

Analytes	Result	MDL	RL	DF	Date Analyzed
Aroclor1016	ND	0.050	0.050	1	02/16/2022 19:44
Aroclor1221	ND	0.050	0.050	1	02/16/2022 19:44
Aroclor1232	ND	0.050	0.050	1	02/16/2022 19:44
Aroclor1242	ND	0.050	0.050	1	02/16/2022 19:44
Aroclor1248	ND	0.050	0.050	1	02/16/2022 19:44
Aroclor1254	ND	0.050	0.050	1	02/16/2022 19:44
Aroclor1260	ND	0.050	0.050	1	02/16/2022 19:44
Aroclor1262	ND	0.050	0.050	1	02/16/2022 19:44
Aroclor1268	ND	0.050	0.050	1	02/16/2022 19:44
PCBs, total	ND	NA	0.050	1	02/16/2022 19:44

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	76	50-150	02/16/2022 19:44

Analyst(s): CN

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA2-DU04	2202654-006A	Soil	02/11/2022 11:05	GC40 02162254.d	239547

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.050	0.050	1	02/16/2022 19:58
Aroclor1221	ND		0.050	0.050	1	02/16/2022 19:58
Aroclor1232	ND		0.050	0.050	1	02/16/2022 19:58
Aroclor1242	ND		0.050	0.050	1	02/16/2022 19:58
Aroclor1248	**0.22**	PA	0.050	0.050	1	02/16/2022 19:58
Aroclor1254	**0.13**	A	0.050	0.050	1	02/16/2022 19:58
Aroclor1260	ND		0.050	0.050	1	02/16/2022 19:58
Aroclor1262	ND		0.050	0.050	1	02/16/2022 19:58
Aroclor1268	ND		0.050	0.050	1	02/16/2022 19:58
PCBs, total	**0.35**		NA	0.050	1	02/16/2022 19:58

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	86	50-150	02/16/2022 19:58

Analyst(s): CN

(Cont.)

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Analytical Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2202654
Date Received:	02/11/2022 13:32	**Extraction Method:**	SW3540C
Date Prepared:	02/15/2022	**Analytical Method:**	SW8082
Project:	1035582304.02; Richmond Field Station	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors w/ Soxhlet Extraction

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA2-DU05	2202654-007A	Soil	02/11/2022 11:11	GC40 02162255.d	239547

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.050	0.050	1	02/16/2022 20:12
Aroclor1221	ND		0.050	0.050	1	02/16/2022 20:12
Aroclor1232	ND		0.050	0.050	1	02/16/2022 20:12
Aroclor1242	ND		0.050	0.050	1	02/16/2022 20:12
Aroclor1248	**0.40**	A	0.050	0.050	1	02/16/2022 20:12
Aroclor1254	**0.24**	A	0.050	0.050	1	02/16/2022 20:12
Aroclor1260	ND		0.050	0.050	1	02/16/2022 20:12
Aroclor1262	ND		0.050	0.050	1	02/16/2022 20:12
Aroclor1268	ND		0.050	0.050	1	02/16/2022 20:12
PCBs, total	**0.64**		NA	0.050	1	02/16/2022 20:12

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	81	50-150	02/16/2022 20:12

Analyst(s): CN

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
B112-PCBRA2-DU06	2202654-008A	Soil	02/11/2022 11:18	GC40 02162256.d	239547

Analytes	Result	Qualifiers	MDL	RL	DF	Date Analyzed
Aroclor1016	ND		0.050	0.050	1	02/16/2022 20:26
Aroclor1221	ND		0.050	0.050	1	02/16/2022 20:26
Aroclor1232	ND		0.050	0.050	1	02/16/2022 20:26
Aroclor1242	ND		0.050	0.050	1	02/16/2022 20:26
Aroclor1248	**0.15**	A	0.050	0.050	1	02/16/2022 20:26
Aroclor1254	**0.089**	A	0.050	0.050	1	02/16/2022 20:26
Aroclor1260	ND		0.050	0.050	1	02/16/2022 20:26
Aroclor1262	ND		0.050	0.050	1	02/16/2022 20:26
Aroclor1268	ND		0.050	0.050	1	02/16/2022 20:26
PCBs, total	**0.24**		NA	0.050	1	02/16/2022 20:26

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	83	50-150	02/16/2022 20:26

Analyst(s): CN

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Quality Control Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2202654
Date Prepared:	02/15/2022	**BatchID:**	239547
Date Analyzed:	02/16/2022 - 02/18/2022	**Extraction Method:**	SW3540C
Instrument:	GC40	**Analytical Method:**	SW8082
Matrix:	Soil	**Unit:**	mg/kg
Project:	1035582304.02; Richmond Field Station	**Sample ID:**	MB/LCS/LCSD-239547 2202654-001AMS/MSD

QC Summary Report for SW8082

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Aroclor1016	ND	0.050	0.050	-	-	-
Aroclor1221	ND	0.050	0.050	-	-	-
Aroclor1232	ND	0.050	0.050	-	-	-
Aroclor1242	ND	0.050	0.050	-	-	-
Aroclor1248	ND	0.050	0.050	-	-	-
Aroclor1254	ND	0.050	0.050	-	-	-
Aroclor1260	ND	0.050	0.050	-	-	-
Aroclor1262	ND	0.050	0.050	-	-	-
Aroclor1268	ND	0.050	0.050	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.048			0.05	95	50-150

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aroclor1016	0.12	0.12	0.15	78	79	60-140	1.40	20
Aroclor1260	0.12	0.12	0.15	77	79	60-140	2.21	20
Surrogate Recovery								
Decachlorobiphenyl	0.036	0.037	0.050	72	75	50-150	3.05	20

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Aroclor1016	1	0.18	0.18	0.15	ND	119	122	60-140	2.69	20
Aroclor1260	1	0.23	0.22	0.15	ND	150,F1	148,F1	60-140	1.47	20
Surrogate Recovery										
Decachlorobiphenyl	1	0.029	0.028	0.050		58	56	50-150	4.02	20

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 2202654 **ClientCode: TTIO** **QuoteID: 213387**

☐ WaterTrax ☐ CLIP ☐ EDF ☐ EQuIS ☐ Dry-Weight ☑ Email ☐ HardCopy ☐ ThirdParty ☑ J-flag
☐ Detection Summary ☑ Excel [FormatA]

Report to:
Jason Brodersen
Tetra Tech Inc.
1999 Harrison Street, Suite 500
Oakland, CA 94612
(415) 497-9060 FAX: (510) 433-0830

Email: Jason.brodersen@tetratech.com
cc/3rd Party:
PO:
Project: 1035582304.02; Richmond Field Station

Bill to:
Accounts Payable
Tetra Tech Inc.
1999 Harrison Street, Suite 500
Oakland, CA 94612

Requested TAT: **10 days;**

Date Received: **02/11/2022**
Date Logged: **02/11/2022**

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
2202654-001	B112-PCBRA2-DU01	Soil	2/11/2022 10:25	☐	A	A	A									
2202654-002	B112-PCBRA2-DU02	Soil	2/11/2022 10:37	☐	A	A	A									
2202654-003	B112-PCBRA2-DU03-R1	Soil	2/11/2022 10:45	☐	A	A	A									
2202654-004	B112-PCBRA2-DU03-R2	Soil	2/11/2022 10:49	☐	A	A	A									
2202654-005	B112-PCBRA2-DU03-R3 1st	Soil	2/11/2022 10:51	☐	A	A	A									
2202654-005	B112-PCBRA2-DU03-R3 2nd	Soil	2/11/2022 10:51	☐	B		B									
2202654-005	B112-PCBRA2-DU03-R3 3rd	Soil	2/11/2022 10:51	☐	C		C									
2202654-006	B112-PCBRA2-DU04	Soil	2/11/2022 11:05	☐	A	A	A									
2202654-007	B112-PCBRA2-DU05	Soil	2/11/2022 11:11	☐	A	A	A									
2202654-008	B112-PCBRA2-DU06	Soil	2/11/2022 11:18	☐	A	A	A									

Test Legend:

1	8082_Soxhlet_S	2	PRDisposal Fee	3	PRISM	4	
5		6		7		8	
9		10		11		12	

Project Manager: Susan Thompson

Prepared by: Lilly Ortiz

Comments: Client has been advised the fastest TAT for the RUSH data is 1 week considering the drying time required by ISM. Samples will be silt/ clay like matrix

NOTE: Soil samples are discarded 60 days after receipt 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: TETRA TECH INC.
Client Contact: Jason Brodersen
Contact's Email: Jason.brodersen@tetratech.com

Project: 1035582304.02; Richmond Field Station
Comments Client has been advised the fastest TAT for the RUSH data is 1 week considering the drying time required by ISM. Samples will be silt/ clay like matrix

Work Order: 2202654
QC Level: LEVEL4
Date Logged: 2/11/2022

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

LabID	ClientSampID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	U**	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	Sub Out
001A	B112-PCBRA2-DU01	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	8OZ GJ, Unpres	☐	☐	☐	2/11/2022 10:25	10 days	2/28/2022		☐	☐
002A	B112-PCBRA2-DU02	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	8OZ GJ, Unpres	☐	☐	☐	2/11/2022 10:37	10 days	2/28/2022		☐	☐
003A	B112-PCBRA2-DU03-R1	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	8OZ GJ, Unpres	☐	☐	☐	2/11/2022 10:45	10 days	2/28/2022		☐	☐
004A	B112-PCBRA2-DU03-R2	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	8OZ GJ, Unpres	☐	☐	☐	2/11/2022 10:49	10 days	2/28/2022		☐	☐
005A	B112-PCBRA2-DU03-R3 1st	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	8OZ GJ, Unpres	☐	☐	☐	2/11/2022 10:51	10 days	2/28/2022		☐	☐
005B	B112-PCBRA2-DU03-R3 2nd	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	8OZ GJ, Unpres	☐	☐	☐	2/11/2022 10:51	10 days	2/28/2022		☐	☐
005C	B112-PCBRA2-DU03-R3 3rd	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	8OZ GJ, Unpres	☐	☐	☐	2/11/2022 10:51	10 days	2/28/2022		☐	☐
006A	B112-PCBRA2-DU04	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	8OZ GJ, Unpres	☐	☐	☐	2/11/2022 11:05	10 days	2/28/2022		☐	☐
007A	B112-PCBRA2-DU05	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	8OZ GJ, Unpres	☐	☐	☐	2/11/2022 11:11	10 days	2/28/2022		☐	☐
008A	B112-PCBRA2-DU06	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	8OZ GJ, Unpres	☐	☐	☐	2/11/2022 11:18	10 days	2/28/2022		☐	☐

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.

U = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.**

General COC

MAI Work Order # 2202654

7

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CHAIN OF CUSTODY RECORD

Turn Around Time:	1 Day Rush		2 Day Rush		3 Day Rush		STD	X	Quote #					
J-Flag / MDL		ESL		Cleanup Approved		Dry Weight		Bottle Order #						
Delivery Format:	PDF	X	GeoTracker EDF		EDD	X	Write On (DW)		Detect Summary					

Report To: Jason Broderson Bill To: Jason Broderson
Company: Tetra Tech, INC.
Address: 1999 Harrison St. Oakland, CA
Email: Jason.Broderson@tetratech.com Tele: (415) 497-9860
Project Name: Richmond Field Station Project #: 103582304.02
Project Location: B12, PCB RA PO #
Sampler Signature: Christine Phillips / Christine Phillips

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	Multi Range as Gas, Diesel, and Motor Oil (8021/8015)	BTEX & TPH as Gas (8021/ 8015) MTBE	TPH as Diesel (8015) + Motor Oil Without Silica Gel	TPH as Diesel (8015) + Motor Oil With Silica Gel	Total Oil & Grease (1664 / 9071) Without Silica Gel	Total Petroleum Hydrocarbons - Oil & Grease (1664 / 9071) With Silica Gel	Total Petroleum Hydrocarbons (418.1) With Silica Gel	EPA 505/ 608 / 8081 (CI Pesticides)	EPA 608 / 8082 PCB's ; Aroclors only	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.8 / 6020)*	Metals (200.8 / 6020)*	Baylands Requirements	Lab to filter sample for dissolved metals analysis	1SM Preparation	SOxHLET Extraction EPA 3540C
B12-PCBRA2-DV01	2/11/22	1025	1	Soil	N/A									X								X	X
B12-PCBRA2-DV02	2/11/22	1037	1	Soil	N/A																	X	X
B12-PCBRA2-DV03-R1	2/11/22	1045	1	Soil	N/A									X								X	X
B12-PCBRA2-DV03-R2	2/11/22	1049	1	Soil	N/A									X								X	X
* B12-PCBRA2-DV03-R3	2/11/22	1051	1	Soil	N/A									X								X	X
B12-PCBRA2-DV04	2/11/22	1105	1	Soil	N/A									X								X	X
B12-PCBRA2-DV05	2/11/22	1111	1	Soil	N/A									X								X	X
B12-PCBRA2-DV06	2/11/22	1118	1	Soil	N/A									X								X	X
														X								X	X

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
Christine Phillips, Tetra Tech	2/11/22	1332		2/11/22	1332
Christine Phillips					

Comments / Instructions

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other
Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 26.7 °C Initials TP

standard 10-day TAT
* Analyze 3 times as triplicate

NO ice

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Sample Receipt Checklist

Client Name: **Tetra Tech Inc.**
Project: **1035582304.02; Richmond Field Station**

WorkOrder №: **2202654** Matrix: Soil
Carrier: Client Drop-In

Date and Time Received: **2/11/2022 13:32**
Date Logged: **2/11/2022**
Received by: Tina Perez
Logged by: Lilly Ortiz

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 ☑
Custody seals intact on sample bottles?	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 ☑	
Sample/Temp Blank temperature	Temp: 26.7°C		NA ☐
ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)?	Yes ☐	No ☐	NA ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
pH acceptable upon receipt (Metal: <2; Nitrate 353.2/4500NO3: <2; 522: <4; 218.7: >8)?	Yes ☐	No ☐	NA ☑
UCMR Samples:			
pH tested and acceptable upon receipt (200.7: ≤2; 533: 6 - 8; 537.1: 6 - 8)?	Yes ☐	No ☐	NA ☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L) [not applicable to 200.7]?	Yes ☐	No ☐	NA ☑

Comments:

McCampbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 2302216

Report Created for: Tetra Tech Inc.

1999 Harrison Street, Suite 500
Oakland, CA 94612

Project Contact: Jason Brodersen
Project P.O.:
Project: 103S582304.02; UC Berkeley Sampling

Project Received: 02/03/2023

Analytical Report reviewed & approved for release on 02/13/2023 by:

Susan Thompson
Project Manager

1534 Willow Pass Rd. Pittsburg, CA 94565 ♦ TEL: (877) 252-9262 ♦ FAX: (925) 252-9269 ♦ www.mccampbell.com
CA ELAP 1644 ♦ NELAP 4033 ORELAP

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Glossary of Terms & Qualifier Definitions

Client: Tetra Tech Inc. **WorkOrder:** 2302216

Project: 103S582304.02; UC Berkeley Sampling

Glossary Abbreviation

%D	Serial Dilution Percent Difference
95% Interval	95% Confident Interval
CPT	Consumer Product Testing not NELAP Accredited
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
LQL	Lowest Quantitation Level
MB	Method Blank
MB % Rec	% Recovery of Surrogate in Method Blank, if applicable
MDL	MDL is the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. Definition and Procedure for the Determination of the Method Detection Limit, Revision 2, 40CFR, Part 136, Appendix B, EPA 821-R-16-006, December 2016.
ML	Minimum Level of Quantitation
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NA	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 is the lowest level that can be reliably determined within specified limits of precision and accuracy during routine laboratory operating conditions. (The RL cannot be lower than the lowest calibration standard used in the initial calibration of the instrument and must be greater than the MDL.)
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
TZA	TimeZone Net Adjustment for sample collected outside of MAI's UTC.
WET (STLC)	Waste Extraction Test (Soluble Threshold Limit Concentration)

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Glossary of Terms & Qualifier Definitions

Client: Tetra Tech Inc. **WorkOrder:** 2302216

Project: 103S582304.02; UC Berkeley Sampling

Analytical Qualifiers

a3	Sample diluted due to high organic content interfering with quantitative/or qualitative analysis.
h7	Copper (EPA 3660B) cleanup

Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria; LCS validates the prep batch.

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Case Narrative

Client: Tetra Tech Inc.
Project: 103S582304.02; UC Berkeley Sampling

Work Order: 2302216
February 13, 2023

Sample prepared per the Interstate Technology & Regulatory Council (ITRC). 2012. Incremental Sampling Methodology. ISM-1. Washington, D.C.: Interstate Technology & Regulatory Council, Incremental Sampling Methodology Team. Www.itrcweb.org.

Sample aliquots are weighed for extraction after the air-drying step outlined in the ISM method; therefore all associated data is reported on an "air dried" basis.

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Analytical Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2302216
Date Received:	02/03/2023 15:00	**Extraction Method:**	SW3540C
Date Prepared:	02/09/2023	**Analytical Method:**	SW8082
Project:	103S582304.02; UC Berkeley Sampling	**Unit:**	mg/kg

Polychlorinated Biphenyls (PCBs) Aroclors w/ Soxhlet Extraction

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
RFS-B112-Storm Drain-01	2302216-001A	Soil	02/02/2023 12:00	GC22 02102314.D	263479

Analytes	Result	MDL	RL	DF	Date Analyzed
Aroclor1016	ND	0.25	0.25	5	02/10/2023 11:19
Aroclor1221	ND	0.25	0.25	5	02/10/2023 11:19
Aroclor1232	ND	0.25	0.25	5	02/10/2023 11:19
Aroclor1242	ND	0.25	0.25	5	02/10/2023 11:19
Aroclor1248	ND	0.25	0.25	5	02/10/2023 11:19
Aroclor1254	ND	0.25	0.25	5	02/10/2023 11:19
Aroclor1260	ND	0.25	0.25	5	02/10/2023 11:19
Aroclor1262	ND	0.25	0.25	5	02/10/2023 11:19
Aroclor1268	ND	0.25	0.25	5	02/10/2023 11:19
PCBs, total	ND	NA	0.25	5	02/10/2023 11:19

Surrogates	REC (%)	Limits	
Decachlorobiphenyl	81	50-150	02/10/2023 11:19

Analyst(s): CK Analytical Comments: a3,h7

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Quality Control Report

Client:	Tetra Tech Inc.	**WorkOrder:**	2302216
Date Prepared:	02/09/2023	**BatchID:**	263479
Date Analyzed:	02/10/2023	**Extraction Method:**	SW3540C
Instrument:	GC22	**Analytical Method:**	SW8082
Matrix:	Soil	**Unit:**	mg/kg
Project:	103S582304.02; UC Berkeley Sampling	**Sample ID:**	MB/LCS/LCSD-263479 2302216-001AMS/MSD

QC Summary Report for SW8082

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Aroclor1016	ND	0.050	0.050	-	-	-
Aroclor1221	ND	0.050	0.050	-	-	-
Aroclor1232	ND	0.050	0.050	-	-	-
Aroclor1242	ND	0.050	0.050	-	-	-
Aroclor1248	ND	0.050	0.050	-	-	-
Aroclor1254	ND	0.050	0.050	-	-	-
Aroclor1260	ND	0.050	0.050	-	-	-
Aroclor1262	ND	0.050	0.050	-	-	-
Aroclor1268	ND	0.050	0.050	-	-	-
Surrogate Recovery						
Decachlorobiphenyl	0.046			0.05	91	50-150

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aroclor1016	0.15	0.16	0.15	102	108	60-140	6.37	20
Aroclor1260	0.15	0.17	0.15	98	110	60-140	11.6	20
Surrogate Recovery								
Decachlorobiphenyl	0.043	0.045	0.050	86	90	50-150	4.37	20

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Aroclor1016	5	0.23	0.20	0.15	ND<0.25	157,F1	135	60-140	14.8	20
Aroclor1260	5	0.19	0.20	0.15	ND<0.25	127	131	60-140	2.95	20
Surrogate Recovery										
Decachlorobiphenyl	5	0.038	0.043	0.050		76	87	50-150	12.8	20

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CHAIN-OF-CUSTODY RECORD

WorkOrder: 2302216 **ClientCode: TTIO**

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

Report to:
Jason Brodersen
Tetra Tech Inc.
1999 Harrison Street, Suite 500
Oakland, CA 94612
(415) 497-9060 FAX: (510) 433-0830

Email: Jason.brodersen@tetratech.com
cc/3rd Party:
PO:
Project: 103S582304.02; UC Berkeley Sampling

Bill to:
Accounts Payable
Tetra Tech Inc.
1999 Harrison Street, Suite 500
Oakland, CA 94612

Requested TAT: 5 days;

Date Received: **02/03/2023**
Date Logged: **02/03/2023**

Lab ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
2302216-001	RFS-B112-Storm Drain-01	Soil	2/2/2023 12:00	☐	A	A	A									

Test Legend:

1	8082_Soxhlet_S	2	PRDisposal Fee	3	PRISM	4	
5		6		7		8	
9		10		11		12	

Prepared by: Cassandra Gallegos

Comments:

NOTE: Soil samples are discarded 60 days after receipt 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: TETRA TECH INC.
Client Contact: Jason Brodersen
Contact's Email: Jason.brodersen@tetratech.com

Project: 103S582304.02; UC Berkeley Sampling
Comments:

Work Order: 2302216
QC Level: LEVEL4
Date Logged: 2/3/2023

☐ WaterTrax ☐ CLIP ☐ EDF ☐ Excel ☐ EQuIS ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

LabID	ClientSampID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	U**	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	Sub Out
001A	RFS-B112-Storm Drain-01	Soil	SW8082 (PCBs w/ Soxhlet Extraction)	1	1LA, Unpres	☐	☐	☐	2/2/2023 12:00	5 days	2/10/2023		☐	☐

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).

- Organic extracts are held for 40 days before disposal; Inorganic extract are held for 30 days.

- 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.

U = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.**

General COC **RUSH** MAI Work Order # 2302216

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CHAIN OF CUSTODY RECORD

Turn Around Time:	1 Day Rush		2 Day Rush		3 Day Rush	●	STD		Quote #	223961									
J-Flag / MDL		ESL		Cleanup Approved		Dry Weight		Bottle Order #											
Delivery Format:	PDF		GeoTracker EDF		EDD		CLIP EDT (DW)		Detect Summary										

Report To: Jason Brodersen	Bill To: Jason Brodersen
Company: Tetra Tech Inc.	
Email: Jason.brodersen@tetratech.com	
Alt Email:	Tele: 4154979060
Project Name: UC Berkeley Sampling	Project #: 103S582304.02
Project Location: UC Berkeley Sampling	PO #
Sampler Signature:	

SAMPLE ID Location / Field Point	Sampling Date	Sampling Time	#Containers	Matrix	Preservative	SW6020 (CAM 17)	SW8082 (PCBs w/ Soxhlet Extraction)	SW8270C (PAHs/PNAs)
RFS-B112-Storm Drain-01	2/2/2023	1200	1	Soil / SEDIMENT			●	
L4 data package								

Analysis Requested

MAI clients MUST disclose any dangerous chemicals known to be present in their submitted samples in concentrations that may cause immediate harm or serious future health endangerment as a result of brief, gloved, open air, sample handling by MAI staff. Non-disclosure incurs an immediate $250 surcharge and the client is subject to full legal liability for harm suffered. Thank you for your understanding and for allowing us to work safely.

* If metals are requested for water samples and the water type (Matrix) is not specified on the chain of custody, MAI will default to metals by E200.8.

Please provide an adequate volume of sample. If the volume is not sufficient for a MS/MSD a LCS/LCSD will be prepared in its place and noted in the report.

Comments / Instructions

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
J BRODERSEN / TETRA TECH	2/2/23	1232	MAJ	2/2/23	1137
MAJ	2/3/23	1500	Cassandra Dallas	2/3/23	1500

Matrix Code: DW=Drinking Water, GW=Ground Water, WW=Waste Water, SW=Seawater, S=Soil, SL=Sludge, A=Air, WP=Wipe, O=Other

Preservative Code: 1=4°C 2=HCl 3=H_2SO_4 4=HNO_3 5=NaOH 6=ZnOAc/NaOH 7=None

Temp 2.6 °C Initials WRT

Reset Form

Page ___ of ___

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Sample Receipt Checklist

Client Name:	Tetra Tech Inc.	Date and Time Received:	2/3/2023 15:00
Project:	103S582304.02; UC Berkeley Sampling	Date Logged:	2/3/2023
		Received by:	Cassandra Gallegos
WorkOrder №:	2302216 Matrix: Soil	Logged by:	Cassandra Gallegos
Carrier:	Antonio Mason (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	☑
Custody seals intact on sample bottles?	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: 2.6°C				NA	☐
ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)?	Yes	☐	No	☐	NA	☑
Sample labels checked for correct preservation?	Yes	☑	No	☐		
pH acceptable upon receipt (Metal: <2; Nitrate 353.2/4500NO3: <2; 522: <4; 218.7: >8)?	Yes	☐	No	☐	NA	☑
UCMR Samples:						
pH tested and acceptable upon receipt (200.7: ≤2; 533: 6 - 8; 537.1: 6 - 8)?	Yes	☐	No	☐	NA	☑
Free Chlorine tested and acceptable upon receipt (<0.1mg/L) [not applicable to 200.7]?	Yes	☐	No	☐	NA	☑

Comments: