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**PHASE II ENVIRONMENTAL SITE  
CHARACTERIZATION  
Block 54  
San Francisco, California**

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**PHASE II ENVIRONMENTAL SITE CHARACTERIZATION**  
**Block 54**  
**San Francisco, California**

**1.0 INTRODUCTION**

Langan Engineering and Environmental Services, Inc. (Langan) has prepared this Draft Phase II Environmental Site Characterization (ESC) on behalf of the Jonathan Rose Company, Sponsor and Client, and the San Francisco Housing Development Corporation for Block 54 located at the northwest corner of Friedell Street and Innes Avenue in San Francisco, California (site, Figure 1). The proposed development will be a five-story podium-style building with one level of concrete podium topped with four wood-framed levels of residential units. The concrete level will be partially below grade and will consist of a parking garage, utility rooms, and community spaces, including a courtyard and offices. Proposed excavations range from none on the north side to approximately 10 feet below ground surface (bgs) on the south side of the site.

**2.0 SITE DESCRIPTION**

The site consists of one assessor parcel number (APN) 4591C/212 and is located at the Hilltop Neighborhood within Parcel A of the Hunters Point Shipyard. The site is bound by Hudson Avenue to the northeast, a residential development to the southeast, Innes Avenue to the southwest, and Friedell Street to the northwest, as shown on Figure 2. The site is located in a mixed-use area of San Francisco and is approximately 0.45 acres in size. The site is vacant and currently used for construction staging.

The site is subject to the requirements of Article 31 of the San Francisco Health Code. Article 31 specifically applies to environmental conditions during construction at the former Hunters Point Shipyard Redevelopment project. Article 31 requires that prior to receiving approval of construction permits; a developer/builder must submit Article 31 compliant plans to ensure safe work practices and environmental protection during construction. The Article 31 plans that have already been approved and will continue to be implemented at Block 54 are a Site Evaluation Report, a Dust Control Plan (DCP); an Unexpected Condition Response Plan (UCRP); a Soil Import Plan (SIP); and a serpentine Cover Plan. Additional plans that will be submitted specific to Block 54 are a Transportation and Disposal Plan (TDP) and an Environmental Health and Safety Plan (EHASP). Lastly, when construction is complete and prior to receiving permission to occupy the new Block 54 residences, the developer/builder must submit an Article 31 Closure Report for



San Francisco Department of Public Health (SFDPH) approval verifying that all approved Article 31 plans were properly implemented.

## **2.1 Project Description**

The proposed development will be a five-story podium-style building with one level of concrete podium topped with four wood-framed levels of residential units. The concrete level will be partially below grade and will consist of a parking garage, utility rooms, and community spaces, including a courtyard and offices. Proposed excavation depths range from none on the northwest side to approximately 10 feet bgs on the south side of the site, and 13 feet at the elevator pit (Engeo, 2020).

## **2.2 Geology and Hydrogeology**

The site is part of the California Coastal Range Province, a region characterized by northwest-trending ridges and valleys that generally parallel the major geologic structures, such as the San Andreas and Hayward Fault systems. Bedrock in the area is composed of highly consolidated and tectonically deformed sedimentary, volcanic, and metamorphic rocks of the Franciscan Complex (about 180 million years old). Large intrusions of serpentinite are closely associated with Franciscan rock. The Franciscan rocks commonly consist of pervasively sheared shale and sandstone that include isolated masses of other types of rocks and are referred to as *mélange*. Previous analytical results of rock samples collected during Engeo's geotechnical investigation detected elevated asbestos at concentrations ranging from 2.75% to 4.5%. Groundwater was not encountered during the onsite geotechnical investigation conducted by Engeo (July 2020) or during this environmental characterization effort.

Subsurface conditions, based on reports completed by Engeo (July 2020), indicate that the site is blanketed by one to three feet of fill underlain by Franciscan bedrock. The near surface material consists primarily of stiff to hard sandy clay with varying amounts of silt, sand, and gravel. Below the fill Engeo encountered residual soil comprising stiff to hard sheared serpentinite *mélange*. The serpentinite bedrock beneath the site is moderately soft, with low hardness, and deeply to intensely weathered.

## **3.0 SITE HISTORY**

Historically, the site was located within the former Hunters Point Shipyard Parcel A, which was primarily used for Navy administration offices and housing (USEPA, 2020). In the early 1990s, the Navy performed routine cleanup activities at Parcel A including removal of transformers and an

underground storage tank, abrasive blast material that had been used as utility trench backfill from two areas, and soil impacted by petroleum and other contaminants from two other areas. Soil was disposed of off-site and those areas were backfilled with clean soil (Navy, 2004). These areas are outside of the current Block 54 boundaries and no known release of petroleum or hazardous substances occurred there (Navy, 2004). Former Parcel A was found to not require additional action in 1995 by the United States Environmental Protection Agency (USEPA) and the USEPA removed Parcel A from being part of the Hunters Point Shipyard superfund site in 1999 (USEPA, 2020).

In December 2004, the Navy transferred Parcel A to the San Francisco Redevelopment Agency, which is now known as the Office of Community Investment and Infrastructure (successor agency). Developers removed all Navy-era utilities, including sewer lines and maintenance holes. Additionally, the developer excavated (dug out) former Parcel A surface soil and graded to prepare the land for redevelopment, removing approximately 10 feet of soil from Block 54 (ENGEO, 2007). The developer also brought in engineered fill for placement under hardscape to construct new utilities, streets, sidewalks, building foundations and added additional soil for landscaping.

In 2018, California Department of Public Health (CDPH) performed gamma radiological scanning in all accessible, outdoor areas in Parcel A. CDPH's scanning activities included the use of handheld instruments and instruments that were towed on a trailer behind a small vehicle. The areas scanned included the soil stockpiles and the undeveloped portion of Parcel A. CDPH's Division of Radiation Safety and Environmental Management Radiologic Health Branch presented the results of the health and safety survey in the report *Hunters Point Shipyard, Parcel A-1, Health and Safety Survey*, dated 5 February 2019. CDPH concluded there were "No radiological health and safety hazards to the residents of Parcel A-1." Comprehensive scanning by CDPH showed no radiological contamination in the near-surface soil.

Based on a review of aerial photographs by SCA (October 2018), in 1938 the Block 54 site appeared to be occupied by two rectangular-shaped buildings which were likely residential or military barracks. By 1946, the two rectangular buildings had been demolished and replaced with four rectangular-shaped buildings which were likely used by the Navy. These buildings began to be removed from the site in the 2000s. By 2009, the site had been cleared of structures and is still currently a vacant lot.

## **4.0 ENVIRONMENTAL INVESTIGATIONS**

### **4.1 Langan's June 2022 Phase I Environmental Site Assessment**

Langan prepared a Phase I Environmental Site Assessment (ESA) dated July 2022. The Phase I ESA identified two recognized environmental conditions (RECs) for the site:

#### REC 1 – Presence of Contaminated Fill Material

Based on the location of the site within the Maher Ordinance (2013) boundary limits, fill material, potentially contaminated with heavy metals and/or petroleum hydrocarbons, exists beneath the site. The fill material represents a REC for the site.

#### REC 2 – Presence of Naturally Occurring Asbestos (NOA)

Based on the results of ENGEO's geotechnical subsurface investigation, endemic serpentinite rock containing naturally occurring asbestos (NOA) is present beneath the site. Due to concentrations of NOA detected in rock samples beneath the site, preparation of an asbestos dust mitigation plan (ADMP) and DCP will be required prior to construction.

### **4.2 Langan's March 2022 Environmental Sampling**

Langan performed a Phase II subsurface investigation in March 2022 for the collection and analyses of soil and rock samples. Prior to any drilling and sampling activities, Langan obtained a drilling permit from SFDPH, notified Underground Services Alert (USA) and retained a private underground utility locating service to check that locations of exploratory borings were clear of existing utilities.

On 29 March 2022, 12 exploratory borings, E-1 through E-12, were advanced to depths of approximately five to 10 feet bgs by direct push drilling methods or hand auger. All environmental drilling was conducted by Gregg Drilling, LLC (Gregg) of Martinez, California. The exploratory boring locations are shown on Figure 2.

Based on the depth of the proposed excavation and in an effort to adequately characterize the material to be off-hauled during construction, soil/rock samples were collected at depths of approximately 0.5, 1.5, 3.0, 5.0, 7.5, and 10.0 feet bgs. Sample ends were covered with Teflon, sealed with plastic end caps, labeled, and stored on ice until delivery to the analytical laboratory. All samples were delivered under chain-of-custody control to McCampbell Analytical, Inc. (McCampbell), a California Department of Public Health certified analytical laboratory in Pittsburg, California.

Additionally, one to three soil samples were collected from each boring location at depths of approximately 0.5, 1.5, 3.0, and 5.0 feet bgs and were delivered under chain-of-custody control to Eurofins TestAmerica, St. Louis (Eurofins), a certified analytical laboratory in Earth City, Missouri for radionuclides testing described in Section 4.2.2.

Following sample collection, each boring was properly abandoned via grouting per permit requirements. Environmental boring logs from this investigation are presented in Appendix A as Figures A-1 through A-12. The material encountered was classified according to the soil classification system described on Figure A-13.

#### 4.2.1 Phase II Sample Selection and Analytical Testing

The chemical analytical schedule was chosen to assess soil quality in accordance with Article 31 requirements and to satisfy waste profiling scenarios generally accepted by landfills. The soil samples were analyzed for a combination of some or all of the following:

- Total petroleum hydrocarbons (TPH) as gasoline (TPHg), diesel (TPHd), and motor oil (TPHmo) by USEPA Method 8021/8015;
- Volatile organic compounds (VOCs) by USEPA Method 8260;
- Semi-volatile organic compounds (SVOCs) by USEPA Method 8270;
- Organochlorine pesticides (OCPs) by USEPA Method 8081;
- Polychlorinated biphenyls (PCBs) by USEPA Method 8082;
- California Assessment Manual (CAM) 17 metals by USEPA Method 6020;
- Leaking Underground Fuel Tank (LUFT) 5 metals by USEPA Method 6020;
- Asbestos by California Air Resources Board Method 425;
- pH by EPA Method 9045C;
- Sulfides by EPA Method 9030B; and
- Total cyanide by EPA Method 9010C.

Analytical results for metal concentrations in soil were compared to the total threshold limit concentration (TTLC). Samples with concentrations of any metal greater than 10 times the soluble threshold limit concentration (STLC) were also analyzed for soluble metals using the California waste extraction test (WET) method. Select soil samples in which the TTLC

concentration was elevated or where the detected concentrations exceeded the STLC value after analysis with the WET method were submitted for analysis by the Federal toxicity characteristic leaching procedure (TCLP). These analyses were performed to determine soil disposition requirements.

#### 4.2.1.1 Phase II Soil Analytical Results

The non-radiological laboratory analytical results for soil are summarized in Tables 1 and 2 and discussed below. Copies of the certified analytical laboratory reports are presented in Appendix B.

Soil analytical results for parameters other than metals are summarized in Table 1. TPHg was detected in 14 of the 29 samples analyzed at concentrations ranging from 1.1 milligrams per kilogram (mg/kg) to 14 mg/kg. TPHd was detected in five of the 29 samples analyzed at concentrations ranging from 2.5 mg/kg to 33 mg/kg. TPHmo was detected in nine of the 29 samples analyzed at concentrations ranging from 11 mg/kg to 840 mg/kg. One VOC (m,p-xylene) was detected in one of the 14 samples analyzed at a concentration of 0.0069 mg/kg. None of the TPHg, TPHd, TPHmo, and VOC concentrations exceeded the 2019 Regional Water Quality Control Board (RWQCB) residential environmental screening levels (ESLs).

Low levels of 11 SVOCs (anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, 1,1-biphenyl, dibenzo(a,h)anthracene, dibenzofuran, fluoranthene, fluorene, 1-methylnaphthalene, phenanthrene, and pyrene) were detected in at least one of the 14 samples analyzed. None of the SVOC detections exceeded the 2019 Residential ESLs.

Low levels of 10 OCPs (Lindane (g-BHC), chlordane, alpha-chlordane, gamma-chlordane, endosulfan sulfate, 4,4-dichlorodiphenyldichloroethane [DDD], 4,4-dichlorodiphenyldichloroethylene [DDE], 4,4-dichlorodiphenyltrichloroethane [DDT] heptachlor, and heptachlor epoxide) were detected in at least one of the 12 samples analyzed. None of the OCP detections exceeded the 2019 Residential ESLs.

No PCBs were detected in any of the soil samples analyzed. Elevated asbestos concentrations were detected in six of the 12 samples analyzed at concentrations ranging from 1.25% to 4.50%.

The metal analytical results are summarized in Table 2. Total chromium was detected in each of the 27 soil samples analyzed at concentrations ranging from 33 mg/kg to 1,200 mg/kg, below the California non-RCRA concentration threshold (TTLC) of 2,500 mg/kg. The thresholds of 10 times the STLC (50 mg/kg) and 20 times the TCLP (100 mg/kg) were used to identify samples requiring

STLC and TCLP analyses. Each of the samples detected above these thresholds was subsequently analyzed for STLC and/or TCLP, as appropriate, to determine soluble chromium levels. STLC chromium was detected above the reporting limit (0.10 milligrams per liter [mg/L]) in 25 of the 26 soil samples analyzed, ranging in concentrations from 0.11 mg/L to 2.7 mg/L. None of the samples analyzed exceeded the California non-RCRA criteria (STLC) of 5 mg/L. 25 soil samples were analyzed for TCLP chromium and none the soil samples analyzed detected soluble chromium above the reporting limit (0.10 mg/L).

Total nickel was detected in each of the 27 soil samples analyzed at concentrations ranging from 40 mg/kg to 2,400 mg/kg, with three samples (E-1-3.0, E-3-0.5, E-3-3.0) exceeding the California non-RCRA concentration threshold (TTLC) of 2,000 mg/kg. The threshold of 10 times the STLC (200 mg/kg) was used to identify samples requiring STLC analysis. Each of the samples detected above this threshold was analyzed for STLC to determine soluble nickel levels. Soluble nickel was detected above the reporting limit (0.10 mg/L) in all 25 soil samples analyzed ranging in concentrations from 2.0 mg/L to 71 mg/L. Six soil sample concentrations (E-1-3.0, E-3-0.5, E-3-3.0, E-5-0.5, E-5-3.0, E-6-5.0) exceeded the California non-RCRA criteria (STLC) of 20 mg/L. Total nickel was detected above the residential ESL of 820 mg/kg in 10 of the samples analyzed. Seven of the 27 nickel detections exceeded expected background ranges found locally.<sup>1</sup> The nickel data set was further evaluated to determine whether the concentrations exceed background at a statistically significant level (95 percent upper confidence limit [UCL]). The calculated 95UCL of 1,138 mg/kg was within expected background.<sup>2</sup>

Arsenic was detected at or above the reporting limit in 14 of the 18 samples analyzed at concentrations ranging from 2.1 mg/kg to 8.9 mg/kg. These detections are within normal background ranges<sup>3</sup> found in the San Francisco Bay Area.

Cobalt was detected at or above the reporting limit in each of the 18 samples analyzed at concentrations ranging from 11 mg/kg to 140 mg/kg. Two of the cobalt detections exceeded expected background ranges found locally.<sup>1</sup> The cobalt data set was further evaluated to

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<sup>1</sup> 95% UCL for soil and rock matrices for Innes Avenue dataset. *Metals Concentrations in Franciscan Bedrock Outcrops: Three Sites in the Hunters Point Shear Zone and Marin Headlands Terrane Subunits, Hunters Point Shipyard, San Francisco, California*. March 2004.

<sup>2</sup> USEPA. Calculating Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites. December 2002.

<sup>3</sup> Background concentration ranges of metals in Bay Area soils, Appendix A, Table A-2 from *Environmental Resources Management. Feasibility Study, Hookston Station, Pleasant Hill, California*. July 2006.

determine whether the concentrations exceed background at a statistically significant level (95UCL). The calculated 95UCL of 71.29 mg/kg was within expected background.<sup>2</sup>

#### 4.2.2 Radiological Sample Selection and Analytical Testing

In addition to the studies and conclusions discussed in Section 3.0, out of an abundance of caution and at the request of the community and district Supervisor, radiological soil analyses were conducted to provide added confidence that subsurface soil is free from radiological contamination. The radiological sampling and testing conducted at Block 54 was not required by Article 31.

The purpose of this radiological sampling was to screen for significant concentrations of tested radionuclides, i.e., at concentrations that may pose a health risk. With the exception of cobalt-60, the radionuclides tested are naturally occurring in soil and rock (radium-226, thorium-232, uranium-235) or present in the environment due to worldwide fallout from historical nuclear testing (americium-241, cesium-137, plutonium-239, strontium-90).<sup>4</sup> Thus, while the concentrations of these materials may vary, their presence in environmental samples is expected. Minute amounts of these radionuclides are ubiquitously found in the environment and do not pose a health risk.

The radiological sampling included advancing borings to collect soil samples for radionuclide analysis. Radionuclide laboratory analysis involves measuring the activity (emissions) of radionuclides to estimate the quantity of the substance present using a small sample volume over a specific time period.

Twenty-two samples were collected and analyzed for radionuclides via gamma spectroscopy by Department of Energy (DOE) Health and Safety Laboratory (HASL) 300 4.5.2.3/GA-01-R consistent with USEPA 901.1 to determine the concentration of the following radionuclides: americium-241 (Am-241), cesium-137 (Cs-137), cobalt-60 (Co-60), and radium-226 (Ra-226). Alpha spectroscopy by DOE A-01-R Mod was used to determine the levels of thorium-232 (Th-232), plutonium-239 (Pu-239) and uranium-235 (U-235). Strontium-90 (Sr-90) was analyzed by Eurofins Environmental Testing Laboratory Standard Operating Procedure (SOP) No. ST-RC-0058<sup>5</sup>. Soil

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<sup>4</sup> Cobalt-60 is a man-made cobalt isotope that has a relatively short half-life or decay rate of approximately 5 years.

<sup>5</sup> Eurofins Environmental Testing Laboratory SOP No. ST-RC-0058 for Sr-90 analysis, with sample preparation using extraction chromatography, is based on ASTM Method C1507-07 and Eichrom Method SRW01 with modifications. Eurofins Environmental Testing Laboratory's DoD ELAP certification references this SOP number for extraction chromatography.

analytical results for radionuclides are summarized in Table 3. The analytical laboratory report is provided in Appendix C. As presented in Table 3 and Appendix C, some radionuclides are present in site soil at low concentrations. It should be noted that the typical background concentrations of these radionuclides are very low. The low concentrations present approach the limits of the ability to detect the radionuclides with available analytical laboratory methods. For comparison purposes, background threshold concentrations are also presented in Table 3.<sup>6</sup>

Table 3 includes the calculated average (i.e., mean) concentrations of the detected radionuclides and the calculated 95<sup>th</sup> percentile concentrations of the detected radionuclides. Average concentrations of a radionuclide represent a reasonable estimate of the concentration likely to be contacted by a site receptor over time. A 95<sup>th</sup> percentile concentration of a radionuclide is a concentration that is greater than 95 percent of the detected concentrations. Using an overall concentration comparison (i.e., average concentration) versus a point-by-point approach (i.e., single concentration) to evaluate potential risk is generally applicable for scenarios where the potential risk from direct human contact exposure is being evaluated.<sup>7</sup> Comparison to the 95<sup>th</sup> percentile is also a useful benchmark.

The soil radiological analytical data provided in the laboratory report (Appendix C) include a number of measures to aid interpretation of the results. These include the uncertainty<sup>8</sup> associated with each result, the limit of quantitation (LOQ), and the decision level concentration (DLC). The LOQ is the lowest value where quantitation is valid to achieve a given precision and accuracy. The LOQ is a fixed value that represents the capability of a given analytical method. In contrast, the DLC is the level at which the radionuclide can be detected in a given sample, but with no

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<sup>6</sup> Precise quantification of background levels was not the goal of the sampling conducted at the site. Block 54 is not a radiological release site and radionuclides, if present, would be expected at background levels. Background concentrations identified in Table 3 are from a recent background study conducted by the Navy in June 2020, which identifies background threshold values from a reference area located outside of the Hunters Point Shipyard superfund site. USEPA Region 9 Santa Susana Field Laboratory background threshold values are also provided for additional reference (USEPA, 2011).

<sup>7</sup> U.S. Department of Defense, U.S. Nuclear Regulatory Commission, U.S. Department of Energy, Environmental Protection Agency, 2000. *The Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). Revision 1.* August.

<sup>8</sup> Uncertainty is defined as the interval within which the true value can be considered to lie with a given level of confidence or probability. Radiological analyses involve counting the emission of radiation. Because the emission of radiation from an atom is a random process, a sample counted several times usually yields a slightly different result each time; therefore, a single measurement is not definitive. To account for this variability, the concept of uncertainty is applied to radiological data. Therefore, the reported result (X) is within an expected interval (equal to the reported uncertainty [+/-]) of the true value, with a certain level of confidence. The laboratory reported uncertainty is provided as standard deviations of the mean. Roughly, 95% of all readings will fall within two standard deviations.



guarantee about the bias or precision of the result. The DLC is measurement-specific (i.e., it will differ for each individual analysis). The confidence in an analytical result increases the more it exceeds the applicable threshold for detection (i.e., the DLC) and as its uncertainty decreases.

#### 4.2.2.1 Radiological Results

The average concentration of each radionuclide and the LOQ, DLC and uncertainty associated with each analysis are provided in Table 3. Using the uncertainties presented in Table 3, statistical uncertainties were calculated as percentages relative to the mean for each radionuclide. High percent uncertainties indicate results were at or below the limits of detection. Limits of detection for all the radionuclides are well below levels that would indicate a health risk.

The mean concentration of Am-241 is -0.0140 picocuries per gram (pCi/g) with an uncertainty of 222%. None of the individual Am-241 sample results exceeded the LOQ or the DLC. Collectively these results (i.e., negative average concentration, high uncertainty percentage and no sample results in exceedance of their respective DLC or LOQ) do not indicate the presence of Am-241.

The mean concentration of Cs-137 is -0.0126 pCi/g with an uncertainty of 103%. None of the individual sample results of Cs-137 exceeded the LOQ or the DLC. Collectively these results (i.e., negative average concentration, high uncertainty percentage and no sample results in exceedance of their respective DLC or LOQ) do not indicate the presence of Cs-137.

Co-60 has a short half-life (or the time for the radionuclide to decay into other isotopes to half of its original amount) of around five years<sup>9</sup>. This half-life is less than other radionuclides, for example, Ra-226 has a half-life of 1,600 years<sup>10</sup>. Given this half-life, the presence of Co-60 is not expected. The mean concentration of Co-60 is 0.0067 pCi/g with an uncertainty of 147%. None of the individual sample results exceeded the LOQ. Six of the individual Co-60 results exceeded their corresponding DLCs, which is not unexpected given the very high uncertainties associated with measurements for an analyte that is not actually present. Collectively these results (i.e., high uncertainty percentage, and limited number of sample results in exceedance of their respective DLC or LOQ) do not indicate the presence of Co-60.

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<sup>9</sup> Stanford, 2020. *Environmental Health and Safety, Radionuclide Safety Data Sheet, Cobalt-60*. March.

<sup>10</sup> USEPA, 2021. *Radionuclide Basics: Radium*. July. <https://www.epa.gov/radiation/radionuclide-basics-radium>.

The mean concentration of Pu-239 was 0.0028 pCi/g with an uncertainty of 175%. None of the individual sample results exceeded the LOQ. Three of the individual sample results exceeded the DLC. Collectively the results do not indicate the presence of Pu-239.

The mean concentration of Ra-226 is 0.3910 pCi/g with an uncertainty of 8%. Six of the individual sample results exceeded the LOQ and 18 of the individual sample results exceeded the DLC. Collectively the data indicate the presence of Ra-226 (i.e., a reliable result) at a mean concentration below the background threshold concentration (Table 3). The 95<sup>th</sup> percentile concentration is also below the background threshold concentration (Table 3).

The mean concentration of Sr-90 is 0.0141 pCi/g with an uncertainty of 50%. None of the individual sample results exceeded the LOQ. Four of the individual sample results exceeded the DLC. Collectively these results (i.e., high uncertainty percentage, and limited number of sample results in exceedance of their respective DLC or LOQ) do not indicate the presence of Sr-90.

The mean concentration of Th-232 is 0.3798 pCi/g with an uncertainty of 8%. All 22 of the individual sample results exceeded the LOQ and the DLC. Collectively the data show a reliable result for a background concentration of Th-232. The mean concentration of Th-232 is below the background threshold concentration (Table 3). The 95<sup>th</sup> percentile concentration is also below the background threshold concentration (Table 3).

The mean concentration of U-235 is 0.0238 pCi/g with an uncertainty of 32%. None of the individual sample results exceeded the LOQ. Sixteen of the individual sample results exceeded the minimum detectable concentration (MDC). Collectively the data show a reasonably reliable value. The mean concentration for U-235 is below the background threshold concentration (Table 3). The 95<sup>th</sup> percentile concentration is also below the background threshold concentration (Table 3).

Further evaluation, including estimates for dose and risk, of the radionuclide concentrations detected at Block 54 is provided in Appendix D. Evaluation of concentrations below background threshold values, such as those at Block 54, is not generally conducted or required by the USEPA, the Argonne National Laboratory (ANL), the United States Department of Energy (DOE), or the

United States Nuclear Regulatory Commission (NRC);<sup>11</sup> therefore, the evaluation presented in Appendix D should be considered for informational purposes only.

## **5.0 CONCLUSIONS AND RECOMMENDATIONS**

The site consists of one APN 4591C/212 and is located in a mixed-use area of San Francisco and is approximately 0.45 acres in size. The site is vacant and used for construction staging and is located at the Hilltop Neighborhood within Parcel A of the Hunters Point Shipyard. The proposed development will be a five-story podium-style building with one level of concrete podium topped with four wood-framed levels of residential units. The concrete level will be partially below grade and will consist of a parking garage, utility rooms, and community spaces, including a courtyard and offices. Proposed excavations range from none on the north side to approximately 10 bgs on the south side of the site.

### **5.1 Conclusions**

Based on the analytical results from our subsurface investigation, some of the subsurface material contains total and soluble nickel concentrations above offsite disposal criteria. The areas of material containing total and soluble nickel concentrations above offsite disposal criteria are shown on Figure 3 and are near soil borings E-1 at 3.0 feet bgs, E-3 at 0.5 feet and 3.0 feet bgs, E-5 at 0.5 feet and 3.0 feet bgs, and E-6 at 5.0 feet bgs. This material must be removed and disposed as State of California Class I non-RCRA waste and the remaining material on-site to be excavated and removed must be disposed of as Class II material based on the asbestos concentrations. Remaining non-radiological constituents were not detected at elevated concentrations that would represent a concern to construction workers, the public or future residents.

The radiological testing results do not indicate the presence of radionuclides above background levels or the presence of radionuclides at levels that would indicate a release from a contaminant source at the site. In addition, the calculated maximum annual dose rate and relative risk associated with exposure to the maximum annual dose rate were calculated using RESRAD for each radionuclide considered at the site. The maximum annual dose rates were well below the NRC's dose rate criterion of 25 mrem/yr. The risk values associated with these maximum annual dose rates were below or within the generally acceptable risk range of E-06 to E-04. All of the

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<sup>11</sup> Refer to USEPA's Preliminary Remediation Goal (PRG) Calculator for Radionuclide Contaminants at Superfund Sites and ANL's, DOE's and NRC's Residual Radiation (RESRAD) Tool User's Guides at: <https://epa-prgs.ornl.gov/radionuclides/> and <https://resrad.evs.anl.gov/>.

mean (i.e., average) or maximum concentrations of radionuclides detected in site soil were below or within the accepted risk range or otherwise within expected background.

## **5.2 Recommendations**

An approved ADMP and DCP must be implemented due to the presence of endemic serpentinite rock containing NOA confirmed in the samples collected at the site. Real-time NOA and PM-10 dust monitoring and third party inspections must be conducted during potential dust generating activities such as grading, excavation, trenching, soil stockpiling, backfilling, soil handling and movement, and vehicular traffic on unpaved surfaces.

Per Article 31, a TDP must be submitted for SFDPH approval prior to construction because NOA and nickel are present on-site above off-site disposal criteria. Nickel is naturally occurring in the endemic serpentinite rock. The TDP must provide guidance and protocols to the contractor for soil/rock handling, transport, and disposal according to the pertinent regulations in an environmentally sound and safe manner. The UCRP contains protocols that should be referenced in the TDP and must be implemented during excavation activities if unanticipated conditions are encountered. The EHASP must outline proper material handling procedures and health and safety requirements to minimize worker and public exposure to hazardous materials during construction.

The Article 31 Closure Report must include the results of implementation of all the required Article 31 plans, all air monitoring results, copies of the required EHASP trainings (asbestos and lead awareness) and any notifications during construction.

The radiological sampling and testing conducted at Block 54 was not required by Article 31. As stated above, these radionuclides (except Co-60) are naturally occurring in rock or present due to worldwide fallout from nuclear testing. These radionuclides are present at very low concentrations that test the limits of the available and appropriate analytical laboratory methods (as indicated by the relative uncertainties associated with each radionuclide).<sup>12</sup> Given the very low concentrations and lack of radiological dose or risk exceedances, these radiological results do not pose a risk to the public or future residential users.

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<sup>12</sup> Radionuclide laboratory analysis involves measuring the activity of radionuclides to estimate the quantity of the substance present using a small sample volume over a specific time period and thus has inherent uncertainties.

## **6.0 LIMITATIONS**

Descriptions of specific field activities and historical events are based on our observations and on information provided by others. The opinions and information presented in this report apply to site conditions and the information that was available at the time the work was performed and do not apply to changes of which we are not aware or have not had the opportunity to evaluate. Langan makes no guarantees or warranties with respect to the accuracy or completeness of this information.

## 7.0 REFERENCES

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## **TABLES**



**Table 1**  
**Soil Analytical Results - Non-Metals**  
**Hunters Point Block 54**  
**San Francisco, California**

Sample ID	Sample Depth	Date Sampled	Petroleum Hydrocarbons			VOCs		All Other VOCs	SVOCs											All Other SVOCs
			TPHg	TPHd	TPHmo	M,P-Xylene	Total Xylenes		Anthracene	Benzo (a) pyrene	Benzo(g,h,i) perylene	1,1-Biphenyl	Dibenzo (a,h) anthracene	Dibenzofuran	Fluoranthene	Fluorene	1-Methylnaphthalene	Phenathrene	Pyrene	
			(mg/kg)																	
E-1-0.5	0.5	3/29/2022	< 1.0	12	170	0.0069	0.0069	ND	< 0.026	< 0.050	< 0.050	< 0.26	< 0.050	< 0.026	< 0.026	< 0.050	< 0.026	< 0.10	< 0.050	ND
E-1-3.0	3.0	3/29/2022	< 1.0	< 2.0	< 10	< 0.0050	< 0.0050	ND	< 0.0013	< 0.0025	< 0.0025	< 0.013	< 0.0025	< 0.0013	< 0.0013	< 0.0025	< 0.0013	< 0.0050	< 0.0025	ND
E-2-0.5	0.5	3/29/2022	8.5	33	840	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-2-1.5	1.5	3/29/2022	< 1.0	< 2.0	< 10	< 0.0050	< 0.0050	ND	< 0.0013	< 0.0025	< 0.0025	< 0.013	< 0.0025	< 0.0013	< 0.0013	< 0.0025	< 0.0013	< 0.0050	< 0.0025	ND
E-3-0.5	0.5	3/29/2022	< 1.0	< 2.0	< 10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-3-3.0	3.0	3/29/2022	< 1.0	< 2.0	< 10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-4-0.5	0.5	3/29/2022	< 1.0	< 2.0	14	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-4-1.5	1.5	3/29/2022	< 1.0	< 2.0	< 10	< 0.0050	< 0.0050	ND	< 0.0013	< 0.0025	< 0.0025	0.021	< 0.0025	0.023	< 0.0013	0.019	< 0.0013	0.0068	< 0.0025	ND
E-5-0.5	0.5	3/29/2022	1.6	< 2.0	< 10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-5-3.0	3.0	3/29/2022	< 1.0	< 2.0	< 10	< 0.0050	< 0.0050	ND	< 0.0013	< 0.0025	< 0.0025	< 0.013	< 0.0025	< 0.0013	< 0.0013	< 0.0025	< 0.0013	< 0.0050	< 0.0025	ND
E-6-0.5	0.5	3/29/2022	< 1.0	6.9	84.0	< 0.0050	< 0.0050	ND	< 0.026	< 0.050	< 0.050	< 0.26	< 0.050	< 0.026	< 0.026	< 0.050	< 0.026	< 0.10	< 0.050	ND
E-6-5.0	5.0	3/29/2022	< 1.0	< 2.0	< 10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-7-0.5	0.5	3/29/2022	2.7	< 2.0	< 10	< 0.0050	< 0.0050	ND	0.0015	< 0.0025	0.0038	< 0.013	< 0.0025	< 0.0013	0.0029	0.0065	< 0.0013	0.0078	0.0029	ND
E-7-3.0	3.0	3/29/2022	< 1.0	< 2.0	< 10	< 0.0050	< 0.0050	ND	< 0.0013	< 0.0025	< 0.0025	< 0.013	< 0.0025	< 0.0013	< 0.0013	< 0.0025	< 0.0013	< 0.0050	< 0.0025	ND
E-8-0.5	0.5	3/29/2022	3.0	4.4	110	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-8-1.5	1.5	3/29/2022	1.8	2.5	25	< 0.0050	< 0.0050	ND	0.0028	< 0.0025	0.0058	0.024	< 0.0025	0.023	0.006	0.021	0.0016	0.0096	0.0052	ND
E-8-5.0	5.0	3/29/2022	1.1	< 2.0	11	< 0.0050	< 0.0050	ND	< 0.0013	< 0.0025	< 0.0025	0.036	< 0.0025	0.025	< 0.0013	0.02	< 0.0013	< 0.0050	< 0.0025	ND
E-9-0.5	0.5	3/29/2022	1.2	< 2.0	12	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-9-1.5	1.5	3/29/2022	1.3	< 2.0	< 10	< 0.0050	< 0.0050	ND	< 0.0013	0.0033	0.0051	0.015	< 0.0025	0.013	0.0074	0.011	0.0013	0.0076	0.0062	ND
E-9-7.5	7.5	3/29/2022	1.2	< 2.0	< 10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-10-0.5	0.5	3/29/2022	3.3	< 2.0	< 10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-10-3.0	3.0	3/29/2022	< 1.0	< 2.0	< 10	< 0.0050	< 0.0050	ND	< 0.0013	< 0.0025	0.0049	0.017	0.0043	0.039	< 0.0013	0.011	< 0.0013	0.011	< 0.0025	ND
E-10-10.0	10.0	3/29/2022	< 1.0	< 2.0	< 10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-11-0.5	0.5	3/29/2022	1.2	< 2.0	< 10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-11-1.5	1.5	3/29/2022	< 1.0	< 2.0	< 10	< 0.0050	< 0.0050	ND	< 0.0013	< 0.0025	0.0025	0.014	0.0025	0.023	< 0.0013	0.0073	< 0.0013	0.0061	< 0.0025	ND
E-11-5.0	5.0	3/29/2022	1.1	< 2.0	< 10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-12-0.5	0.5	3/29/2022	2.8	< 2.0	23	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-12-3.0	3.0	3/29/2022	< 1.0	< 2.0	< 10	< 0.0050	< 0.0050	ND	< 0.0013	< 0.0025	< 0.0025	< 0.013	< 0.0025	0.0044	< 0.0013	< 0.0025	< 0.0013	< 0.0050	< 0.0025	ND
E-12-10.0	10.0	3/29/2022	14	< 2.0	< 10	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<b>Environmental Screening Levels<sup>1</sup></b>																				
<b>Residential</b>			430	260	12,000	--	580	Various	18,000	0.11	--	47	0.11	--	2,400	2,400	--	--	1,800	Various

**Table 1**  
**Soil Analytical Results - Non-Metals**  
**Hunters Point Block 54**  
**San Francisco, California**

Sample ID	Sample Depth	Date Sampled	OCPs										All Other OCPs	PCBs	Sulfide	Cyanide	pH	Asbestos
			g-BHC	Chlordane	alpha-Chlordane	gamma-Chlordane	DDD	DDE	DDT	Endosulfan Sulfate	Heptachlor	Heptachlor Epoxide						
			(mg/kg)															
E-1-0.5	0.5	3/29/2022	< 0.0010	< 0.025	< 0.0010	< 0.0010	0.001	0.0047	0.0047	< 0.0010	< 0.0010	< 0.0010	ND	ND	--	--	--	--
E-1-3.0	3.0	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	< 1.0	<1.9	8.24	2.75
E-2-0.5	0.5	3/29/2022	< 0.0010	< 0.025	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	< 0.0010	ND	ND	--	--	--	--
E-2-1.5	1.5	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-3-0.5	0.5	3/29/2022	< 0.00010	< 0.0025	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	< 0.00010	ND	ND	--	--	--	--
E-3-3.0	3.0	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.50
E-4-0.5	0.5	3/29/2022	< 0.00010	< 0.0025	0.00026	0.0004	0.00070	0.0055	0.014	< 0.00010	< 0.00010	< 0.00010	ND	ND	--	--	--	--
E-4-1.5	1.5	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-5-0.5	0.5	3/29/2022	< 0.00020	< 0.0050	< 0.00020	< 0.00020	< 0.00020	0.00036	0.0007	< 0.00020	< 0.00020	< 0.00020	ND	ND	--	--	--	--
E-5-3.0	3.0	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	3.00
E-6-0.5	0.5	3/29/2022	< 0.00050	< 0.012	0.00077	0.00099	< 0.00050	0.00051	0.0025	< 0.00050	< 0.00050	< 0.00050	ND	ND	--	--	--	--
E-6-5.0	5.0	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4.25
E-7-0.5	0.5	3/29/2022	< 0.00010	< 0.0025	< 0.00010	0.00012	0.00016	0.0023	0.0017	< 0.00010	< 0.00010	< 0.00010	ND	ND	--	--	--	--
E-7-3.0	3.0	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.25
E-8-0.5	0.5	3/29/2022	< 0.00010	0.016	0.0022	0.0021	< 0.00010	0.0034	0.0032	0.0001	< 0.00010	0.00022	ND	ND	--	--	--	--
E-8-1.5	1.5	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-8-5.0	5.0	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-9-0.5	0.5	3/29/2022	0.00029	< 0.0025	0.00012	0.00013	0.00027	0.002	0.0029	< 0.00010	< 0.00010	< 0.00010	ND	ND	--	--	--	1.25
E-9-1.5	1.5	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-9-7.5	7.5	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-10-0.5	0.5	3/29/2022	< 0.00010	< 0.0025	0.00049	0.00043	< 0.00010	0.00029	0.00026	< 0.00010	0.00022	< 0.00010	ND	ND	--	--	--	--
E-10-3.0	3.0	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	< 1.0	< 2.0	8.47	< 0.25
E-10-10.0	10.0	3/29/2022													--	--	--	< 0.25
E-11-0.5	0.5	3/29/2022	< 0.00010	< 0.0025	< 0.00010	< 0.00010	< 0.00010	0.00068	0.00049	< 0.00010	< 0.00010	< 0.00010	ND	ND	--	--	--	--
E-11-1.5	1.5	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.25
E-11-5.0	5.0	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.25
E-12-0.5	0.5	3/29/2022	0.00053	< 0.0025	0.00014	0.00016	0.00015	0.00098	0.0011	< 0.00010	< 0.00010	< 0.00010	ND	ND	--	--	--	2.25
E-12-3.0	3.0	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
E-12-10.0	10.0	3/29/2022	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	< 0.25
<b>Environmental Screening Levels<sup>1</sup></b>																		
<b>Residential</b>			0.55	0.48	--	--	2.7	1.8	1.9	--	0.12	0.062	Various	0.23	--	--	--	--

**Table 1**  
**Soil Analytical Results - Non-Metals**  
**Block 52 54**  
**11 Innes Court**  
**San Francisco, California**

Langan 770681001  
October 2022

Notes:

<sup>1</sup> - Residential Environmental Screening Levels (ESLs), San Francisco Bay Regional Water Quality Control Board (RWQCB), Direct Exposure Human Health Risk Screening Levels, Shallow Soil Exposure (Table S-1) 2019

Asbestos by California Air Resource Board (CARB) 435 Method

DDD - Dichlorodiphenyldichloroethane

DDE - Dichlorodiphenyldichloroethylene

DDT - Dichlorodiphenyltrichloroethane

OCPs - Organochlorine Pesticides, EPA Method 8081A

PCBs - Polychlorinated Biphenyls, EPA Method 8082

SVOCs - Semi-volatile Organic Compounds, EPA Method 8270C

TPHd - Total Petroleum Hydrocarbons as Diesel, EPA Method 8015M

TPHg - Total Petroleum Hydrocarbons as Gasoline, EPA Method 8015M

TPHmo - Total Petroleum Hydrocarbons as Motor Oil, EPA Method 8015M

VOCs - Volatile Organic Compounds, EPA Method 8260B

mg/kg - milligrams per kilograms

ND - Not detected at or above the laboratory reporting limit

– Not Analyzed or criteria not established

< 1.0 - Analyte was not detected at or above the laboratory reporting limit

**Table 2**  
**Soil Analytical Results - Metals**  
**Hunters Point Block 54**  
**San Francisco, California**

Sample ID	Sample Depth	Date Sampled	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	STLC Chromium	TCLP Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	STLC Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
			(mg/kg)						(mg/L)		(mg/kg)						(mg/L)	(mg/kg)				
E-1-0.5	0.5	3/29/2022	< 0.50	4.6	110	< 0.50	< 0.50	420	0.76	< 0.10	42	30	9.6	0.12	< 0.50	830	12	< 0.50	< 0.50	< 0.50	62	57
E-1-3.0	3.0	3/29/2022	--	--	--	--	< 0.50	1100	1.0	< 0.10	--	--	< 0.50	--	--	<b>2,100</b>	<b>47</b>	--	--	--	--	23
E-2-1.5	1.5	3/29/2022	< 0.50	< 0.50	6.8	< 0.50	< 0.50	860	1.5	< 0.10	72	8.9	< 0.50	< 0.050	< 0.50	1,600	8.5	< 0.50	< 0.50	< 0.50	17	18
E-3-0.5	0.5	3/29/2022	< 0.50	< 0.50	47	< 0.50	< 0.50	560	2.5	< 0.10	<b>120</b>	6.3	< 0.50	0.11	< 0.50	<b>2,400</b>	<b>42</b>	< 0.50	< 0.50	< 0.50	13	49
E-3-3.0	3.0	3/29/2022	< 0.50	< 0.50	7.7	< 0.50	< 0.50	290	2.1	< 0.10	<b>140</b>	27	< 0.50	0.12	< 0.50	<b>2,400</b>	<b>71</b>	< 0.50	< 0.50	< 0.50	3.6	26
E-4-0.5	0.5	3/29/2022	--	--	--	--	< 0.50	430	0.49	< 0.10	--	--	4.8	--	--	750	6.0	--	--	--	--	43
E-4-1.5	1.5	3/29/2022	< 0.50	5.7	88	< 0.50	< 0.50	270	0.11	< 0.10	27	29	6	0.065	< 0.50	510	2.1	< 0.50	< 0.50	< 0.50	70	61
E-5-0.5	0.5	3/29/2022	2.3	2.1	53	< 0.50	< 0.50	940	1.2	< 0.10	69	20	2.4	0.12	< 0.50	1,600	<b>32</b>	< 0.50	< 0.50	< 0.50	39	45
E-5-3.0	3.0	3/29/2022	--	--	--	--	< 0.50	1200	2.7	< 0.10	--	--	< 0.50	--	--	<b>1,800</b>	<b>53</b>	--	--	--	--	25
E-6-0.5	0.5	3/29/2022	< 0.50	4.2	130	< 0.50	< 0.50	280	0.42	< 0.10	27	22	27	0.091	< 0.50	420	5.2	< 0.50	< 0.50	< 0.50	69	86
E-6-5.0	5.0	3/29/2022	< 0.50	< 0.50	31	< 0.50	< 0.50	710	1.7	< 0.10	71	9.4	< 0.50	0.062	< 0.50	<b>1,700</b>	<b>35</b>	< 0.50	< 0.50	< 0.50	18	17
E-7-0.5	0.5	3/29/2022	--	--	--	--	< 0.50	350	0.37	< 0.10	--	--	7.3	--	--	630	4.1	--	--	--	--	72
E-7-3.0	3.0	3/29/2022	0.57	7.2	26	< 0.50	< 0.50	33	--	--	11	30	6.7	0.062	< 0.50	40	--	< 0.50	< 0.50	< 0.50	54	62
E-8-0.5	0.5	3/29/2022	1.5	6.5	160	0.66	< 0.50	300	0.62	< 0.10	34	34	7.7	0.15	0.61	610	5.3	< 0.50	< 0.50	< 0.50	76	70
E-8-1.5	1.5	3/29/2022	0.67	7.9	350	0.66	< 0.50	540	0.49	< 0.10	47	47	18	0.16	2.5	880	6.4	< 0.50	< 0.50	< 0.50	100	92
E-9-0.5	0.5	3/29/2022	--	--	--	--	< 0.50	360	0.24	< 0.10	--	--	8.4	--	--	620	6.1	--	--	--	--	67
E-9-1.5	1.5	3/29/2022	0.78	6.2	150	< 0.50	< 0.50	280	0.51	< 0.10	40	39	6.6	0.099	1.0	700	5.4	< 0.50	< 0.50	< 0.50	90	70
E-9-7.5	7.5	3/29/2022	--	--	--	--	< 0.50	260	0.22	< 0.10	--	--	4.6	--	--	560	2.2	--	--	--	--	65
E-10-0.5	0.5	3/29/2022	0.95	8.9	170	0.64	< 0.50	370	0.27	< 0.10	38	44	8.3	0.11	< 0.50	740	2.0	< 0.50	< 0.50	< 0.50	76	82
E-10-3.0	3.0	3/29/2022	< 0.50	4.2	110	0.64	< 0.50	230	0.23	< 0.10	23	42	4	0.052	< 0.50	350	2.6	< 0.50	< 0.50	< 0.50	98	63
E-10-10.0	10.0	3/29/2022	--	--	--	--	< 0.50	71	< 0.10	--	--	--	7.5	--	--	86	--	--	--	--	--	77
E-11-0.5	0.5	3/29/2022	0.62	7.9	210	0.65	< 0.50	510	0.21	< 0.10	48	44	8.2	0.13	1.2	860	2.3	< 0.50	< 0.50	< 0.50	87	91
E-11-1.5	1.5	3/29/2022	--	--	--	--	< 0.50	270	0.24	< 0.10	--	--	3.9	--	--	380	2.4	--	--	--	--	74
E-11-5.0	5.0	3/29/2022	--	--	--	--	< 0.50	390	0.34	< 0.10	--	--	6	--	--	660	3	--	--	--	--	64
E-12-0.5	0.5	3/29/2022	0.67	7.7	150	0.56	< 0.50	310	0.45	< 0.10	32	41	8.5	0.12	0.63	590	6.1	< 0.50	< 0.50	< 0.50	84	77
E-12-3.0	3.0	3/29/2022	< 0.50	5.2	150	< 0.50	< 0.50	230	0.33	< 0.10	25	32	6.9	0.09	0.51	380	4.8	< 0.50	< 0.50	< 0.50	60	65
E-12-10.0	10.0	3/29/2022	< 0.50	7.5	410	0.61	< 0.50	370	0.39	< 0.10	48	51	6.3	0.17	0.53	630	2.3	< 0.50	< 0.50	< 0.50	110	79
<b>Hazardous Waste Criteria</b>																						
TTL			500	500	10,000	75	100	2,500	--	--	8,000	2,500	1,000	20	3,500	2,000	--	100	500	700	2,400	5,000
STLC			15	5	--	0.75	1	--	5	--	80	25	--	0.2	350	--	20	1	5	7.0	24	--
TCLP			--	5	--	--	1	--	--	5	--	--	--	0.2	--	--	--	1	5	--	--	--
<b>Screening Criteria</b>																						
Residential ESLs <sup>1</sup>			11	0.067	15,000	16	78	120,000	--	--	23	3,100	80	13	390	820	--	390	390	0.78	390	23,000
Background Metals in Bay Area <sup>2</sup>			1.5-7.1	1.2-31	41-411	3	0.27-3.3	10-142	--	--	6.5-25.5	5.4-100	4.8-65	0.07-0.6	0.33-11.4	16-144	--	< 0.25-7	0.2-2.2	< 0.25-42.5	22-90	33-282
Background Metals in Hunters Point <sup>3</sup>			5.21-11.34	5.73-8.76	210.17-593.21	0.61-0.75	0.85-2.13	--	--	--	--	35.23-91.54	5.96-34.05	0.15-2.94	0.85-2.81	--	--	0.59-5.20	0.62-1.43	0.56-0.99	87.00-129.26	70.37-371.69
Background Metals in Innes Ave <sup>4</sup>			NA	1.08-2.84	6.59-47.5	--	--	460-662	--	--	84.4-113	27.1-28.6	58.9-85.4	0.0812-0.361	--	1,630*	--	--	--	2.71-8.25	12.6-34.6	32.7-99.4

Notes:

<sup>1</sup> Residential Environmental Screening Levels (ESLs), San Francisco Bay Regional Water Quality Control Board (RWQCB), Direct Exposure Human Health Risk Screening Levels, Shallow Soil Exposure (Table S-1) 2019. The lower of the cancer risk or non-cancer hazard ESL listed (where applicable).

<sup>2</sup> Background metals in Bay Area. Environmental Resources Management. Feasibility Study, Hookston Station, Pleasant Hill, California. Appendix A, Table A-2, "Comparison of Background Concentrations of Metals in Bay Area Soils," July 2006.

<sup>3</sup> 95% UCL of the 95 percentile (ambient levels) provided for all soil types, excluding Bay Mud. Navy, Calculation of Hunters Point Ambient Levels. August 1995.

<sup>4</sup> 95% UCL for soil and rock matrices for Innes Avenue dataset. Navy, Metals Concentrations in Franciscan Bedrock Outcrops: Three Sites in the Hunters Point Shear Zone and Marin Headlands Terrane Subunits, Hunters Point Shipyard, San Francisco, California. March 2004.

mg/kg - milligrams per kilograms

mg/L - milligrams per Liter

STLC - California Soluble Threshold Limit Concentration

TCLP - Federal Toxicity Characteristic Leaching Potential Analysis

TTL - California Total Threshold Limit Concentration

< 0.5 - Analyte was not detected at or above the laboratory reporting limit

-- Not analyzed or not established

**240** - Sample exceeds residential ESL and background concentrations

**Bold** - sample concentration exceeds hazardous waste criteria

*Italics* - Sample exceeds background metal concentrations

**Table 3**  
**Soil Analytical Results - Radionuclides**  
**Block 54**  
**San Francisco, California**

Sample ID	Sample Depth (Feet)	Date Sampled	Americium-241			Cesium-137			Cobalt-60			Plutonium-239/240		
			Result	Uncertainty	DLC	Result	Uncertainty	DLC	Result	Uncertainty	DLC	Result	Uncertainty	DLC
			pCi/g			pCi/g			pCi/g			pCi/g		
E-1-0.5	0.5	3/29/2022	-0.00489	0.152	0.101	-0.0432	0.0552	0.0588	0.0413	0.0762	0.0352	0.00230	0.0145	0.0102
E-1-1.5	1.5	3/29/2022	-0.0656	0.160	0.129	-0.00968	0.0553	0.0445	0.0259	0.0233	0.0121	-0.00326	0.0246	0.0216
E-2-0.5	0.5	3/29/2022	0.0152	0.120	0.0981	-0.0266	0.0489	0.0381	-0.00778	0.0537	0.0262	0.0146	0.0226	0.0102
E-3-0.5	0.5	3/29/2022	-0.00162	0.0922	0.0625	-0.0157	0.0638	0.0537	0.0165	0.0680	0.0333	0.00915	0.0206	0.0110
E-4-0.5	0.5	3/29/2022	-0.0818	0.211	0.171	-0.0498	0.0792	0.0612	0.00210	0.00427	0.0406	0.00521	0.0232	0.0163
E-4-1.5	1.5	3/29/2022	-0.0342	0.135	0.110	0.00958	0.0479	0.0256	0.0422	0.0270	0.00983	0.000820	0.0234	0.0188
E-5-0.5	0.5	3/29/2022	0.0412	0.114	0.0914	-0.0255	0.0567	0.0442	0.0128	0.0222	0.0112	-0.00334	0.0252	0.0222
E-5-1.5	1.5	3/29/2022	-0.0162	0.115	0.0838	0.00709	0.0831	0.0679	0.0121	0.00949	0.0458	0.00448	0.0199	0.0140
E-6-0.5	0.5	3/29/2022	0.0670	0.162	0.131	0.00239	0.0533	0.0436	0.0105	0.0369	0.0273	0.00328	0.0280	0.0217
E-6-1.5	1.5	3/29/2022	-0.0746	0.260	0.212	0.00692	0.0527	0.0429	-0.0221	0.0759	0.0367	-0.00323	0.0244	0.0215
E-7-0.5	0.5	3/29/2022	-0.0716	0.164	0.132	-0.00282	0.0583	0.0478	0.00485	0.00836	0.0335	-0.0101	0.0217	0.0224
E-7-3.0	3.0	3/29/2022	0.0218	0.102	0.0694	0.0101	0.0427	0.0339	-0.00789	0.0542	0.0262	-0.00496	0.0167	0.0163
E-8-1.5	1.5	3/29/2022	-0.0749	0.172	0.139	-0.000857	0.0524	0.0431	0.00142	0.0478	0.0236	0.00339	0.0290	0.0225
E-8-5.0	5.0	3/29/2022	-0.0255	0.139	0.144	0.00281	0.0342	0.0278	-0.00224	0.00540	0.0396	0.0209	0.0241	0.0115
E-9-0.5	0.5	3/29/2022	-0.0711	0.0912	0.102	0.00813	0.0547	0.0436	0.0118	0.0294	0.0134	-0.00346	0.0261	0.0229
E-9-1.5	1.5	3/29/2022	0.0477	0.123	0.0836	-0.0470	0.0810	0.0635	0.00151	0.0510	0.0252	0.00610	0.0122	0.0101
E-10-1.5	1.5	3/29/2022	-0.0757	0.163	0.132	0.00533	0.0502	0.0408	-0.0193	0.0624	0.0399	0.00245	0.0154	0.0108
E-10-5.0	5.0	3/29/2022	0.0221	0.123	0.0838	-0.0529	0.0913	0.0713	-0.00223	0.00188	0.0448	-0.00393	0.00787	0.0104
E-11-1.5	1.5	3/29/2022	0.0565	0.129	0.104	-0.0254	0.068	0.0544	0.00663	0.0306	0.0225	0.0107	0.0338	0.0237
E-11-5.0	5.0	3/29/2022	-0.0551	0.100	0.116	-0.0217	0.0805	0.0679	0.0561	0.0429	0.0187	0.0257	0.0258	0.0107
E-12-1.5	1.5	3/29/2022	0.0108	0.142	0.117	0.00125	0.0393	0.0322	0.0223	0.0352	0.0217	-0.0127	0.0148	0.0195
E-12-3.0	3.0	3/29/2022	0.0617	0.138	0.111	-0.00915	0.0438	0.0352	-0.0582	0.0937	0.0442	-0.00347	0.0262	0.0230
<b>Arithmetic (i.e. Mean) Averages</b>			-0.0140	-	-	-0.0126	-	-	0.0067	-	-	0.0028	-	-
<b>95th Percentile</b>			0.0614			0.0095			0.0422			0.0206		
<b>Percent Uncertainty of the Average</b>			-	222%	-	-	103%	-	-	147%	-	-	175%	-
<b>Limit of Quantitation</b>			0.500	-	-	0.0700	-	-	0.100	-	-	0.200	-	-
<b>HPS Background Threshold Values<sup>1</sup></b>			-	-	-	0.141	-	-	-	-	-	0.515	-	-
<b>SSFL Background Threshold Value<sup>2</sup></b>			0.0162			0.229			0.00556			0.0134		

**Table 3**  
**Soil Analytical Results - Radionuclides**  
**Block 54**  
**San Francisco, California**

Sample ID	Sample Depth (Feet)	Date Sampled	Radium-226			Strontium 89/90			Thorium-232			Uranium-235/236		
			Result	Uncertainty	DLC	Result	Uncertainty	DLC	Result	Uncertainty	DLC	Result	Uncertainty	DLC
			pCi/g			pCi/g			pCi/g			pCi/g		
E-1-0.5	0.5	3/29/2022	0.327	0.132	0.0447	0.0144	0.0307	0.0341	0.320	0.144	0.0299	0.0269	0.0429	0.0247
E-1-1.5	1.5	3/29/2022	0.413	0.140	0.0433	0.0406	0.0386	0.0406	0.226	0.113	0.0266	0.000	0.0108	0.0143
E-2-0.5	0.5	3/29/2022	0.0794	0.139	0.108	0.0111	0.0364	0.0411	0.313	0.110	0.0193	0.0114	0.02560	0.0137
E-3-0.5	0.5	3/29/2022	0.0721	0.211	0.115	-0.00641	0.0461	0.0545	0.211	0.0995	0.0303	0.000	0.0108	0.0143
E-4-0.5	0.5	3/29/2022	0.493	0.166	0.0531	-0.0133	0.0297	0.0360	0.388	0.153	0.0275	0.0249	0.0396	0.0212
E-4-1.5	1.5	3/29/2022	0.408	0.131	0.0519	0.0426	0.0329	0.0334	0.601	0.192	0.0350	0.00906	0.0329	0.0231
E-5-0.5	0.5	3/29/2022	0.334	0.116	0.0440	0.00457	0.0315	0.0361	0.334	0.161	0.0424	0.0521	0.0428	0.0144
E-5-1.5	1.5	3/29/2022	0.374	0.169	0.0745	-0.0109	0.0332	0.0400	0.242	0.144	0.0506	0.0304	0.0391	0.0190
E-6-0.5	0.5	3/29/2022	0.588	0.147	0.0353	0.00224	0.0334	0.0387	0.293	0.114	0.0324	0.0219	0.0349	0.0187
E-6-1.5	1.5	3/29/2022	0.0969	0.125	0.0886	0.0359	0.0374	0.0392	0.475	0.136	0.0266	-0.0284	0.0461	0.0459
E-7-0.5	0.5	3/29/2022	0.474	0.129	0.0413	0.00914	0.0360	0.0409	0.403	0.152	0.0262	0.0254	0.0404	0.0216
E-7-3.0	3.0	3/29/2022	0.451	0.139	0.0469	0.0254	0.0331	0.0353	0.334	0.108	0.0176	0.0319	0.0320	0.0132
E-8-1.5	1.5	3/29/2022	0.539	0.138	0.0350	0.00126	0.0283	0.0328	0.447	0.131	0.0316	0.0351	0.0353	0.0146
E-8-5.0	5.0	3/29/2022	0.268	0.0965	0.0417	0.0101	0.0313	0.0351	0.277	0.142	0.0330	0.00354	0.0223	0.0157
E-9-0.5	0.5	3/29/2022	0.519	0.142	0.0261	-0.00152	0.0290	0.0340	0.391	0.123	0.0233	0.0569	0.0433	0.0135
E-9-1.5	1.5	3/29/2022	0.128	0.195	0.172	0.0205	0.0351	0.0384	0.331	0.125	0.0316	0.0346	0.0347	0.0143
E-10-1.5	1.5	3/29/2022	0.683	0.158	0.0436	-0.00946	0.0299	0.0360	0.597	0.166	0.0271	0.0307	0.0395	0.0192
E-10-5.0	5.0	3/29/2022	0.207	0.110	0.227	0.0506	0.0339	0.0330	0.424	0.173	0.0314	0.0234	0.0373	0.0200
E-11-1.5	1.5	3/29/2022	0.472	0.109	0.0238	0.0485	0.0369	0.0370	0.310	0.0977	0.0159	0.0407	0.0366	0.0135
E-11-5.0	5.0	3/29/2022	0.780	0.199	0.0230	0.0377	0.0325	0.0330	0.447	0.119	0.0162	0.0214	0.0332	0.0149
E-12-1.5	1.5	3/29/2022	0.503	0.129	0.0395	0.00300	0.0223	0.0256	0.477	0.123	0.0265	0.0471	0.0445	0.0145
E-12-3.0	3.0	3/29/2022	0.392	0.101	0.0312	-0.00502	0.0250	0.0298	0.514	0.129	0.0196	0.0249	0.0289	0.0138
<b>Arithmetic (i.e. Mean) Averages</b>			0.3910	-	-	0.0141	-	-	0.3798	-	-	0.0238	-	-
<b>95th Percentile</b>			0.6783			0.0482			0.5929			0.0519		
<b>Percent Uncertainty of the Average</b>			-	8%	-	-	50%	-	-	8%	-	-	32%	-
<b>Limit of Quantitation</b>			0.500	-	-	0.15	-	-	0.200	-	-	0.145	-	-
<b>HPS Background Threshold Values<sup>1</sup></b>			0.861	-	-	0.15	-	-	1.63	-	-	0.145	-	-
<b>SSFL Background Threshold Value<sup>2</sup></b>			1.88			0.075			2.95			0.130		

**Table 3**  
**Soil Analytical Results - Radionuclides**  
**Hunters Point Block 52**  
**San Francisco, California**

Langan 770681001  
October 2022

Notes:

pCi/g - picocuries per gram

DLC - decision level concentration

LOQ - limit of quantitation

MDC - minimum detectable concentration


1. Navy, 2020. Memorandum to File Regarding Radiological Remediation Goals for Removal Site Evaluation Workplan for Parcels B, C, D-1, E, G, UC-1, UC-2, UC-3, Former Hunters Point Naval Shipyard, San Francisco California. 8 March.
2. USEPA Region 9, 2011. Final Radiological Background Study Report Santa Susana Field Laboratory (SSFL) Ventura County, California.

## FIGURES






**Legend**

 Approximate Site Boundary

**Notes:**  
 1. Topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online  
 Copyright: © 2011 National Geographic Society, i-cubed.



 Langan Engineering and Environmental Services, Inc. 1 Almaden Boulevard, Suite 590 San Jose, CA 95113-2253 T: 408.551.6700 F: 408.551.0344 www.langan.com	Project <b>HUNTERS POINT SHIPYARD BLOCK 54</b> SAN FRANCISCO SAN FRANCISCO COUNTY CALIFORNIA	Figure Title <b>SITE LOCATION MAP</b>	Project No. <b>770681000</b> Date <b>10/7/2022</b> Scale <b>1" = 1,000'</b> Drawn By <b>JNE</b>	Figure <b>1</b>
	© 2022 Langan			





**Legend**

- Approximate Location of Environmental Soil Boring, Langan 2022
- Site Boundary

Notes:  
 1. Aerial imagery provided by Langan's subscription to Nearmap.com.  
 Aerial flown 09/16/2022.  
 2. All features shown are approximate.



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Project

HUNTERS POINT  
 SHIPYARD BLOCK 54

SAN FRANCISCO

SAN FRANCISCO  
 COUNTY

Drawing Title

SITE PLAN  
 WITH  
 SAMPLING LOCATIONS

CALIFORNIA

Project No.  
 770681000

Date  
 10/7/2022

Scale  
 1" = 50'

Drawn By  
 JNE

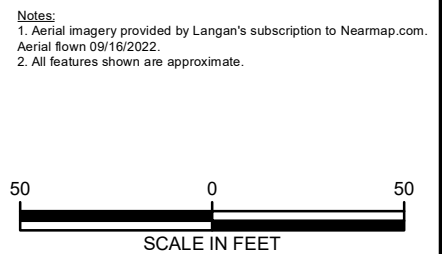
Figure

2





- Legend**
- Approximate Location of Environmental Soil Boring, Langan 2022
  - Site Boundary
  - Approximate Location of Class I Non-RCRA State of California Hazardous Waste
  - Approximate Depth of Class I Non-RCRA State of California Hazardous Waste



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Project

**HUNTERS POINT SHIPYARD BLOCK 54**

SAN FRANCISCO

SAN FRANCISCO COUNTY CALIFORNIA

Drawing Title

**SITE PLAN WITH ESTIMATED EXTENT OF CLASS I NON-RCRA MATERIAL**

Project No.	770681000	<b>3</b>
Date	10/7/2022	
Scale	1" = 50'	
Drawn By	JNE	



**APPENDIX A**  
**EXPLORATORY BORING LOGS**

PROJECT:

**HUNTERS POINT BLOCK 54  
San Francisco, California**

**Log of Boring E-1**

PAGE 1 OF 1

Boring location: See Site Plan, Figure 2

Logged by: D. Wood  
Drilled By: Gregg Drilling

Date started: 03/29/22

Date finished: 03/29/22

Drilling method: Hand Augered (HA), Direct Push (DPT)

Hammer weight/drop: NA

Hammer type: NA

Sampler: Geoprobe

DEPTH (feet)	SAMPLES				OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION
	Sample Number	Sample	Blow Count	Recovery (Inches)			
1	E-1-0.5				0.0	GP	SANDY GRAVEL (GP) gray, medium dense, dry, no odor, chunks of serpentinite
2	E-1-1.5				0.0	SM	SILTY SAND (SM) gray and green, loose, dry, no odor, some serpentinite fragments, some gravel, gravel decrease with depth
3	E-1-3.0				0.0		WEATHERED SERPENTINITE ROCK green and black, medium dense, dry, no odor, heavily weathered serpentinite rock pulverized by geoprobe
5	E-1-5.0			48/ 48"	0.0		
7	E-1-7.5			36/ 36"	0.0		
10	E-1-10.0				0.0		

TEST ENVIRONMENTAL INCHES 770681001 - HUNTERS POINT - 54-ENV-GPJ T&R.GDT 10/12/22

End of boring at 10 feet below ground surface.  
Groundwater not encountered during drilling.

**LANGAN**

Project No.:  
770681001

Figure:  
A-1

PROJECT:

**HUNTERS POINT BLOCK 54  
San Francisco, California**

**Log of Boring E-2**

PAGE 1 OF 1

Boring location: See Site Plan, Figure 2

Logged by: D. Wood  
Drilled By: Gregg Drilling

Date started: 03/29/22

Date finished: 03/29/22

Drilling method: Direct Push (DPT)

Hammer weight/drop: NA

Hammer type: NA

Sampler: Geoprobe

DEPTH (feet)	SAMPLES				OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION
	Sample Number	Sample	Blow Count	Recovery (Inches)			
1	E-2-0.5	●			0.0	GP	SANDY GRAVEL (GP) gray, medium dense, dry, no odor
	E-2-1.5	●			0.0	SM	SILTY SAND (SM) gray and green, loose, dry, no odor, some serpentinite fragments, some gravel
2				48/ 48"	0.0		WEATHERED SERPENTINITE ROCK green and black, medium dense, dry, no odor, weathered serpentinite rock pulverized by geoprobe
3	E-2-3.0	●			0.0		
4					0.0		
5	E-2-5.0	●			0.0		
6				36/ 36"	0.0		
7	E-2-7.5	●			0.0		
8					0.0		
9				36/ 36"	0.0		
10	E-2-10.0	●			0.0		
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

TEST ENVIRONMENTAL INCHES 770681001 - HUNTERS POINT - 54-ENV-GPJ T&R.GDT 10/12/22

End of boring at 10 feet below ground surface.  
Groundwater not encountered during drilling.



Project No.: 770681001

Figure: A-2

PROJECT:

**HUNTERS POINT BLOCK 54**  
San Francisco, California

**Log of Boring E-3**

PAGE 1 OF 1

Boring location: See Site Plan, Figure 2

Logged by: D. Wood  
Drilled By: Gregg Drilling

Date started: 03/29/22

Date finished: 03/29/22

Drilling method: Direct Push (DPT)

Hammer weight/drop: NA

Hammer type: NA

Sampler: Geoprobe

DEPTH (feet)	SAMPLES				OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION
	Sample Number	Sample	Blow Count	Recovery (Inches)			
1	E-3-0.5	●			0.0	GP	SANDY GRAVEL (GP) gray, medium dense, dry, no odor
2	E-3-1.5	●		48/ 48"	0.0	SM	SILTY SAND (SM) gray and green, loose, dry, no odor, some serpentinite fragments, some gravel
3	E-3-3.0	●			0.0		WEATHERED SERPENTINITE ROCK green and black, medium dense, dry, no odor, weathered serpentinite rock pulverized by geoprobe
5	E-3-5.0	●		36/ 36"	0.0		
7	E-3-7.5	●			0.0		
10	E-3-10.0	●		36/ 36"	0.0		
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

End of boring at 10 feet below ground surface.  
Groundwater not encountered during drilling.



Project No.: 770681001

Figure: A-3

TEST ENVIRONMENTAL INCHES 770681001 - HUNTERS POINT - 54-ENV-GPJ T&R.GDT 10/12/22

PROJECT:

**HUNTERS POINT BLOCK 54  
San Francisco, California**

**Log of Boring E-4**

PAGE 1 OF 1

Boring location: See Site Plan, Figure 2

Logged by: D. Wood  
Drilled By: Gregg Drilling

Date started: 03/29/22

Date finished: 03/29/22

Drilling method: Direct Push (DPT)

Hammer weight/drop: NA

Hammer type: NA

Sampler: Geoprobe

DEPTH (feet)	SAMPLES				OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION
	Sample Number	Sample	Blow Count	Recovery (Inches)			
1	E-4-0.5	●			0.0	GP	SANDY GRAVEL (GP) gray, medium dense, dry, no odor
1	E-4-1.5	●			0.0	SM	SILTY SAND (SM) brown, dense, dry, no odor
2				48/ 48"	0.0		WEATHERED SERPENTINITE ROCK green and black, medium dense, dry, no odor, serp fragments, weathered serpentinite rock pulverized by geoprobe
3	E-4-3.0	●			0.0		
4					0.0		
5	E-4-5.0	●		36/ 36"	0.0		
7	E-4-7.5	●			0.0		
8					0.0		
9				36/ 36"	0.0		
10	E-4-10.0	●			0.0		
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

End of boring at 10 feet below ground surface.  
Groundwater not encountered during drilling.

TEST ENVIRONMENTAL INCHES 770681001 - HUNTERS POINT - 54-ENV-GPJ T&R.GDT 10/12/22

**LANGAN**

Project No.:  
770681001

Figure:  
A-4



PROJECT:

**HUNTERS POINT BLOCK 54  
San Francisco, California**

**Log of Boring E-5**

PAGE 1 OF 1

Boring location: See Site Plan, Figure 2

Logged by: D. Wood  
Drilled By: Gregg Drilling

Date started: 03/29/22

Date finished: 03/29/22

Drilling method: Direct Push (DPT)

Hammer weight/drop: NA

Hammer type: NA

Sampler: Geoprobe

DEPTH (feet)	SAMPLES				OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION
	Sample Number	Sample	Blow Count	Recovery (Inches)			
1	E-5-0.5	●			0.0	SM	SANDY SILT (SM) black and gray, medium dense, dry, no odor, serpentinite chunks
2	E-5-1.5	●		48/ 48"	0.0		WEATHERED SERPENTINITE ROCK green and gray, medium dense, dry, no odor, serp fragments weathered serpentinite, rock pulverized by geoprobe, refusal at 4 feet
3	E-5-3.0	●			0.0		
4					0.0		
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

End of boring at 4 feet below ground surface.  
Groundwater not encountered during drilling.

**LANGAN**

Project No.:  
770681001

Figure:  
A-5

TEST ENVIRONMENTAL INCHES 770681001 - HUNTERS POINT - 54-ENV-GPJ T&R.GDT 10/12/22

PROJECT:

**HUNTERS POINT BLOCK 54  
San Francisco, California**

**Log of Boring E-6**

PAGE 1 OF 1

Boring location: See Site Plan, Figure 2

Logged by: D. Wood  
Drilled By: Gregg Drilling

Date started: 03/29/22

Date finished: 03/29/22

Drilling method: Direct Push (DPT)

Hammer weight/drop: NA

Hammer type: NA

Sampler: Geoprobe

DEPTH (feet)	SAMPLES				OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION
	Sample Number	Sample	Blow Count	Recovery (Inches)			
1	E-6-0.5	●			0.0	GP	SANDY GRAVEL (GP) brown and gray, dense, dry, non plastic, no odor, chunks of srpentinite
2	E-6-1.5	●			0.0	CL	SILTY CLAY (CL) dark brown, medium stiff, dry, slightly plastic, no odor
3	E-6-3.0	●		48/ 48"	0.0		sand lens at 3.5'. Plasticity decrease over depth. Serpentinite increase over depth.
5	E-6-5.0	●			0.0		WEATHERED SERPENTINITE ROCK green and black, medium dense, dry, no odor, serp fragments weathered serpentinite, rock pulverized by geoprobe
7	E-6-7.5	●		36/ 36"	0.0		
10	E-6-10.0	●			0.0		
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

TEST ENVIRONMENTAL INCHES 770681001 - HUNTERS POINT - 54-ENV-GPJ T&R.GDT 10/12/22

End of boring at 10 feet below ground surface.  
Groundwater not encountered during drilling.



Project No.:  
770681001

Figure:  
A-6

PROJECT:

**HUNTERS POINT BLOCK 54  
San Francisco, California**

**Log of Boring E-7**

PAGE 1 OF 1

Boring location: See Site Plan, Figure 2

Logged by: D. Wood  
Drilled By: Gregg Drilling

Date started: 03/29/22

Date finished: 03/29/22

Drilling method: Direct Push (DPT)

Hammer weight/drop: NA

Hammer type: NA

Sampler: Geoprobe

DEPTH (feet)	SAMPLES				OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION
	Sample Number	Sample	Blow Count	Recovery (Inches)			
1	E-7-0.5	●			0.0	GP	SANDY GRAVEL (GP) gray, loose, dry, no odor
2	E-7-1.5	●			0.0	CL	SILTY CLAY (CL) black and gray, stiff, dry, slightly plastic, no odor
3	E-7-3.0	●		48/ 48"	0.0		WEATHERED SERPENTINITE tan and gray, medium dense, dry, non plastic, no odor, serp fragments weathered serpentinite, rock pulverized by geoprobe, refulas at 4 feet
4					0.0		
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

End of boring at 4 feet below ground surface.  
Groundwater not encountered during drilling.



Project No.: 770681001

Figure: A-7

TEST ENVIRONMENTAL INCHES 770681001 - HUNTERS POINT - 54-ENV-GPJ T&R.GDT 10/12/22

PROJECT:

**HUNTERS POINT BLOCK 54**  
San Francisco, California

**Log of Boring E-8**

PAGE 1 OF 1

Boring location: See Site Plan, Figure 2

Logged by: D. Wood  
Drilled By: Gregg Drilling

Date started: 03/29/22

Date finished: 03/29/22

Drilling method: Direct Push (DPT)

Hammer weight/drop: NA

Hammer type: NA

Sampler: Geoprobe

DEPTH (feet)	SAMPLES				OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION
	Sample Number	Sample	Blow Count	Recovery (Inches)			
1	E-8-0.5	●			0.0	GP	SANDY GRAVEL (GP) gray, medium dense, dry, no odor
2	E-8-1.5	●		48/ 48"	0.0	CL	SILTY CLAY (CL) dark brown, medium stiff, dry, slightly plastic, no odor, serpentinite fragments
3	E-8-3.0	●			0.0		
4					0.0		
5	E-8-5.0	●		36/ 36"	0.0	SM	SILTY SAND (SM) brown and green, dense, dry, no odor, serpentinite fragments
6					0.0		
7	E-8-7.5	●			0.0		WEATHERED SERPENTINITE ROCK green and black, medium dense, dry, no odor, serpentinite fragments weathered serpentinite, rock pulverized by geoprobe
8				36/ 36"	0.0		
9					0.0		
10	E-8-10.0	●			0.0		
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

End of boring at 10 feet below ground surface.  
Groundwater not encountered during drilling.



Project No.: 770681001

Figure: A-8

TEST ENVIRONMENTAL INCHES 770681001 - HUNTERS POINT - 54-ENV-GPJ T&R.GDT 10/12/22

PROJECT:

**HUNTERS POINT BLOCK 54**  
**San Francisco, California**

**Log of Boring E-9**

PAGE 1 OF 1

Boring location: See Site Plan, Figure 2

Logged by: D. Wood  
 Drilled By: Gregg Drilling

Date started: 03/29/22

Date finished: 03/29/22

Drilling method: Direct Push (DPT)

Hammer weight/drop: NA

Hammer type: NA

Sampler: Geoprobe

DEPTH (feet)	SAMPLES				Recovery (Inches)	OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION
	Sample Number	Sample	Blow Count					
1	E-9-0.5	●			48/ 48"	0.0	GP	SANDY GRAVEL (GP) gray, medium dense, dry, no odor
2	E-9-1.5	●				0.0	CL	SILTY CLAY (CL) brown and black, stiff, dry, slightly plastic, non odor, serpentinite fragments. plasticity decrease over depth, serpentinite fragments increase over depth.
3	E-9-3.0	●				0.0		
4						0.0		
5	E-9-5.0	●			36/ 36"	0.0	SC	CLAYEY SAND (SC) brown and green, dense, dry, slightly plastic, no odor, serpentinite fragments
6						0.0		
7	E-9-7.5	●				0.0		
8					36/ 36"	0.0		
9						0.0		
10	E-9-10.0	●				0.0		
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

End of boring at 10 feet below ground surface.  
 Groundwater not encountered during drilling.

**LANGAN**

Project No.:  
 770681001

Figure:  
 A-9

TEST ENVIRONMENTAL INCHES 770681001 - HUNTERS POINT - 54-ENV-GPJ T&R.GDT 10/12/22

PROJECT: **HUNTERS POINT BLOCK 54  
San Francisco, California**

**Log of Boring E-10**

PAGE 1 OF 1

Boring location: See Site Plan, Figure 2

Logged by: D. Wood  
Drilled By: Gregg Drilling

Date started: 03/29/22

Date finished: 03/29/22

Drilling method: Direct Push (DPT)

Hammer weight/drop: NA

Hammer type: NA

Sampler: Geoprobe

DEPTH (feet)	SAMPLES				OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION
	Sample Number	Sample	Blow Count	Recovery (Inches)			
1	E-10-0.5	●			0.0	GP	SANDY GRAVEL (GP) gray, medium dense, dry, no odor
2	E-10-1.5	●		48/ 48"	0.0	CL	SILTY CLAY (CL) brown and black, stiff, dry, slightly plastic, no odor, serpentinite fragments
3	E-10-3.0	●			0.0		
4					0.0		
5	E-10-5.0	●		36/ 36"	0.0		WEATHERED SERPENTINITE ROCK brown and green, medium dense, dry, no odor serpentinite fragments, weathered serpentinite rock pulverized by geoprobe
6					0.0		
7	E-10-7.5	●			0.0		
8					0.0		
9				36/ 36"	0.0		
10	E-10-10.0	●			0.0		
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

TEST ENVIRONMENTAL INCHES 770681001 - HUNTERS POINT - 54-ENV-GPJ T&R.GDT 10/12/22

End of boring at 10 feet below ground surface.  
Groundwater not encountered during drilling.



Project No.: 770681001

Figure: A-10

PROJECT: **HUNTERS POINT BLOCK 54  
San Francisco, California**

**Log of Boring E-11**

PAGE 1 OF 1

Boring location: See Site Plan, Figure 2

Logged by: D. Wood  
Drilled By: Gregg Drilling

Date started: 03/29/22

Date finished: 03/29/22

Drilling method: Direct Push (DPT)

Hammer weight/drop: NA

Hammer type: NA

Sampler: Geoprobe

DEPTH (feet)	SAMPLES				OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION
	Sample Number	Sample	Blow Count	Recovery (Inches)			
1	E-11-0.5	●			0.0	GP	SANDY GRAVEL (GP) gray, dense, dry, no odor
2	E-11-1.5	●		48/ 48"	0.0	SM	SILTY SAND (SM) brown and black, medium stiff, slightly plastic, no odor, serpentinite fragments
3	E-11-3.0	●			0.0		
4					0.0		
5	E-11-5.0	●		36/ 36"	0.0	CL	SILTY CLAY (CL) gray, black, green, medium dense, dry, no odor, weathered serpentinite fragments
6					0.0		
7	E-11-7.5	●			0.0		
8				36/ 36"	0.0		
9					0.0		
10	E-11-10.0	●			0.0		
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

End of boring at 10 feet below ground surface.  
Groundwater not encountered during drilling.

**LANGAN**

Project No.: 770681001

Figure: A-11

TEST ENVIRONMENTAL INCHES 770681001 - HUNTERS POINT - 54-ENV-GPJ T&R.GDT 10/12/22

PROJECT: HUNTERS POINT BLOCK 54  
San Francisco, California

# Log of Boring E-12

PAGE 1 OF 1

Boring location: See Site Plan, Figure 2

Logged by: D. Wood  
Drilled By: Gregg Drilling

Date started: 03/29/22

Date finished: 03/29/22

Drilling method: Direct Push (DPT)

Hammer weight/drop: NA

Hammer type: NA

Sampler: Geoprobe

DEPTH (feet)	SAMPLES				OVM (ppm)	LITHOLOGY	MATERIAL DESCRIPTION
	Sample Number	Sample	Blow Count	Recovery (Inches)			
1	E-12-0.5	●			0.0	SM	SILTY SAND (SM) brown, medium dense, dry, no odor
2	E-12-1.5	●			0.0	CL	SILTY CLAY (CL) brown and black, stiff, dry, slightly plastic, no odor
3	E-12-3.0	●		48/ 48"	0.0		
4					0.0		
5	E-12-5.0	●			0.0		
6				36/ 36"	0.0		
7	E-12-7.5	●			0.0		
8					0.0		
9				36/ 36"	0.0		
10	E-12-10.0	●			0.0		
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							

End of boring at 10 feet below ground surface.  
Groundwater not encountered during drilling.

TEST ENVIRONMENTAL INCHES 770681001 - HUNTERS POINT - 54-ENV-GPJ T&R.GDT 10/12/22



Project No.: 770681001

Figure: A-12



## UNIFIED SOIL CLASSIFICATION SYSTEM

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

### SAMPLE DESIGNATIONS/SYMBOLS

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

- Sample taken with Sprague & Henwood split-barrel sampler with a 3.0-inch outside diameter and a 2.43-inch inside diameter. Darkened area indicates soil recovered
- Classification sample taken with Standard Penetration Test sampler
- Undisturbed sample taken with thin-walled tube
- Disturbed sample
- Sampling attempted with no recovery
- Core sample
- Analytical laboratory sample
- Sample taken with Direct Push or Drive sampler
- Sonic

- Unstabilized groundwater level
- Stabilized groundwater level

### SAMPLER TYPE

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

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Project  
**HUNTERS POINT  
 BLOCK 54**  
**SAN FRANCISCO**  
**SAN FRANCISCO COUNTY CALIFORNIA**

Figure Title  
**SOIL CLASSIFICATION CHART**

Project No.  
 770681001  
 Date  
 05/06/2022  
 Drawn By  
 AG  
 Checked By  
 DW

A-13

**APPENDIX B**  
**NON-RADIOLOGICAL LABORATORY ANALYTICAL REPORTS**



# McC Campbell Analytical, Inc.

"When Quality Counts"

## Analytical Report

**WorkOrder:** 2203L27

**Report Created for:** Langan

1 Almaden Blvd, Suite 590  
San Jose, CA 95113

**Project Contact:** Peter Cusack

**Project P.O.:**

**Project:** 770681001; Hunters Point Block 54

**Project Received:** 03/31/2022

Analytical Report reviewed & approved for release on 04/13/2022 by:

Jennifer Lagerbom  
Project Manager

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





## Glossary of Terms & Qualifier Definitions

**Client:** Langan

**WorkOrder:** 2203L27

**Project:** 770681001; Hunters Point Block 54

### 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)



## Glossary of Terms & Qualifier Definitions

**Client:** Langan

**WorkOrder:** 2203L27

**Project:** 770681001; Hunters Point Block 54

### Analytical Qualifiers

J	Result is less than the RL/ML but greater than the MDL. The reported concentration is an estimated value.
P	Agreement between quantitative confirmation results exceed method recommended limits
S	Surrogate recovery outside accepted recovery limits.
a2	Sample diluted due to cluttered chromatogram.
a3	Sample diluted due to high organic content interfering with quantitative/or qualitative analysis.
c1	Surrogate recovery outside of the control limits due to the dilution of the sample.
c2	Surrogate recovery outside of the control limits due to matrix interference.
c16	The internal standard recovery is below the lower limit. The target analyte(s) were Not Detected (ND); therefore, the data is reportable.
d1	Weakly modified or unmodified gasoline is significant
d7	Strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram
e2	Diesel range compounds are detected; no recognizable pattern
e7	Oil range compounds are detected.
h7	Copper (EPA 3660B) cleanup
k12	Asbestos observed but no asbestos points counted
k15	Chrysotile

### Quality Control Qualifiers

F1	MS/MSD recovery and/or RPD is out of acceptance criteria; LCS validates the prep batch.
F5	LCS/LCSD recovery is outside of acceptance limits; however, the data is acceptable based upon the TNI allowable marginal exceedances.



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640Am/3630Cm  
**Analytical Method:** SW8081A/8082  
**Unit:** mg/kg

### Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-0.5	2203L27-001A	Soil	03/29/2022 09:45	GC23 04072261.d	242785

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Aldrin	ND		0.0010	10	04/07/2022 17:48
a-BHC	ND		0.0010	10	04/07/2022 17:48
b-BHC	ND		0.0030	10	04/07/2022 17:48
d-BHC	ND		0.0020	10	04/07/2022 17:48
g-BHC	ND		0.0010	10	04/07/2022 17:48
Chlordane (Technical)	ND		0.025	10	04/07/2022 17:48
a-Chlordane	ND		0.0010	10	04/07/2022 17:48
g-Chlordane	ND		0.0010	10	04/07/2022 17:48
p,p-DDD	<b>0.0010</b>	P	0.0010	10	04/07/2022 17:48
p,p-DDE	<b>0.0047</b>		0.0010	10	04/07/2022 17:48
p,p-DDT	<b>0.0047</b>		0.0010	10	04/07/2022 17:48
Dieldrin	ND		0.0010	10	04/07/2022 17:48
Endosulfan I	ND		0.0010	10	04/07/2022 17:48
Endosulfan II	ND		0.0010	10	04/07/2022 17:48
Endosulfan sulfate	ND		0.0010	10	04/07/2022 17:48
Endrin	ND		0.0010	10	04/07/2022 17:48
Endrin aldehyde	ND		0.0010	10	04/07/2022 17:48
Endrin ketone	ND		0.0010	10	04/07/2022 17:48
Heptachlor	ND		0.0010	10	04/07/2022 17:48
Heptachlor epoxide	ND		0.0010	10	04/07/2022 17:48
Hexachlorobenzene	ND		0.010	10	04/07/2022 17:48
Hexachlorocyclopentadiene	ND		0.020	10	04/07/2022 17:48
Methoxychlor	ND		0.0020	10	04/07/2022 17:48
Toxaphene	ND		0.050	10	04/07/2022 17:48
Aroclor1016	ND		0.050	10	04/07/2022 17:48
Aroclor1221	ND		0.050	10	04/07/2022 17:48
Aroclor1232	ND		0.050	10	04/07/2022 17:48
Aroclor1242	ND		0.050	10	04/07/2022 17:48
Aroclor1248	ND		0.050	10	04/07/2022 17:48
Aroclor1254	ND		0.050	10	04/07/2022 17:48
Aroclor1260	ND		0.050	10	04/07/2022 17:48
PCBs, total	ND		0.050	10	04/07/2022 17:48

Surrogates	REC (%)	Limits	Date Analyzed
Decachlorobiphenyl	119	20-145	04/07/2022 17:48

Analyst(s): CN

Analytical Comments: a2

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640Am/3630Cm  
**Analytical Method:** SW8081A/8082  
**Unit:** mg/kg

### Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-2-0.5	2203L27-005A	Soil	03/29/2022 10:32	GC23 04082202.d	242785

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.0010	10	04/08/2022 02:06
a-BHC	ND	0.0010	10	04/08/2022 02:06
b-BHC	ND	0.0030	10	04/08/2022 02:06
d-BHC	ND	0.0020	10	04/08/2022 02:06
g-BHC	ND	0.0010	10	04/08/2022 02:06
Chlordane (Technical)	ND	0.025	10	04/08/2022 02:06
a-Chlordane	ND	0.0010	10	04/08/2022 02:06
g-Chlordane	ND	0.0010	10	04/08/2022 02:06
p,p-DDD	ND	0.0010	10	04/08/2022 02:06
p,p-DDE	ND	0.0010	10	04/08/2022 02:06
p,p-DDT	ND	0.0010	10	04/08/2022 02:06
Dieldrin	ND	0.0010	10	04/08/2022 02:06
Endosulfan I	ND	0.0010	10	04/08/2022 02:06
Endosulfan II	ND	0.0010	10	04/08/2022 02:06
Endosulfan sulfate	ND	0.0010	10	04/08/2022 02:06
Endrin	ND	0.0010	10	04/08/2022 02:06
Endrin aldehyde	ND	0.0010	10	04/08/2022 02:06
Endrin ketone	ND	0.0010	10	04/08/2022 02:06
Heptachlor	ND	0.0010	10	04/08/2022 02:06
Heptachlor epoxide	ND	0.0010	10	04/08/2022 02:06
Hexachlorobenzene	ND	0.010	10	04/08/2022 02:06
Hexachlorocyclopentadiene	ND	0.020	10	04/08/2022 02:06
Methoxychlor	ND	0.0020	10	04/08/2022 02:06
Toxaphene	ND	0.050	10	04/08/2022 02:06
Aroclor1016	ND	0.050	10	04/08/2022 02:06
Aroclor1221	ND	0.050	10	04/08/2022 02:06
Aroclor1232	ND	0.050	10	04/08/2022 02:06
Aroclor1242	ND	0.050	10	04/08/2022 02:06
Aroclor1248	ND	0.050	10	04/08/2022 02:06
Aroclor1254	ND	0.050	10	04/08/2022 02:06
Aroclor1260	ND	0.050	10	04/08/2022 02:06
PCBs, total	ND	0.050	10	04/08/2022 02:06

Surrogates	REC (%)	Limits	Date Analyzed
Decachlorobiphenyl	104	20-145	04/08/2022 02:06

Analyst(s): CN

Analytical Comments: a2

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640Am/3630Cm  
**Analytical Method:** SW8081A/8082  
**Unit:** mg/kg

### Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-3-0.5	2203L27-009A	Soil	03/29/2022 11:30	GC23 04062224.d	242785

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00010	1	04/07/2022 07:26
a-BHC	ND	0.00010	1	04/07/2022 07:26
b-BHC	ND	0.00030	1	04/07/2022 07:26
d-BHC	ND	0.00020	1	04/07/2022 07:26
g-BHC	ND	0.00010	1	04/07/2022 07:26
Chlordane (Technical)	ND	0.0025	1	04/07/2022 07:26
a-Chlordane	ND	0.00010	1	04/07/2022 07:26
g-Chlordane	ND	0.00010	1	04/07/2022 07:26
p,p-DDD	ND	0.00010	1	04/07/2022 07:26
p,p-DDE	ND	0.00010	1	04/07/2022 07:26
p,p-DDT	ND	0.00010	1	04/07/2022 07:26
Dieldrin	ND	0.00010	1	04/07/2022 07:26
Endosulfan I	ND	0.00010	1	04/07/2022 07:26
Endosulfan II	ND	0.00010	1	04/07/2022 07:26
Endosulfan sulfate	ND	0.00010	1	04/07/2022 07:26
Endrin	ND	0.00010	1	04/07/2022 07:26
Endrin aldehyde	ND	0.00010	1	04/07/2022 07:26
Endrin ketone	ND	0.00010	1	04/07/2022 07:26
Heptachlor	ND	0.00010	1	04/07/2022 07:26
Heptachlor epoxide	ND	0.00010	1	04/07/2022 07:26
Hexachlorobenzene	ND	0.0010	1	04/07/2022 07:26
Hexachlorocyclopentadiene	ND	0.0020	1	04/07/2022 07:26
Methoxychlor	ND	0.00020	1	04/07/2022 07:26
Toxaphene	ND	0.0050	1	04/07/2022 07:26
Aroclor1016	ND	0.0050	1	04/07/2022 07:26
Aroclor1221	ND	0.0050	1	04/07/2022 07:26
Aroclor1232	ND	0.0050	1	04/07/2022 07:26
Aroclor1242	ND	0.0050	1	04/07/2022 07:26
Aroclor1248	ND	0.0050	1	04/07/2022 07:26
Aroclor1254	ND	0.0050	1	04/07/2022 07:26
Aroclor1260	ND	0.0050	1	04/07/2022 07:26
PCBs, total	ND	0.0050	1	04/07/2022 07:26

Surrogates	REC (%)	Limits	Date Analyzed
Decachlorobiphenyl	83	20-145	04/07/2022 07:26

Analyst(s): CN

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640Am/3630Cm  
**Analytical Method:** SW8081A/8082  
**Unit:** mg/kg

### Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-0.5	2203L27-013A	Soil	03/29/2022 12:05	GC23 04062225.d	242785

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Aldrin	ND		0.00010	1	04/07/2022 07:41
a-BHC	ND		0.00010	1	04/07/2022 07:41
b-BHC	ND		0.00030	1	04/07/2022 07:41
d-BHC	ND		0.00020	1	04/07/2022 07:41
g-BHC	ND		0.00010	1	04/07/2022 07:41
Chlordane (Technical)	ND		0.0025	1	04/07/2022 07:41
a-Chlordane	<b>0.00026</b>	P	0.00010	1	04/07/2022 07:41
g-Chlordane	<b>0.00040</b>		0.00010	1	04/07/2022 07:41
p,p-DDD	<b>0.00070</b>		0.00010	1	04/07/2022 07:41
p,p-DDE	<b>0.0055</b>		0.00010	1	04/07/2022 07:41
p,p-DDT	<b>0.014</b>		0.00010	1	04/07/2022 07:41
Dieldrin	ND		0.00010	1	04/07/2022 07:41
Endosulfan I	ND		0.00010	1	04/07/2022 07:41
Endosulfan II	ND		0.00010	1	04/07/2022 07:41
Endosulfan sulfate	ND		0.00010	1	04/07/2022 07:41
Endrin	ND		0.00010	1	04/07/2022 07:41
Endrin aldehyde	ND		0.00010	1	04/07/2022 07:41
Endrin ketone	ND		0.00010	1	04/07/2022 07:41
Heptachlor	ND		0.00010	1	04/07/2022 07:41
Heptachlor epoxide	ND		0.00010	1	04/07/2022 07:41
Hexachlorobenzene	ND		0.0010	1	04/07/2022 07:41
Hexachlorocyclopentadiene	ND		0.0020	1	04/07/2022 07:41
Methoxychlor	ND		0.00020	1	04/07/2022 07:41
Toxaphene	ND		0.0050	1	04/07/2022 07:41
Aroclor1016	ND		0.0050	1	04/07/2022 07:41
Aroclor1221	ND		0.0050	1	04/07/2022 07:41
Aroclor1232	ND		0.0050	1	04/07/2022 07:41
Aroclor1242	ND		0.0050	1	04/07/2022 07:41
Aroclor1248	ND		0.0050	1	04/07/2022 07:41
Aroclor1254	ND		0.0050	1	04/07/2022 07:41
Aroclor1260	ND		0.0050	1	04/07/2022 07:41
PCBs, total	ND		0.0050	1	04/07/2022 07:41

Surrogates	REC (%)	Limits	Date Analyzed
Decachlorobiphenyl	114	20-145	04/07/2022 07:41

Analyst(s): CN

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640Am/3630Cm  
**Analytical Method:** SW8081A/8082  
**Unit:** mg/kg

### Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-0.5	2203L27-017A	Soil	03/29/2022 13:05	GC23 04112266.d	242785

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00020	2	04/12/2022 02:28
a-BHC	ND	0.00020	2	04/12/2022 02:28
b-BHC	ND	0.00060	2	04/12/2022 02:28
d-BHC	ND	0.00040	2	04/12/2022 02:28
g-BHC	ND	0.00020	2	04/12/2022 02:28
Chlordane (Technical)	ND	0.0050	2	04/12/2022 02:28
a-Chlordane	ND	0.00020	2	04/12/2022 02:28
g-Chlordane	ND	0.00020	2	04/12/2022 02:28
p,p-DDD	ND	0.00020	2	04/12/2022 02:28
p,p-DDE	<b>0.00036</b>	0.00020	2	04/12/2022 02:28
p,p-DDT	<b>0.00070</b>	0.00020	2	04/12/2022 02:28
Dieldrin	ND	0.00020	2	04/12/2022 02:28
Endosulfan I	ND	0.00020	2	04/12/2022 02:28
Endosulfan II	ND	0.00020	2	04/12/2022 02:28
Endosulfan sulfate	ND	0.00020	2	04/12/2022 02:28
Endrin	ND	0.00020	2	04/12/2022 02:28
Endrin aldehyde	ND	0.00020	2	04/12/2022 02:28
Endrin ketone	ND	0.00020	2	04/12/2022 02:28
Heptachlor	ND	0.00020	2	04/12/2022 02:28
Heptachlor epoxide	ND	0.00020	2	04/12/2022 02:28
Hexachlorobenzene	ND	0.0020	2	04/12/2022 02:28
Hexachlorocyclopentadiene	ND	0.0040	2	04/12/2022 02:28
Methoxychlor	ND	0.00040	2	04/12/2022 02:28
Toxaphene	ND	0.010	2	04/12/2022 02:28
Aroclor1016	ND	0.010	2	04/12/2022 02:28
Aroclor1221	ND	0.010	2	04/12/2022 02:28
Aroclor1232	ND	0.010	2	04/12/2022 02:28
Aroclor1242	ND	0.010	2	04/12/2022 02:28
Aroclor1248	ND	0.010	2	04/12/2022 02:28
Aroclor1254	ND	0.010	2	04/12/2022 02:28
Aroclor1260	ND	0.010	2	04/12/2022 02:28
PCBs, total	ND	0.010	2	04/12/2022 02:28

Surrogates	REC (%)	Limits	Date Analyzed
Decachlorobiphenyl	85	20-145	04/12/2022 02:28

Analyst(s): CN

Analytical Comments: a3

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640Am/3630Cm  
**Analytical Method:** SW8081A/8082  
**Unit:** mg/kg

### Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-0.5	2203L27-020A	Soil	03/29/2022 13:25	GC23 04112274.d	242785

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Aldrin	ND		0.00050	5	04/12/2022 04:32
a-BHC	ND		0.00050	5	04/12/2022 04:32
b-BHC	ND		0.0015	5	04/12/2022 04:32
d-BHC	ND		0.0010	5	04/12/2022 04:32
g-BHC	ND		0.00050	5	04/12/2022 04:32
Chlordane (Technical)	ND		0.012	5	04/12/2022 04:32
a-Chlordane	<b>0.00077</b>	P	0.00050	5	04/12/2022 04:32
g-Chlordane	<b>0.00099</b>		0.00050	5	04/12/2022 04:32
p,p-DDD	ND		0.00050	5	04/12/2022 04:32
p,p-DDE	<b>0.00051</b>		0.00050	5	04/12/2022 04:32
p,p-DDT	<b>0.0025</b>		0.00050	5	04/12/2022 04:32
Dieldrin	ND		0.00050	5	04/12/2022 04:32
Endosulfan I	ND		0.00050	5	04/12/2022 04:32
Endosulfan II	ND		0.00050	5	04/12/2022 04:32
Endosulfan sulfate	ND		0.00050	5	04/12/2022 04:32
Endrin	ND		0.00050	5	04/12/2022 04:32
Endrin aldehyde	ND		0.00050	5	04/12/2022 04:32
Endrin ketone	ND		0.00050	5	04/12/2022 04:32
Heptachlor	ND		0.00050	5	04/12/2022 04:32
Heptachlor epoxide	ND		0.00050	5	04/12/2022 04:32
Hexachlorobenzene	ND		0.0050	5	04/12/2022 04:32
Hexachlorocyclopentadiene	ND		0.010	5	04/12/2022 04:32
Methoxychlor	ND		0.0010	5	04/12/2022 04:32
Toxaphene	ND		0.025	5	04/12/2022 04:32
Aroclor1016	ND		0.025	5	04/12/2022 04:32
Aroclor1221	ND		0.025	5	04/12/2022 04:32
Aroclor1232	ND		0.025	5	04/12/2022 04:32
Aroclor1242	ND		0.025	5	04/12/2022 04:32
Aroclor1248	ND		0.025	5	04/12/2022 04:32
Aroclor1254	ND		0.025	5	04/12/2022 04:32
Aroclor1260	ND		0.025	5	04/12/2022 04:32
PCBs, total	ND		0.025	5	04/12/2022 04:32

Surrogates	REC (%)	Limits	Date Analyzed
Decachlorobiphenyl	84	20-145	04/12/2022 04:32

**Analyst(s):** CN **Analytical Comments:** a2

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640Am/3630Cm  
**Analytical Method:** SW8081A/8082  
**Unit:** mg/kg

### Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-0.5	2203L27-024A	Soil	03/29/2022 14:35	GC23 04062226.d	242785

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00010	1	04/07/2022 07:57
a-BHC	ND	0.00010	1	04/07/2022 07:57
b-BHC	ND	0.00030	1	04/07/2022 07:57
d-BHC	ND	0.00020	1	04/07/2022 07:57
g-BHC	ND	0.00010	1	04/07/2022 07:57
Chlordane (Technical)	ND	0.0025	1	04/07/2022 07:57
a-Chlordane	ND	0.00010	1	04/07/2022 07:57
g-Chlordane	<b>0.00012</b>	0.00010	1	04/07/2022 07:57
p,p-DDD	<b>0.00016</b>	0.00010	1	04/07/2022 07:57
p,p-DDE	<b>0.0023</b>	0.00010	1	04/07/2022 07:57
p,p-DDT	<b>0.0017</b>	0.00010	1	04/07/2022 07:57
Dieldrin	ND	0.00010	1	04/07/2022 07:57
Endosulfan I	ND	0.00010	1	04/07/2022 07:57
Endosulfan II	ND	0.00010	1	04/07/2022 07:57
Endosulfan sulfate	ND	0.00010	1	04/07/2022 07:57
Endrin	ND	0.00010	1	04/07/2022 07:57
Endrin aldehyde	ND	0.00010	1	04/07/2022 07:57
Endrin ketone	ND	0.00010	1	04/07/2022 07:57
Heptachlor	ND	0.00010	1	04/07/2022 07:57
Heptachlor epoxide	ND	0.00010	1	04/07/2022 07:57
Hexachlorobenzene	ND	0.0010	1	04/07/2022 07:57
Hexachlorocyclopentadiene	ND	0.0020	1	04/07/2022 07:57
Methoxychlor	ND	0.00020	1	04/07/2022 07:57
Toxaphene	ND	0.0050	1	04/07/2022 07:57
Aroclor1016	ND	0.0050	1	04/07/2022 07:57
Aroclor1221	ND	0.0050	1	04/07/2022 07:57
Aroclor1232	ND	0.0050	1	04/07/2022 07:57
Aroclor1242	ND	0.0050	1	04/07/2022 07:57
Aroclor1248	ND	0.0050	1	04/07/2022 07:57
Aroclor1254	ND	0.0050	1	04/07/2022 07:57
Aroclor1260	ND	0.0050	1	04/07/2022 07:57
PCBs, total	ND	0.0050	1	04/07/2022 07:57

Surrogates	REC (%)	Limits	Date Analyzed
Decachlorobiphenyl	105	20-145	04/07/2022 07:57

Analyst(s): CN

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640Am/3630Cm  
**Analytical Method:** SW8081A/8082  
**Unit:** mg/kg

### Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-0.5	2203L27-027A	Soil	03/29/2022 14:15	GC23 04062227.d	242785

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00010	1	04/07/2022 08:12
a-BHC	ND	0.00010	1	04/07/2022 08:12
b-BHC	ND	0.00030	1	04/07/2022 08:12
d-BHC	ND	0.00020	1	04/07/2022 08:12
g-BHC	ND	0.00010	1	04/07/2022 08:12
Chlordane (Technical)	<b>0.016</b>	0.0025	1	04/07/2022 08:12
a-Chlordane	<b>0.0022</b>	0.00010	1	04/07/2022 08:12
g-Chlordane	<b>0.0021</b>	0.00010	1	04/07/2022 08:12
p,p-DDD	ND	0.00010	1	04/07/2022 08:12
p,p-DDE	<b>0.0034</b>	0.00010	1	04/07/2022 08:12
p,p-DDT	<b>0.0032</b>	0.00010	1	04/07/2022 08:12
Dieldrin	ND	0.00010	1	04/07/2022 08:12
Endosulfan I	ND	0.00010	1	04/07/2022 08:12
Endosulfan II	ND	0.00010	1	04/07/2022 08:12
Endosulfan sulfate	<b>0.00010</b>	0.00010	1	04/07/2022 08:12
Endrin	ND	0.00010	1	04/07/2022 08:12
Endrin aldehyde	ND	0.00010	1	04/07/2022 08:12
Endrin ketone	ND	0.00010	1	04/07/2022 08:12
Heptachlor	ND	0.00010	1	04/07/2022 08:12
Heptachlor epoxide	<b>0.00022</b>	0.00010	1	04/07/2022 08:12
Hexachlorobenzene	ND	0.0010	1	04/07/2022 08:12
Hexachlorocyclopentadiene	ND	0.0020	1	04/07/2022 08:12
Methoxychlor	ND	0.00020	1	04/07/2022 08:12
Toxaphene	ND	0.0050	1	04/07/2022 08:12
Aroclor1016	ND	0.0050	1	04/07/2022 08:12
Aroclor1221	ND	0.0050	1	04/07/2022 08:12
Aroclor1232	ND	0.0050	1	04/07/2022 08:12
Aroclor1242	ND	0.0050	1	04/07/2022 08:12
Aroclor1248	ND	0.0050	1	04/07/2022 08:12
Aroclor1254	ND	0.0050	1	04/07/2022 08:12
Aroclor1260	ND	0.0050	1	04/07/2022 08:12
PCBs, total	ND	0.0050	1	04/07/2022 08:12

Surrogates	REC (%)	Limits	Date Analyzed
Decachlorobiphenyl	97	20-145	04/07/2022 08:12

Analyst(s): CN

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640Am/3630Cm  
**Analytical Method:** SW8081A/8082  
**Unit:** mg/kg

### Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-0.5	2203L27-033A	Soil	03/29/2022 13:50	GC23 04092227.d	242785

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Aldrin	ND		0.00010	1	04/09/2022 10:22
a-BHC	ND		0.00010	1	04/09/2022 10:22
b-BHC	ND		0.00030	1	04/09/2022 10:22
d-BHC	ND		0.00020	1	04/09/2022 10:22
g-BHC	<b>0.00029</b>		0.00010	1	04/09/2022 10:22
Chlordane (Technical)	ND		0.0025	1	04/09/2022 10:22
a-Chlordane	<b>0.00012</b>	P	0.00010	1	04/09/2022 10:22
g-Chlordane	<b>0.00013</b>	P	0.00010	1	04/09/2022 10:22
p,p-DDD	<b>0.00027</b>	P	0.00010	1	04/09/2022 10:22
p,p-DDE	<b>0.0020</b>		0.00010	1	04/09/2022 10:22
p,p-DDT	<b>0.0029</b>		0.00010	1	04/09/2022 10:22
Dieldrin	ND		0.00010	1	04/09/2022 10:22
Endosulfan I	ND		0.00010	1	04/09/2022 10:22
Endosulfan II	ND		0.00010	1	04/09/2022 10:22
Endosulfan sulfate	ND		0.00010	1	04/09/2022 10:22
Endrin	ND		0.00010	1	04/09/2022 10:22
Endrin aldehyde	ND		0.00010	1	04/09/2022 10:22
Endrin ketone	ND		0.00010	1	04/09/2022 10:22
Heptachlor	ND		0.00010	1	04/09/2022 10:22
Heptachlor epoxide	ND		0.00010	1	04/09/2022 10:22
Hexachlorobenzene	ND		0.0010	1	04/09/2022 10:22
Hexachlorocyclopentadiene	ND		0.0020	1	04/09/2022 10:22
Methoxychlor	ND		0.00020	1	04/09/2022 10:22
Toxaphene	ND		0.0050	1	04/09/2022 10:22
Aroclor1016	ND		0.0050	1	04/09/2022 10:22
Aroclor1221	ND		0.0050	1	04/09/2022 10:22
Aroclor1232	ND		0.0050	1	04/09/2022 10:22
Aroclor1242	ND		0.0050	1	04/09/2022 10:22
Aroclor1248	ND		0.0050	1	04/09/2022 10:22
Aroclor1254	ND		0.0050	1	04/09/2022 10:22
Aroclor1260	ND		0.0050	1	04/09/2022 10:22
PCBs, total	ND		0.0050	1	04/09/2022 10:22

Surrogates	REC (%)	Limits	Date Analyzed
Decachlorobiphenyl	88	20-145	04/09/2022 10:22

Analyst(s): CN

Analytical Comments: h7

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640Am/3630Cm  
**Analytical Method:** SW8081A/8082  
**Unit:** mg/kg

### Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-0.5	2203L27-039A	Soil	03/29/2022 15:05	GC23 04092228.d	242785

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Aldrin	ND		0.00010	1	04/09/2022 10:38
a-BHC	ND		0.00010	1	04/09/2022 10:38
b-BHC	ND		0.00030	1	04/09/2022 10:38
d-BHC	ND		0.00020	1	04/09/2022 10:38
g-BHC	ND		0.00010	1	04/09/2022 10:38
Chlordane (Technical)	ND		0.0025	1	04/09/2022 10:38
a-Chlordane	<b>0.00049</b>	P	0.00010	1	04/09/2022 10:38
g-Chlordane	<b>0.00043</b>	P	0.00010	1	04/09/2022 10:38
p,p-DDD	ND		0.00010	1	04/09/2022 10:38
p,p-DDE	<b>0.00029</b>		0.00010	1	04/09/2022 10:38
p,p-DDT	<b>0.00026</b>		0.00010	1	04/09/2022 10:38
Dieldrin	ND		0.00010	1	04/09/2022 10:38
Endosulfan I	ND		0.00010	1	04/09/2022 10:38
Endosulfan II	ND		0.00010	1	04/09/2022 10:38
Endosulfan sulfate	ND		0.00010	1	04/09/2022 10:38
Endrin	ND		0.00010	1	04/09/2022 10:38
Endrin aldehyde	ND		0.00010	1	04/09/2022 10:38
Endrin ketone	ND		0.00010	1	04/09/2022 10:38
Heptachlor	<b>0.00022</b>	P	0.00010	1	04/09/2022 10:38
Heptachlor epoxide	ND		0.00010	1	04/09/2022 10:38
Hexachlorobenzene	ND		0.0010	1	04/09/2022 10:38
Hexachlorocyclopentadiene	ND		0.0020	1	04/09/2022 10:38
Methoxychlor	ND		0.00020	1	04/09/2022 10:38
Toxaphene	ND		0.0050	1	04/09/2022 10:38
Aroclor1016	ND		0.0050	1	04/09/2022 10:38
Aroclor1221	ND		0.0050	1	04/09/2022 10:38
Aroclor1232	ND		0.0050	1	04/09/2022 10:38
Aroclor1242	ND		0.0050	1	04/09/2022 10:38
Aroclor1248	ND		0.0050	1	04/09/2022 10:38
Aroclor1254	ND		0.0050	1	04/09/2022 10:38
Aroclor1260	ND		0.0050	1	04/09/2022 10:38
PCBs, total	ND		0.0050	1	04/09/2022 10:38

Surrogates	REC (%)	Limits	Date Analyzed
Decachlorobiphenyl	95	20-145	04/09/2022 10:38

Analyst(s): CN

Analytical Comments: h7

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640Am/3630Cm  
**Analytical Method:** SW8081A/8082  
**Unit:** mg/kg

### Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-0.5	2203L27-045A	Soil	03/29/2022 15:30	GC23 04092229.d	242785

Analytes	Result	RL	DF	Date Analyzed
Aldrin	ND	0.00010	1	04/09/2022 10:53
a-BHC	ND	0.00010	1	04/09/2022 10:53
b-BHC	ND	0.00030	1	04/09/2022 10:53
d-BHC	ND	0.00020	1	04/09/2022 10:53
g-BHC	ND	0.00010	1	04/09/2022 10:53
Chlordane (Technical)	ND	0.0025	1	04/09/2022 10:53
a-Chlordane	ND	0.00010	1	04/09/2022 10:53
g-Chlordane	ND	0.00010	1	04/09/2022 10:53
p,p-DDD	ND	0.00010	1	04/09/2022 10:53
p,p-DDE	<b>0.00068</b>	0.00010	1	04/09/2022 10:53
p,p-DDT	<b>0.00049</b>	0.00010	1	04/09/2022 10:53
Dieldrin	ND	0.00010	1	04/09/2022 10:53
Endosulfan I	ND	0.00010	1	04/09/2022 10:53
Endosulfan II	ND	0.00010	1	04/09/2022 10:53
Endosulfan sulfate	ND	0.00010	1	04/09/2022 10:53
Endrin	ND	0.00010	1	04/09/2022 10:53
Endrin aldehyde	ND	0.00010	1	04/09/2022 10:53
Endrin ketone	ND	0.00010	1	04/09/2022 10:53
Heptachlor	ND	0.00010	1	04/09/2022 10:53
Heptachlor epoxide	ND	0.00010	1	04/09/2022 10:53
Hexachlorobenzene	ND	0.0010	1	04/09/2022 10:53
Hexachlorocyclopentadiene	ND	0.0020	1	04/09/2022 10:53
Methoxychlor	ND	0.00020	1	04/09/2022 10:53
Toxaphene	ND	0.0050	1	04/09/2022 10:53
Aroclor1016	ND	0.0050	1	04/09/2022 10:53
Aroclor1221	ND	0.0050	1	04/09/2022 10:53
Aroclor1232	ND	0.0050	1	04/09/2022 10:53
Aroclor1242	ND	0.0050	1	04/09/2022 10:53
Aroclor1248	ND	0.0050	1	04/09/2022 10:53
Aroclor1254	ND	0.0050	1	04/09/2022 10:53
Aroclor1260	ND	0.0050	1	04/09/2022 10:53
PCBs, total	ND	0.0050	1	04/09/2022 10:53

Surrogates	REC (%)	Limits	Date Analyzed
Decachlorobiphenyl	91	20-145	04/09/2022 10:53

Analyst(s): CN

Analytical Comments: h7

(Cont.)





# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640Am/3630Cm  
**Analytical Method:** SW8081A/8082  
**Unit:** mg/kg

## Organochlorine Pesticides + PCBs

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-0.5	2203L27-051A	Soil	03/29/2022 15:50	GC23 04092230.d	242785

Analytes	Result	Qualifiers	RL	DF	Date Analyzed
Aldrin	ND		0.00010	1	04/09/2022 11:09
a-BHC	ND		0.00010	1	04/09/2022 11:09
b-BHC	ND		0.00030	1	04/09/2022 11:09
d-BHC	ND		0.00020	1	04/09/2022 11:09
g-BHC	<b>0.00053</b>		0.00010	1	04/09/2022 11:09
Chlordane (Technical)	ND		0.0025	1	04/09/2022 11:09
a-Chlordane	<b>0.00014</b>	P	0.00010	1	04/09/2022 11:09
g-Chlordane	<b>0.00016</b>	P	0.00010	1	04/09/2022 11:09
p,p-DDD	<b>0.00015</b>	P	0.00010	1	04/09/2022 11:09
p,p-DDE	<b>0.00098</b>		0.00010	1	04/09/2022 11:09
p,p-DDT	<b>0.0011</b>		0.00010	1	04/09/2022 11:09
Dieldrin	ND		0.00010	1	04/09/2022 11:09
Endosulfan I	ND		0.00010	1	04/09/2022 11:09
Endosulfan II	ND		0.00010	1	04/09/2022 11:09
Endosulfan sulfate	ND		0.00010	1	04/09/2022 11:09
Endrin	ND		0.00010	1	04/09/2022 11:09
Endrin aldehyde	ND		0.00010	1	04/09/2022 11:09
Endrin ketone	ND		0.00010	1	04/09/2022 11:09
Heptachlor	ND		0.00010	1	04/09/2022 11:09
Heptachlor epoxide	ND		0.00010	1	04/09/2022 11:09
Hexachlorobenzene	ND		0.0010	1	04/09/2022 11:09
Hexachlorocyclopentadiene	ND		0.0020	1	04/09/2022 11:09
Methoxychlor	ND		0.00020	1	04/09/2022 11:09
Toxaphene	ND		0.0050	1	04/09/2022 11:09
Aroclor1016	ND		0.0050	1	04/09/2022 11:09
Aroclor1221	ND		0.0050	1	04/09/2022 11:09
Aroclor1232	ND		0.0050	1	04/09/2022 11:09
Aroclor1242	ND		0.0050	1	04/09/2022 11:09
Aroclor1248	ND		0.0050	1	04/09/2022 11:09
Aroclor1254	ND		0.0050	1	04/09/2022 11:09
Aroclor1260	ND		0.0050	1	04/09/2022 11:09
PCBs, total	ND		0.0050	1	04/09/2022 11:09

Surrogates	REC (%)	Limits	Date Analyzed
Decachlorobiphenyl	98	20-145	04/09/2022 11:09

Analyst(s): CN

Analytical Comments: h7



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-0.5	2203L27-001A	Soil	03/29/2022 09:45	GC45 04042232.D	242510
Analytes	Result	RL	DF	Date Analyzed	
Acetone	ND	0.20	1	04/05/2022 06:22	
tert-Amyl methyl ether (TAME)	ND	0.0050	1	04/05/2022 06:22	
Benzene	ND	0.0050	1	04/05/2022 06:22	
Bromobenzene	ND	0.0050	1	04/05/2022 06:22	
Bromochloromethane	ND	0.0050	1	04/05/2022 06:22	
Bromodichloromethane	ND	0.0050	1	04/05/2022 06:22	
Bromoform	ND	0.0050	1	04/05/2022 06:22	
Bromomethane	ND	0.0050	1	04/05/2022 06:22	
2-Butanone (MEK)	ND	0.10	1	04/05/2022 06:22	
t-Butyl alcohol (TBA)	ND	0.050	1	04/05/2022 06:22	
n-Butyl benzene	ND	0.0050	1	04/05/2022 06:22	
sec-Butyl benzene	ND	0.0050	1	04/05/2022 06:22	
tert-Butyl benzene	ND	0.0050	1	04/05/2022 06:22	
Carbon Disulfide	ND	0.0050	1	04/05/2022 06:22	
Carbon Tetrachloride	ND	0.0050	1	04/05/2022 06:22	
Chlorobenzene	ND	0.0050	1	04/05/2022 06:22	
Chloroethane	ND	0.0050	1	04/05/2022 06:22	
Chloroform	ND	0.0050	1	04/05/2022 06:22	
Chloromethane	ND	0.0050	1	04/05/2022 06:22	
2-Chlorotoluene	ND	0.0050	1	04/05/2022 06:22	
4-Chlorotoluene	ND	0.0050	1	04/05/2022 06:22	
Dibromochloromethane	ND	0.0050	1	04/05/2022 06:22	
1,2-Dibromo-3-chloropropane	ND	0.00050	1	04/05/2022 06:22	
1,2-Dibromoethane (EDB)	ND	0.00025	1	04/05/2022 06:22	
Dibromomethane	ND	0.0050	1	04/05/2022 06:22	
1,2-Dichlorobenzene	ND	0.0050	1	04/05/2022 06:22	
1,3-Dichlorobenzene	ND	0.0050	1	04/05/2022 06:22	
1,4-Dichlorobenzene	ND	0.0050	1	04/05/2022 06:22	
Dichlorodifluoromethane	ND	0.0050	1	04/05/2022 06:22	
1,1-Dichloroethane	ND	0.0050	1	04/05/2022 06:22	
1,2-Dichloroethane (1,2-DCA)	ND	0.00010	1	04/05/2022 06:22	
1,1-Dichloroethene	ND	0.0050	1	04/05/2022 06:22	
cis-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 06:22	
trans-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 06:22	
1,2-Dichloropropane	ND	0.0050	1	04/05/2022 06:22	
1,3-Dichloropropane	ND	0.0050	1	04/05/2022 06:22	
2,2-Dichloropropane	ND	0.0050	1	04/05/2022 06:22	

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-0.5	2203L27-001A	Soil	03/29/2022 09:45	GC45 04042232.D	242510

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	04/05/2022 06:22
cis-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 06:22
trans-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 06:22
Diisopropyl ether (DIPE)	ND	0.0050	1	04/05/2022 06:22
Ethylbenzene	ND	0.0050	1	04/05/2022 06:22
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	04/05/2022 06:22
Freon 113	ND	0.0050	1	04/05/2022 06:22
Hexachlorobutadiene	ND	0.0050	1	04/05/2022 06:22
Hexachloroethane	ND	0.0050	1	04/05/2022 06:22
2-Hexanone	ND	0.0050	1	04/05/2022 06:22
Isopropylbenzene	ND	0.0050	1	04/05/2022 06:22
4-Isopropyl toluene	ND	0.0050	1	04/05/2022 06:22
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	04/05/2022 06:22
Methylene chloride	ND	0.020	1	04/05/2022 06:22
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	04/05/2022 06:22
Naphthalene	ND	0.0050	1	04/05/2022 06:22
n-Propyl benzene	ND	0.0050	1	04/05/2022 06:22
Styrene	ND	0.0050	1	04/05/2022 06:22
1,1,1,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 06:22
1,1,2,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 06:22
Tetrachloroethene	ND	0.0050	1	04/05/2022 06:22
Toluene	ND	0.0050	1	04/05/2022 06:22
1,2,3-Trichlorobenzene	ND	0.0050	1	04/05/2022 06:22
1,2,4-Trichlorobenzene	ND	0.0050	1	04/05/2022 06:22
1,1,1-Trichloroethane	ND	0.0050	1	04/05/2022 06:22
1,1,2-Trichloroethane	ND	0.0050	1	04/05/2022 06:22
Trichloroethene	ND	0.0050	1	04/05/2022 06:22
Trichlorofluoromethane	ND	0.0050	1	04/05/2022 06:22
1,2,3-Trichloropropane	ND	0.00025	1	04/05/2022 06:22
1,2,4-Trimethylbenzene	ND	0.0050	1	04/05/2022 06:22
1,3,5-Trimethylbenzene	ND	0.0050	1	04/05/2022 06:22
Vinyl Chloride	ND	0.00025	1	04/05/2022 06:22
m,p-Xylene	<b>0.0069</b>	0.0050	1	04/05/2022 06:22
o-Xylene	ND	0.0050	1	04/05/2022 06:22
Xylenes, Total	<b>0.0069</b>	0.0050	1	04/05/2022 06:22

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# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-0.5	2203L27-001A	Soil	03/29/2022 09:45	GC45 04042232.D	242510

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	105	70-140		04/05/2022 06:22
Toluene-d8	126	70-140		04/05/2022 06:22
4-BFB	89	70-140		04/05/2022 06:22
Benzene-d6	99	50-140		04/05/2022 06:22
Ethylbenzene-d10	102	50-140		04/05/2022 06:22
1,2-DCB-d4	85	40-140		04/05/2022 06:22

Analyst(s): LT



# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-3.0	2203L27-003A	Soil	03/29/2022 09:47	GC45 04042231.D	242510

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.20	1	04/05/2022 05:42
tert-Amyl methyl ether (TAME)	ND	0.0050	1	04/05/2022 05:42
Benzene	ND	0.0050	1	04/05/2022 05:42
Bromobenzene	ND	0.0050	1	04/05/2022 05:42
Bromochloromethane	ND	0.0050	1	04/05/2022 05:42
Bromodichloromethane	ND	0.0050	1	04/05/2022 05:42
Bromoform	ND	0.0050	1	04/05/2022 05:42
Bromomethane	ND	0.0050	1	04/05/2022 05:42
2-Butanone (MEK)	ND	0.10	1	04/05/2022 05:42
t-Butyl alcohol (TBA)	ND	0.050	1	04/05/2022 05:42
n-Butyl benzene	ND	0.0050	1	04/05/2022 05:42
sec-Butyl benzene	ND	0.0050	1	04/05/2022 05:42
tert-Butyl benzene	ND	0.0050	1	04/05/2022 05:42
Carbon Disulfide	ND	0.0050	1	04/05/2022 05:42
Carbon Tetrachloride	ND	0.0050	1	04/05/2022 05:42
Chlorobenzene	ND	0.0050	1	04/05/2022 05:42
Chloroethane	ND	0.0050	1	04/05/2022 05:42
Chloroform	ND	0.0050	1	04/05/2022 05:42
Chloromethane	ND	0.0050	1	04/05/2022 05:42
2-Chlorotoluene	ND	0.0050	1	04/05/2022 05:42
4-Chlorotoluene	ND	0.0050	1	04/05/2022 05:42
Dibromochloromethane	ND	0.0050	1	04/05/2022 05:42
1,2-Dibromo-3-chloropropane	ND	0.00050	1	04/05/2022 05:42
1,2-Dibromoethane (EDB)	ND	0.00025	1	04/05/2022 05:42
Dibromomethane	ND	0.0050	1	04/05/2022 05:42
1,2-Dichlorobenzene	ND	0.0050	1	04/05/2022 05:42
1,3-Dichlorobenzene	ND	0.0050	1	04/05/2022 05:42
1,4-Dichlorobenzene	ND	0.0050	1	04/05/2022 05:42
Dichlorodifluoromethane	ND	0.0050	1	04/05/2022 05:42
1,1-Dichloroethane	ND	0.0050	1	04/05/2022 05:42
1,2-Dichloroethane (1,2-DCA)	ND	0.00010	1	04/05/2022 05:42
1,1-Dichloroethene	ND	0.0050	1	04/05/2022 05:42
cis-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 05:42
trans-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 05:42
1,2-Dichloropropane	ND	0.0050	1	04/05/2022 05:42
1,3-Dichloropropane	ND	0.0050	1	04/05/2022 05:42
2,2-Dichloropropane	ND	0.0050	1	04/05/2022 05:42

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-3.0	2203L27-003A	Soil	03/29/2022 09:47	GC45 04042231.D	242510

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	04/05/2022 05:42
cis-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 05:42
trans-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 05:42
Diisopropyl ether (DIPE)	ND	0.0050	1	04/05/2022 05:42
Ethylbenzene	ND	0.0050	1	04/05/2022 05:42
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	04/05/2022 05:42
Freon 113	ND	0.0050	1	04/05/2022 05:42
Hexachlorobutadiene	ND	0.0050	1	04/05/2022 05:42
Hexachloroethane	ND	0.0050	1	04/05/2022 05:42
2-Hexanone	ND	0.0050	1	04/05/2022 05:42
Isopropylbenzene	ND	0.0050	1	04/05/2022 05:42
4-Isopropyl toluene	ND	0.0050	1	04/05/2022 05:42
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	04/05/2022 05:42
Methylene chloride	ND	0.020	1	04/05/2022 05:42
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	04/05/2022 05:42
Naphthalene	ND	0.0050	1	04/05/2022 05:42
n-Propyl benzene	ND	0.0050	1	04/05/2022 05:42
Styrene	ND	0.0050	1	04/05/2022 05:42
1,1,1,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 05:42
1,1,2,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 05:42
Tetrachloroethene	ND	0.0050	1	04/05/2022 05:42
Toluene	ND	0.0050	1	04/05/2022 05:42
1,2,3-Trichlorobenzene	ND	0.0050	1	04/05/2022 05:42
1,2,4-Trichlorobenzene	ND	0.0050	1	04/05/2022 05:42
1,1,1-Trichloroethane	ND	0.0050	1	04/05/2022 05:42
1,1,2-Trichloroethane	ND	0.0050	1	04/05/2022 05:42
Trichloroethene	ND	0.0050	1	04/05/2022 05:42
Trichlorofluoromethane	ND	0.0050	1	04/05/2022 05:42
1,2,3-Trichloropropane	ND	0.00025	1	04/05/2022 05:42
1,2,4-Trimethylbenzene	ND	0.0050	1	04/05/2022 05:42
1,3,5-Trimethylbenzene	ND	0.0050	1	04/05/2022 05:42
Vinyl Chloride	ND	0.00025	1	04/05/2022 05:42
m,p-Xylene	ND	0.0050	1	04/05/2022 05:42
o-Xylene	ND	0.0050	1	04/05/2022 05:42
Xylenes, Total	ND	0.0050	1	04/05/2022 05:42

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# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-3.0	2203L27-003A	Soil	03/29/2022 09:47	GC45 04042231.D	242510

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	105	70-140		04/05/2022 05:42
Toluene-d8	124	70-140		04/05/2022 05:42
4-BFB	89	70-140		04/05/2022 05:42
Benzene-d6	92	50-140		04/05/2022 05:42
Ethylbenzene-d10	95	50-140		04/05/2022 05:42
1,2-DCB-d4	81	40-140		04/05/2022 05:42

Analyst(s): LT



# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-2-1.5	2203L27-006A	Soil	03/29/2022 11:15	GC45 04042228.D	242510

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.20	1	04/05/2022 03:43
tert-Amyl methyl ether (TAME)	ND	0.0050	1	04/05/2022 03:43
Benzene	ND	0.0050	1	04/05/2022 03:43
Bromobenzene	ND	0.0050	1	04/05/2022 03:43
Bromochloromethane	ND	0.0050	1	04/05/2022 03:43
Bromodichloromethane	ND	0.0050	1	04/05/2022 03:43
Bromoform	ND	0.0050	1	04/05/2022 03:43
Bromomethane	ND	0.0050	1	04/05/2022 03:43
2-Butanone (MEK)	ND	0.10	1	04/05/2022 03:43
t-Butyl alcohol (TBA)	ND	0.050	1	04/05/2022 03:43
n-Butyl benzene	ND	0.0050	1	04/05/2022 03:43
sec-Butyl benzene	ND	0.0050	1	04/05/2022 03:43
tert-Butyl benzene	ND	0.0050	1	04/05/2022 03:43
Carbon Disulfide	ND	0.0050	1	04/05/2022 03:43
Carbon Tetrachloride	ND	0.0050	1	04/05/2022 03:43
Chlorobenzene	ND	0.0050	1	04/05/2022 03:43
Chloroethane	ND	0.0050	1	04/05/2022 03:43
Chloroform	ND	0.0050	1	04/05/2022 03:43
Chloromethane	ND	0.0050	1	04/05/2022 03:43
2-Chlorotoluene	ND	0.0050	1	04/05/2022 03:43
4-Chlorotoluene	ND	0.0050	1	04/05/2022 03:43
Dibromochloromethane	ND	0.0050	1	04/05/2022 03:43
1,2-Dibromo-3-chloropropane	ND	0.00050	1	04/05/2022 03:43
1,2-Dibromoethane (EDB)	ND	0.00025	1	04/05/2022 03:43
Dibromomethane	ND	0.0050	1	04/05/2022 03:43
1,2-Dichlorobenzene	ND	0.0050	1	04/05/2022 03:43
1,3-Dichlorobenzene	ND	0.0050	1	04/05/2022 03:43
1,4-Dichlorobenzene	ND	0.0050	1	04/05/2022 03:43
Dichlorodifluoromethane	ND	0.0050	1	04/05/2022 03:43
1,1-Dichloroethane	ND	0.0050	1	04/05/2022 03:43
1,2-Dichloroethane (1,2-DCA)	ND	0.00010	1	04/05/2022 03:43
1,1-Dichloroethene	ND	0.0050	1	04/05/2022 03:43
cis-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 03:43
trans-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 03:43
1,2-Dichloropropane	ND	0.0050	1	04/05/2022 03:43
1,3-Dichloropropane	ND	0.0050	1	04/05/2022 03:43
2,2-Dichloropropane	ND	0.0050	1	04/05/2022 03:43

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-2-1.5	2203L27-006A	Soil	03/29/2022 11:15	GC45 04042228.D	242510

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	04/05/2022 03:43
cis-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 03:43
trans-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 03:43
Diisopropyl ether (DIPE)	ND	0.0050	1	04/05/2022 03:43
Ethylbenzene	ND	0.0050	1	04/05/2022 03:43
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	04/05/2022 03:43
Freon 113	ND	0.0050	1	04/05/2022 03:43
Hexachlorobutadiene	ND	0.0050	1	04/05/2022 03:43
Hexachloroethane	ND	0.0050	1	04/05/2022 03:43
2-Hexanone	ND	0.0050	1	04/05/2022 03:43
Isopropylbenzene	ND	0.0050	1	04/05/2022 03:43
4-Isopropyl toluene	ND	0.0050	1	04/05/2022 03:43
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	04/05/2022 03:43
Methylene chloride	ND	0.020	1	04/05/2022 03:43
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	04/05/2022 03:43
Naphthalene	ND	0.0050	1	04/05/2022 03:43
n-Propyl benzene	ND	0.0050	1	04/05/2022 03:43
Styrene	ND	0.0050	1	04/05/2022 03:43
1,1,1,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 03:43
1,1,2,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 03:43
Tetrachloroethene	ND	0.0050	1	04/05/2022 03:43
Toluene	ND	0.0050	1	04/05/2022 03:43
1,2,3-Trichlorobenzene	ND	0.0050	1	04/05/2022 03:43
1,2,4-Trichlorobenzene	ND	0.0050	1	04/05/2022 03:43
1,1,1-Trichloroethane	ND	0.0050	1	04/05/2022 03:43
1,1,2-Trichloroethane	ND	0.0050	1	04/05/2022 03:43
Trichloroethene	ND	0.0050	1	04/05/2022 03:43
Trichlorofluoromethane	ND	0.0050	1	04/05/2022 03:43
1,2,3-Trichloropropane	ND	0.00025	1	04/05/2022 03:43
1,2,4-Trimethylbenzene	ND	0.0050	1	04/05/2022 03:43
1,3,5-Trimethylbenzene	ND	0.0050	1	04/05/2022 03:43
Vinyl Chloride	ND	0.00025	1	04/05/2022 03:43
m,p-Xylene	ND	0.0050	1	04/05/2022 03:43
o-Xylene	ND	0.0050	1	04/05/2022 03:43
Xylenes, Total	ND	0.0050	1	04/05/2022 03:43

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# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-2-1.5	2203L27-006A	Soil	03/29/2022 11:15	GC45 04042228.D	242510

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	105	70-140		04/05/2022 03:43
Toluene-d8	123	70-140		04/05/2022 03:43
4-BFB	85	70-140		04/05/2022 03:43
Benzene-d6	81	50-140		04/05/2022 03:43
Ethylbenzene-d10	82	50-140		04/05/2022 03:43
1,2-DCB-d4	71	40-140		04/05/2022 03:43

Analyst(s): LT



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-1.5	2203L27-014A	Soil	03/29/2022 12:06	GC45 04042229.D	242510

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.20	1	04/05/2022 04:23
tert-Amyl methyl ether (TAME)	ND	0.0050	1	04/05/2022 04:23
Benzene	ND	0.0050	1	04/05/2022 04:23
Bromobenzene	ND	0.0050	1	04/05/2022 04:23
Bromochloromethane	ND	0.0050	1	04/05/2022 04:23
Bromodichloromethane	ND	0.0050	1	04/05/2022 04:23
Bromoform	ND	0.0050	1	04/05/2022 04:23
Bromomethane	ND	0.0050	1	04/05/2022 04:23
2-Butanone (MEK)	ND	0.10	1	04/05/2022 04:23
t-Butyl alcohol (TBA)	ND	0.050	1	04/05/2022 04:23
n-Butyl benzene	ND	0.0050	1	04/05/2022 04:23
sec-Butyl benzene	ND	0.0050	1	04/05/2022 04:23
tert-Butyl benzene	ND	0.0050	1	04/05/2022 04:23
Carbon Disulfide	ND	0.0050	1	04/05/2022 04:23
Carbon Tetrachloride	ND	0.0050	1	04/05/2022 04:23
Chlorobenzene	ND	0.0050	1	04/05/2022 04:23
Chloroethane	ND	0.0050	1	04/05/2022 04:23
Chloroform	ND	0.0050	1	04/05/2022 04:23
Chloromethane	ND	0.0050	1	04/05/2022 04:23
2-Chlorotoluene	ND	0.0050	1	04/05/2022 04:23
4-Chlorotoluene	ND	0.0050	1	04/05/2022 04:23
Dibromochloromethane	ND	0.0050	1	04/05/2022 04:23
1,2-Dibromo-3-chloropropane	ND	0.00050	1	04/05/2022 04:23
1,2-Dibromoethane (EDB)	ND	0.00025	1	04/05/2022 04:23
Dibromomethane	ND	0.0050	1	04/05/2022 04:23
1,2-Dichlorobenzene	ND	0.0050	1	04/05/2022 04:23
1,3-Dichlorobenzene	ND	0.0050	1	04/05/2022 04:23
1,4-Dichlorobenzene	ND	0.0050	1	04/05/2022 04:23
Dichlorodifluoromethane	ND	0.0050	1	04/05/2022 04:23
1,1-Dichloroethane	ND	0.0050	1	04/05/2022 04:23
1,2-Dichloroethane (1,2-DCA)	ND	0.00010	1	04/05/2022 04:23
1,1-Dichloroethene	ND	0.0050	1	04/05/2022 04:23
cis-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 04:23
trans-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 04:23
1,2-Dichloropropane	ND	0.0050	1	04/05/2022 04:23
1,3-Dichloropropane	ND	0.0050	1	04/05/2022 04:23
2,2-Dichloropropane	ND	0.0050	1	04/05/2022 04:23

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-1.5	2203L27-014A	Soil	03/29/2022 12:06	GC45 04042229.D	242510

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	04/05/2022 04:23
cis-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 04:23
trans-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 04:23
Diisopropyl ether (DIPE)	ND	0.0050	1	04/05/2022 04:23
Ethylbenzene	ND	0.0050	1	04/05/2022 04:23
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	04/05/2022 04:23
Freon 113	ND	0.0050	1	04/05/2022 04:23
Hexachlorobutadiene	ND	0.0050	1	04/05/2022 04:23
Hexachloroethane	ND	0.0050	1	04/05/2022 04:23
2-Hexanone	ND	0.0050	1	04/05/2022 04:23
Isopropylbenzene	ND	0.0050	1	04/05/2022 04:23
4-Isopropyl toluene	ND	0.0050	1	04/05/2022 04:23
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	04/05/2022 04:23
Methylene chloride	ND	0.020	1	04/05/2022 04:23
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	04/05/2022 04:23
Naphthalene	ND	0.0050	1	04/05/2022 04:23
n-Propyl benzene	ND	0.0050	1	04/05/2022 04:23
Styrene	ND	0.0050	1	04/05/2022 04:23
1,1,1,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 04:23
1,1,2,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 04:23
Tetrachloroethene	ND	0.0050	1	04/05/2022 04:23
Toluene	ND	0.0050	1	04/05/2022 04:23
1,2,3-Trichlorobenzene	ND	0.0050	1	04/05/2022 04:23
1,2,4-Trichlorobenzene	ND	0.0050	1	04/05/2022 04:23
1,1,1-Trichloroethane	ND	0.0050	1	04/05/2022 04:23
1,1,2-Trichloroethane	ND	0.0050	1	04/05/2022 04:23
Trichloroethene	ND	0.0050	1	04/05/2022 04:23
Trichlorofluoromethane	ND	0.0050	1	04/05/2022 04:23
1,2,3-Trichloropropane	ND	0.00025	1	04/05/2022 04:23
1,2,4-Trimethylbenzene	ND	0.0050	1	04/05/2022 04:23
1,3,5-Trimethylbenzene	ND	0.0050	1	04/05/2022 04:23
Vinyl Chloride	ND	0.00025	1	04/05/2022 04:23
m,p-Xylene	ND	0.0050	1	04/05/2022 04:23
o-Xylene	ND	0.0050	1	04/05/2022 04:23
Xylenes, Total	ND	0.0050	1	04/05/2022 04:23

(Cont.)



# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-1.5	2203L27-014A	Soil	03/29/2022 12:06	GC45 04042229.D	242510

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	105	70-140		04/05/2022 04:23
Toluene-d8	124	70-140		04/05/2022 04:23
4-BFB	88	70-140		04/05/2022 04:23
Benzene-d6	84	50-140		04/05/2022 04:23
Ethylbenzene-d10	87	50-140		04/05/2022 04:23
1,2-DCB-d4	76	40-140		04/05/2022 04:23

Analyst(s): LT



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-3.0	2203L27-019A	Soil	03/29/2022 13:07	GC45 04042230.D	242510
Analytes	Result	RL	DF	Date Analyzed	
Acetone	ND	0.20	1	04/05/2022 05:03	
tert-Amyl methyl ether (TAME)	ND	0.0050	1	04/05/2022 05:03	
Benzene	ND	0.0050	1	04/05/2022 05:03	
Bromobenzene	ND	0.0050	1	04/05/2022 05:03	
Bromochloromethane	ND	0.0050	1	04/05/2022 05:03	
Bromodichloromethane	ND	0.0050	1	04/05/2022 05:03	
Bromoform	ND	0.0050	1	04/05/2022 05:03	
Bromomethane	ND	0.0050	1	04/05/2022 05:03	
2-Butanone (MEK)	ND	0.10	1	04/05/2022 05:03	
t-Butyl alcohol (TBA)	ND	0.050	1	04/05/2022 05:03	
n-Butyl benzene	ND	0.0050	1	04/05/2022 05:03	
sec-Butyl benzene	ND	0.0050	1	04/05/2022 05:03	
tert-Butyl benzene	ND	0.0050	1	04/05/2022 05:03	
Carbon Disulfide	ND	0.0050	1	04/05/2022 05:03	
Carbon Tetrachloride	ND	0.0050	1	04/05/2022 05:03	
Chlorobenzene	ND	0.0050	1	04/05/2022 05:03	
Chloroethane	ND	0.0050	1	04/05/2022 05:03	
Chloroform	ND	0.0050	1	04/05/2022 05:03	
Chloromethane	ND	0.0050	1	04/05/2022 05:03	
2-Chlorotoluene	ND	0.0050	1	04/05/2022 05:03	
4-Chlorotoluene	ND	0.0050	1	04/05/2022 05:03	
Dibromochloromethane	ND	0.0050	1	04/05/2022 05:03	
1,2-Dibromo-3-chloropropane	ND	0.00050	1	04/05/2022 05:03	
1,2-Dibromoethane (EDB)	ND	0.00025	1	04/05/2022 05:03	
Dibromomethane	ND	0.0050	1	04/05/2022 05:03	
1,2-Dichlorobenzene	ND	0.0050	1	04/05/2022 05:03	
1,3-Dichlorobenzene	ND	0.0050	1	04/05/2022 05:03	
1,4-Dichlorobenzene	ND	0.0050	1	04/05/2022 05:03	
Dichlorodifluoromethane	ND	0.0050	1	04/05/2022 05:03	
1,1-Dichloroethane	ND	0.0050	1	04/05/2022 05:03	
1,2-Dichloroethane (1,2-DCA)	ND	0.00010	1	04/05/2022 05:03	
1,1-Dichloroethene	ND	0.0050	1	04/05/2022 05:03	
cis-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 05:03	
trans-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 05:03	
1,2-Dichloropropane	ND	0.0050	1	04/05/2022 05:03	
1,3-Dichloropropane	ND	0.0050	1	04/05/2022 05:03	
2,2-Dichloropropane	ND	0.0050	1	04/05/2022 05:03	

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# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-3.0	2203L27-019A	Soil	03/29/2022 13:07	GC45 04042230.D	242510

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	04/05/2022 05:03
cis-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 05:03
trans-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 05:03
Diisopropyl ether (DIPE)	ND	0.0050	1	04/05/2022 05:03
Ethylbenzene	ND	0.0050	1	04/05/2022 05:03
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	04/05/2022 05:03
Freon 113	ND	0.0050	1	04/05/2022 05:03
Hexachlorobutadiene	ND	0.0050	1	04/05/2022 05:03
Hexachloroethane	ND	0.0050	1	04/05/2022 05:03
2-Hexanone	ND	0.0050	1	04/05/2022 05:03
Isopropylbenzene	ND	0.0050	1	04/05/2022 05:03
4-Isopropyl toluene	ND	0.0050	1	04/05/2022 05:03
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	04/05/2022 05:03
Methylene chloride	ND	0.020	1	04/05/2022 05:03
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	04/05/2022 05:03
Naphthalene	ND	0.0050	1	04/05/2022 05:03
n-Propyl benzene	ND	0.0050	1	04/05/2022 05:03
Styrene	ND	0.0050	1	04/05/2022 05:03
1,1,1,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 05:03
1,1,2,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 05:03
Tetrachloroethene	ND	0.0050	1	04/05/2022 05:03
Toluene	ND	0.0050	1	04/05/2022 05:03
1,2,3-Trichlorobenzene	ND	0.0050	1	04/05/2022 05:03
1,2,4-Trichlorobenzene	ND	0.0050	1	04/05/2022 05:03
1,1,1-Trichloroethane	ND	0.0050	1	04/05/2022 05:03
1,1,2-Trichloroethane	ND	0.0050	1	04/05/2022 05:03
Trichloroethene	ND	0.0050	1	04/05/2022 05:03
Trichlorofluoromethane	ND	0.0050	1	04/05/2022 05:03
1,2,3-Trichloropropane	ND	0.00025	1	04/05/2022 05:03
1,2,4-Trimethylbenzene	ND	0.0050	1	04/05/2022 05:03
1,3,5-Trimethylbenzene	ND	0.0050	1	04/05/2022 05:03
Vinyl Chloride	ND	0.00025	1	04/05/2022 05:03
m,p-Xylene	ND	0.0050	1	04/05/2022 05:03
o-Xylene	ND	0.0050	1	04/05/2022 05:03
Xylenes, Total	ND	0.0050	1	04/05/2022 05:03

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# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-3.0	2203L27-019A	Soil	03/29/2022 13:07	GC45 04042230.D	242510

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	104	70-140		04/05/2022 05:03
Toluene-d8	126	70-140		04/05/2022 05:03
4-BFB	88	70-140		04/05/2022 05:03
Benzene-d6	95	50-140		04/05/2022 05:03
Ethylbenzene-d10	100	50-140		04/05/2022 05:03
1,2-DCB-d4	83	40-140		04/05/2022 05:03

Analyst(s): LT





## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected		Instrument	Batch ID
E-6-0.5	2203L27-020A	Soil	03/29/2022 13:25		GC18 04042231.D	242510
Analytes	Result	RL	DF	Date Analyzed		
Acetone	ND	0.20	1	04/05/2022 04:05		
tert-Amyl methyl ether (TAME)	ND	0.0050	1	04/05/2022 04:05		
Benzene	ND	0.0050	1	04/05/2022 04:05		
Bromobenzene	ND	0.0050	1	04/05/2022 04:05		
Bromochloromethane	ND	0.0050	1	04/05/2022 04:05		
Bromodichloromethane	ND	0.0050	1	04/05/2022 04:05		
Bromoform	ND	0.0050	1	04/05/2022 04:05		
Bromomethane	ND	0.0050	1	04/05/2022 04:05		
2-Butanone (MEK)	ND	0.10	1	04/05/2022 04:05		
t-Butyl alcohol (TBA)	ND	0.050	1	04/05/2022 04:05		
n-Butyl benzene	ND	0.0050	1	04/05/2022 04:05		
sec-Butyl benzene	ND	0.0050	1	04/05/2022 04:05		
tert-Butyl benzene	ND	0.0050	1	04/05/2022 04:05		
Carbon Disulfide	ND	0.0050	1	04/05/2022 04:05		
Carbon Tetrachloride	ND	0.0050	1	04/05/2022 04:05		
Chlorobenzene	ND	0.0050	1	04/05/2022 04:05		
Chloroethane	ND	0.0050	1	04/05/2022 04:05		
Chloroform	ND	0.0050	1	04/05/2022 04:05		
Chloromethane	ND	0.0050	1	04/05/2022 04:05		
2-Chlorotoluene	ND	0.0050	1	04/05/2022 04:05		
4-Chlorotoluene	ND	0.0050	1	04/05/2022 04:05		
Dibromochloromethane	ND	0.0050	1	04/05/2022 04:05		
1,2-Dibromo-3-chloropropane	ND	0.00050	1	04/05/2022 04:05		
1,2-Dibromoethane (EDB)	ND	0.00025	1	04/05/2022 04:05		
Dibromomethane	ND	0.0050	1	04/05/2022 04:05		
1,2-Dichlorobenzene	ND	0.0050	1	04/05/2022 04:05		
1,3-Dichlorobenzene	ND	0.0050	1	04/05/2022 04:05		
1,4-Dichlorobenzene	ND	0.0050	1	04/05/2022 04:05		
Dichlorodifluoromethane	ND	0.0050	1	04/05/2022 04:05		
1,1-Dichloroethane	ND	0.0050	1	04/05/2022 04:05		
1,2-Dichloroethane (1,2-DCA)	ND	0.00010	1	04/05/2022 04:05		
1,1-Dichloroethene	ND	0.0050	1	04/05/2022 04:05		
cis-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 04:05		
trans-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 04:05		
1,2-Dichloropropane	ND	0.0050	1	04/05/2022 04:05		
1,3-Dichloropropane	ND	0.0050	1	04/05/2022 04:05		
2,2-Dichloropropane	ND	0.0050	1	04/05/2022 04:05		

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-0.5	2203L27-020A	Soil	03/29/2022 13:25	GC18 04042231.D	242510

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	04/05/2022 04:05
cis-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 04:05
trans-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 04:05
Diisopropyl ether (DIPE)	ND	0.0050	1	04/05/2022 04:05
Ethylbenzene	ND	0.0050	1	04/05/2022 04:05
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	04/05/2022 04:05
Freon 113	ND	0.0050	1	04/05/2022 04:05
Hexachlorobutadiene	ND	0.0050	1	04/05/2022 04:05
Hexachloroethane	ND	0.0050	1	04/05/2022 04:05
2-Hexanone	ND	0.0050	1	04/05/2022 04:05
Isopropylbenzene	ND	0.0050	1	04/05/2022 04:05
4-Isopropyl toluene	ND	0.0050	1	04/05/2022 04:05
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	04/05/2022 04:05
Methylene chloride	ND	0.020	1	04/05/2022 04:05
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	04/05/2022 04:05
Naphthalene	ND	0.0050	1	04/05/2022 04:05
n-Propyl benzene	ND	0.0050	1	04/05/2022 04:05
Styrene	ND	0.0050	1	04/05/2022 04:05
1,1,1,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 04:05
1,1,2,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 04:05
Tetrachloroethene	ND	0.0050	1	04/05/2022 04:05
Toluene	ND	0.0050	1	04/05/2022 04:05
1,2,3-Trichlorobenzene	ND	0.0050	1	04/05/2022 04:05
1,2,4-Trichlorobenzene	ND	0.0050	1	04/05/2022 04:05
1,1,1-Trichloroethane	ND	0.0050	1	04/05/2022 04:05
1,1,2-Trichloroethane	ND	0.0050	1	04/05/2022 04:05
Trichloroethene	ND	0.0050	1	04/05/2022 04:05
Trichlorofluoromethane	ND	0.0050	1	04/05/2022 04:05
1,2,3-Trichloropropane	ND	0.00025	1	04/05/2022 04:05
1,2,4-Trimethylbenzene	ND	0.0050	1	04/05/2022 04:05
1,3,5-Trimethylbenzene	ND	0.0050	1	04/05/2022 04:05
Vinyl Chloride	ND	0.00025	1	04/05/2022 04:05
m,p-Xylene	ND	0.0050	1	04/05/2022 04:05
o-Xylene	ND	0.0050	1	04/05/2022 04:05
Xylenes, Total	ND	0.0050	1	04/05/2022 04:05

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# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-0.5	2203L27-020A	Soil	03/29/2022 13:25	GC18 04042231.D	242510

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	93	70-140		04/05/2022 04:05
Toluene-d8	109	70-140		04/05/2022 04:05
4-BFB	89	70-140		04/05/2022 04:05
Benzene-d6	84	50-140		04/05/2022 04:05
Ethylbenzene-d10	93	50-140		04/05/2022 04:05
1,2-DCB-d4	72	40-140		04/05/2022 04:05

Analyst(s): KF



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected		Instrument	Batch ID
E-7-0.5	2203L27-024A	Soil	03/29/2022 14:35		GC18 04042232.D	242510
Analytes	Result	RL	DF	Date Analyzed		
Acetone	ND	0.20	1	04/05/2022 04:43		
tert-Amyl methyl ether (TAME)	ND	0.0050	1	04/05/2022 04:43		
Benzene	ND	0.0050	1	04/05/2022 04:43		
Bromobenzene	ND	0.0050	1	04/05/2022 04:43		
Bromochloromethane	ND	0.0050	1	04/05/2022 04:43		
Bromodichloromethane	ND	0.0050	1	04/05/2022 04:43		
Bromoform	ND	0.0050	1	04/05/2022 04:43		
Bromomethane	ND	0.0050	1	04/05/2022 04:43		
2-Butanone (MEK)	ND	0.10	1	04/05/2022 04:43		
t-Butyl alcohol (TBA)	ND	0.050	1	04/05/2022 04:43		
n-Butyl benzene	ND	0.0050	1	04/05/2022 04:43		
sec-Butyl benzene	ND	0.0050	1	04/05/2022 04:43		
tert-Butyl benzene	ND	0.0050	1	04/05/2022 04:43		
Carbon Disulfide	ND	0.0050	1	04/05/2022 04:43		
Carbon Tetrachloride	ND	0.0050	1	04/05/2022 04:43		
Chlorobenzene	ND	0.0050	1	04/05/2022 04:43		
Chloroethane	ND	0.0050	1	04/05/2022 04:43		
Chloroform	ND	0.0050	1	04/05/2022 04:43		
Chloromethane	ND	0.0050	1	04/05/2022 04:43		
2-Chlorotoluene	ND	0.0050	1	04/05/2022 04:43		
4-Chlorotoluene	ND	0.0050	1	04/05/2022 04:43		
Dibromochloromethane	ND	0.0050	1	04/05/2022 04:43		
1,2-Dibromo-3-chloropropane	ND	0.00050	1	04/05/2022 04:43		
1,2-Dibromoethane (EDB)	ND	0.00025	1	04/05/2022 04:43		
Dibromomethane	ND	0.0050	1	04/05/2022 04:43		
1,2-Dichlorobenzene	ND	0.0050	1	04/05/2022 04:43		
1,3-Dichlorobenzene	ND	0.0050	1	04/05/2022 04:43		
1,4-Dichlorobenzene	ND	0.0050	1	04/05/2022 04:43		
Dichlorodifluoromethane	ND	0.0050	1	04/05/2022 04:43		
1,1-Dichloroethane	ND	0.0050	1	04/05/2022 04:43		
1,2-Dichloroethane (1,2-DCA)	ND	0.00010	1	04/05/2022 04:43		
1,1-Dichloroethene	ND	0.0050	1	04/05/2022 04:43		
cis-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 04:43		
trans-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 04:43		
1,2-Dichloropropane	ND	0.0050	1	04/05/2022 04:43		
1,3-Dichloropropane	ND	0.0050	1	04/05/2022 04:43		
2,2-Dichloropropane	ND	0.0050	1	04/05/2022 04:43		

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-0.5	2203L27-024A	Soil	03/29/2022 14:35	GC18 04042232.D	242510

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	04/05/2022 04:43
cis-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 04:43
trans-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 04:43
Diisopropyl ether (DIPE)	ND	0.0050	1	04/05/2022 04:43
Ethylbenzene	ND	0.0050	1	04/05/2022 04:43
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	04/05/2022 04:43
Freon 113	ND	0.0050	1	04/05/2022 04:43
Hexachlorobutadiene	ND	0.0050	1	04/05/2022 04:43
Hexachloroethane	ND	0.0050	1	04/05/2022 04:43
2-Hexanone	ND	0.0050	1	04/05/2022 04:43
Isopropylbenzene	ND	0.0050	1	04/05/2022 04:43
4-Isopropyl toluene	ND	0.0050	1	04/05/2022 04:43
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	04/05/2022 04:43
Methylene chloride	ND	0.020	1	04/05/2022 04:43
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	04/05/2022 04:43
Naphthalene	ND	0.0050	1	04/05/2022 04:43
n-Propyl benzene	ND	0.0050	1	04/05/2022 04:43
Styrene	ND	0.0050	1	04/05/2022 04:43
1,1,1,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 04:43
1,1,2,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 04:43
Tetrachloroethene	ND	0.0050	1	04/05/2022 04:43
Toluene	ND	0.0050	1	04/05/2022 04:43
1,2,3-Trichlorobenzene	ND	0.0050	1	04/05/2022 04:43
1,2,4-Trichlorobenzene	ND	0.0050	1	04/05/2022 04:43
1,1,1-Trichloroethane	ND	0.0050	1	04/05/2022 04:43
1,1,2-Trichloroethane	ND	0.0050	1	04/05/2022 04:43
Trichloroethene	ND	0.0050	1	04/05/2022 04:43
Trichlorofluoromethane	ND	0.0050	1	04/05/2022 04:43
1,2,3-Trichloropropane	ND	0.00025	1	04/05/2022 04:43
1,2,4-Trimethylbenzene	ND	0.0050	1	04/05/2022 04:43
1,3,5-Trimethylbenzene	ND	0.0050	1	04/05/2022 04:43
Vinyl Chloride	ND	0.00025	1	04/05/2022 04:43
m,p-Xylene	ND	0.0050	1	04/05/2022 04:43
o-Xylene	ND	0.0050	1	04/05/2022 04:43
Xylenes, Total	ND	0.0050	1	04/05/2022 04:43

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# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-0.5	2203L27-024A	Soil	03/29/2022 14:35	GC18 04042232.D	242510

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	92	70-140		04/05/2022 04:43
Toluene-d8	111	70-140		04/05/2022 04:43
4-BFB	89	70-140		04/05/2022 04:43
Benzene-d6	92	50-140		04/05/2022 04:43
Ethylbenzene-d10	104	50-140		04/05/2022 04:43
1,2-DCB-d4	77	40-140		04/05/2022 04:43

Analyst(s): KF

Analytical Comments: c16



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected		Instrument	Batch ID
E-7-3.0	2203L27-026A	Soil	03/29/2022 14:37		GC38 04042216.D	242510
Analytes	Result	RL	DF	Date Analyzed		
Acetone	ND	0.20	1	04/04/2022 17:39		
tert-Amyl methyl ether (TAME)	ND	0.0050	1	04/04/2022 17:39		
Benzene	ND	0.0050	1	04/04/2022 17:39		
Bromobenzene	ND	0.0050	1	04/04/2022 17:39		
Bromochloromethane	ND	0.0050	1	04/04/2022 17:39		
Bromodichloromethane	ND	0.0050	1	04/04/2022 17:39		
Bromoform	ND	0.0050	1	04/04/2022 17:39		
Bromomethane	ND	0.0050	1	04/04/2022 17:39		
2-Butanone (MEK)	ND	0.10	1	04/04/2022 17:39		
t-Butyl alcohol (TBA)	ND	0.050	1	04/04/2022 17:39		
n-Butyl benzene	ND	0.0050	1	04/04/2022 17:39		
sec-Butyl benzene	ND	0.0050	1	04/04/2022 17:39		
tert-Butyl benzene	ND	0.0050	1	04/04/2022 17:39		
Carbon Disulfide	ND	0.0050	1	04/04/2022 17:39		
Carbon Tetrachloride	ND	0.0050	1	04/04/2022 17:39		
Chlorobenzene	ND	0.0050	1	04/04/2022 17:39		
Chloroethane	ND	0.0050	1	04/04/2022 17:39		
Chloroform	ND	0.0050	1	04/04/2022 17:39		
Chloromethane	ND	0.0050	1	04/04/2022 17:39		
2-Chlorotoluene	ND	0.0050	1	04/04/2022 17:39		
4-Chlorotoluene	ND	0.0050	1	04/04/2022 17:39		
Dibromochloromethane	ND	0.0050	1	04/04/2022 17:39		
1,2-Dibromo-3-chloropropane	ND	0.00050	1	04/04/2022 17:39		
1,2-Dibromoethane (EDB)	ND	0.00025	1	04/04/2022 17:39		
Dibromomethane	ND	0.0050	1	04/04/2022 17:39		
1,2-Dichlorobenzene	ND	0.0050	1	04/04/2022 17:39		
1,3-Dichlorobenzene	ND	0.0050	1	04/04/2022 17:39		
1,4-Dichlorobenzene	ND	0.0050	1	04/04/2022 17:39		
Dichlorodifluoromethane	ND	0.0050	1	04/04/2022 17:39		
1,1-Dichloroethane	ND	0.0050	1	04/04/2022 17:39		
1,2-Dichloroethane (1,2-DCA)	ND	0.00010	1	04/04/2022 17:39		
1,1-Dichloroethene	ND	0.0050	1	04/04/2022 17:39		
cis-1,2-Dichloroethene	ND	0.0050	1	04/04/2022 17:39		
trans-1,2-Dichloroethene	ND	0.0050	1	04/04/2022 17:39		
1,2-Dichloropropane	ND	0.0050	1	04/04/2022 17:39		
1,3-Dichloropropane	ND	0.0050	1	04/04/2022 17:39		
2,2-Dichloropropane	ND	0.0050	1	04/04/2022 17:39		

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# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-3.0	2203L27-026A	Soil	03/29/2022 14:37	GC38 04042216.D	242510

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	04/04/2022 17:39
cis-1,3-Dichloropropene	ND	0.0050	1	04/04/2022 17:39
trans-1,3-Dichloropropene	ND	0.0050	1	04/04/2022 17:39
Diisopropyl ether (DIPE)	ND	0.0050	1	04/04/2022 17:39
Ethylbenzene	ND	0.0050	1	04/04/2022 17:39
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	04/04/2022 17:39
Freon 113	ND	0.0050	1	04/04/2022 17:39
Hexachlorobutadiene	ND	0.0050	1	04/04/2022 17:39
Hexachloroethane	ND	0.0050	1	04/04/2022 17:39
2-Hexanone	ND	0.0050	1	04/04/2022 17:39
Isopropylbenzene	ND	0.0050	1	04/04/2022 17:39
4-Isopropyl toluene	ND	0.0050	1	04/04/2022 17:39
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	04/04/2022 17:39
Methylene chloride	ND	0.020	1	04/04/2022 17:39
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	04/04/2022 17:39
Naphthalene	ND	0.0050	1	04/04/2022 17:39
n-Propyl benzene	ND	0.0050	1	04/04/2022 17:39
Styrene	ND	0.0050	1	04/04/2022 17:39
1,1,1,2-Tetrachloroethane	ND	0.0050	1	04/04/2022 17:39
1,1,2,2-Tetrachloroethane	ND	0.0050	1	04/04/2022 17:39
Tetrachloroethene	ND	0.0050	1	04/04/2022 17:39
Toluene	ND	0.0050	1	04/04/2022 17:39
1,2,3-Trichlorobenzene	ND	0.0050	1	04/04/2022 17:39
1,2,4-Trichlorobenzene	ND	0.0050	1	04/04/2022 17:39
1,1,1-Trichloroethane	ND	0.0050	1	04/04/2022 17:39
1,1,2-Trichloroethane	ND	0.0050	1	04/04/2022 17:39
Trichloroethene	ND	0.0050	1	04/04/2022 17:39
Trichlorofluoromethane	ND	0.0050	1	04/04/2022 17:39
1,2,3-Trichloropropane	ND	0.00025	1	04/04/2022 17:39
1,2,4-Trimethylbenzene	ND	0.0050	1	04/04/2022 17:39
1,3,5-Trimethylbenzene	ND	0.0050	1	04/04/2022 17:39
Vinyl Chloride	ND	0.00025	1	04/04/2022 17:39
m,p-Xylene	ND	0.0050	1	04/04/2022 17:39
o-Xylene	ND	0.0050	1	04/04/2022 17:39
Xylenes, Total	ND	0.0050	1	04/04/2022 17:39

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# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-3.0	2203L27-026A	Soil	03/29/2022 14:37	GC38 04042216.D	242510

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	93	70-140		04/04/2022 17:39
Toluene-d8	118	70-140		04/04/2022 17:39
4-BFB	99	70-140		04/04/2022 17:39
Benzene-d6	90	50-140		04/04/2022 17:39
Ethylbenzene-d10	100	50-140		04/04/2022 17:39
1,2-DCB-d4	75	40-140		04/04/2022 17:39

Analyst(s): ANL



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-1.5	2203L27-028A	Soil	03/29/2022 14:16	GC38 04042225.D	242510
Analytes	Result	RL	DF	Date Analyzed	
Acetone	ND	0.20	1	04/04/2022 23:51	
tert-Amyl methyl ether (TAME)	ND	0.0050	1	04/04/2022 23:51	
Benzene	ND	0.0050	1	04/04/2022 23:51	
Bromobenzene	ND	0.0050	1	04/04/2022 23:51	
Bromochloromethane	ND	0.0050	1	04/04/2022 23:51	
Bromodichloromethane	ND	0.0050	1	04/04/2022 23:51	
Bromoform	ND	0.0050	1	04/04/2022 23:51	
Bromomethane	ND	0.0050	1	04/04/2022 23:51	
2-Butanone (MEK)	ND	0.10	1	04/04/2022 23:51	
t-Butyl alcohol (TBA)	ND	0.050	1	04/04/2022 23:51	
n-Butyl benzene	ND	0.0050	1	04/04/2022 23:51	
sec-Butyl benzene	ND	0.0050	1	04/04/2022 23:51	
tert-Butyl benzene	ND	0.0050	1	04/04/2022 23:51	
Carbon Disulfide	ND	0.0050	1	04/04/2022 23:51	
Carbon Tetrachloride	ND	0.0050	1	04/04/2022 23:51	
Chlorobenzene	ND	0.0050	1	04/04/2022 23:51	
Chloroethane	ND	0.0050	1	04/04/2022 23:51	
Chloroform	ND	0.0050	1	04/04/2022 23:51	
Chloromethane	ND	0.0050	1	04/04/2022 23:51	
2-Chlorotoluene	ND	0.0050	1	04/04/2022 23:51	
4-Chlorotoluene	ND	0.0050	1	04/04/2022 23:51	
Dibromochloromethane	ND	0.0050	1	04/04/2022 23:51	
1,2-Dibromo-3-chloropropane	ND	0.00050	1	04/04/2022 23:51	
1,2-Dibromoethane (EDB)	ND	0.00025	1	04/04/2022 23:51	
Dibromomethane	ND	0.0050	1	04/04/2022 23:51	
1,2-Dichlorobenzene	ND	0.0050	1	04/04/2022 23:51	
1,3-Dichlorobenzene	ND	0.0050	1	04/04/2022 23:51	
1,4-Dichlorobenzene	ND	0.0050	1	04/04/2022 23:51	
Dichlorodifluoromethane	ND	0.0050	1	04/04/2022 23:51	
1,1-Dichloroethane	ND	0.0050	1	04/04/2022 23:51	
1,2-Dichloroethane (1,2-DCA)	ND	0.00010	1	04/04/2022 23:51	
1,1-Dichloroethene	ND	0.0050	1	04/04/2022 23:51	
cis-1,2-Dichloroethene	ND	0.0050	1	04/04/2022 23:51	
trans-1,2-Dichloroethene	ND	0.0050	1	04/04/2022 23:51	
1,2-Dichloropropane	ND	0.0050	1	04/04/2022 23:51	
1,3-Dichloropropane	ND	0.0050	1	04/04/2022 23:51	
2,2-Dichloropropane	ND	0.0050	1	04/04/2022 23:51	

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-1.5	2203L27-028A	Soil	03/29/2022 14:16	GC38 04042225.D	242510

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	04/04/2022 23:51
cis-1,3-Dichloropropene	ND	0.0050	1	04/04/2022 23:51
trans-1,3-Dichloropropene	ND	0.0050	1	04/04/2022 23:51
Diisopropyl ether (DIPE)	ND	0.0050	1	04/04/2022 23:51
Ethylbenzene	ND	0.0050	1	04/04/2022 23:51
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	04/04/2022 23:51
Freon 113	ND	0.0050	1	04/04/2022 23:51
Hexachlorobutadiene	ND	0.0050	1	04/04/2022 23:51
Hexachloroethane	ND	0.0050	1	04/04/2022 23:51
2-Hexanone	ND	0.0050	1	04/04/2022 23:51
Isopropylbenzene	ND	0.0050	1	04/04/2022 23:51
4-Isopropyl toluene	ND	0.0050	1	04/04/2022 23:51
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	04/04/2022 23:51
Methylene chloride	ND	0.020	1	04/04/2022 23:51
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	04/04/2022 23:51
Naphthalene	ND	0.0050	1	04/04/2022 23:51
n-Propyl benzene	ND	0.0050	1	04/04/2022 23:51
Styrene	ND	0.0050	1	04/04/2022 23:51
1,1,1,2-Tetrachloroethane	ND	0.0050	1	04/04/2022 23:51
1,1,2,2-Tetrachloroethane	ND	0.0050	1	04/04/2022 23:51
Tetrachloroethene	ND	0.0050	1	04/04/2022 23:51
Toluene	ND	0.0050	1	04/04/2022 23:51
1,2,3-Trichlorobenzene	ND	0.0050	1	04/04/2022 23:51
1,2,4-Trichlorobenzene	ND	0.0050	1	04/04/2022 23:51
1,1,1-Trichloroethane	ND	0.0050	1	04/04/2022 23:51
1,1,2-Trichloroethane	ND	0.0050	1	04/04/2022 23:51
Trichloroethene	ND	0.0050	1	04/04/2022 23:51
Trichlorofluoromethane	ND	0.0050	1	04/04/2022 23:51
1,2,3-Trichloropropane	ND	0.00025	1	04/04/2022 23:51
1,2,4-Trimethylbenzene	ND	0.0050	1	04/04/2022 23:51
1,3,5-Trimethylbenzene	ND	0.0050	1	04/04/2022 23:51
Vinyl Chloride	ND	0.00025	1	04/04/2022 23:51
m,p-Xylene	ND	0.0050	1	04/04/2022 23:51
o-Xylene	ND	0.0050	1	04/04/2022 23:51
Xylenes, Total	ND	0.0050	1	04/04/2022 23:51

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# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-1.5	2203L27-028A	Soil	03/29/2022 14:16	GC38 04042225.D	242510

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	90	70-140		04/04/2022 23:51
Toluene-d8	121	70-140		04/04/2022 23:51
4-BFB	98	70-140		04/04/2022 23:51
Benzene-d6	81	50-140		04/04/2022 23:51
Ethylbenzene-d10	91	50-140		04/04/2022 23:51
1,2-DCB-d4	70	40-140		04/04/2022 23:51

Analyst(s): ANL



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-5.0	2203L27-030A	Soil	03/29/2022 14:18	GC18 04042233.D	242510
Analytes	Result	RL	DF	Date Analyzed	
Acetone	ND	0.20	1	04/05/2022 05:22	
tert-Amyl methyl ether (TAME)	ND	0.0050	1	04/05/2022 05:22	
Benzene	ND	0.0050	1	04/05/2022 05:22	
Bromobenzene	ND	0.0050	1	04/05/2022 05:22	
Bromochloromethane	ND	0.0050	1	04/05/2022 05:22	
Bromodichloromethane	ND	0.0050	1	04/05/2022 05:22	
Bromoform	ND	0.0050	1	04/05/2022 05:22	
Bromomethane	ND	0.0050	1	04/05/2022 05:22	
2-Butanone (MEK)	ND	0.10	1	04/05/2022 05:22	
t-Butyl alcohol (TBA)	ND	0.050	1	04/05/2022 05:22	
n-Butyl benzene	ND	0.0050	1	04/05/2022 05:22	
sec-Butyl benzene	ND	0.0050	1	04/05/2022 05:22	
tert-Butyl benzene	ND	0.0050	1	04/05/2022 05:22	
Carbon Disulfide	ND	0.0050	1	04/05/2022 05:22	
Carbon Tetrachloride	ND	0.0050	1	04/05/2022 05:22	
Chlorobenzene	ND	0.0050	1	04/05/2022 05:22	
Chloroethane	ND	0.0050	1	04/05/2022 05:22	
Chloroform	ND	0.0050	1	04/05/2022 05:22	
Chloromethane	ND	0.0050	1	04/05/2022 05:22	
2-Chlorotoluene	ND	0.0050	1	04/05/2022 05:22	
4-Chlorotoluene	ND	0.0050	1	04/05/2022 05:22	
Dibromochloromethane	ND	0.0050	1	04/05/2022 05:22	
1,2-Dibromo-3-chloropropane	ND	0.00050	1	04/05/2022 05:22	
1,2-Dibromoethane (EDB)	ND	0.00025	1	04/05/2022 05:22	
Dibromomethane	ND	0.0050	1	04/05/2022 05:22	
1,2-Dichlorobenzene	ND	0.0050	1	04/05/2022 05:22	
1,3-Dichlorobenzene	ND	0.0050	1	04/05/2022 05:22	
1,4-Dichlorobenzene	ND	0.0050	1	04/05/2022 05:22	
Dichlorodifluoromethane	ND	0.0050	1	04/05/2022 05:22	
1,1-Dichloroethane	ND	0.0050	1	04/05/2022 05:22	
1,2-Dichloroethane (1,2-DCA)	ND	0.00010	1	04/05/2022 05:22	
1,1-Dichloroethene	ND	0.0050	1	04/05/2022 05:22	
cis-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 05:22	
trans-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 05:22	
1,2-Dichloropropane	ND	0.0050	1	04/05/2022 05:22	
1,3-Dichloropropane	ND	0.0050	1	04/05/2022 05:22	
2,2-Dichloropropane	ND	0.0050	1	04/05/2022 05:22	

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-5.0	2203L27-030A	Soil	03/29/2022 14:18	GC18 04042233.D	242510

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	04/05/2022 05:22
cis-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 05:22
trans-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 05:22
Diisopropyl ether (DIPE)	ND	0.0050	1	04/05/2022 05:22
Ethylbenzene	ND	0.0050	1	04/05/2022 05:22
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	04/05/2022 05:22
Freon 113	ND	0.0050	1	04/05/2022 05:22
Hexachlorobutadiene	ND	0.0050	1	04/05/2022 05:22
Hexachloroethane	ND	0.0050	1	04/05/2022 05:22
2-Hexanone	ND	0.0050	1	04/05/2022 05:22
Isopropylbenzene	ND	0.0050	1	04/05/2022 05:22
4-Isopropyl toluene	ND	0.0050	1	04/05/2022 05:22
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	04/05/2022 05:22
Methylene chloride	ND	0.020	1	04/05/2022 05:22
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	04/05/2022 05:22
Naphthalene	ND	0.0050	1	04/05/2022 05:22
n-Propyl benzene	ND	0.0050	1	04/05/2022 05:22
Styrene	ND	0.0050	1	04/05/2022 05:22
1,1,1,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 05:22
1,1,2,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 05:22
Tetrachloroethene	ND	0.0050	1	04/05/2022 05:22
Toluene	ND	0.0050	1	04/05/2022 05:22
1,2,3-Trichlorobenzene	ND	0.0050	1	04/05/2022 05:22
1,2,4-Trichlorobenzene	ND	0.0050	1	04/05/2022 05:22
1,1,1-Trichloroethane	ND	0.0050	1	04/05/2022 05:22
1,1,2-Trichloroethane	ND	0.0050	1	04/05/2022 05:22
Trichloroethene	ND	0.0050	1	04/05/2022 05:22
Trichlorofluoromethane	ND	0.0050	1	04/05/2022 05:22
1,2,3-Trichloropropane	ND	0.00025	1	04/05/2022 05:22
1,2,4-Trimethylbenzene	ND	0.0050	1	04/05/2022 05:22
1,3,5-Trimethylbenzene	ND	0.0050	1	04/05/2022 05:22
Vinyl Chloride	ND	0.00025	1	04/05/2022 05:22
m,p-Xylene	ND	0.0050	1	04/05/2022 05:22
o-Xylene	ND	0.0050	1	04/05/2022 05:22
Xylenes, Total	ND	0.0050	1	04/05/2022 05:22

(Cont.)



# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-5.0	2203L27-030A	Soil	03/29/2022 14:18	GC18 04042233.D	242510

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>	
Dibromofluoromethane	92		70-140	04/05/2022 05:22
Toluene-d8	110		70-140	04/05/2022 05:22
4-BFB	85		70-140	04/05/2022 05:22
Benzene-d6	87		50-140	04/05/2022 05:22
Ethylbenzene-d10	98		50-140	04/05/2022 05:22
1,2-DCB-d4	72		40-140	04/05/2022 05:22

Analyst(s): KF



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-1.5	2203L27-034A	Soil	03/29/2022 13:51	GC38 04042226.D	242510

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.20	1	04/05/2022 00:28
tert-Amyl methyl ether (TAME)	ND	0.0050	1	04/05/2022 00:28
Benzene	ND	0.0050	1	04/05/2022 00:28
Bromobenzene	ND	0.0050	1	04/05/2022 00:28
Bromochloromethane	ND	0.0050	1	04/05/2022 00:28
Bromodichloromethane	ND	0.0050	1	04/05/2022 00:28
Bromoform	ND	0.0050	1	04/05/2022 00:28
Bromomethane	ND	0.0050	1	04/05/2022 00:28
2-Butanone (MEK)	ND	0.10	1	04/05/2022 00:28
t-Butyl alcohol (TBA)	ND	0.050	1	04/05/2022 00:28
n-Butyl benzene	ND	0.0050	1	04/05/2022 00:28
sec-Butyl benzene	ND	0.0050	1	04/05/2022 00:28
tert-Butyl benzene	ND	0.0050	1	04/05/2022 00:28
Carbon Disulfide	ND	0.0050	1	04/05/2022 00:28
Carbon Tetrachloride	ND	0.0050	1	04/05/2022 00:28
Chlorobenzene	ND	0.0050	1	04/05/2022 00:28
Chloroethane	ND	0.0050	1	04/05/2022 00:28
Chloroform	ND	0.0050	1	04/05/2022 00:28
Chloromethane	ND	0.0050	1	04/05/2022 00:28
2-Chlorotoluene	ND	0.0050	1	04/05/2022 00:28
4-Chlorotoluene	ND	0.0050	1	04/05/2022 00:28
Dibromochloromethane	ND	0.0050	1	04/05/2022 00:28
1,2-Dibromo-3-chloropropane	ND	0.00050	1	04/05/2022 00:28
1,2-Dibromoethane (EDB)	ND	0.00025	1	04/05/2022 00:28
Dibromomethane	ND	0.0050	1	04/05/2022 00:28
1,2-Dichlorobenzene	ND	0.0050	1	04/05/2022 00:28
1,3-Dichlorobenzene	ND	0.0050	1	04/05/2022 00:28
1,4-Dichlorobenzene	ND	0.0050	1	04/05/2022 00:28
Dichlorodifluoromethane	ND	0.0050	1	04/05/2022 00:28
1,1-Dichloroethane	ND	0.0050	1	04/05/2022 00:28
1,2-Dichloroethane (1,2-DCA)	ND	0.00010	1	04/05/2022 00:28
1,1-Dichloroethene	ND	0.0050	1	04/05/2022 00:28
cis-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 00:28
trans-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 00:28
1,2-Dichloropropane	ND	0.0050	1	04/05/2022 00:28
1,3-Dichloropropane	ND	0.0050	1	04/05/2022 00:28
2,2-Dichloropropane	ND	0.0050	1	04/05/2022 00:28

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-1.5	2203L27-034A	Soil	03/29/2022 13:51	GC38 04042226.D	242510

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	04/05/2022 00:28
cis-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 00:28
trans-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 00:28
Diisopropyl ether (DIPE)	ND	0.0050	1	04/05/2022 00:28
Ethylbenzene	ND	0.0050	1	04/05/2022 00:28
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	04/05/2022 00:28
Freon 113	ND	0.0050	1	04/05/2022 00:28
Hexachlorobutadiene	ND	0.0050	1	04/05/2022 00:28
Hexachloroethane	ND	0.0050	1	04/05/2022 00:28
2-Hexanone	ND	0.0050	1	04/05/2022 00:28
Isopropylbenzene	ND	0.0050	1	04/05/2022 00:28
4-Isopropyl toluene	ND	0.0050	1	04/05/2022 00:28
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	04/05/2022 00:28
Methylene chloride	ND	0.020	1	04/05/2022 00:28
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	04/05/2022 00:28
Naphthalene	ND	0.0050	1	04/05/2022 00:28
n-Propyl benzene	ND	0.0050	1	04/05/2022 00:28
Styrene	ND	0.0050	1	04/05/2022 00:28
1,1,1,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 00:28
1,1,2,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 00:28
Tetrachloroethene	ND	0.0050	1	04/05/2022 00:28
Toluene	ND	0.0050	1	04/05/2022 00:28
1,2,3-Trichlorobenzene	ND	0.0050	1	04/05/2022 00:28
1,2,4-Trichlorobenzene	ND	0.0050	1	04/05/2022 00:28
1,1,1-Trichloroethane	ND	0.0050	1	04/05/2022 00:28
1,1,2-Trichloroethane	ND	0.0050	1	04/05/2022 00:28
Trichloroethene	ND	0.0050	1	04/05/2022 00:28
Trichlorofluoromethane	ND	0.0050	1	04/05/2022 00:28
1,2,3-Trichloropropane	ND	0.00025	1	04/05/2022 00:28
1,2,4-Trimethylbenzene	ND	0.0050	1	04/05/2022 00:28
1,3,5-Trimethylbenzene	ND	0.0050	1	04/05/2022 00:28
Vinyl Chloride	ND	0.00025	1	04/05/2022 00:28
m,p-Xylene	ND	0.0050	1	04/05/2022 00:28
o-Xylene	ND	0.0050	1	04/05/2022 00:28
Xylenes, Total	ND	0.0050	1	04/05/2022 00:28

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# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-1.5	2203L27-034A	Soil	03/29/2022 13:51	GC38 04042226.D	242510

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	99	70-140		04/05/2022 00:28
Toluene-d8	120	70-140		04/05/2022 00:28
4-BFB	101	70-140		04/05/2022 00:28
Benzene-d6	94	50-140		04/05/2022 00:28
Ethylbenzene-d10	96	50-140		04/05/2022 00:28
1,2-DCB-d4	74	40-140		04/05/2022 00:28

Analyst(s): ANL



# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-3.0	2203L27-041A	Soil	03/29/2022 15:07	GC38 04042227.D	242510

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.20	1	04/05/2022 01:05
tert-Amyl methyl ether (TAME)	ND	0.0050	1	04/05/2022 01:05
Benzene	ND	0.0050	1	04/05/2022 01:05
Bromobenzene	ND	0.0050	1	04/05/2022 01:05
Bromochloromethane	ND	0.0050	1	04/05/2022 01:05
Bromodichloromethane	ND	0.0050	1	04/05/2022 01:05
Bromoform	ND	0.0050	1	04/05/2022 01:05
Bromomethane	ND	0.0050	1	04/05/2022 01:05
2-Butanone (MEK)	ND	0.10	1	04/05/2022 01:05
t-Butyl alcohol (TBA)	ND	0.050	1	04/05/2022 01:05
n-Butyl benzene	ND	0.0050	1	04/05/2022 01:05
sec-Butyl benzene	ND	0.0050	1	04/05/2022 01:05
tert-Butyl benzene	ND	0.0050	1	04/05/2022 01:05
Carbon Disulfide	ND	0.0050	1	04/05/2022 01:05
Carbon Tetrachloride	ND	0.0050	1	04/05/2022 01:05
Chlorobenzene	ND	0.0050	1	04/05/2022 01:05
Chloroethane	ND	0.0050	1	04/05/2022 01:05
Chloroform	ND	0.0050	1	04/05/2022 01:05
Chloromethane	ND	0.0050	1	04/05/2022 01:05
2-Chlorotoluene	ND	0.0050	1	04/05/2022 01:05
4-Chlorotoluene	ND	0.0050	1	04/05/2022 01:05
Dibromochloromethane	ND	0.0050	1	04/05/2022 01:05
1,2-Dibromo-3-chloropropane	ND	0.00050	1	04/05/2022 01:05
1,2-Dibromoethane (EDB)	ND	0.00025	1	04/05/2022 01:05
Dibromomethane	ND	0.0050	1	04/05/2022 01:05
1,2-Dichlorobenzene	ND	0.0050	1	04/05/2022 01:05
1,3-Dichlorobenzene	ND	0.0050	1	04/05/2022 01:05
1,4-Dichlorobenzene	ND	0.0050	1	04/05/2022 01:05
Dichlorodifluoromethane	ND	0.0050	1	04/05/2022 01:05
1,1-Dichloroethane	ND	0.0050	1	04/05/2022 01:05
1,2-Dichloroethane (1,2-DCA)	ND	0.00010	1	04/05/2022 01:05
1,1-Dichloroethene	ND	0.0050	1	04/05/2022 01:05
cis-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 01:05
trans-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 01:05
1,2-Dichloropropane	ND	0.0050	1	04/05/2022 01:05
1,3-Dichloropropane	ND	0.0050	1	04/05/2022 01:05
2,2-Dichloropropane	ND	0.0050	1	04/05/2022 01:05

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-3.0	2203L27-041A	Soil	03/29/2022 15:07	GC38 04042227.D	242510

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	04/05/2022 01:05
cis-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 01:05
trans-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 01:05
Diisopropyl ether (DIPE)	ND	0.0050	1	04/05/2022 01:05
Ethylbenzene	ND	0.0050	1	04/05/2022 01:05
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	04/05/2022 01:05
Freon 113	ND	0.0050	1	04/05/2022 01:05
Hexachlorobutadiene	ND	0.0050	1	04/05/2022 01:05
Hexachloroethane	ND	0.0050	1	04/05/2022 01:05
2-Hexanone	ND	0.0050	1	04/05/2022 01:05
Isopropylbenzene	ND	0.0050	1	04/05/2022 01:05
4-Isopropyl toluene	ND	0.0050	1	04/05/2022 01:05
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	04/05/2022 01:05
Methylene chloride	ND	0.020	1	04/05/2022 01:05
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	04/05/2022 01:05
Naphthalene	ND	0.0050	1	04/05/2022 01:05
n-Propyl benzene	ND	0.0050	1	04/05/2022 01:05
Styrene	ND	0.0050	1	04/05/2022 01:05
1,1,1,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 01:05
1,1,2,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 01:05
Tetrachloroethene	ND	0.0050	1	04/05/2022 01:05
Toluene	ND	0.0050	1	04/05/2022 01:05
1,2,3-Trichlorobenzene	ND	0.0050	1	04/05/2022 01:05
1,2,4-Trichlorobenzene	ND	0.0050	1	04/05/2022 01:05
1,1,1-Trichloroethane	ND	0.0050	1	04/05/2022 01:05
1,1,2-Trichloroethane	ND	0.0050	1	04/05/2022 01:05
Trichloroethene	ND	0.0050	1	04/05/2022 01:05
Trichlorofluoromethane	ND	0.0050	1	04/05/2022 01:05
1,2,3-Trichloropropane	ND	0.00025	1	04/05/2022 01:05
1,2,4-Trimethylbenzene	ND	0.0050	1	04/05/2022 01:05
1,3,5-Trimethylbenzene	ND	0.0050	1	04/05/2022 01:05
Vinyl Chloride	ND	0.00025	1	04/05/2022 01:05
m,p-Xylene	ND	0.0050	1	04/05/2022 01:05
o-Xylene	ND	0.0050	1	04/05/2022 01:05
Xylenes, Total	ND	0.0050	1	04/05/2022 01:05

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-3.0	2203L27-041A	Soil	03/29/2022 15:07	GC38 04042227.D	242510

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	86	70-140		04/05/2022 01:05
Toluene-d8	120	70-140		04/05/2022 01:05
4-BFB	100	70-140		04/05/2022 01:05
Benzene-d6	81	50-140		04/05/2022 01:05
Ethylbenzene-d10	97	50-140		04/05/2022 01:05
1,2-DCB-d4	73	40-140		04/05/2022 01:05

**Analyst(s):** ANL



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-1.5	2203L27-046A	Soil	03/29/2022 15:31	GC38 04042228.D	242510

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.20	1	04/05/2022 01:42
tert-Amyl methyl ether (TAME)	ND	0.0050	1	04/05/2022 01:42
Benzene	ND	0.0050	1	04/05/2022 01:42
Bromobenzene	ND	0.0050	1	04/05/2022 01:42
Bromochloromethane	ND	0.0050	1	04/05/2022 01:42
Bromodichloromethane	ND	0.0050	1	04/05/2022 01:42
Bromoform	ND	0.0050	1	04/05/2022 01:42
Bromomethane	ND	0.0050	1	04/05/2022 01:42
2-Butanone (MEK)	ND	0.10	1	04/05/2022 01:42
t-Butyl alcohol (TBA)	ND	0.050	1	04/05/2022 01:42
n-Butyl benzene	ND	0.0050	1	04/05/2022 01:42
sec-Butyl benzene	ND	0.0050	1	04/05/2022 01:42
tert-Butyl benzene	ND	0.0050	1	04/05/2022 01:42
Carbon Disulfide	ND	0.0050	1	04/05/2022 01:42
Carbon Tetrachloride	ND	0.0050	1	04/05/2022 01:42
Chlorobenzene	ND	0.0050	1	04/05/2022 01:42
Chloroethane	ND	0.0050	1	04/05/2022 01:42
Chloroform	ND	0.0050	1	04/05/2022 01:42
Chloromethane	ND	0.0050	1	04/05/2022 01:42
2-Chlorotoluene	ND	0.0050	1	04/05/2022 01:42
4-Chlorotoluene	ND	0.0050	1	04/05/2022 01:42
Dibromochloromethane	ND	0.0050	1	04/05/2022 01:42
1,2-Dibromo-3-chloropropane	ND	0.00050	1	04/05/2022 01:42
1,2-Dibromoethane (EDB)	ND	0.00025	1	04/05/2022 01:42
Dibromomethane	ND	0.0050	1	04/05/2022 01:42
1,2-Dichlorobenzene	ND	0.0050	1	04/05/2022 01:42
1,3-Dichlorobenzene	ND	0.0050	1	04/05/2022 01:42
1,4-Dichlorobenzene	ND	0.0050	1	04/05/2022 01:42
Dichlorodifluoromethane	ND	0.0050	1	04/05/2022 01:42
1,1-Dichloroethane	ND	0.0050	1	04/05/2022 01:42
1,2-Dichloroethane (1,2-DCA)	ND	0.00010	1	04/05/2022 01:42
1,1-Dichloroethene	ND	0.0050	1	04/05/2022 01:42
cis-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 01:42
trans-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 01:42
1,2-Dichloropropane	ND	0.0050	1	04/05/2022 01:42
1,3-Dichloropropane	ND	0.0050	1	04/05/2022 01:42
2,2-Dichloropropane	ND	0.0050	1	04/05/2022 01:42

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-1.5	2203L27-046A	Soil	03/29/2022 15:31	GC38 04042228.D	242510

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	04/05/2022 01:42
cis-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 01:42
trans-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 01:42
Diisopropyl ether (DIPE)	ND	0.0050	1	04/05/2022 01:42
Ethylbenzene	ND	0.0050	1	04/05/2022 01:42
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	04/05/2022 01:42
Freon 113	ND	0.0050	1	04/05/2022 01:42
Hexachlorobutadiene	ND	0.0050	1	04/05/2022 01:42
Hexachloroethane	ND	0.0050	1	04/05/2022 01:42
2-Hexanone	ND	0.0050	1	04/05/2022 01:42
Isopropylbenzene	ND	0.0050	1	04/05/2022 01:42
4-Isopropyl toluene	ND	0.0050	1	04/05/2022 01:42
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	04/05/2022 01:42
Methylene chloride	ND	0.020	1	04/05/2022 01:42
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	04/05/2022 01:42
Naphthalene	ND	0.0050	1	04/05/2022 01:42
n-Propyl benzene	ND	0.0050	1	04/05/2022 01:42
Styrene	ND	0.0050	1	04/05/2022 01:42
1,1,1,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 01:42
1,1,2,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 01:42
Tetrachloroethene	ND	0.0050	1	04/05/2022 01:42
Toluene	ND	0.0050	1	04/05/2022 01:42
1,2,3-Trichlorobenzene	ND	0.0050	1	04/05/2022 01:42
1,2,4-Trichlorobenzene	ND	0.0050	1	04/05/2022 01:42
1,1,1-Trichloroethane	ND	0.0050	1	04/05/2022 01:42
1,1,2-Trichloroethane	ND	0.0050	1	04/05/2022 01:42
Trichloroethene	ND	0.0050	1	04/05/2022 01:42
Trichlorofluoromethane	ND	0.0050	1	04/05/2022 01:42
1,2,3-Trichloropropane	ND	0.00025	1	04/05/2022 01:42
1,2,4-Trimethylbenzene	ND	0.0050	1	04/05/2022 01:42
1,3,5-Trimethylbenzene	ND	0.0050	1	04/05/2022 01:42
Vinyl Chloride	ND	0.00025	1	04/05/2022 01:42
m,p-Xylene	ND	0.0050	1	04/05/2022 01:42
o-Xylene	ND	0.0050	1	04/05/2022 01:42
Xylenes, Total	ND	0.0050	1	04/05/2022 01:42

(Cont.)



# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-1.5	2203L27-046A	Soil	03/29/2022 15:31	GC38 04042228.D	242510

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	92	70-140		04/05/2022 01:42
Toluene-d8	119	70-140		04/05/2022 01:42
4-BFB	96	70-140		04/05/2022 01:42
Benzene-d6	84	50-140		04/05/2022 01:42
Ethylbenzene-d10	93	50-140		04/05/2022 01:42
1,2-DCB-d4	71	40-140		04/05/2022 01:42

Analyst(s): ANL





# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-3.0	2203L27-053A	Soil	03/29/2022 15:52	GC38 04042229.D	242510

Analytes	Result	RL	DF	Date Analyzed
Acetone	ND	0.20	1	04/05/2022 02:19
tert-Amyl methyl ether (TAME)	ND	0.0050	1	04/05/2022 02:19
Benzene	ND	0.0050	1	04/05/2022 02:19
Bromobenzene	ND	0.0050	1	04/05/2022 02:19
Bromochloromethane	ND	0.0050	1	04/05/2022 02:19
Bromodichloromethane	ND	0.0050	1	04/05/2022 02:19
Bromoform	ND	0.0050	1	04/05/2022 02:19
Bromomethane	ND	0.0050	1	04/05/2022 02:19
2-Butanone (MEK)	ND	0.10	1	04/05/2022 02:19
t-Butyl alcohol (TBA)	ND	0.050	1	04/05/2022 02:19
n-Butyl benzene	ND	0.0050	1	04/05/2022 02:19
sec-Butyl benzene	ND	0.0050	1	04/05/2022 02:19
tert-Butyl benzene	ND	0.0050	1	04/05/2022 02:19
Carbon Disulfide	ND	0.0050	1	04/05/2022 02:19
Carbon Tetrachloride	ND	0.0050	1	04/05/2022 02:19
Chlorobenzene	ND	0.0050	1	04/05/2022 02:19
Chloroethane	ND	0.0050	1	04/05/2022 02:19
Chloroform	ND	0.0050	1	04/05/2022 02:19
Chloromethane	ND	0.0050	1	04/05/2022 02:19
2-Chlorotoluene	ND	0.0050	1	04/05/2022 02:19
4-Chlorotoluene	ND	0.0050	1	04/05/2022 02:19
Dibromochloromethane	ND	0.0050	1	04/05/2022 02:19
1,2-Dibromo-3-chloropropane	ND	0.00050	1	04/05/2022 02:19
1,2-Dibromoethane (EDB)	ND	0.00025	1	04/05/2022 02:19
Dibromomethane	ND	0.0050	1	04/05/2022 02:19
1,2-Dichlorobenzene	ND	0.0050	1	04/05/2022 02:19
1,3-Dichlorobenzene	ND	0.0050	1	04/05/2022 02:19
1,4-Dichlorobenzene	ND	0.0050	1	04/05/2022 02:19
Dichlorodifluoromethane	ND	0.0050	1	04/05/2022 02:19
1,1-Dichloroethane	ND	0.0050	1	04/05/2022 02:19
1,2-Dichloroethane (1,2-DCA)	ND	0.00010	1	04/05/2022 02:19
1,1-Dichloroethene	ND	0.0050	1	04/05/2022 02:19
cis-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 02:19
trans-1,2-Dichloroethene	ND	0.0050	1	04/05/2022 02:19
1,2-Dichloropropane	ND	0.0050	1	04/05/2022 02:19
1,3-Dichloropropane	ND	0.0050	1	04/05/2022 02:19
2,2-Dichloropropane	ND	0.0050	1	04/05/2022 02:19

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

### Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-3.0	2203L27-053A	Soil	03/29/2022 15:52	GC38 04042229.D	242510

Analytes	Result	RL	DF	Date Analyzed
1,1-Dichloropropene	ND	0.0050	1	04/05/2022 02:19
cis-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 02:19
trans-1,3-Dichloropropene	ND	0.0050	1	04/05/2022 02:19
Diisopropyl ether (DIPE)	ND	0.0050	1	04/05/2022 02:19
Ethylbenzene	ND	0.0050	1	04/05/2022 02:19
Ethyl tert-butyl ether (ETBE)	ND	0.0050	1	04/05/2022 02:19
Freon 113	ND	0.0050	1	04/05/2022 02:19
Hexachlorobutadiene	ND	0.0050	1	04/05/2022 02:19
Hexachloroethane	ND	0.0050	1	04/05/2022 02:19
2-Hexanone	ND	0.0050	1	04/05/2022 02:19
Isopropylbenzene	ND	0.0050	1	04/05/2022 02:19
4-Isopropyl toluene	ND	0.0050	1	04/05/2022 02:19
Methyl-t-butyl ether (MTBE)	ND	0.0050	1	04/05/2022 02:19
Methylene chloride	ND	0.020	1	04/05/2022 02:19
4-Methyl-2-pentanone (MIBK)	ND	0.0050	1	04/05/2022 02:19
Naphthalene	ND	0.0050	1	04/05/2022 02:19
n-Propyl benzene	ND	0.0050	1	04/05/2022 02:19
Styrene	ND	0.0050	1	04/05/2022 02:19
1,1,1,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 02:19
1,1,2,2-Tetrachloroethane	ND	0.0050	1	04/05/2022 02:19
Tetrachloroethene	ND	0.0050	1	04/05/2022 02:19
Toluene	ND	0.0050	1	04/05/2022 02:19
1,2,3-Trichlorobenzene	ND	0.0050	1	04/05/2022 02:19
1,2,4-Trichlorobenzene	ND	0.0050	1	04/05/2022 02:19
1,1,1-Trichloroethane	ND	0.0050	1	04/05/2022 02:19
1,1,2-Trichloroethane	ND	0.0050	1	04/05/2022 02:19
Trichloroethene	ND	0.0050	1	04/05/2022 02:19
Trichlorofluoromethane	ND	0.0050	1	04/05/2022 02:19
1,2,3-Trichloropropane	ND	0.00025	1	04/05/2022 02:19
1,2,4-Trimethylbenzene	ND	0.0050	1	04/05/2022 02:19
1,3,5-Trimethylbenzene	ND	0.0050	1	04/05/2022 02:19
Vinyl Chloride	ND	0.00025	1	04/05/2022 02:19
m,p-Xylene	ND	0.0050	1	04/05/2022 02:19
o-Xylene	ND	0.0050	1	04/05/2022 02:19
Xylenes, Total	ND	0.0050	1	04/05/2022 02:19

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# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg

## Volatile Organics

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-3.0	2203L27-053A	Soil	03/29/2022 15:52	GC38 04042229.D	242510

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
Dibromofluoromethane	100	70-140		04/05/2022 02:19
Toluene-d8	115	70-140		04/05/2022 02:19
4-BFB	93	70-140		04/05/2022 02:19
Benzene-d6	63	50-140		04/05/2022 02:19
Ethylbenzene-d10	61	50-140		04/05/2022 02:19
1,2-DCB-d4	50	40-140		04/05/2022 02:19

Analyst(s): ANL



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-0.5	2203L27-001A	Soil	03/29/2022 09:45	GC47 04052214.D	242737

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.026	20	04/05/2022 15:14
Acenaphthylene	ND	0.026	20	04/05/2022 15:14
Acetochlor	ND	5.0	20	04/05/2022 15:14
Anthracene	ND	0.026	20	04/05/2022 15:14
Benzidine	ND	25	20	04/05/2022 15:14
Benzo (a) anthracene	ND	0.26	20	04/05/2022 15:14
Benzo (a) pyrene	ND	0.050	20	04/05/2022 15:14
Benzo (b) fluoranthene	ND	0.13	20	04/05/2022 15:14
Benzo (g,h,i) perylene	ND	0.050	20	04/05/2022 15:14
Benzo (k) fluoranthene	ND	0.026	20	04/05/2022 15:14
Benzyl Alcohol	ND	25	20	04/05/2022 15:14
1,1-Biphenyl	ND	0.26	20	04/05/2022 15:14
Bis (2-chloroethoxy) Methane	ND	5.0	20	04/05/2022 15:14
Bis (2-chloroethyl) Ether	ND	0.026	20	04/05/2022 15:14
Bis (2-chloroisopropyl) Ether	ND	0.050	20	04/05/2022 15:14
Bis (2-ethylhexyl) Adipate	ND	5.0	20	04/05/2022 15:14
Bis (2-ethylhexyl) Phthalate	ND	0.50	20	04/05/2022 15:14
4-Bromophenyl Phenyl Ether	ND	5.0	20	04/05/2022 15:14
Butylbenzyl Phthalate	ND	0.50	20	04/05/2022 15:14
4-Chloroaniline	ND	0.050	20	04/05/2022 15:14
4-Chloro-3-methylphenol	ND	5.0	20	04/05/2022 15:14
2-Chloronaphthalene	ND	5.0	20	04/05/2022 15:14
2-Chlorophenol	ND	0.26	20	04/05/2022 15:14
4-Chlorophenyl Phenyl Ether	ND	5.0	20	04/05/2022 15:14
Chrysene	ND	0.050	20	04/05/2022 15:14
Dibenzo (a,h) anthracene	ND	0.050	20	04/05/2022 15:14
Dibenzofuran	ND	0.026	20	04/05/2022 15:14
Di-n-butyl Phthalate	ND	0.26	20	04/05/2022 15:14
1,2-Dichlorobenzene	ND	5.0	20	04/05/2022 15:14
1,3-Dichlorobenzene	ND	5.0	20	04/05/2022 15:14
1,4-Dichlorobenzene	ND	5.0	20	04/05/2022 15:14
3,3-Dichlorobenzidine	ND	0.050	20	04/05/2022 15:14
2,4-Dichlorophenol	ND	0.050	20	04/05/2022 15:14
Diethyl Phthalate	ND	0.26	20	04/05/2022 15:14
2,4-Dimethylphenol	ND	5.0	20	04/05/2022 15:14
Dimethyl Phthalate	ND	0.050	20	04/05/2022 15:14
4,6-Dinitro-2-methylphenol	ND	25	20	04/05/2022 15:14

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-0.5	2203L27-001A	Soil	03/29/2022 09:45	GC47 04052214.D	242737

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	5.0	20	04/05/2022 15:14
2,4-Dinitrotoluene	ND	0.26	20	04/05/2022 15:14
2,6-Dinitrotoluene	ND	2.5	20	04/05/2022 15:14
Di-n-octyl Phthalate	ND	10	20	04/05/2022 15:14
1,2-Diphenylhydrazine	ND	5.0	20	04/05/2022 15:14
Fluoranthene	ND	0.026	20	04/05/2022 15:14
Fluorene	ND	0.050	20	04/05/2022 15:14
Hexachlorobenzene	ND	0.026	20	04/05/2022 15:14
Hexachlorobutadiene	ND	0.050	20	04/05/2022 15:14
Hexachlorocyclopentadiene	ND	40	20	04/05/2022 15:14
Hexachloroethane	ND	0.26	20	04/05/2022 15:14
Indeno (1,2,3-cd) pyrene	ND	0.26	20	04/05/2022 15:14
Isophorone	ND	5.0	20	04/05/2022 15:14
1-Methylnaphthalene	ND	0.026	20	04/05/2022 15:14
2-Methylnaphthalene	ND	0.050	20	04/05/2022 15:14
2-Methylphenol (o-Cresol)	ND	5.0	20	04/05/2022 15:14
3 & 4-Methylphenol (m,p-Cresol)	ND	5.0	20	04/05/2022 15:14
Naphthalene	ND	0.12	20	04/05/2022 15:14
2-Nitroaniline	ND	25	20	04/05/2022 15:14
3-Nitroaniline	ND	25	20	04/05/2022 15:14
4-Nitroaniline	ND	25	20	04/05/2022 15:14
Nitrobenzene	ND	5.0	20	04/05/2022 15:14
2-Nitrophenol	ND	25	20	04/05/2022 15:14
4-Nitrophenol	ND	25	20	04/05/2022 15:14
N-Nitrosodimethylamine	ND	25	20	04/05/2022 15:14
N-Nitrosodiphenylamine	ND	5.0	20	04/05/2022 15:14
N-Nitrosodi-n-propylamine	ND	5.0	20	04/05/2022 15:14
Pentachlorophenol	ND	1.2	20	04/05/2022 15:14
Phenanthrene	ND	0.10	20	04/05/2022 15:14
Phenol	ND	1.0	20	04/05/2022 15:14
Pyrene	ND	0.050	20	04/05/2022 15:14
Pyridine	ND	5.0	20	04/05/2022 15:14
1,2,4-Trichlorobenzene	ND	5.0	20	04/05/2022 15:14
2,4,5-Trichlorophenol	ND	0.050	20	04/05/2022 15:14
2,4,6-Trichlorophenol	ND	0.26	20	04/05/2022 15:14

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-0.5	2203L27-001A	Soil	03/29/2022 09:45	GC47 04052214.D	242737

Analytes	Result	RL	DF	Date Analyzed
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Surrogates	REC (%)	Limits	
2-Fluorophenol	73	60-130	04/05/2022 15:14
Phenol-d5	67	60-130	04/05/2022 15:14
Nitrobenzene-d5	63	60-130	04/05/2022 15:14
2-Fluorobiphenyl	83	60-130	04/05/2022 15:14
2,4,6-Tribromophenol	50	50-130	04/05/2022 15:14
4-Terphenyl-d14	82	50-130	04/05/2022 15:14

Analyst(s): KVE

Analytical Comments: a3



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-3.0	2203L27-003A	Soil	03/29/2022 09:47	GC47 04052215.D	242737

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.0013	1	04/05/2022 15:41
Acenaphthylene	ND	0.0013	1	04/05/2022 15:41
Acetochlor	ND	0.25	1	04/05/2022 15:41
Anthracene	ND	0.0013	1	04/05/2022 15:41
Benzidine	ND	1.2	1	04/05/2022 15:41
Benzo (a) anthracene	ND	0.013	1	04/05/2022 15:41
Benzo (a) pyrene	ND	0.0025	1	04/05/2022 15:41
Benzo (b) fluoranthene	ND	0.0063	1	04/05/2022 15:41
Benzo (g,h,i) perylene	ND	0.0025	1	04/05/2022 15:41
Benzo (k) fluoranthene	ND	0.0013	1	04/05/2022 15:41
Benzyl Alcohol	ND	1.2	1	04/05/2022 15:41
1,1-Biphenyl	ND	0.013	1	04/05/2022 15:41
Bis (2-chloroethoxy) Methane	ND	0.25	1	04/05/2022 15:41
Bis (2-chloroethyl) Ether	ND	0.0013	1	04/05/2022 15:41
Bis (2-chloroisopropyl) Ether	ND	0.0025	1	04/05/2022 15:41
Bis (2-ethylhexyl) Adipate	ND	0.25	1	04/05/2022 15:41
Bis (2-ethylhexyl) Phthalate	ND	0.025	1	04/05/2022 15:41
4-Bromophenyl Phenyl Ether	ND	0.25	1	04/05/2022 15:41
Butylbenzyl Phthalate	ND	0.025	1	04/05/2022 15:41
4-Chloroaniline	ND	0.0025	1	04/05/2022 15:41
4-Chloro-3-methylphenol	ND	0.25	1	04/05/2022 15:41
2-Chloronaphthalene	ND	0.25	1	04/05/2022 15:41
2-Chlorophenol	ND	0.013	1	04/05/2022 15:41
4-Chlorophenyl Phenyl Ether	ND	0.25	1	04/05/2022 15:41
Chrysene	ND	0.0025	1	04/05/2022 15:41
Dibenzo (a,h) anthracene	ND	0.0025	1	04/05/2022 15:41
Dibenzofuran	ND	0.0013	1	04/05/2022 15:41
Di-n-butyl Phthalate	ND	0.013	1	04/05/2022 15:41
1,2-Dichlorobenzene	ND	0.25	1	04/05/2022 15:41
1,3-Dichlorobenzene	ND	0.25	1	04/05/2022 15:41
1,4-Dichlorobenzene	ND	0.25	1	04/05/2022 15:41
3,3-Dichlorobenzidine	ND	0.0025	1	04/05/2022 15:41
2,4-Dichlorophenol	ND	0.0025	1	04/05/2022 15:41
Diethyl Phthalate	ND	0.013	1	04/05/2022 15:41
2,4-Dimethylphenol	ND	0.25	1	04/05/2022 15:41
Dimethyl Phthalate	ND	0.0025	1	04/05/2022 15:41
4,6-Dinitro-2-methylphenol	ND	1.2	1	04/05/2022 15:41

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-3.0	2203L27-003A	Soil	03/29/2022 09:47	GC47 04052215.D	242737

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.25	1	04/05/2022 15:41
2,4-Dinitrotoluene	ND	0.013	1	04/05/2022 15:41
2,6-Dinitrotoluene	ND	0.12	1	04/05/2022 15:41
Di-n-octyl Phthalate	ND	0.50	1	04/05/2022 15:41
1,2-Diphenylhydrazine	ND	0.25	1	04/05/2022 15:41
Fluoranthene	ND	0.0013	1	04/05/2022 15:41
Fluorene	ND	0.0025	1	04/05/2022 15:41
Hexachlorobenzene	ND	0.0013	1	04/05/2022 15:41
Hexachlorobutadiene	ND	0.0025	1	04/05/2022 15:41
Hexachlorocyclopentadiene	ND	2.0	1	04/05/2022 15:41
Hexachloroethane	ND	0.013	1	04/05/2022 15:41
Indeno (1,2,3-cd) pyrene	ND	0.013	1	04/05/2022 15:41
Isophorone	ND	0.25	1	04/05/2022 15:41
1-Methylnaphthalene	ND	0.0013	1	04/05/2022 15:41
2-Methylnaphthalene	ND	0.0025	1	04/05/2022 15:41
2-Methylphenol (o-Cresol)	ND	0.25	1	04/05/2022 15:41
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	04/05/2022 15:41
Naphthalene	ND	0.0062	1	04/05/2022 15:41
2-Nitroaniline	ND	1.2	1	04/05/2022 15:41
3-Nitroaniline	ND	1.2	1	04/05/2022 15:41
4-Nitroaniline	ND	1.2	1	04/05/2022 15:41
Nitrobenzene	ND	0.25	1	04/05/2022 15:41
2-Nitrophenol	ND	1.2	1	04/05/2022 15:41
4-Nitrophenol	ND	1.2	1	04/05/2022 15:41
N-Nitrosodimethylamine	ND	1.2	1	04/05/2022 15:41
N-Nitrosodiphenylamine	ND	0.25	1	04/05/2022 15:41
N-Nitrosodi-n-propylamine	ND	0.25	1	04/05/2022 15:41
Pentachlorophenol	ND	0.062	1	04/05/2022 15:41
Phenanthrene	ND	0.0050	1	04/05/2022 15:41
Phenol	ND	0.050	1	04/05/2022 15:41
Pyrene	ND	0.0025	1	04/05/2022 15:41
Pyridine	ND	0.25	1	04/05/2022 15:41
1,2,4-Trichlorobenzene	ND	0.25	1	04/05/2022 15:41
2,4,5-Trichlorophenol	ND	0.0025	1	04/05/2022 15:41
2,4,6-Trichlorophenol	ND	0.013	1	04/05/2022 15:41

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-3.0	2203L27-003A	Soil	03/29/2022 09:47	GC47 04052215.D	242737

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
2-Fluorophenol	84	60-130		04/05/2022 15:41
Phenol-d5	79	60-130		04/05/2022 15:41
Nitrobenzene-d5	78	60-130		04/05/2022 15:41
2-Fluorobiphenyl	96	60-130		04/05/2022 15:41
2,4,6-Tribromophenol	61	50-130		04/05/2022 15:41
4-Terphenyl-d14	94	50-130		04/05/2022 15:41

**Analyst(s):** KVE



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-2-1.5	2203L27-006A	Soil	03/29/2022 11:15	GC47 04052216.D	242737

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.0013	1	04/05/2022 16:08
Acenaphthylene	ND	0.0013	1	04/05/2022 16:08
Acetochlor	ND	0.25	1	04/05/2022 16:08
Anthracene	ND	0.0013	1	04/05/2022 16:08
Benzidine	ND	1.2	1	04/05/2022 16:08
Benzo (a) anthracene	ND	0.013	1	04/05/2022 16:08
Benzo (a) pyrene	ND	0.0025	1	04/05/2022 16:08
Benzo (b) fluoranthene	ND	0.0063	1	04/05/2022 16:08
Benzo (g,h,i) perylene	ND	0.0025	1	04/05/2022 16:08
Benzo (k) fluoranthene	ND	0.0013	1	04/05/2022 16:08
Benzyl Alcohol	ND	1.2	1	04/05/2022 16:08
1,1-Biphenyl	ND	0.013	1	04/05/2022 16:08
Bis (2-chloroethoxy) Methane	ND	0.25	1	04/05/2022 16:08
Bis (2-chloroethyl) Ether	ND	0.0013	1	04/05/2022 16:08
Bis (2-chloroisopropyl) Ether	ND	0.0025	1	04/05/2022 16:08
Bis (2-ethylhexyl) Adipate	ND	0.25	1	04/05/2022 16:08
Bis (2-ethylhexyl) Phthalate	ND	0.025	1	04/05/2022 16:08
4-Bromophenyl Phenyl Ether	ND	0.25	1	04/05/2022 16:08
Butylbenzyl Phthalate	ND	0.025	1	04/05/2022 16:08
4-Chloroaniline	ND	0.0025	1	04/05/2022 16:08
4-Chloro-3-methylphenol	ND	0.25	1	04/05/2022 16:08
2-Chloronaphthalene	ND	0.25	1	04/05/2022 16:08
2-Chlorophenol	ND	0.013	1	04/05/2022 16:08
4-Chlorophenyl Phenyl Ether	ND	0.25	1	04/05/2022 16:08
Chrysene	ND	0.0025	1	04/05/2022 16:08
Dibenzo (a,h) anthracene	ND	0.0025	1	04/05/2022 16:08
Dibenzofuran	ND	0.0013	1	04/05/2022 16:08
Di-n-butyl Phthalate	ND	0.013	1	04/05/2022 16:08
1,2-Dichlorobenzene	ND	0.25	1	04/05/2022 16:08
1,3-Dichlorobenzene	ND	0.25	1	04/05/2022 16:08
1,4-Dichlorobenzene	ND	0.25	1	04/05/2022 16:08
3,3-Dichlorobenzidine	ND	0.0025	1	04/05/2022 16:08
2,4-Dichlorophenol	ND	0.0025	1	04/05/2022 16:08
Diethyl Phthalate	ND	0.013	1	04/05/2022 16:08
2,4-Dimethylphenol	ND	0.25	1	04/05/2022 16:08
Dimethyl Phthalate	ND	0.0025	1	04/05/2022 16:08
4,6-Dinitro-2-methylphenol	ND	1.2	1	04/05/2022 16:08

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-2-1.5	2203L27-006A	Soil	03/29/2022 11:15	GC47 04052216.D	242737

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.25	1	04/05/2022 16:08
2,4-Dinitrotoluene	ND	0.013	1	04/05/2022 16:08
2,6-Dinitrotoluene	ND	0.12	1	04/05/2022 16:08
Di-n-octyl Phthalate	ND	0.50	1	04/05/2022 16:08
1,2-Diphenylhydrazine	ND	0.25	1	04/05/2022 16:08
Fluoranthene	ND	0.0013	1	04/05/2022 16:08
Fluorene	ND	0.0025	1	04/05/2022 16:08
Hexachlorobenzene	ND	0.0013	1	04/05/2022 16:08
Hexachlorobutadiene	ND	0.0025	1	04/05/2022 16:08
Hexachlorocyclopentadiene	ND	2.0	1	04/05/2022 16:08
Hexachloroethane	ND	0.013	1	04/05/2022 16:08
Indeno (1,2,3-cd) pyrene	ND	0.013	1	04/05/2022 16:08
Isophorone	ND	0.25	1	04/05/2022 16:08
1-Methylnaphthalene	ND	0.0013	1	04/05/2022 16:08
2-Methylnaphthalene	ND	0.0025	1	04/05/2022 16:08
2-Methylphenol (o-Cresol)	ND	0.25	1	04/05/2022 16:08
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	04/05/2022 16:08
Naphthalene	ND	0.0062	1	04/05/2022 16:08
2-Nitroaniline	ND	1.2	1	04/05/2022 16:08
3-Nitroaniline	ND	1.2	1	04/05/2022 16:08
4-Nitroaniline	ND	1.2	1	04/05/2022 16:08
Nitrobenzene	ND	0.25	1	04/05/2022 16:08
2-Nitrophenol	ND	1.2	1	04/05/2022 16:08
4-Nitrophenol	ND	1.2	1	04/05/2022 16:08
N-Nitrosodimethylamine	ND	1.2	1	04/05/2022 16:08
N-Nitrosodiphenylamine	ND	0.25	1	04/05/2022 16:08
N-Nitrosodi-n-propylamine	ND	0.25	1	04/05/2022 16:08
Pentachlorophenol	ND	0.062	1	04/05/2022 16:08
Phenanthrene	ND	0.0050	1	04/05/2022 16:08
Phenol	ND	0.050	1	04/05/2022 16:08
Pyrene	ND	0.0025	1	04/05/2022 16:08
Pyridine	ND	0.25	1	04/05/2022 16:08
1,2,4-Trichlorobenzene	ND	0.25	1	04/05/2022 16:08
2,4,5-Trichlorophenol	ND	0.0025	1	04/05/2022 16:08
2,4,6-Trichlorophenol	ND	0.013	1	04/05/2022 16:08

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-2-1.5	2203L27-006A	Soil	03/29/2022 11:15	GC47 04052216.D	242737

Analytes	Result	RL	DF	Date Analyzed
<b>Surrogates</b>	<b>REC (%)</b>	<b>Limits</b>		
2-Fluorophenol	109	60-130		04/05/2022 16:08
Phenol-d5	105	60-130		04/05/2022 16:08
Nitrobenzene-d5	102	60-130		04/05/2022 16:08
2-Fluorobiphenyl	123	60-130		04/05/2022 16:08
2,4,6-Tribromophenol	79	50-130		04/05/2022 16:08
4-Terphenyl-d14	118	50-130		04/05/2022 16:08

**Analyst(s):** KVE



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-1.5	2203L27-014A	Soil	03/29/2022 12:06	GC47 04052217.D	242737

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.0013	1	04/05/2022 16:35
Acenaphthylene	ND	0.0013	1	04/05/2022 16:35
Acetochlor	ND	0.25	1	04/05/2022 16:35
Anthracene	ND	0.0013	1	04/05/2022 16:35
Benzidine	ND	1.2	1	04/05/2022 16:35
Benzo (a) anthracene	ND	0.013	1	04/05/2022 16:35
Benzo (a) pyrene	ND	0.0025	1	04/05/2022 16:35
Benzo (b) fluoranthene	ND	0.0063	1	04/05/2022 16:35
Benzo (g,h,i) perylene	ND	0.0025	1	04/05/2022 16:35
Benzo (k) fluoranthene	ND	0.0013	1	04/05/2022 16:35
Benzyl Alcohol	ND	1.2	1	04/05/2022 16:35
1,1-Biphenyl	<b>0.021</b>	0.013	1	04/05/2022 16:35
Bis (2-chloroethoxy) Methane	ND	0.25	1	04/05/2022 16:35
Bis (2-chloroethyl) Ether	ND	0.0013	1	04/05/2022 16:35
Bis (2-chloroisopropyl) Ether	ND	0.0025	1	04/05/2022 16:35
Bis (2-ethylhexyl) Adipate	ND	0.25	1	04/05/2022 16:35
Bis (2-ethylhexyl) Phthalate	ND	0.025	1	04/05/2022 16:35
4-Bromophenyl Phenyl Ether	ND	0.25	1	04/05/2022 16:35
Butylbenzyl Phthalate	ND	0.025	1	04/05/2022 16:35
4-Chloroaniline	ND	0.0025	1	04/05/2022 16:35
4-Chloro-3-methylphenol	ND	0.25	1	04/05/2022 16:35
2-Chloronaphthalene	ND	0.25	1	04/05/2022 16:35
2-Chlorophenol	ND	0.013	1	04/05/2022 16:35
4-Chlorophenyl Phenyl Ether	ND	0.25	1	04/05/2022 16:35
Chrysene	ND	0.0025	1	04/05/2022 16:35
Dibenzo (a,h) anthracene	ND	0.0025	1	04/05/2022 16:35
Dibenzofuran	<b>0.023</b>	0.0013	1	04/05/2022 16:35
Di-n-butyl Phthalate	ND	0.013	1	04/05/2022 16:35
1,2-Dichlorobenzene	ND	0.25	1	04/05/2022 16:35
1,3-Dichlorobenzene	ND	0.25	1	04/05/2022 16:35
1,4-Dichlorobenzene	ND	0.25	1	04/05/2022 16:35
3,3-Dichlorobenzidine	ND	0.0025	1	04/05/2022 16:35
2,4-Dichlorophenol	ND	0.0025	1	04/05/2022 16:35
Diethyl Phthalate	ND	0.013	1	04/05/2022 16:35
2,4-Dimethylphenol	ND	0.25	1	04/05/2022 16:35
Dimethyl Phthalate	ND	0.0025	1	04/05/2022 16:35
4,6-Dinitro-2-methylphenol	ND	1.2	1	04/05/2022 16:35

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-1.5	2203L27-014A	Soil	03/29/2022 12:06	GC47 04052217.D	242737

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.25	1	04/05/2022 16:35
2,4-Dinitrotoluene	ND	0.013	1	04/05/2022 16:35
2,6-Dinitrotoluene	ND	0.12	1	04/05/2022 16:35
Di-n-octyl Phthalate	ND	0.50	1	04/05/2022 16:35
1,2-Diphenylhydrazine	ND	0.25	1	04/05/2022 16:35
Fluoranthene	ND	0.0013	1	04/05/2022 16:35
Fluorene	<b>0.019</b>	0.0025	1	04/05/2022 16:35
Hexachlorobenzene	ND	0.0013	1	04/05/2022 16:35
Hexachlorobutadiene	ND	0.0025	1	04/05/2022 16:35
Hexachlorocyclopentadiene	ND	2.0	1	04/05/2022 16:35
Hexachloroethane	ND	0.013	1	04/05/2022 16:35
Indeno (1,2,3-cd) pyrene	ND	0.013	1	04/05/2022 16:35
Isophorone	ND	0.25	1	04/05/2022 16:35
1-Methylnaphthalene	ND	0.0013	1	04/05/2022 16:35
2-Methylnaphthalene	ND	0.0025	1	04/05/2022 16:35
2-Methylphenol (o-Cresol)	ND	0.25	1	04/05/2022 16:35
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	04/05/2022 16:35
Naphthalene	ND	0.0062	1	04/05/2022 16:35
2-Nitroaniline	ND	1.2	1	04/05/2022 16:35
3-Nitroaniline	ND	1.2	1	04/05/2022 16:35
4-Nitroaniline	ND	1.2	1	04/05/2022 16:35
Nitrobenzene	ND	0.25	1	04/05/2022 16:35
2-Nitrophenol	ND	1.2	1	04/05/2022 16:35
4-Nitrophenol	ND	1.2	1	04/05/2022 16:35
N-Nitrosodimethylamine	ND	1.2	1	04/05/2022 16:35
N-Nitrosodiphenylamine	ND	0.25	1	04/05/2022 16:35
N-Nitrosodi-n-propylamine	ND	0.25	1	04/05/2022 16:35
Pentachlorophenol	ND	0.062	1	04/05/2022 16:35
Phenanthrene	<b>0.0068</b>	0.0050	1	04/05/2022 16:35
Phenol	ND	0.050	1	04/05/2022 16:35
Pyrene	ND	0.0025	1	04/05/2022 16:35
Pyridine	ND	0.25	1	04/05/2022 16:35
1,2,4-Trichlorobenzene	ND	0.25	1	04/05/2022 16:35
2,4,5-Trichlorophenol	ND	0.0025	1	04/05/2022 16:35
2,4,6-Trichlorophenol	ND	0.013	1	04/05/2022 16:35

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-1.5	2203L27-014A	Soil	03/29/2022 12:06	GC47 04052217.D	242737

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
2-Fluorophenol	81	60-130		04/05/2022 16:35
Phenol-d5	78	60-130		04/05/2022 16:35
Nitrobenzene-d5	77	60-130		04/05/2022 16:35
2-Fluorobiphenyl	95	60-130		04/05/2022 16:35
2,4,6-Tribromophenol	53	50-130		04/05/2022 16:35
4-Terphenyl-d14	90	50-130		04/05/2022 16:35

Analyst(s): KVE



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-3.0	2203L27-019A	Soil	03/29/2022 13:07	GC47 04052218.D	242737

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.0013	1	04/05/2022 17:02
Acenaphthylene	ND	0.0013	1	04/05/2022 17:02
Acetochlor	ND	0.25	1	04/05/2022 17:02
Anthracene	ND	0.0013	1	04/05/2022 17:02
Benzidine	ND	1.2	1	04/05/2022 17:02
Benzo (a) anthracene	ND	0.013	1	04/05/2022 17:02
Benzo (a) pyrene	ND	0.0025	1	04/05/2022 17:02
Benzo (b) fluoranthene	ND	0.0063	1	04/05/2022 17:02
Benzo (g,h,i) perylene	ND	0.0025	1	04/05/2022 17:02
Benzo (k) fluoranthene	ND	0.0013	1	04/05/2022 17:02
Benzyl Alcohol	ND	1.2	1	04/05/2022 17:02
1,1-Biphenyl	ND	0.013	1	04/05/2022 17:02
Bis (2-chloroethoxy) Methane	ND	0.25	1	04/05/2022 17:02
Bis (2-chloroethyl) Ether	ND	0.0013	1	04/05/2022 17:02
Bis (2-chloroisopropyl) Ether	ND	0.0025	1	04/05/2022 17:02
Bis (2-ethylhexyl) Adipate	ND	0.25	1	04/05/2022 17:02
Bis (2-ethylhexyl) Phthalate	ND	0.025	1	04/05/2022 17:02
4-Bromophenyl Phenyl Ether	ND	0.25	1	04/05/2022 17:02
Butylbenzyl Phthalate	ND	0.025	1	04/05/2022 17:02
4-Chloroaniline	ND	0.0025	1	04/05/2022 17:02
4-Chloro-3-methylphenol	ND	0.25	1	04/05/2022 17:02
2-Chloronaphthalene	ND	0.25	1	04/05/2022 17:02
2-Chlorophenol	ND	0.013	1	04/05/2022 17:02
4-Chlorophenyl Phenyl Ether	ND	0.25	1	04/05/2022 17:02
Chrysene	ND	0.0025	1	04/05/2022 17:02
Dibenzo (a,h) anthracene	ND	0.0025	1	04/05/2022 17:02
Dibenzofuran	ND	0.0013	1	04/05/2022 17:02
Di-n-butyl Phthalate	ND	0.013	1	04/05/2022 17:02
1,2-Dichlorobenzene	ND	0.25	1	04/05/2022 17:02
1,3-Dichlorobenzene	ND	0.25	1	04/05/2022 17:02
1,4-Dichlorobenzene	ND	0.25	1	04/05/2022 17:02
3,3-Dichlorobenzidine	ND	0.0025	1	04/05/2022 17:02
2,4-Dichlorophenol	ND	0.0025	1	04/05/2022 17:02
Diethyl Phthalate	ND	0.013	1	04/05/2022 17:02
2,4-Dimethylphenol	ND	0.25	1	04/05/2022 17:02
Dimethyl Phthalate	ND	0.0025	1	04/05/2022 17:02
4,6-Dinitro-2-methylphenol	ND	1.2	1	04/05/2022 17:02

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-3.0	2203L27-019A	Soil	03/29/2022 13:07	GC47 04052218.D	242737

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.25	1	04/05/2022 17:02
2,4-Dinitrotoluene	ND	0.013	1	04/05/2022 17:02
2,6-Dinitrotoluene	ND	0.12	1	04/05/2022 17:02
Di-n-octyl Phthalate	ND	0.50	1	04/05/2022 17:02
1,2-Diphenylhydrazine	ND	0.25	1	04/05/2022 17:02
Fluoranthene	ND	0.0013	1	04/05/2022 17:02
Fluorene	ND	0.0025	1	04/05/2022 17:02
Hexachlorobenzene	ND	0.0013	1	04/05/2022 17:02
Hexachlorobutadiene	ND	0.0025	1	04/05/2022 17:02
Hexachlorocyclopentadiene	ND	2.0	1	04/05/2022 17:02
Hexachloroethane	ND	0.013	1	04/05/2022 17:02
Indeno (1,2,3-cd) pyrene	ND	0.013	1	04/05/2022 17:02
Isophorone	ND	0.25	1	04/05/2022 17:02
1-Methylnaphthalene	ND	0.0013	1	04/05/2022 17:02
2-Methylnaphthalene	ND	0.0025	1	04/05/2022 17:02
2-Methylphenol (o-Cresol)	ND	0.25	1	04/05/2022 17:02
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	04/05/2022 17:02
Naphthalene	ND	0.0062	1	04/05/2022 17:02
2-Nitroaniline	ND	1.2	1	04/05/2022 17:02
3-Nitroaniline	ND	1.2	1	04/05/2022 17:02
4-Nitroaniline	ND	1.2	1	04/05/2022 17:02
Nitrobenzene	ND	0.25	1	04/05/2022 17:02
2-Nitrophenol	ND	1.2	1	04/05/2022 17:02
4-Nitrophenol	ND	1.2	1	04/05/2022 17:02
N-Nitrosodimethylamine	ND	1.2	1	04/05/2022 17:02
N-Nitrosodiphenylamine	ND	0.25	1	04/05/2022 17:02
N-Nitrosodi-n-propylamine	ND	0.25	1	04/05/2022 17:02
Pentachlorophenol	ND	0.062	1	04/05/2022 17:02
Phenanthrene	ND	0.0050	1	04/05/2022 17:02
Phenol	ND	0.050	1	04/05/2022 17:02
Pyrene	ND	0.0025	1	04/05/2022 17:02
Pyridine	ND	0.25	1	04/05/2022 17:02
1,2,4-Trichlorobenzene	ND	0.25	1	04/05/2022 17:02
2,4,5-Trichlorophenol	ND	0.0025	1	04/05/2022 17:02
2,4,6-Trichlorophenol	ND	0.013	1	04/05/2022 17:02

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-3.0	2203L27-019A	Soil	03/29/2022 13:07	GC47 04052218.D	242737

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
2-Fluorophenol	70	60-130		04/05/2022 17:02
Phenol-d5	66	60-130		04/05/2022 17:02
Nitrobenzene-d5	63	60-130		04/05/2022 17:02
2-Fluorobiphenyl	75	60-130		04/05/2022 17:02
2,4,6-Tribromophenol	50	50-130		04/05/2022 17:02
4-Terphenyl-d14	76	50-130		04/05/2022 17:02

**Analyst(s):** KVE



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-0.5	2203L27-020A	Soil	03/29/2022 13:25	GC47 04052219.D	242737

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.026	20	04/05/2022 17:29
Acenaphthylene	ND	0.026	20	04/05/2022 17:29
Acetochlor	ND	5.0	20	04/05/2022 17:29
Anthracene	ND	0.026	20	04/05/2022 17:29
Benzidine	ND	25	20	04/05/2022 17:29
Benzo (a) anthracene	ND	0.26	20	04/05/2022 17:29
Benzo (a) pyrene	ND	0.050	20	04/05/2022 17:29
Benzo (b) fluoranthene	ND	0.13	20	04/05/2022 17:29
Benzo (g,h,i) perylene	ND	0.050	20	04/05/2022 17:29
Benzo (k) fluoranthene	ND	0.026	20	04/05/2022 17:29
Benzyl Alcohol	ND	25	20	04/05/2022 17:29
1,1-Biphenyl	ND	0.26	20	04/05/2022 17:29
Bis (2-chloroethoxy) Methane	ND	5.0	20	04/05/2022 17:29
Bis (2-chloroethyl) Ether	ND	0.026	20	04/05/2022 17:29
Bis (2-chloroisopropyl) Ether	ND	0.050	20	04/05/2022 17:29
Bis (2-ethylhexyl) Adipate	ND	5.0	20	04/05/2022 17:29
Bis (2-ethylhexyl) Phthalate	ND	0.50	20	04/05/2022 17:29
4-Bromophenyl Phenyl Ether	ND	5.0	20	04/05/2022 17:29
Butylbenzyl Phthalate	ND	0.50	20	04/05/2022 17:29
4-Chloroaniline	ND	0.050	20	04/05/2022 17:29
4-Chloro-3-methylphenol	ND	5.0	20	04/05/2022 17:29
2-Chloronaphthalene	ND	5.0	20	04/05/2022 17:29
2-Chlorophenol	ND	0.26	20	04/05/2022 17:29
4-Chlorophenyl Phenyl Ether	ND	5.0	20	04/05/2022 17:29
Chrysene	ND	0.050	20	04/05/2022 17:29
Dibenzo (a,h) anthracene	ND	0.050	20	04/05/2022 17:29
Dibenzofuran	ND	0.026	20	04/05/2022 17:29
Di-n-butyl Phthalate	ND	0.26	20	04/05/2022 17:29
1,2-Dichlorobenzene	ND	5.0	20	04/05/2022 17:29
1,3-Dichlorobenzene	ND	5.0	20	04/05/2022 17:29
1,4-Dichlorobenzene	ND	5.0	20	04/05/2022 17:29
3,3-Dichlorobenzidine	ND	0.050	20	04/05/2022 17:29
2,4-Dichlorophenol	ND	0.050	20	04/05/2022 17:29
Diethyl Phthalate	ND	0.26	20	04/05/2022 17:29
2,4-Dimethylphenol	ND	5.0	20	04/05/2022 17:29
Dimethyl Phthalate	ND	0.050	20	04/05/2022 17:29
4,6-Dinitro-2-methylphenol	ND	25	20	04/05/2022 17:29

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-0.5	2203L27-020A	Soil	03/29/2022 13:25	GC47 04052219.D	242737

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	5.0	20	04/05/2022 17:29
2,4-Dinitrotoluene	ND	0.26	20	04/05/2022 17:29
2,6-Dinitrotoluene	ND	2.5	20	04/05/2022 17:29
Di-n-octyl Phthalate	ND	10	20	04/05/2022 17:29
1,2-Diphenylhydrazine	ND	5.0	20	04/05/2022 17:29
Fluoranthene	ND	0.026	20	04/05/2022 17:29
Fluorene	ND	0.050	20	04/05/2022 17:29
Hexachlorobenzene	ND	0.026	20	04/05/2022 17:29
Hexachlorobutadiene	ND	0.050	20	04/05/2022 17:29
Hexachlorocyclopentadiene	ND	40	20	04/05/2022 17:29
Hexachloroethane	ND	0.26	20	04/05/2022 17:29
Indeno (1,2,3-cd) pyrene	ND	0.26	20	04/05/2022 17:29
Isophorone	ND	5.0	20	04/05/2022 17:29
1-Methylnaphthalene	ND	0.026	20	04/05/2022 17:29
2-Methylnaphthalene	ND	0.050	20	04/05/2022 17:29
2-Methylphenol (o-Cresol)	ND	5.0	20	04/05/2022 17:29
3 & 4-Methylphenol (m,p-Cresol)	ND	5.0	20	04/05/2022 17:29
Naphthalene	ND	0.12	20	04/05/2022 17:29
2-Nitroaniline	ND	25	20	04/05/2022 17:29
3-Nitroaniline	ND	25	20	04/05/2022 17:29
4-Nitroaniline	ND	25	20	04/05/2022 17:29
Nitrobenzene	ND	5.0	20	04/05/2022 17:29
2-Nitrophenol	ND	25	20	04/05/2022 17:29
4-Nitrophenol	ND	25	20	04/05/2022 17:29
N-Nitrosodimethylamine	ND	25	20	04/05/2022 17:29
N-Nitrosodiphenylamine	ND	5.0	20	04/05/2022 17:29
N-Nitrosodi-n-propylamine	ND	5.0	20	04/05/2022 17:29
Pentachlorophenol	ND	1.2	20	04/05/2022 17:29
Phenanthrene	ND	0.10	20	04/05/2022 17:29
Phenol	ND	1.0	20	04/05/2022 17:29
Pyrene	ND	0.050	20	04/05/2022 17:29
Pyridine	ND	5.0	20	04/05/2022 17:29
1,2,4-Trichlorobenzene	ND	5.0	20	04/05/2022 17:29
2,4,5-Trichlorophenol	ND	0.050	20	04/05/2022 17:29
2,4,6-Trichlorophenol	ND	0.26	20	04/05/2022 17:29

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-0.5	2203L27-020A	Soil	03/29/2022 13:25	GC47 04052219.D	242737

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Qualifiers</u>	<u>Limits</u>	
2-Fluorophenol	68		60-130	04/05/2022 17:29
Phenol-d5	64		60-130	04/05/2022 17:29
Nitrobenzene-d5	58	S	60-130	04/05/2022 17:29
2-Fluorobiphenyl	82		60-130	04/05/2022 17:29
2,4,6-Tribromophenol	46	S	50-130	04/05/2022 17:29
4-Terphenyl-d14	82		50-130	04/05/2022 17:29

Analyst(s): KVE

Analytical Comments: a3,c1



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-0.5	2203L27-024A	Soil	03/29/2022 14:35	GC53 04072221.D	242737

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.0013	1	04/07/2022 17:39
Acenaphthylene	ND	0.0013	1	04/07/2022 17:39
Acetochlor	ND	0.25	1	04/07/2022 17:39
Anthracene	<b>0.0015</b>	0.0013	1	04/07/2022 17:39
Benzidine	ND	1.2	1	04/07/2022 17:39
Benzo (a) anthracene	ND	0.013	1	04/07/2022 17:39
Benzo (a) pyrene	ND	0.0025	1	04/07/2022 17:39
Benzo (b) fluoranthene	ND	0.0063	1	04/07/2022 17:39
Benzo (g,h,i) perylene	<b>0.0038</b>	0.0025	1	04/07/2022 17:39
Benzo (k) fluoranthene	ND	0.0013	1	04/07/2022 17:39
Benzyl Alcohol	ND	1.2	1	04/07/2022 17:39
1,1-Biphenyl	ND	0.013	1	04/07/2022 17:39
Bis (2-chloroethoxy) Methane	ND	0.25	1	04/07/2022 17:39
Bis (2-chloroethyl) Ether	ND	0.0013	1	04/07/2022 17:39
Bis (2-chloroisopropyl) Ether	ND	0.0025	1	04/07/2022 17:39
Bis (2-ethylhexyl) Adipate	ND	0.25	1	04/07/2022 17:39
Bis (2-ethylhexyl) Phthalate	ND	0.025	1	04/07/2022 17:39
4-Bromophenyl Phenyl Ether	ND	0.25	1	04/07/2022 17:39
Butylbenzyl Phthalate	ND	0.025	1	04/07/2022 17:39
4-Chloroaniline	ND	0.0025	1	04/07/2022 17:39
4-Chloro-3-methylphenol	ND	0.25	1	04/07/2022 17:39
2-Chloronaphthalene	ND	0.25	1	04/07/2022 17:39
2-Chlorophenol	ND	0.013	1	04/07/2022 17:39
4-Chlorophenyl Phenyl Ether	ND	0.25	1	04/07/2022 17:39
Chrysene	ND	0.0025	1	04/07/2022 17:39
Dibenzo (a,h) anthracene	ND	0.0025	1	04/07/2022 17:39
Dibenzofuran	ND	0.0013	1	04/07/2022 17:39
Di-n-butyl Phthalate	ND	0.013	1	04/07/2022 17:39
1,2-Dichlorobenzene	ND	0.25	1	04/07/2022 17:39
1,3-Dichlorobenzene	ND	0.25	1	04/07/2022 17:39
1,4-Dichlorobenzene	ND	0.25	1	04/07/2022 17:39
3,3-Dichlorobenzidine	ND	0.0025	1	04/07/2022 17:39
2,4-Dichlorophenol	ND	0.0025	1	04/07/2022 17:39
Diethyl Phthalate	ND	0.013	1	04/07/2022 17:39
2,4-Dimethylphenol	ND	0.25	1	04/07/2022 17:39
Dimethyl Phthalate	ND	0.0025	1	04/07/2022 17:39
4,6-Dinitro-2-methylphenol	ND	1.2	1	04/07/2022 17:39

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-0.5	2203L27-024A	Soil	03/29/2022 14:35	GC53 04072221.D	242737

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.25	1	04/07/2022 17:39
2,4-Dinitrotoluene	ND	0.013	1	04/07/2022 17:39
2,6-Dinitrotoluene	ND	0.12	1	04/07/2022 17:39
Di-n-octyl Phthalate	ND	0.50	1	04/07/2022 17:39
1,2-Diphenylhydrazine	ND	0.25	1	04/07/2022 17:39
Fluoranthene	<b>0.0029</b>	0.0013	1	04/07/2022 17:39
Fluorene	<b>0.0065</b>	0.0025	1	04/07/2022 17:39
Hexachlorobenzene	ND	0.0013	1	04/07/2022 17:39
Hexachlorobutadiene	ND	0.0025	1	04/07/2022 17:39
Hexachlorocyclopentadiene	ND	2.0	1	04/07/2022 17:39
Hexachloroethane	ND	0.013	1	04/07/2022 17:39
Indeno (1,2,3-cd) pyrene	ND	0.013	1	04/07/2022 17:39
Isophorone	ND	0.25	1	04/07/2022 17:39
1-Methylnaphthalene	ND	0.0013	1	04/07/2022 17:39
2-Methylnaphthalene	ND	0.0025	1	04/07/2022 17:39
2-Methylphenol (o-Cresol)	ND	0.25	1	04/07/2022 17:39
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	04/07/2022 17:39
Naphthalene	ND	0.0062	1	04/07/2022 17:39
2-Nitroaniline	ND	1.2	1	04/07/2022 17:39
3-Nitroaniline	ND	1.2	1	04/07/2022 17:39
4-Nitroaniline	ND	1.2	1	04/07/2022 17:39
Nitrobenzene	ND	0.25	1	04/07/2022 17:39
2-Nitrophenol	ND	1.2	1	04/07/2022 17:39
4-Nitrophenol	ND	1.2	1	04/07/2022 17:39
N-Nitrosodimethylamine	ND	1.2	1	04/07/2022 17:39
N-Nitrosodiphenylamine	ND	0.25	1	04/07/2022 17:39
N-Nitrosodi-n-propylamine	ND	0.25	1	04/07/2022 17:39
Pentachlorophenol	ND	0.062	1	04/07/2022 17:39
Phenanthrene	<b>0.0078</b>	0.0050	1	04/07/2022 17:39
Phenol	ND	0.050	1	04/07/2022 17:39
Pyrene	<b>0.0029</b>	0.0025	1	04/07/2022 17:39
Pyridine	ND	0.25	1	04/07/2022 17:39
1,2,4-Trichlorobenzene	ND	0.25	1	04/07/2022 17:39
2,4,5-Trichlorophenol	ND	0.0025	1	04/07/2022 17:39
2,4,6-Trichlorophenol	ND	0.013	1	04/07/2022 17:39

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-0.5	2203L27-024A	Soil	03/29/2022 14:35	GC53 04072221.D	242737

Analytes	Result	RL	DF	Date Analyzed
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Surrogates	REC (%)	Qualifiers	Limits	
2-Fluorophenol	47	S	60-130	04/07/2022 17:39
Phenol-d5	44	S	60-130	04/07/2022 17:39
Nitrobenzene-d5	45	S	60-130	04/07/2022 17:39
2-Fluorobiphenyl	40	S	60-130	04/07/2022 17:39
2,4,6-Tribromophenol	33	S	50-130	04/07/2022 17:39
4-Terphenyl-d14	45	S	50-130	04/07/2022 17:39

Analyst(s): KVE

Analytical Comments: c2





## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-3.0	2203L27-026A	Soil	03/29/2022 14:37	GC47 04052221.D	242737

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.0013	1	04/05/2022 18:22
Acenaphthylene	ND	0.0013	1	04/05/2022 18:22
Acetochlor	ND	0.25	1	04/05/2022 18:22
Anthracene	ND	0.0013	1	04/05/2022 18:22
Benzidine	ND	1.2	1	04/05/2022 18:22
Benzo (a) anthracene	ND	0.013	1	04/05/2022 18:22
Benzo (a) pyrene	ND	0.0025	1	04/05/2022 18:22
Benzo (b) fluoranthene	ND	0.0063	1	04/05/2022 18:22
Benzo (g,h,i) perylene	ND	0.0025	1	04/05/2022 18:22
Benzo (k) fluoranthene	ND	0.0013	1	04/05/2022 18:22
Benzyl Alcohol	ND	1.2	1	04/05/2022 18:22
1,1-Biphenyl	ND	0.013	1	04/05/2022 18:22
Bis (2-chloroethoxy) Methane	ND	0.25	1	04/05/2022 18:22
Bis (2-chloroethyl) Ether	ND	0.0013	1	04/05/2022 18:22
Bis (2-chloroisopropyl) Ether	ND	0.0025	1	04/05/2022 18:22
Bis (2-ethylhexyl) Adipate	ND	0.25	1	04/05/2022 18:22
Bis (2-ethylhexyl) Phthalate	ND	0.025	1	04/05/2022 18:22
4-Bromophenyl Phenyl Ether	ND	0.25	1	04/05/2022 18:22
Butylbenzyl Phthalate	ND	0.025	1	04/05/2022 18:22
4-Chloroaniline	ND	0.0025	1	04/05/2022 18:22
4-Chloro-3-methylphenol	ND	0.25	1	04/05/2022 18:22
2-Chloronaphthalene	ND	0.25	1	04/05/2022 18:22
2-Chlorophenol	ND	0.013	1	04/05/2022 18:22
4-Chlorophenyl Phenyl Ether	ND	0.25	1	04/05/2022 18:22
Chrysene	ND	0.0025	1	04/05/2022 18:22
Dibenzo (a,h) anthracene	ND	0.0025	1	04/05/2022 18:22
Dibenzofuran	ND	0.0013	1	04/05/2022 18:22
Di-n-butyl Phthalate	ND	0.013	1	04/05/2022 18:22
1,2-Dichlorobenzene	ND	0.25	1	04/05/2022 18:22
1,3-Dichlorobenzene	ND	0.25	1	04/05/2022 18:22
1,4-Dichlorobenzene	ND	0.25	1	04/05/2022 18:22
3,3-Dichlorobenzidine	ND	0.0025	1	04/05/2022 18:22
2,4-Dichlorophenol	ND	0.0025	1	04/05/2022 18:22
Diethyl Phthalate	ND	0.013	1	04/05/2022 18:22
2,4-Dimethylphenol	ND	0.25	1	04/05/2022 18:22
Dimethyl Phthalate	ND	0.0025	1	04/05/2022 18:22
4,6-Dinitro-2-methylphenol	ND	1.2	1	04/05/2022 18:22

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-3.0	2203L27-026A	Soil	03/29/2022 14:37	GC47 04052221.D	242737

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.25	1	04/05/2022 18:22
2,4-Dinitrotoluene	ND	0.013	1	04/05/2022 18:22
2,6-Dinitrotoluene	ND	0.12	1	04/05/2022 18:22
Di-n-octyl Phthalate	ND	0.50	1	04/05/2022 18:22
1,2-Diphenylhydrazine	ND	0.25	1	04/05/2022 18:22
Fluoranthene	ND	0.0013	1	04/05/2022 18:22
Fluorene	ND	0.0025	1	04/05/2022 18:22
Hexachlorobenzene	ND	0.0013	1	04/05/2022 18:22
Hexachlorobutadiene	ND	0.0025	1	04/05/2022 18:22
Hexachlorocyclopentadiene	ND	2.0	1	04/05/2022 18:22
Hexachloroethane	ND	0.013	1	04/05/2022 18:22
Indeno (1,2,3-cd) pyrene	ND	0.013	1	04/05/2022 18:22
Isophorone	ND	0.25	1	04/05/2022 18:22
1-Methylnaphthalene	ND	0.0013	1	04/05/2022 18:22
2-Methylnaphthalene	ND	0.0025	1	04/05/2022 18:22
2-Methylphenol (o-Cresol)	ND	0.25	1	04/05/2022 18:22
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	04/05/2022 18:22
Naphthalene	ND	0.0062	1	04/05/2022 18:22
2-Nitroaniline	ND	1.2	1	04/05/2022 18:22
3-Nitroaniline	ND	1.2	1	04/05/2022 18:22
4-Nitroaniline	ND	1.2	1	04/05/2022 18:22
Nitrobenzene	ND	0.25	1	04/05/2022 18:22
2-Nitrophenol	ND	1.2	1	04/05/2022 18:22
4-Nitrophenol	ND	1.2	1	04/05/2022 18:22
N-Nitrosodimethylamine	ND	1.2	1	04/05/2022 18:22
N-Nitrosodiphenylamine	ND	0.25	1	04/05/2022 18:22
N-Nitrosodi-n-propylamine	ND	0.25	1	04/05/2022 18:22
Pentachlorophenol	ND	0.062	1	04/05/2022 18:22
Phenanthrene	ND	0.0050	1	04/05/2022 18:22
Phenol	ND	0.050	1	04/05/2022 18:22
Pyrene	ND	0.0025	1	04/05/2022 18:22
Pyridine	ND	0.25	1	04/05/2022 18:22
1,2,4-Trichlorobenzene	ND	0.25	1	04/05/2022 18:22
2,4,5-Trichlorophenol	ND	0.0025	1	04/05/2022 18:22
2,4,6-Trichlorophenol	ND	0.013	1	04/05/2022 18:22

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-3.0	2203L27-026A	Soil	03/29/2022 14:37	GC47 04052221.D	242737

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
2-Fluorophenol	87	60-130		04/05/2022 18:22
Phenol-d5	82	60-130		04/05/2022 18:22
Nitrobenzene-d5	80	60-130		04/05/2022 18:22
2-Fluorobiphenyl	98	60-130		04/05/2022 18:22
2,4,6-Tribromophenol	63	50-130		04/05/2022 18:22
4-Terphenyl-d14	93	50-130		04/05/2022 18:22

Analyst(s): KVE



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-1.5	2203L27-028A	Soil	03/29/2022 14:16	GC47 04052222.D	242737

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.0013	1	04/05/2022 18:49
Acenaphthylene	ND	0.0013	1	04/05/2022 18:49
Acetochlor	ND	0.25	1	04/05/2022 18:49
Anthracene	<b>0.0028</b>	0.0013	1	04/05/2022 18:49
Benzidine	ND	1.2	1	04/05/2022 18:49
Benzo (a) anthracene	ND	0.013	1	04/05/2022 18:49
Benzo (a) pyrene	ND	0.0025	1	04/05/2022 18:49
Benzo (b) fluoranthene	ND	0.0063	1	04/05/2022 18:49
Benzo (g,h,i) perylene	<b>0.0058</b>	0.0025	1	04/05/2022 18:49
Benzo (k) fluoranthene	ND	0.0013	1	04/05/2022 18:49
Benzyl Alcohol	ND	1.2	1	04/05/2022 18:49
1,1-Biphenyl	<b>0.024</b>	0.013	1	04/05/2022 18:49
Bis (2-chloroethoxy) Methane	ND	0.25	1	04/05/2022 18:49
Bis (2-chloroethyl) Ether	ND	0.0013	1	04/05/2022 18:49
Bis (2-chloroisopropyl) Ether	ND	0.0025	1	04/05/2022 18:49
Bis (2-ethylhexyl) Adipate	ND	0.25	1	04/05/2022 18:49
Bis (2-ethylhexyl) Phthalate	ND	0.025	1	04/05/2022 18:49
4-Bromophenyl Phenyl Ether	ND	0.25	1	04/05/2022 18:49
Butylbenzyl Phthalate	ND	0.025	1	04/05/2022 18:49
4-Chloroaniline	ND	0.0025	1	04/05/2022 18:49
4-Chloro-3-methylphenol	ND	0.25	1	04/05/2022 18:49
2-Chloronaphthalene	ND	0.25	1	04/05/2022 18:49
2-Chlorophenol	ND	0.013	1	04/05/2022 18:49
4-Chlorophenyl Phenyl Ether	ND	0.25	1	04/05/2022 18:49
Chrysene	ND	0.0025	1	04/05/2022 18:49
Dibenzo (a,h) anthracene	ND	0.0025	1	04/05/2022 18:49
Dibenzofuran	<b>0.023</b>	0.0013	1	04/05/2022 18:49
Di-n-butyl Phthalate	ND	0.013	1	04/05/2022 18:49
1,2-Dichlorobenzene	ND	0.25	1	04/05/2022 18:49
1,3-Dichlorobenzene	ND	0.25	1	04/05/2022 18:49
1,4-Dichlorobenzene	ND	0.25	1	04/05/2022 18:49
3,3-Dichlorobenzidine	ND	0.0025	1	04/05/2022 18:49
2,4-Dichlorophenol	ND	0.0025	1	04/05/2022 18:49
Diethyl Phthalate	ND	0.013	1	04/05/2022 18:49
2,4-Dimethylphenol	ND	0.25	1	04/05/2022 18:49
Dimethyl Phthalate	ND	0.0025	1	04/05/2022 18:49
4,6-Dinitro-2-methylphenol	ND	1.2	1	04/05/2022 18:49

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected		Instrument	Batch ID
E-8-1.5	2203L27-028A	Soil	03/29/2022 14:16		GC47 04052222.D	242737
Analytes	Result		RL	DF		Date Analyzed
2,4-Dinitrophenol	ND		0.25	1		04/05/2022 18:49
2,4-Dinitrotoluene	ND		0.013	1		04/05/2022 18:49
2,6-Dinitrotoluene	ND		0.12	1		04/05/2022 18:49
Di-n-octyl Phthalate	ND		0.50	1		04/05/2022 18:49
1,2-Diphenylhydrazine	ND		0.25	1		04/05/2022 18:49
Fluoranthene	<b>0.0060</b>		0.0013	1		04/05/2022 18:49
Fluorene	<b>0.021</b>		0.0025	1		04/05/2022 18:49
Hexachlorobenzene	ND		0.0013	1		04/05/2022 18:49
Hexachlorobutadiene	ND		0.0025	1		04/05/2022 18:49
Hexachlorocyclopentadiene	ND		2.0	1		04/05/2022 18:49
Hexachloroethane	ND		0.013	1		04/05/2022 18:49
Indeno (1,2,3-cd) pyrene	ND		0.013	1		04/05/2022 18:49
Isophorone	ND		0.25	1		04/05/2022 18:49
1-Methylnaphthalene	<b>0.0016</b>		0.0013	1		04/05/2022 18:49
2-Methylnaphthalene	ND		0.0025	1		04/05/2022 18:49
2-Methylphenol (o-Cresol)	ND		0.25	1		04/05/2022 18:49
3 & 4-Methylphenol (m,p-Cresol)	ND		0.25	1		04/05/2022 18:49
Naphthalene	ND		0.0062	1		04/05/2022 18:49
2-Nitroaniline	ND		1.2	1		04/05/2022 18:49
3-Nitroaniline	ND		1.2	1		04/05/2022 18:49
4-Nitroaniline	ND		1.2	1		04/05/2022 18:49
Nitrobenzene	ND		0.25	1		04/05/2022 18:49
2-Nitrophenol	ND		1.2	1		04/05/2022 18:49
4-Nitrophenol	ND		1.2	1		04/05/2022 18:49
N-Nitrosodimethylamine	ND		1.2	1		04/05/2022 18:49
N-Nitrosodiphenylamine	ND		0.25	1		04/05/2022 18:49
N-Nitrosodi-n-propylamine	ND		0.25	1		04/05/2022 18:49
Pentachlorophenol	ND		0.062	1		04/05/2022 18:49
Phenanthrene	<b>0.0096</b>		0.0050	1		04/05/2022 18:49
Phenol	ND		0.050	1		04/05/2022 18:49
Pyrene	<b>0.0052</b>		0.0025	1		04/05/2022 18:49
Pyridine	ND		0.25	1		04/05/2022 18:49
1,2,4-Trichlorobenzene	ND		0.25	1		04/05/2022 18:49
2,4,5-Trichlorophenol	ND		0.0025	1		04/05/2022 18:49
2,4,6-Trichlorophenol	ND		0.013	1		04/05/2022 18:49

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-1.5	2203L27-028A	Soil	03/29/2022 14:16	GC47 04052222.D	242737

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
2-Fluorophenol	77	60-130		04/05/2022 18:49
Phenol-d5	76	60-130		04/05/2022 18:49
Nitrobenzene-d5	76	60-130		04/05/2022 18:49
2-Fluorobiphenyl	91	60-130		04/05/2022 18:49
2,4,6-Tribromophenol	60	50-130		04/05/2022 18:49
4-Terphenyl-d14	87	50-130		04/05/2022 18:49

Analyst(s): KVE



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-5.0	2203L27-030A	Soil	03/29/2022 14:18	GC47 04052223.D	242737

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.0013	1	04/05/2022 19:16
Acenaphthylene	ND	0.0013	1	04/05/2022 19:16
Acetochlor	ND	0.25	1	04/05/2022 19:16
Anthracene	ND	0.0013	1	04/05/2022 19:16
Benzidine	ND	1.2	1	04/05/2022 19:16
Benzo (a) anthracene	ND	0.013	1	04/05/2022 19:16
Benzo (a) pyrene	ND	0.0025	1	04/05/2022 19:16
Benzo (b) fluoranthene	ND	0.0063	1	04/05/2022 19:16
Benzo (g,h,i) perylene	ND	0.0025	1	04/05/2022 19:16
Benzo (k) fluoranthene	ND	0.0013	1	04/05/2022 19:16
Benzyl Alcohol	ND	1.2	1	04/05/2022 19:16
1,1-Biphenyl	<b>0.036</b>	0.013	1	04/05/2022 19:16
Bis (2-chloroethoxy) Methane	ND	0.25	1	04/05/2022 19:16
Bis (2-chloroethyl) Ether	ND	0.0013	1	04/05/2022 19:16
Bis (2-chloroisopropyl) Ether	ND	0.0025	1	04/05/2022 19:16
Bis (2-ethylhexyl) Adipate	ND	0.25	1	04/05/2022 19:16
Bis (2-ethylhexyl) Phthalate	ND	0.025	1	04/05/2022 19:16
4-Bromophenyl Phenyl Ether	ND	0.25	1	04/05/2022 19:16
Butylbenzyl Phthalate	ND	0.025	1	04/05/2022 19:16
4-Chloroaniline	ND	0.0025	1	04/05/2022 19:16
4-Chloro-3-methylphenol	ND	0.25	1	04/05/2022 19:16
2-Chloronaphthalene	ND	0.25	1	04/05/2022 19:16
2-Chlorophenol	ND	0.013	1	04/05/2022 19:16
4-Chlorophenyl Phenyl Ether	ND	0.25	1	04/05/2022 19:16
Chrysene	ND	0.0025	1	04/05/2022 19:16
Dibenzo (a,h) anthracene	ND	0.0025	1	04/05/2022 19:16
Dibenzofuran	<b>0.025</b>	0.0013	1	04/05/2022 19:16
Di-n-butyl Phthalate	ND	0.013	1	04/05/2022 19:16
1,2-Dichlorobenzene	ND	0.25	1	04/05/2022 19:16
1,3-Dichlorobenzene	ND	0.25	1	04/05/2022 19:16
1,4-Dichlorobenzene	ND	0.25	1	04/05/2022 19:16
3,3-Dichlorobenzidine	ND	0.0025	1	04/05/2022 19:16
2,4-Dichlorophenol	ND	0.0025	1	04/05/2022 19:16
Diethyl Phthalate	ND	0.013	1	04/05/2022 19:16
2,4-Dimethylphenol	ND	0.25	1	04/05/2022 19:16
Dimethyl Phthalate	ND	0.0025	1	04/05/2022 19:16
4,6-Dinitro-2-methylphenol	ND	1.2	1	04/05/2022 19:16

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-5.0	2203L27-030A	Soil	03/29/2022 14:18	GC47 04052223.D	242737

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.25	1	04/05/2022 19:16
2,4-Dinitrotoluene	ND	0.013	1	04/05/2022 19:16
2,6-Dinitrotoluene	ND	0.12	1	04/05/2022 19:16
Di-n-octyl Phthalate	ND	0.50	1	04/05/2022 19:16
1,2-Diphenylhydrazine	ND	0.25	1	04/05/2022 19:16
Fluoranthene	ND	0.0013	1	04/05/2022 19:16
Fluorene	<b>0.020</b>	0.0025	1	04/05/2022 19:16
Hexachlorobenzene	ND	0.0013	1	04/05/2022 19:16
Hexachlorobutadiene	ND	0.0025	1	04/05/2022 19:16
Hexachlorocyclopentadiene	ND	2.0	1	04/05/2022 19:16
Hexachloroethane	ND	0.013	1	04/05/2022 19:16
Indeno (1,2,3-cd) pyrene	ND	0.013	1	04/05/2022 19:16
Isophorone	ND	0.25	1	04/05/2022 19:16
1-Methylnaphthalene	ND	0.0013	1	04/05/2022 19:16
2-Methylnaphthalene	ND	0.0025	1	04/05/2022 19:16
2-Methylphenol (o-Cresol)	ND	0.25	1	04/05/2022 19:16
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	04/05/2022 19:16
Naphthalene	ND	0.0062	1	04/05/2022 19:16
2-Nitroaniline	ND	1.2	1	04/05/2022 19:16
3-Nitroaniline	ND	1.2	1	04/05/2022 19:16
4-Nitroaniline	ND	1.2	1	04/05/2022 19:16
Nitrobenzene	ND	0.25	1	04/05/2022 19:16
2-Nitrophenol	ND	1.2	1	04/05/2022 19:16
4-Nitrophenol	ND	1.2	1	04/05/2022 19:16
N-Nitrosodimethylamine	ND	1.2	1	04/05/2022 19:16
N-Nitrosodiphenylamine	ND	0.25	1	04/05/2022 19:16
N-Nitrosodi-n-propylamine	ND	0.25	1	04/05/2022 19:16
Pentachlorophenol	ND	0.062	1	04/05/2022 19:16
Phenanthrene	ND	0.0050	1	04/05/2022 19:16
Phenol	ND	0.050	1	04/05/2022 19:16
Pyrene	ND	0.0025	1	04/05/2022 19:16
Pyridine	ND	0.25	1	04/05/2022 19:16
1,2,4-Trichlorobenzene	ND	0.25	1	04/05/2022 19:16
2,4,5-Trichlorophenol	ND	0.0025	1	04/05/2022 19:16
2,4,6-Trichlorophenol	ND	0.013	1	04/05/2022 19:16

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-5.0	2203L27-030A	Soil	03/29/2022 14:18	GC47 04052223.D	242737

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>	
2-Fluorophenol	78		60-130	04/05/2022 19:16
Phenol-d5	80		60-130	04/05/2022 19:16
Nitrobenzene-d5	73		60-130	04/05/2022 19:16
2-Fluorobiphenyl	84		60-130	04/05/2022 19:16
2,4,6-Tribromophenol	57		50-130	04/05/2022 19:16
4-Terphenyl-d14	86		50-130	04/05/2022 19:16

**Analyst(s):** KVE



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-1.5	2203L27-034A	Soil	03/29/2022 13:51	GC47 04052224.D	242737

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.0013	1	04/05/2022 19:42
Acenaphthylene	ND	0.0013	1	04/05/2022 19:42
Acetochlor	ND	0.25	1	04/05/2022 19:42
Anthracene	ND	0.0013	1	04/05/2022 19:42
Benzidine	ND	1.2	1	04/05/2022 19:42
Benzo (a) anthracene	ND	0.013	1	04/05/2022 19:42
Benzo (a) pyrene	<b>0.0033</b>	0.0025	1	04/05/2022 19:42
Benzo (b) fluoranthene	ND	0.0063	1	04/05/2022 19:42
Benzo (g,h,i) perylene	<b>0.0051</b>	0.0025	1	04/05/2022 19:42
Benzo (k) fluoranthene	ND	0.0013	1	04/05/2022 19:42
Benzyl Alcohol	ND	1.2	1	04/05/2022 19:42
1,1-Biphenyl	<b>0.015</b>	0.013	1	04/05/2022 19:42
Bis (2-chloroethoxy) Methane	ND	0.25	1	04/05/2022 19:42
Bis (2-chloroethyl) Ether	ND	0.0013	1	04/05/2022 19:42
Bis (2-chloroisopropyl) Ether	ND	0.0025	1	04/05/2022 19:42
Bis (2-ethylhexyl) Adipate	ND	0.25	1	04/05/2022 19:42
Bis (2-ethylhexyl) Phthalate	ND	0.025	1	04/05/2022 19:42
4-Bromophenyl Phenyl Ether	ND	0.25	1	04/05/2022 19:42
Butylbenzyl Phthalate	ND	0.025	1	04/05/2022 19:42
4-Chloroaniline	ND	0.0025	1	04/05/2022 19:42
4-Chloro-3-methylphenol	ND	0.25	1	04/05/2022 19:42
2-Chloronaphthalene	ND	0.25	1	04/05/2022 19:42
2-Chlorophenol	ND	0.013	1	04/05/2022 19:42
4-Chlorophenyl Phenyl Ether	ND	0.25	1	04/05/2022 19:42
Chrysene	ND	0.0025	1	04/05/2022 19:42
Dibenzo (a,h) anthracene	ND	0.0025	1	04/05/2022 19:42
Dibenzofuran	<b>0.013</b>	0.0013	1	04/05/2022 19:42
Di-n-butyl Phthalate	ND	0.013	1	04/05/2022 19:42
1,2-Dichlorobenzene	ND	0.25	1	04/05/2022 19:42
1,3-Dichlorobenzene	ND	0.25	1	04/05/2022 19:42
1,4-Dichlorobenzene	ND	0.25	1	04/05/2022 19:42
3,3-Dichlorobenzidine	ND	0.0025	1	04/05/2022 19:42
2,4-Dichlorophenol	ND	0.0025	1	04/05/2022 19:42
Diethyl Phthalate	ND	0.013	1	04/05/2022 19:42
2,4-Dimethylphenol	ND	0.25	1	04/05/2022 19:42
Dimethyl Phthalate	ND	0.0025	1	04/05/2022 19:42
4,6-Dinitro-2-methylphenol	ND	1.2	1	04/05/2022 19:42

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-1.5	2203L27-034A	Soil	03/29/2022 13:51	GC47 04052224.D	242737

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.25	1	04/05/2022 19:42
2,4-Dinitrotoluene	ND	0.013	1	04/05/2022 19:42
2,6-Dinitrotoluene	ND	0.12	1	04/05/2022 19:42
Di-n-octyl Phthalate	ND	0.50	1	04/05/2022 19:42
1,2-Diphenylhydrazine	ND	0.25	1	04/05/2022 19:42
Fluoranthene	<b>0.0074</b>	0.0013	1	04/05/2022 19:42
Fluorene	<b>0.011</b>	0.0025	1	04/05/2022 19:42
Hexachlorobenzene	ND	0.0013	1	04/05/2022 19:42
Hexachlorobutadiene	ND	0.0025	1	04/05/2022 19:42
Hexachlorocyclopentadiene	ND	2.0	1	04/05/2022 19:42
Hexachloroethane	ND	0.013	1	04/05/2022 19:42
Indeno (1,2,3-cd) pyrene	ND	0.013	1	04/05/2022 19:42
Isophorone	ND	0.25	1	04/05/2022 19:42
1-Methylnaphthalene	<b>0.0013</b>	0.0013	1	04/05/2022 19:42
2-Methylnaphthalene	ND	0.0025	1	04/05/2022 19:42
2-Methylphenol (o-Cresol)	ND	0.25	1	04/05/2022 19:42
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	04/05/2022 19:42
Naphthalene	ND	0.0062	1	04/05/2022 19:42
2-Nitroaniline	ND	1.2	1	04/05/2022 19:42
3-Nitroaniline	ND	1.2	1	04/05/2022 19:42
4-Nitroaniline	ND	1.2	1	04/05/2022 19:42
Nitrobenzene	ND	0.25	1	04/05/2022 19:42
2-Nitrophenol	ND	1.2	1	04/05/2022 19:42
4-Nitrophenol	ND	1.2	1	04/05/2022 19:42
N-Nitrosodimethylamine	ND	1.2	1	04/05/2022 19:42
N-Nitrosodiphenylamine	ND	0.25	1	04/05/2022 19:42
N-Nitrosodi-n-propylamine	ND	0.25	1	04/05/2022 19:42
Pentachlorophenol	ND	0.062	1	04/05/2022 19:42
Phenanthrene	<b>0.0076</b>	0.0050	1	04/05/2022 19:42
Phenol	ND	0.050	1	04/05/2022 19:42
Pyrene	<b>0.0062</b>	0.0025	1	04/05/2022 19:42
Pyridine	ND	0.25	1	04/05/2022 19:42
1,2,4-Trichlorobenzene	ND	0.25	1	04/05/2022 19:42
2,4,5-Trichlorophenol	ND	0.0025	1	04/05/2022 19:42
2,4,6-Trichlorophenol	ND	0.013	1	04/05/2022 19:42

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-1.5	2203L27-034A	Soil	03/29/2022 13:51	GC47 04052224.D	242737

Analytes	Result	RL	DF	Date Analyzed
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Surrogates	REC (%)	Limits	
2-Fluorophenol	80	60-130	04/05/2022 19:42
Phenol-d5	81	60-130	04/05/2022 19:42
Nitrobenzene-d5	78	60-130	04/05/2022 19:42
2-Fluorobiphenyl	88	60-130	04/05/2022 19:42
2,4,6-Tribromophenol	65	50-130	04/05/2022 19:42
4-Terphenyl-d14	86	50-130	04/05/2022 19:42

**Analyst(s):** KVE



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-3.0	2203L27-041A	Soil	03/29/2022 15:07	GC47 04052225.D	242737

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.0013	1	04/05/2022 20:09
Acenaphthylene	ND	0.0013	1	04/05/2022 20:09
Acetochlor	ND	0.25	1	04/05/2022 20:09
Anthracene	ND	0.0013	1	04/05/2022 20:09
Benzidine	ND	1.2	1	04/05/2022 20:09
Benzo (a) anthracene	ND	0.013	1	04/05/2022 20:09
Benzo (a) pyrene	ND	0.0025	1	04/05/2022 20:09
Benzo (b) fluoranthene	ND	0.0063	1	04/05/2022 20:09
Benzo (g,h,i) perylene	<b>0.0049</b>	0.0025	1	04/05/2022 20:09
Benzo (k) fluoranthene	ND	0.0013	1	04/05/2022 20:09
Benzyl Alcohol	ND	1.2	1	04/05/2022 20:09
1,1-Biphenyl	<b>0.017</b>	0.013	1	04/05/2022 20:09
Bis (2-chloroethoxy) Methane	ND	0.25	1	04/05/2022 20:09
Bis (2-chloroethyl) Ether	ND	0.0013	1	04/05/2022 20:09
Bis (2-chloroisopropyl) Ether	ND	0.0025	1	04/05/2022 20:09
Bis (2-ethylhexyl) Adipate	ND	0.25	1	04/05/2022 20:09
Bis (2-ethylhexyl) Phthalate	ND	0.025	1	04/05/2022 20:09
4-Bromophenyl Phenyl Ether	ND	0.25	1	04/05/2022 20:09
Butylbenzyl Phthalate	ND	0.025	1	04/05/2022 20:09
4-Chloroaniline	ND	0.0025	1	04/05/2022 20:09
4-Chloro-3-methylphenol	ND	0.25	1	04/05/2022 20:09
2-Chloronaphthalene	ND	0.25	1	04/05/2022 20:09
2-Chlorophenol	ND	0.013	1	04/05/2022 20:09
4-Chlorophenyl Phenyl Ether	ND	0.25	1	04/05/2022 20:09
Chrysene	ND	0.0025	1	04/05/2022 20:09
Dibenzo (a,h) anthracene	<b>0.0043</b>	0.0025	1	04/05/2022 20:09
Dibenzofuran	<b>0.039</b>	0.0013	1	04/05/2022 20:09
Di-n-butyl Phthalate	ND	0.013	1	04/05/2022 20:09
1,2-Dichlorobenzene	ND	0.25	1	04/05/2022 20:09
1,3-Dichlorobenzene	ND	0.25	1	04/05/2022 20:09
1,4-Dichlorobenzene	ND	0.25	1	04/05/2022 20:09
3,3-Dichlorobenzidine	ND	0.0025	1	04/05/2022 20:09
2,4-Dichlorophenol	ND	0.0025	1	04/05/2022 20:09
Diethyl Phthalate	ND	0.013	1	04/05/2022 20:09
2,4-Dimethylphenol	ND	0.25	1	04/05/2022 20:09
Dimethyl Phthalate	ND	0.0025	1	04/05/2022 20:09
4,6-Dinitro-2-methylphenol	ND	1.2	1	04/05/2022 20:09

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-3.0	2203L27-041A	Soil	03/29/2022 15:07	GC47 04052225.D	242737

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.25	1	04/05/2022 20:09
2,4-Dinitrotoluene	ND	0.013	1	04/05/2022 20:09
2,6-Dinitrotoluene	ND	0.12	1	04/05/2022 20:09
Di-n-octyl Phthalate	ND	0.50	1	04/05/2022 20:09
1,2-Diphenylhydrazine	ND	0.25	1	04/05/2022 20:09
Fluoranthene	ND	0.0013	1	04/05/2022 20:09
Fluorene	<b>0.011</b>	0.0025	1	04/05/2022 20:09
Hexachlorobenzene	ND	0.0013	1	04/05/2022 20:09
Hexachlorobutadiene	ND	0.0025	1	04/05/2022 20:09
Hexachlorocyclopentadiene	ND	2.0	1	04/05/2022 20:09
Hexachloroethane	ND	0.013	1	04/05/2022 20:09
Indeno (1,2,3-cd) pyrene	ND	0.013	1	04/05/2022 20:09
Isophorone	ND	0.25	1	04/05/2022 20:09
1-Methylnaphthalene	ND	0.0013	1	04/05/2022 20:09
2-Methylnaphthalene	ND	0.0025	1	04/05/2022 20:09
2-Methylphenol (o-Cresol)	ND	0.25	1	04/05/2022 20:09
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	04/05/2022 20:09
Naphthalene	ND	0.0062	1	04/05/2022 20:09
2-Nitroaniline	ND	1.2	1	04/05/2022 20:09
3-Nitroaniline	ND	1.2	1	04/05/2022 20:09
4-Nitroaniline	ND	1.2	1	04/05/2022 20:09
Nitrobenzene	ND	0.25	1	04/05/2022 20:09
2-Nitrophenol	ND	1.2	1	04/05/2022 20:09
4-Nitrophenol	ND	1.2	1	04/05/2022 20:09
N-Nitrosodimethylamine	ND	1.2	1	04/05/2022 20:09
N-Nitrosodiphenylamine	ND	0.25	1	04/05/2022 20:09
N-Nitrosodi-n-propylamine	ND	0.25	1	04/05/2022 20:09
Pentachlorophenol	ND	0.062	1	04/05/2022 20:09
Phenanthrene	<b>0.011</b>	0.0050	1	04/05/2022 20:09
Phenol	ND	0.050	1	04/05/2022 20:09
Pyrene	ND	0.0025	1	04/05/2022 20:09
Pyridine	ND	0.25	1	04/05/2022 20:09
1,2,4-Trichlorobenzene	ND	0.25	1	04/05/2022 20:09
2,4,5-Trichlorophenol	ND	0.0025	1	04/05/2022 20:09
2,4,6-Trichlorophenol	ND	0.013	1	04/05/2022 20:09

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-3.0	2203L27-041A	Soil	03/29/2022 15:07	GC47 04052225.D	242737

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
2-Fluorophenol	99	60-130		04/05/2022 20:09
Phenol-d5	96	60-130		04/05/2022 20:09
Nitrobenzene-d5	92	60-130		04/05/2022 20:09
2-Fluorobiphenyl	101	60-130		04/05/2022 20:09
2,4,6-Tribromophenol	73	50-130		04/05/2022 20:09
4-Terphenyl-d14	100	50-130		04/05/2022 20:09

Analyst(s): KVE



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-1.5	2203L27-046A	Soil	03/29/2022 15:31	GC47 04052226.D	242737

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.0013	1	04/05/2022 20:36
Acenaphthylene	ND	0.0013	1	04/05/2022 20:36
Acetochlor	ND	0.25	1	04/05/2022 20:36
Anthracene	ND	0.0013	1	04/05/2022 20:36
Benzidine	ND	1.2	1	04/05/2022 20:36
Benzo (a) anthracene	ND	0.013	1	04/05/2022 20:36
Benzo (a) pyrene	ND	0.0025	1	04/05/2022 20:36
Benzo (b) fluoranthene	ND	0.0063	1	04/05/2022 20:36
Benzo (g,h,i) perylene	<b>0.0025</b>	0.0025	1	04/05/2022 20:36
Benzo (k) fluoranthene	ND	0.0013	1	04/05/2022 20:36
Benzyl Alcohol	ND	1.2	1	04/05/2022 20:36
1,1-Biphenyl	<b>0.014</b>	0.013	1	04/05/2022 20:36
Bis (2-chloroethoxy) Methane	ND	0.25	1	04/05/2022 20:36
Bis (2-chloroethyl) Ether	ND	0.0013	1	04/05/2022 20:36
Bis (2-chloroisopropyl) Ether	ND	0.0025	1	04/05/2022 20:36
Bis (2-ethylhexyl) Adipate	ND	0.25	1	04/05/2022 20:36
Bis (2-ethylhexyl) Phthalate	ND	0.025	1	04/05/2022 20:36
4-Bromophenyl Phenyl Ether	ND	0.25	1	04/05/2022 20:36
Butylbenzyl Phthalate	ND	0.025	1	04/05/2022 20:36
4-Chloroaniline	ND	0.0025	1	04/05/2022 20:36
4-Chloro-3-methylphenol	ND	0.25	1	04/05/2022 20:36
2-Chloronaphthalene	ND	0.25	1	04/05/2022 20:36
2-Chlorophenol	ND	0.013	1	04/05/2022 20:36
4-Chlorophenyl Phenyl Ether	ND	0.25	1	04/05/2022 20:36
Chrysene	ND	0.0025	1	04/05/2022 20:36
Dibenzo (a,h) anthracene	<b>0.0025</b>	0.0025	1	04/05/2022 20:36
Dibenzofuran	<b>0.023</b>	0.0013	1	04/05/2022 20:36
Di-n-butyl Phthalate	ND	0.013	1	04/05/2022 20:36
1,2-Dichlorobenzene	ND	0.25	1	04/05/2022 20:36
1,3-Dichlorobenzene	ND	0.25	1	04/05/2022 20:36
1,4-Dichlorobenzene	ND	0.25	1	04/05/2022 20:36
3,3-Dichlorobenzidine	ND	0.0025	1	04/05/2022 20:36
2,4-Dichlorophenol	ND	0.0025	1	04/05/2022 20:36
Diethyl Phthalate	ND	0.013	1	04/05/2022 20:36
2,4-Dimethylphenol	ND	0.25	1	04/05/2022 20:36
Dimethyl Phthalate	ND	0.0025	1	04/05/2022 20:36
4,6-Dinitro-2-methylphenol	ND	1.2	1	04/05/2022 20:36

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-1.5	2203L27-046A	Soil	03/29/2022 15:31	GC47 04052226.D	242737

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.25	1	04/05/2022 20:36
2,4-Dinitrotoluene	ND	0.013	1	04/05/2022 20:36
2,6-Dinitrotoluene	ND	0.12	1	04/05/2022 20:36
Di-n-octyl Phthalate	ND	0.50	1	04/05/2022 20:36
1,2-Diphenylhydrazine	ND	0.25	1	04/05/2022 20:36
Fluoranthene	ND	0.0013	1	04/05/2022 20:36
Fluorene	<b>0.0073</b>	0.0025	1	04/05/2022 20:36
Hexachlorobenzene	ND	0.0013	1	04/05/2022 20:36
Hexachlorobutadiene	ND	0.0025	1	04/05/2022 20:36
Hexachlorocyclopentadiene	ND	2.0	1	04/05/2022 20:36
Hexachloroethane	ND	0.013	1	04/05/2022 20:36
Indeno (1,2,3-cd) pyrene	ND	0.013	1	04/05/2022 20:36
Isophorone	ND	0.25	1	04/05/2022 20:36
1-Methylnaphthalene	ND	0.0013	1	04/05/2022 20:36
2-Methylnaphthalene	ND	0.0025	1	04/05/2022 20:36
2-Methylphenol (o-Cresol)	ND	0.25	1	04/05/2022 20:36
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	04/05/2022 20:36
Naphthalene	ND	0.0062	1	04/05/2022 20:36
2-Nitroaniline	ND	1.2	1	04/05/2022 20:36
3-Nitroaniline	ND	1.2	1	04/05/2022 20:36
4-Nitroaniline	ND	1.2	1	04/05/2022 20:36
Nitrobenzene	ND	0.25	1	04/05/2022 20:36
2-Nitrophenol	ND	1.2	1	04/05/2022 20:36
4-Nitrophenol	ND	1.2	1	04/05/2022 20:36
N-Nitrosodimethylamine	ND	1.2	1	04/05/2022 20:36
N-Nitrosodiphenylamine	ND	0.25	1	04/05/2022 20:36
N-Nitrosodi-n-propylamine	ND	0.25	1	04/05/2022 20:36
Pentachlorophenol	ND	0.062	1	04/05/2022 20:36
Phenanthrene	<b>0.0061</b>	0.0050	1	04/05/2022 20:36
Phenol	ND	0.050	1	04/05/2022 20:36
Pyrene	ND	0.0025	1	04/05/2022 20:36
Pyridine	ND	0.25	1	04/05/2022 20:36
1,2,4-Trichlorobenzene	ND	0.25	1	04/05/2022 20:36
2,4,5-Trichlorophenol	ND	0.0025	1	04/05/2022 20:36
2,4,6-Trichlorophenol	ND	0.013	1	04/05/2022 20:36

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## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-1.5	2203L27-046A	Soil	03/29/2022 15:31	GC47 04052226.D	242737

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
2-Fluorophenol	79	60-130		04/05/2022 20:36
Phenol-d5	74	60-130		04/05/2022 20:36
Nitrobenzene-d5	74	60-130		04/05/2022 20:36
2-Fluorobiphenyl	86	60-130		04/05/2022 20:36
2,4,6-Tribromophenol	62	50-130		04/05/2022 20:36
4-Terphenyl-d14	84	50-130		04/05/2022 20:36

**Analyst(s):** KVE



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-3.0	2203L27-053A	Soil	03/29/2022 15:52	GC47 04052227.D	242737

Analytes	Result	RL	DF	Date Analyzed
Acenaphthene	ND	0.0013	1	04/05/2022 21:03
Acenaphthylene	ND	0.0013	1	04/05/2022 21:03
Acetochlor	ND	0.25	1	04/05/2022 21:03
Anthracene	ND	0.0013	1	04/05/2022 21:03
Benzidine	ND	1.2	1	04/05/2022 21:03
Benzo (a) anthracene	ND	0.013	1	04/05/2022 21:03
Benzo (a) pyrene	ND	0.0025	1	04/05/2022 21:03
Benzo (b) fluoranthene	ND	0.0063	1	04/05/2022 21:03
Benzo (g,h,i) perylene	ND	0.0025	1	04/05/2022 21:03
Benzo (k) fluoranthene	ND	0.0013	1	04/05/2022 21:03
Benzyl Alcohol	ND	1.2	1	04/05/2022 21:03
1,1-Biphenyl	ND	0.013	1	04/05/2022 21:03
Bis (2-chloroethoxy) Methane	ND	0.25	1	04/05/2022 21:03
Bis (2-chloroethyl) Ether	ND	0.0013	1	04/05/2022 21:03
Bis (2-chloroisopropyl) Ether	ND	0.0025	1	04/05/2022 21:03
Bis (2-ethylhexyl) Adipate	ND	0.25	1	04/05/2022 21:03
Bis (2-ethylhexyl) Phthalate	ND	0.025	1	04/05/2022 21:03
4-Bromophenyl Phenyl Ether	ND	0.25	1	04/05/2022 21:03
Butylbenzyl Phthalate	ND	0.025	1	04/05/2022 21:03
4-Chloroaniline	ND	0.0025	1	04/05/2022 21:03
4-Chloro-3-methylphenol	ND	0.25	1	04/05/2022 21:03
2-Chloronaphthalene	ND	0.25	1	04/05/2022 21:03
2-Chlorophenol	ND	0.013	1	04/05/2022 21:03
4-Chlorophenyl Phenyl Ether	ND	0.25	1	04/05/2022 21:03
Chrysene	ND	0.0025	1	04/05/2022 21:03
Dibenzo (a,h) anthracene	ND	0.0025	1	04/05/2022 21:03
Dibenzofuran	<b>0.0044</b>	0.0013	1	04/05/2022 21:03
Di-n-butyl Phthalate	ND	0.013	1	04/05/2022 21:03
1,2-Dichlorobenzene	ND	0.25	1	04/05/2022 21:03
1,3-Dichlorobenzene	ND	0.25	1	04/05/2022 21:03
1,4-Dichlorobenzene	ND	0.25	1	04/05/2022 21:03
3,3-Dichlorobenzidine	ND	0.0025	1	04/05/2022 21:03
2,4-Dichlorophenol	ND	0.0025	1	04/05/2022 21:03
Diethyl Phthalate	ND	0.013	1	04/05/2022 21:03
2,4-Dimethylphenol	ND	0.25	1	04/05/2022 21:03
Dimethyl Phthalate	ND	0.0025	1	04/05/2022 21:03
4,6-Dinitro-2-methylphenol	ND	1.2	1	04/05/2022 21:03

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-3.0	2203L27-053A	Soil	03/29/2022 15:52	GC47 04052227.D	242737

Analytes	Result	RL	DF	Date Analyzed
2,4-Dinitrophenol	ND	0.25	1	04/05/2022 21:03
2,4-Dinitrotoluene	ND	0.013	1	04/05/2022 21:03
2,6-Dinitrotoluene	ND	0.12	1	04/05/2022 21:03
Di-n-octyl Phthalate	ND	0.50	1	04/05/2022 21:03
1,2-Diphenylhydrazine	ND	0.25	1	04/05/2022 21:03
Fluoranthene	ND	0.0013	1	04/05/2022 21:03
Fluorene	ND	0.0025	1	04/05/2022 21:03
Hexachlorobenzene	ND	0.0013	1	04/05/2022 21:03
Hexachlorobutadiene	ND	0.0025	1	04/05/2022 21:03
Hexachlorocyclopentadiene	ND	2.0	1	04/05/2022 21:03
Hexachloroethane	ND	0.013	1	04/05/2022 21:03
Indeno (1,2,3-cd) pyrene	ND	0.013	1	04/05/2022 21:03
Isophorone	ND	0.25	1	04/05/2022 21:03
1-Methylnaphthalene	ND	0.0013	1	04/05/2022 21:03
2-Methylnaphthalene	ND	0.0025	1	04/05/2022 21:03
2-Methylphenol (o-Cresol)	ND	0.25	1	04/05/2022 21:03
3 & 4-Methylphenol (m,p-Cresol)	ND	0.25	1	04/05/2022 21:03
Naphthalene	ND	0.0062	1	04/05/2022 21:03
2-Nitroaniline	ND	1.2	1	04/05/2022 21:03
3-Nitroaniline	ND	1.2	1	04/05/2022 21:03
4-Nitroaniline	ND	1.2	1	04/05/2022 21:03
Nitrobenzene	ND	0.25	1	04/05/2022 21:03
2-Nitrophenol	ND	1.2	1	04/05/2022 21:03
4-Nitrophenol	ND	1.2	1	04/05/2022 21:03
N-Nitrosodimethylamine	ND	1.2	1	04/05/2022 21:03
N-Nitrosodiphenylamine	ND	0.25	1	04/05/2022 21:03
N-Nitrosodi-n-propylamine	ND	0.25	1	04/05/2022 21:03
Pentachlorophenol	ND	0.062	1	04/05/2022 21:03
Phenanthrene	ND	0.0050	1	04/05/2022 21:03
Phenol	ND	0.050	1	04/05/2022 21:03
Pyrene	ND	0.0025	1	04/05/2022 21:03
Pyridine	ND	0.25	1	04/05/2022 21:03
1,2,4-Trichlorobenzene	ND	0.25	1	04/05/2022 21:03
2,4,5-Trichlorophenol	ND	0.0025	1	04/05/2022 21:03
2,4,6-Trichlorophenol	ND	0.013	1	04/05/2022 21:03

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/05/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg

### Semi-Volatile Organics (Low Level) with GPC Cleanup

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-3.0	2203L27-053A	Soil	03/29/2022 15:52	GC47 04052227.D	242737

Analytes	Result	RL	DF	Date Analyzed
<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>		
2-Fluorophenol	79	60-130		04/05/2022 21:03
Phenol-d5	78	60-130		04/05/2022 21:03
Nitrobenzene-d5	75	60-130		04/05/2022 21:03
2-Fluorobiphenyl	85	60-130		04/05/2022 21:03
2,4,6-Tribromophenol	63	50-130		04/05/2022 21:03
4-Terphenyl-d14	80	50-130		04/05/2022 21:03

Analyst(s): KVE



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-0.5	2203L27-001A	Soil	03/29/2022 09:45	ICP-MS4 250SMPL.d	242485

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	04/04/2022 19:52
Arsenic	4.6	0.50	1	04/04/2022 19:52
Barium	110	5.0	1	04/04/2022 19:52
Beryllium	ND	0.50	1	04/04/2022 19:52
Cadmium	ND	0.50	1	04/04/2022 19:52
Chromium	420	0.50	1	04/04/2022 19:52
Cobalt	42	0.50	1	04/04/2022 19:52
Copper	30	0.50	1	04/04/2022 19:52
Lead	9.6	0.50	1	04/04/2022 19:52
Mercury	0.12	0.050	1	04/04/2022 19:52
Molybdenum	ND	0.50	1	04/04/2022 19:52
Nickel	830	5.0	10	04/05/2022 12:17
Selenium	ND	0.50	1	04/04/2022 19:52
Silver	ND	0.50	1	04/04/2022 19:52
Thallium	ND	0.50	1	04/04/2022 19:52
Vanadium	62	0.50	1	04/04/2022 19:52
Zinc	57	5.0	1	04/04/2022 19:52

Surrogates	REC (%)	Limits	
Terbium	107	70-130	04/04/2022 19:52

Analyst(s): AL, DB



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-2-1.5	2203L27-006A	Soil	03/29/2022 11:15	ICP-MS4 252SMPL.d	242485

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	04/04/2022 20:00
Arsenic	ND	0.50	1	04/04/2022 20:00
Barium	<b>6.8</b>	5.0	1	04/04/2022 20:00
Beryllium	ND	0.50	1	04/04/2022 20:00
Cadmium	ND	0.50	1	04/04/2022 20:00
Chromium	<b>860</b>	5.0	10	04/05/2022 12:24
Cobalt	<b>72</b>	0.50	1	04/04/2022 20:00
Copper	<b>8.9</b>	0.50	1	04/04/2022 20:00
Lead	ND	0.50	1	04/04/2022 20:00
Mercury	ND	0.050	1	04/04/2022 20:00
Molybdenum	ND	0.50	1	04/04/2022 20:00
Nickel	<b>1600</b>	5.0	10	04/05/2022 12:24
Selenium	ND	0.50	1	04/04/2022 20:00
Silver	ND	0.50	1	04/04/2022 20:00
Thallium	ND	0.50	1	04/04/2022 20:00
Vanadium	<b>17</b>	0.50	1	04/04/2022 20:00
Zinc	<b>18</b>	5.0	1	04/04/2022 20:00

Surrogates	REC (%)	Limits	
Terbium	101	70-130	04/04/2022 20:00

Analyst(s): AL, DB



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected		Instrument	Batch ID
E-3-0.5	2203L27-009A	Soil	03/29/2022 11:30		ICP-MS4 253SMPL.d	242485
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>		<u>Date Analyzed</u>
Antimony	ND		0.50	1		04/04/2022 20:04
Arsenic	ND		0.50	1		04/04/2022 20:04
Barium	<b>47</b>		5.0	1		04/04/2022 20:04
Beryllium	ND		0.50	1		04/04/2022 20:04
Cadmium	ND		0.50	1		04/04/2022 20:04
Chromium	<b>560</b>		5.0	10		04/05/2022 12:28
Cobalt	<b>120</b>		0.50	1		04/04/2022 20:04
Copper	<b>6.3</b>		0.50	1		04/04/2022 20:04
Lead	ND		0.50	1		04/04/2022 20:04
Mercury	<b>0.11</b>		0.050	1		04/04/2022 20:04
Molybdenum	ND		0.50	1		04/04/2022 20:04
Nickel	<b>2400</b>		5.0	10		04/05/2022 12:28
Selenium	ND		0.50	1		04/04/2022 20:04
Silver	ND		0.50	1		04/04/2022 20:04
Thallium	ND		0.50	1		04/04/2022 20:04
Vanadium	<b>13</b>		0.50	1		04/04/2022 20:04
Zinc	<b>49</b>		5.0	1		04/04/2022 20:04

Surrogates	REC (%)	Limits	
Terbium	111	70-130	04/04/2022 20:04

Analyst(s): AL, DB





## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-3-3.0	2203L27-011A	Soil	03/29/2022 11:32	ICP-MS4 254SMPL.d	242485

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	04/04/2022 20:08
Arsenic	ND	0.50	1	04/04/2022 20:08
Barium	7.7	5.0	1	04/04/2022 20:08
Beryllium	ND	0.50	1	04/04/2022 20:08
Cadmium	ND	0.50	1	04/04/2022 20:08
Chromium	290	0.50	1	04/04/2022 20:08
Cobalt	140	0.50	1	04/04/2022 20:08
Copper	27	0.50	1	04/04/2022 20:08
Lead	ND	0.50	1	04/04/2022 20:08
Mercury	0.12	0.050	1	04/04/2022 20:08
Molybdenum	ND	0.50	1	04/04/2022 20:08
Nickel	2400	5.0	10	04/05/2022 12:31
Selenium	ND	0.50	1	04/04/2022 20:08
Silver	ND	0.50	1	04/04/2022 20:08
Thallium	ND	0.50	1	04/04/2022 20:08
Vanadium	3.6	0.50	1	04/04/2022 20:08
Zinc	26	5.0	1	04/04/2022 20:08

Surrogates	REC (%)	Limits	
Terbium	108	70-130	04/04/2022 20:08

Analyst(s): AL, DB



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-1.5	2203L27-014A	Soil	03/29/2022 12:06	ICP-MS4 256SMPL.d	242485

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	04/04/2022 20:16
Arsenic	<b>5.7</b>	0.50	1	04/04/2022 20:16
Barium	<b>88</b>	5.0	1	04/04/2022 20:16
Beryllium	ND	0.50	1	04/04/2022 20:16
Cadmium	ND	0.50	1	04/04/2022 20:16
Chromium	<b>270</b>	0.50	1	04/04/2022 20:16
Cobalt	<b>27</b>	0.50	1	04/04/2022 20:16
Copper	<b>29</b>	0.50	1	04/04/2022 20:16
Lead	<b>6.0</b>	0.50	1	04/04/2022 20:16
Mercury	<b>0.065</b>	0.050	1	04/04/2022 20:16
Molybdenum	ND	0.50	1	04/04/2022 20:16
Nickel	<b>510</b>	5.0	10	04/05/2022 12:45
Selenium	ND	0.50	1	04/04/2022 20:16
Silver	ND	0.50	1	04/04/2022 20:16
Thallium	ND	0.50	1	04/04/2022 20:16
Vanadium	<b>70</b>	0.50	1	04/04/2022 20:16
Zinc	<b>61</b>	5.0	1	04/04/2022 20:16

Surrogates	REC (%)	Limits	
Terbium	107	70-130	04/04/2022 20:16

Analyst(s): AL, DB



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-0.5	2203L27-017A	Soil	03/29/2022 13:05	ICP-MS4 257SMPL.d	242485

Analytes	Result	RL	DF	Date Analyzed
Antimony	2.3	0.50	1	04/04/2022 20:20
Arsenic	2.1	0.50	1	04/04/2022 20:20
Barium	53	5.0	1	04/04/2022 20:20
Beryllium	ND	0.50	1	04/04/2022 20:20
Cadmium	ND	0.50	1	04/04/2022 20:20
Chromium	940	5.0	10	04/05/2022 12:56
Cobalt	69	0.50	1	04/04/2022 20:20
Copper	20	0.50	1	04/04/2022 20:20
Lead	2.4	0.50	1	04/04/2022 20:20
Mercury	0.12	0.050	1	04/04/2022 20:20
Molybdenum	ND	0.50	1	04/04/2022 20:20
Nickel	1600	5.0	10	04/05/2022 12:56
Selenium	ND	0.50	1	04/04/2022 20:20
Silver	ND	0.50	1	04/04/2022 20:20
Thallium	ND	0.50	1	04/04/2022 20:20
Vanadium	39	0.50	1	04/04/2022 20:20
Zinc	45	5.0	1	04/04/2022 20:20

Surrogates	REC (%)	Limits	
Terbium	104	70-130	04/04/2022 20:20

Analyst(s): AL, DB



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-0.5	2203L27-020A	Soil	03/29/2022 13:25	ICP-MS4 259SMPL.d	242485

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	04/04/2022 20:28
Arsenic	4.2	0.50	1	04/04/2022 20:28
Barium	130	5.0	1	04/04/2022 20:28
Beryllium	ND	0.50	1	04/04/2022 20:28
Cadmium	ND	0.50	1	04/04/2022 20:28
Chromium	280	0.50	1	04/04/2022 20:28
Cobalt	27	0.50	1	04/04/2022 20:28
Copper	22	0.50	1	04/04/2022 20:28
Lead	27	0.50	1	04/04/2022 20:28
Mercury	0.091	0.050	1	04/04/2022 20:28
Molybdenum	ND	0.50	1	04/04/2022 20:28
Nickel	420	0.50	1	04/04/2022 20:28
Selenium	ND	0.50	1	04/04/2022 20:28
Silver	ND	0.50	1	04/04/2022 20:28
Thallium	ND	0.50	1	04/04/2022 20:28
Vanadium	69	0.50	1	04/04/2022 20:28
Zinc	86	5.0	1	04/04/2022 20:28

Surrogates	REC (%)	Limits	Date Analyzed
Terbium	107	70-130	04/04/2022 20:28

Analyst(s): DB



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-5.0	2203L27-023A	Soil	03/29/2022 13:38	ICP-MS4 268SMPL.d	242485

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	04/04/2022 21:03
Arsenic	ND	0.50	1	04/04/2022 21:03
Barium	<b>31</b>	5.0	1	04/04/2022 21:03
Beryllium	ND	0.50	1	04/04/2022 21:03
Cadmium	ND	0.50	1	04/04/2022 21:03
Chromium	<b>710</b>	5.0	10	04/05/2022 14:02
Cobalt	<b>71</b>	0.50	1	04/04/2022 21:03
Copper	<b>9.4</b>	0.50	1	04/04/2022 21:03
Lead	ND	0.50	1	04/04/2022 21:03
Mercury	<b>0.062</b>	0.050	1	04/04/2022 21:03
Molybdenum	ND	0.50	1	04/04/2022 21:03
Nickel	<b>1700</b>	5.0	10	04/05/2022 14:02
Selenium	ND	0.50	1	04/04/2022 21:03
Silver	ND	0.50	1	04/04/2022 21:03
Thallium	ND	0.50	1	04/04/2022 21:03
Vanadium	<b>18</b>	0.50	1	04/04/2022 21:03
Zinc	<b>17</b>	5.0	1	04/04/2022 21:03

Surrogates	REC (%)	Limits	
Terbium	107	70-130	04/04/2022 21:03

Analyst(s): DB, MIG



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-3.0	2203L27-026A	Soil	03/29/2022 14:37	ICP-MS4 113SMPL.d	242523

Analytes	Result	RL	DF	Date Analyzed
Antimony	0.57	0.50	1	04/04/2022 10:53
Arsenic	7.2	0.50	1	04/04/2022 10:53
Barium	26	5.0	1	04/04/2022 10:53
Beryllium	ND	0.50	1	04/04/2022 10:53
Cadmium	ND	0.50	1	04/04/2022 10:53
Chromium	33	0.50	1	04/04/2022 10:53
Cobalt	11	0.50	1	04/04/2022 10:53
Copper	30	0.50	1	04/04/2022 10:53
Lead	6.7	0.50	1	04/04/2022 10:53
Mercury	0.062	0.050	1	04/04/2022 10:53
Molybdenum	ND	0.50	1	04/04/2022 10:53
Nickel	40	0.50	1	04/04/2022 10:53
Selenium	ND	0.50	1	04/04/2022 10:53
Silver	ND	0.50	1	04/04/2022 10:53
Thallium	ND	0.50	1	04/04/2022 10:53
Vanadium	54	0.50	1	04/04/2022 10:53
Zinc	62	5.0	1	04/04/2022 10:53

Surrogates	REC (%)	Limits	Date Analyzed
Terbium	104	70-130	04/04/2022 10:53

Analyst(s): DB



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-0.5	2203L27-027A	Soil	03/29/2022 14:15	ICP-MS4 270SMPL.d	242523

Analytes	Result	RL	DF	Date Analyzed
Antimony	1.5	0.50	1	04/04/2022 21:11
Arsenic	6.5	0.50	1	04/04/2022 21:11
Barium	160	5.0	1	04/04/2022 21:11
Beryllium	0.66	0.50	1	04/04/2022 21:11
Cadmium	ND	0.50	1	04/04/2022 21:11
Chromium	300	0.50	1	04/04/2022 21:11
Cobalt	34	0.50	1	04/04/2022 21:11
Copper	34	0.50	1	04/04/2022 21:11
Lead	7.7	0.50	1	04/04/2022 21:11
Mercury	0.15	0.050	1	04/04/2022 21:11
Molybdenum	0.61	0.50	1	04/04/2022 21:11
Nickel	610	5.0	10	04/05/2022 14:09
Selenium	ND	0.50	1	04/04/2022 21:11
Silver	ND	0.50	1	04/04/2022 21:11
Thallium	ND	0.50	1	04/04/2022 21:11
Vanadium	76	0.50	1	04/04/2022 21:11
Zinc	70	5.0	1	04/04/2022 21:11

Surrogates	REC (%)	Limits	
Terbium	105	70-130	04/04/2022 21:11

Analyst(s): DB, MIG



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-1.5	2203L27-028A	Soil	03/29/2022 14:16	ICP-MS4 271SMPL.d	242523

Analytes	Result	RL	DF	Date Analyzed
Antimony	0.67	0.50	1	04/04/2022 21:15
Arsenic	7.9	0.50	1	04/04/2022 21:15
Barium	350	5.0	1	04/04/2022 21:15
Beryllium	0.66	0.50	1	04/04/2022 21:15
Cadmium	ND	0.50	1	04/04/2022 21:15
Chromium	540	5.0	10	04/05/2022 14:23
Cobalt	47	0.50	1	04/04/2022 21:15
Copper	47	0.50	1	04/04/2022 21:15
Lead	18	0.50	1	04/04/2022 21:15
Mercury	0.16	0.050	1	04/04/2022 21:15
Molybdenum	2.5	0.50	1	04/04/2022 21:15
Nickel	880	5.0	10	04/05/2022 14:23
Selenium	ND	0.50	1	04/04/2022 21:15
Silver	ND	0.50	1	04/04/2022 21:15
Thallium	ND	0.50	1	04/04/2022 21:15
Vanadium	100	0.50	1	04/04/2022 21:15
Zinc	92	5.0	1	04/04/2022 21:15

Surrogates	REC (%)	Limits	Date Analyzed
Terbium	105	70-130	04/04/2022 21:15

**Analyst(s):** DB, MIG





## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-1.5	2203L27-034A	Soil	03/29/2022 13:51	ICP-MS4 275SMPL.d	242523

Analytes	Result	RL	DF	Date Analyzed
Antimony	0.78	0.50	1	04/04/2022 21:31
Arsenic	6.2	0.50	1	04/04/2022 21:31
Barium	150	5.0	1	04/04/2022 21:31
Beryllium	ND	0.50	1	04/04/2022 21:31
Cadmium	ND	0.50	1	04/04/2022 21:31
Chromium	280	0.50	1	04/04/2022 21:31
Cobalt	40	0.50	1	04/04/2022 21:31
Copper	39	0.50	1	04/04/2022 21:31
Lead	6.6	0.50	1	04/04/2022 21:31
Mercury	0.099	0.050	1	04/04/2022 21:31
Molybdenum	1.0	0.50	1	04/04/2022 21:31
Nickel	700	5.0	10	04/05/2022 14:29
Selenium	ND	0.50	1	04/04/2022 21:31
Silver	ND	0.50	1	04/04/2022 21:31
Thallium	ND	0.50	1	04/04/2022 21:31
Vanadium	90	0.50	1	04/04/2022 21:31
Zinc	70	5.0	1	04/04/2022 21:31

Surrogates	REC (%)	Limits	
Terbium	105	70-130	04/04/2022 21:31

Analyst(s): DB, MIG



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-0.5	2203L27-039A	Soil	03/29/2022 15:05	ICP-MS4 277SMPL.d	242523

Analytes	Result	RL	DF	Date Analyzed
Antimony	0.95	0.50	1	04/04/2022 21:39
Arsenic	8.9	0.50	1	04/04/2022 21:39
Barium	170	5.0	1	04/04/2022 21:39
Beryllium	0.64	0.50	1	04/04/2022 21:39
Cadmium	ND	0.50	1	04/04/2022 21:39
Chromium	370	0.50	1	04/04/2022 21:39
Cobalt	38	0.50	1	04/04/2022 21:39
Copper	44	0.50	1	04/04/2022 21:39
Lead	8.3	0.50	1	04/04/2022 21:39
Mercury	0.11	0.050	1	04/04/2022 21:39
Molybdenum	ND	0.50	1	04/04/2022 21:39
Nickel	740	5.0	10	04/05/2022 14:36
Selenium	ND	0.50	1	04/04/2022 21:39
Silver	ND	0.50	1	04/04/2022 21:39
Thallium	ND	0.50	1	04/04/2022 21:39
Vanadium	76	0.50	1	04/04/2022 21:39
Zinc	82	5.0	1	04/04/2022 21:39

Surrogates	REC (%)	Limits	
Terbium	103	70-130	04/04/2022 21:39

Analyst(s): DB, MIG



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-3.0	2203L27-041A	Soil	03/29/2022 15:07	ICP-MS4 278SMPL.d	242523
<u>Analytes</u>	<u>Result</u>		<u>RL</u> <u>DF</u>		<u>Date Analyzed</u>
Antimony	ND		0.50    1		04/04/2022 21:43
Arsenic	4.2		0.50    1		04/04/2022 21:43
Barium	110		5.0    1		04/04/2022 21:43
Beryllium	0.64		0.50    1		04/04/2022 21:43
Cadmium	ND		0.50    1		04/04/2022 21:43
Chromium	230		0.50    1		04/04/2022 21:43
Cobalt	23		0.50    1		04/04/2022 21:43
Copper	42		0.50    1		04/04/2022 21:43
Lead	4.0		0.50    1		04/04/2022 21:43
Mercury	0.052		0.050    1		04/04/2022 21:43
Molybdenum	ND		0.50    1		04/04/2022 21:43
Nickel	350		0.50    1		04/04/2022 21:43
Selenium	ND		0.50    1		04/04/2022 21:43
Silver	ND		0.50    1		04/04/2022 21:43
Thallium	ND		0.50    1		04/04/2022 21:43
Vanadium	98		0.50    1		04/04/2022 21:43
Zinc	63		5.0    1		04/04/2022 21:43

Surrogates	REC (%)	Limits	
Terbium	105	70-130	04/04/2022 21:43

Analyst(s): DB



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-0.5	2203L27-045A	Soil	03/29/2022 15:30	ICP-MS4 280SMPL.d	242523

Analytes	Result	RL	DF	Date Analyzed
Antimony	0.62	0.50	1	04/04/2022 21:51
Arsenic	7.9	0.50	1	04/04/2022 21:51
Barium	210	5.0	1	04/04/2022 21:51
Beryllium	0.65	0.50	1	04/04/2022 21:51
Cadmium	ND	0.50	1	04/04/2022 21:51
Chromium	510	5.0	10	04/05/2022 14:40
Cobalt	48	0.50	1	04/04/2022 21:51
Copper	44	0.50	1	04/04/2022 21:51
Lead	8.2	0.50	1	04/04/2022 21:51
Mercury	0.13	0.050	1	04/04/2022 21:51
Molybdenum	1.2	0.50	1	04/04/2022 21:51
Nickel	860	5.0	10	04/05/2022 14:40
Selenium	ND	0.50	1	04/04/2022 21:51
Silver	ND	0.50	1	04/04/2022 21:51
Thallium	ND	0.50	1	04/04/2022 21:51
Vanadium	87	0.50	1	04/04/2022 21:51
Zinc	91	5.0	1	04/04/2022 21:51

Surrogates	REC (%)	Limits	
Terbium	101	70-130	04/04/2022 21:51

Analyst(s): DB, MIG



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-0.5	2203L27-051A	Soil	03/29/2022 15:50	ICP-MS4 283SMPL.d	242523

Analytes	Result	RL	DF	Date Analyzed
Antimony	0.67	0.50	1	04/04/2022 22:03
Arsenic	7.7	0.50	1	04/04/2022 22:03
Barium	150	5.0	1	04/04/2022 22:03
Beryllium	0.56	0.50	1	04/04/2022 22:03
Cadmium	ND	0.50	1	04/04/2022 22:03
Chromium	310	0.50	1	04/04/2022 22:03
Cobalt	32	0.50	1	04/04/2022 22:03
Copper	41	0.50	1	04/04/2022 22:03
Lead	8.5	0.50	1	04/04/2022 22:03
Mercury	0.12	0.050	1	04/04/2022 22:03
Molybdenum	0.63	0.50	1	04/04/2022 22:03
Nickel	590	5.0	10	04/05/2022 14:47
Selenium	ND	0.50	1	04/04/2022 22:03
Silver	ND	0.50	1	04/04/2022 22:03
Thallium	ND	0.50	1	04/04/2022 22:03
Vanadium	84	0.50	1	04/04/2022 22:03
Zinc	77	5.0	1	04/04/2022 22:03

Surrogates	REC (%)	Limits	
Terbium	104	70-130	04/04/2022 22:03

Analyst(s): DB, MIG



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-3.0	2203L27-053A	Soil	03/29/2022 15:52	ICP-MS4 286SMPL.d	242523

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	04/04/2022 22:14
Arsenic	<b>5.2</b>	0.50	1	04/04/2022 22:14
Barium	<b>150</b>	5.0	1	04/04/2022 22:14
Beryllium	ND	0.50	1	04/04/2022 22:14
Cadmium	ND	0.50	1	04/04/2022 22:14
Chromium	<b>230</b>	0.50	1	04/04/2022 22:14
Cobalt	<b>25</b>	0.50	1	04/04/2022 22:14
Copper	<b>32</b>	0.50	1	04/04/2022 22:14
Lead	<b>6.9</b>	0.50	1	04/04/2022 22:14
Mercury	<b>0.090</b>	0.050	1	04/04/2022 22:14
Molybdenum	<b>0.51</b>	0.50	1	04/04/2022 22:14
Nickel	<b>380</b>	0.50	1	04/04/2022 22:14
Selenium	ND	0.50	1	04/04/2022 22:14
Silver	ND	0.50	1	04/04/2022 22:14
Thallium	ND	0.50	1	04/04/2022 22:14
Vanadium	<b>60</b>	0.50	1	04/04/2022 22:14
Zinc	<b>65</b>	5.0	1	04/04/2022 22:14

Surrogates	REC (%)	Limits	Date Analyzed
Terbium	102	70-130	04/04/2022 22:14

Analyst(s): DB



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### CAM / CCR 17 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-10.0	2203L27-056A	Soil	03/29/2022 15:55	ICP-MS4 190SMPL.d	242523

Analytes	Result	RL	DF	Date Analyzed
Antimony	ND	0.50	1	04/04/2022 15:55
Arsenic	7.5	0.50	1	04/04/2022 15:55
Barium	410	5.0	1	04/04/2022 15:55
Beryllium	0.61	0.50	1	04/04/2022 15:55
Cadmium	ND	0.50	1	04/04/2022 15:55
Chromium	370	0.50	1	04/04/2022 15:55
Cobalt	48	0.50	1	04/04/2022 15:55
Copper	51	0.50	1	04/04/2022 15:55
Lead	6.3	0.50	1	04/04/2022 15:55
Mercury	0.17	0.050	1	04/04/2022 15:55
Molybdenum	0.53	0.50	1	04/04/2022 15:55
Nickel	630	2.5	5	04/04/2022 16:47
Selenium	ND	0.50	1	04/04/2022 15:55
Silver	ND	0.50	1	04/04/2022 15:55
Thallium	ND	0.50	1	04/04/2022 15:55
Vanadium	110	0.50	1	04/04/2022 15:55
Zinc	79	5.0	1	04/04/2022 15:55

Surrogates	REC (%)	Limits	
Terbium	108	70-130	04/04/2022 15:55

Analyst(s): AL, MIG



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 03/31/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** CARB 435 Asbestos  
**Analytical Method:** 435 CARB  
**Unit:** %

### Asbestos (CARB 435) 400 Point Count

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-3.0	2203L27-003A	Soil	03/29/2022 09:47	Microscope	242796

Analytes	Result	RL	DF	Date Analyzed
Asbestos	2.75	0.25	1	04/04/2022 10:20

Analyst(s): DA Analytical Comments: k15

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-3-3.0	2203L27-011A	Soil	03/29/2022 11:32	Microscope	242796

Analytes	Result	RL	DF	Date Analyzed
Asbestos	4.50	0.25	1	04/04/2022 11:45

Analyst(s): DA Analytical Comments: k15

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-3.0	2203L27-019A	Soil	03/29/2022 13:07	Microscope	242796

Analytes	Result	RL	DF	Date Analyzed
Asbestos	3.00	0.25	1	04/04/2022 13:10

Analyst(s): DA Analytical Comments: k15

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-5.0	2203L27-023A	Soil	03/29/2022 13:38	Microscope	242796

Analytes	Result	RL	DF	Date Analyzed
Asbestos	4.25	0.25	1	04/04/2022 16:30

Analyst(s): DA Analytical Comments: k15

(Cont.)





## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 03/31/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** CARB 435 Asbestos  
**Analytical Method:** 435 CARB  
**Unit:** %

### Asbestos (CARB 435) 400 Point Count

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-3.0	2203L27-026A	Soil	03/29/2022 14:37	Microscope	242796

Analytes	Result	RL	DF	Date Analyzed
Asbestos	< 0.25	0.25	1	04/05/2022 09:10

Analyst(s): DA

Analytical Comments: k12,k15

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-0.5	2203L27-033A	Soil	03/29/2022 13:50	Microscope	242796

Analytes	Result	RL	DF	Date Analyzed
Asbestos	1.25	0.25	1	04/05/2022 10:10

Analyst(s): DA

Analytical Comments: k15

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-3.0	2203L27-041A	Soil	03/29/2022 15:07	Microscope	242796

Analytes	Result	RL	DF	Date Analyzed
Asbestos	< 0.25	0.25	1	04/05/2022 11:10

Analyst(s): DA

Analytical Comments: k12,k15

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-10.0	2203L27-044A	Soil	03/29/2022 15:10	Microscope	242796

Analytes	Result	RL	DF	Date Analyzed
Asbestos	< 0.25	0.25	1	04/05/2022 12:15

Analyst(s): DA

Analytical Comments: k12,k15

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 03/31/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** CARB 435 Asbestos  
**Analytical Method:** 435 CARB  
**Unit:** %

### Asbestos (CARB 435) 400 Point Count

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-1.5	2203L27-046A	Soil	03/29/2022 15:31	Microscope	242796

Analytes	Result	RL	DF	Date Analyzed
Asbestos	< 0.25	0.25	1	04/05/2022 13:15

Analyst(s): DA

Analytical Comments: k12,k15

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-5.0	2203L27-048A	Soil	03/29/2022 15:33	Microscope	242796

Analytes	Result	RL	DF	Date Analyzed
Asbestos	< 0.25	0.25	1	04/05/2022 14:15

Analyst(s): DA

Analytical Comments: k12,k15

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-0.5	2203L27-051A	Soil	03/29/2022 15:50	Microscope	242796

Analytes	Result	RL	DF	Date Analyzed
Asbestos	2.25	0.25	1	04/05/2022 15:20

Analyst(s): DA

Analytical Comments: k15

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-10.0	2203L27-056A	Soil	03/29/2022 15:55	Microscope	242796

Analytes	Result	RL	DF	Date Analyzed
Asbestos	< 0.25	0.25	1	04/05/2022 16:25

Analyst(s): DA

Analytical Comments: k12,k15



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/06/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5035  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** mg/Kg

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-0.5	2203L27-001A	Soil	03/29/2022 09:45	GC3 04052206.D	242717

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	04/05/2022 14:07
MTBE	---	0.050	1	04/05/2022 14:07
Benzene	---	0.0050	1	04/05/2022 14:07
Toluene	---	0.0050	1	04/05/2022 14:07
Ethylbenzene	---	0.0050	1	04/05/2022 14:07
m,p-Xylene	---	0.010	1	04/05/2022 14:07
o-Xylene	---	0.0050	1	04/05/2022 14:07
Xylenes	---	0.0050	1	04/05/2022 14:07

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	80	62-126	04/05/2022 14:07

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-3.0	2203L27-003A	Soil	03/29/2022 09:47	GC19 04012213.D	242473

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	04/01/2022 18:48
MTBE	---	0.050	1	04/01/2022 18:48
Benzene	---	0.0050	1	04/01/2022 18:48
Toluene	---	0.0050	1	04/01/2022 18:48
Ethylbenzene	---	0.0050	1	04/01/2022 18:48
m,p-Xylene	---	0.010	1	04/01/2022 18:48
o-Xylene	---	0.0050	1	04/01/2022 18:48
Xylenes	---	0.0050	1	04/01/2022 18:48

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	84	62-126	04/01/2022 18:48

Analyst(s): IA

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/06/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5035  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** mg/Kg

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-2-0.5	2203L27-005A	Soil	03/29/2022 10:32	GC19 04012214.D	242483

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	8.5	1.0	1	04/01/2022 19:19
MTBE	---	0.050	1	04/01/2022 19:19
Benzene	---	0.0050	1	04/01/2022 19:19
Toluene	---	0.0050	1	04/01/2022 19:19
Ethylbenzene	---	0.0050	1	04/01/2022 19:19
m,p-Xylene	---	0.010	1	04/01/2022 19:19
o-Xylene	---	0.0050	1	04/01/2022 19:19
Xylenes	---	0.0050	1	04/01/2022 19:19

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	80	62-126	04/01/2022 19:19

Analyst(s): IA Analytical Comments: d7

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-2-1.5	2203L27-006A	Soil	03/29/2022 11:15	GC19 04012215.D	242483

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	04/01/2022 19:50
MTBE	---	0.050	1	04/01/2022 19:50
Benzene	---	0.0050	1	04/01/2022 19:50
Toluene	---	0.0050	1	04/01/2022 19:50
Ethylbenzene	---	0.0050	1	04/01/2022 19:50
m,p-Xylene	---	0.010	1	04/01/2022 19:50
o-Xylene	---	0.0050	1	04/01/2022 19:50
Xylenes	---	0.0050	1	04/01/2022 19:50

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	70	62-126	04/01/2022 19:50

Analyst(s): IA

(Cont.)



## Analytical Report

<b>Client:</b> Langan	<b>WorkOrder:</b> 2203L27
<b>Date Received:</b> 03/31/2022 13:15	<b>Extraction Method:</b> SW5035
<b>Date Prepared:</b> 04/01/2022-04/06/2022	<b>Analytical Method:</b> SW8021B/8015Bm
<b>Project:</b> 770681001; Hunters Point Block 54	<b>Unit:</b> mg/Kg

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-3-0.5	2203L27-009A	Soil	03/29/2022 11:30	GC19 04012216.D	242483

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	04/01/2022 20:22
MTBE	---	0.050	1	04/01/2022 20:22
Benzene	---	0.0050	1	04/01/2022 20:22
Toluene	---	0.0050	1	04/01/2022 20:22
Ethylbenzene	---	0.0050	1	04/01/2022 20:22
m,p-Xylene	---	0.010	1	04/01/2022 20:22
o-Xylene	---	0.0050	1	04/01/2022 20:22
Xylenes	---	0.0050	1	04/01/2022 20:22

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	86	62-126	04/01/2022 20:22

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-3-3.0	2203L27-011A	Soil	03/29/2022 11:32	GC19 04012225.D	242483

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	04/02/2022 01:01
MTBE	---	0.050	1	04/02/2022 01:01
Benzene	---	0.0050	1	04/02/2022 01:01
Toluene	---	0.0050	1	04/02/2022 01:01
Ethylbenzene	---	0.0050	1	04/02/2022 01:01
m,p-Xylene	---	0.010	1	04/02/2022 01:01
o-Xylene	---	0.0050	1	04/02/2022 01:01
Xylenes	---	0.0050	1	04/02/2022 01:01

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	90	62-126	04/02/2022 01:01

Analyst(s): IA

(Cont.)



## Analytical Report

<b>Client:</b> Langan	<b>WorkOrder:</b> 2203L27
<b>Date Received:</b> 03/31/2022 13:15	<b>Extraction Method:</b> SW5035
<b>Date Prepared:</b> 04/01/2022-04/06/2022	<b>Analytical Method:</b> SW8021B/8015Bm
<b>Project:</b> 770681001; Hunters Point Block 54	<b>Unit:</b> mg/Kg

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-0.5	2203L27-013A	Soil	03/29/2022 12:05	GC3 04052207.D	242717
<b>Analytes</b>					
	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH(g) (C6-C12)	ND		1.0	1	04/05/2022 14:38
MTBE	---		0.050	1	04/05/2022 14:38
Benzene	---		0.0050	1	04/05/2022 14:38
Toluene	---		0.0050	1	04/05/2022 14:38
Ethylbenzene	---		0.0050	1	04/05/2022 14:38
m,p-Xylene	---		0.010	1	04/05/2022 14:38
o-Xylene	---		0.0050	1	04/05/2022 14:38
Xylenes	---		0.0050	1	04/05/2022 14:38
<b>Surrogates</b>					
	<u>REC (%)</u>		<u>Limits</u>		
2-Fluorotoluene	80		62-126		04/05/2022 14:38
<b>Analyst(s):</b> IA					

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-1.5	2203L27-014A	Soil	03/29/2022 12:06	GC19 04012229.D	242483
<b>Analytes</b>					
	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH(g) (C6-C12)	ND		1.0	1	04/02/2022 03:04
MTBE	---		0.050	1	04/02/2022 03:04
Benzene	---		0.0050	1	04/02/2022 03:04
Toluene	---		0.0050	1	04/02/2022 03:04
Ethylbenzene	---		0.0050	1	04/02/2022 03:04
m,p-Xylene	---		0.010	1	04/02/2022 03:04
o-Xylene	---		0.0050	1	04/02/2022 03:04
Xylenes	---		0.0050	1	04/02/2022 03:04
<b>Surrogates</b>					
	<u>REC (%)</u>		<u>Limits</u>		
2-Fluorotoluene	77		62-126		04/02/2022 03:04
<b>Analyst(s):</b> IA					

(Cont.)



## Analytical Report

<b>Client:</b> Langan	<b>WorkOrder:</b> 2203L27
<b>Date Received:</b> 03/31/2022 13:15	<b>Extraction Method:</b> SW5035
<b>Date Prepared:</b> 04/01/2022-04/06/2022	<b>Analytical Method:</b> SW8021B/8015Bm
<b>Project:</b> 770681001; Hunters Point Block 54	<b>Unit:</b> mg/Kg

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-0.5	2203L27-017A	Soil	03/29/2022 13:05	GC19 04022210.D	242483

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	1.6	1.0	1	04/02/2022 18:41
MTBE	---	0.050	1	04/02/2022 18:41
Benzene	---	0.0050	1	04/02/2022 18:41
Toluene	---	0.0050	1	04/02/2022 18:41
Ethylbenzene	---	0.0050	1	04/02/2022 18:41
m,p-Xylene	---	0.010	1	04/02/2022 18:41
o-Xylene	---	0.0050	1	04/02/2022 18:41
Xylenes	---	0.0050	1	04/02/2022 18:41

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	81	62-126	04/02/2022 18:41

Analyst(s): IA      Analytical Comments: d1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-3.0	2203L27-019A	Soil	03/29/2022 13:07	GC19 04022211.D	242483

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	04/02/2022 19:12
MTBE	---	0.050	1	04/02/2022 19:12
Benzene	---	0.0050	1	04/02/2022 19:12
Toluene	---	0.0050	1	04/02/2022 19:12
Ethylbenzene	---	0.0050	1	04/02/2022 19:12
m,p-Xylene	---	0.010	1	04/02/2022 19:12
o-Xylene	---	0.0050	1	04/02/2022 19:12
Xylenes	---	0.0050	1	04/02/2022 19:12

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	88	62-126	04/02/2022 19:12

Analyst(s): IA

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/06/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5035  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** mg/Kg

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-0.5	2203L27-020A	Soil	03/29/2022 13:25	GC19 04052205.D	242717

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	04/05/2022 13:48
MTBE	---	0.050	1	04/05/2022 13:48
Benzene	---	0.0050	1	04/05/2022 13:48
Toluene	---	0.0050	1	04/05/2022 13:48
Ethylbenzene	---	0.0050	1	04/05/2022 13:48
m,p-Xylene	---	0.010	1	04/05/2022 13:48
o-Xylene	---	0.0050	1	04/05/2022 13:48
Xylenes	---	0.0050	1	04/05/2022 13:48

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	81	62-126	04/05/2022 13:48

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-5.0	2203L27-023A	Soil	03/29/2022 13:38	GC19 04022213.D	242483

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	04/02/2022 20:15
MTBE	---	0.050	1	04/02/2022 20:15
Benzene	---	0.0050	1	04/02/2022 20:15
Toluene	---	0.0050	1	04/02/2022 20:15
Ethylbenzene	---	0.0050	1	04/02/2022 20:15
m,p-Xylene	---	0.010	1	04/02/2022 20:15
o-Xylene	---	0.0050	1	04/02/2022 20:15
Xylenes	---	0.0050	1	04/02/2022 20:15

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	81	62-126	04/02/2022 20:15

Analyst(s): IA

(Cont.)





# Analytical Report

**Client:** Langan **WorkOrder:** 2203L27  
**Date Received:** 03/31/2022 13:15 **Extraction Method:** SW5035  
**Date Prepared:** 04/01/2022-04/06/2022 **Analytical Method:** SW8021B/8015Bm  
**Project:** 770681001; Hunters Point Block 54 **Unit:** mg/Kg

## Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-0.5	2203L27-024A	Soil	03/29/2022 14:35	GC3 04042208.D	242483

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	2.7	1.0	1	04/04/2022 15:25
MTBE	---	0.050	1	04/04/2022 15:25
Benzene	---	0.0050	1	04/04/2022 15:25
Toluene	---	0.0050	1	04/04/2022 15:25
Ethylbenzene	---	0.0050	1	04/04/2022 15:25
m,p-Xylene	---	0.010	1	04/04/2022 15:25
o-Xylene	---	0.0050	1	04/04/2022 15:25
Xylenes	---	0.0050	1	04/04/2022 15:25

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	82	62-126	04/04/2022 15:25

Analyst(s): IA Analytical Comments: d1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-3.0	2203L27-026A	Soil	03/29/2022 14:37	GC19 04022215.D	242483

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	04/02/2022 21:17
MTBE	---	0.050	1	04/02/2022 21:17
Benzene	---	0.0050	1	04/02/2022 21:17
Toluene	---	0.0050	1	04/02/2022 21:17
Ethylbenzene	---	0.0050	1	04/02/2022 21:17
m,p-Xylene	---	0.010	1	04/02/2022 21:17
o-Xylene	---	0.0050	1	04/02/2022 21:17
Xylenes	---	0.0050	1	04/02/2022 21:17

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	85	62-126	04/02/2022 21:17

Analyst(s): IA

(Cont.)



## Analytical Report

<b>Client:</b> Langan	<b>WorkOrder:</b> 2203L27
<b>Date Received:</b> 03/31/2022 13:15	<b>Extraction Method:</b> SW5035
<b>Date Prepared:</b> 04/01/2022-04/06/2022	<b>Analytical Method:</b> SW8021B/8015Bm
<b>Project:</b> 770681001; Hunters Point Block 54	<b>Unit:</b> mg/Kg

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-0.5	2203L27-027A	Soil	03/29/2022 14:15	GC19 04062205.D	242521

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	3.0	1.0	1	04/06/2022 13:28
MTBE	---	0.050	1	04/06/2022 13:28
Benzene	---	0.0050	1	04/06/2022 13:28
Toluene	---	0.0050	1	04/06/2022 13:28
Ethylbenzene	---	0.0050	1	04/06/2022 13:28
m,p-Xylene	---	0.010	1	04/06/2022 13:28
o-Xylene	---	0.0050	1	04/06/2022 13:28
Xylenes	---	0.0050	1	04/06/2022 13:28

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	75	62-126	04/06/2022 13:28

Analyst(s): IA      Analytical Comments: d1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-1.5	2203L27-028A	Soil	03/29/2022 14:16	GC19 04022217.D	242521

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	1.8	1.0	1	04/02/2022 22:20
MTBE	---	0.050	1	04/02/2022 22:20
Benzene	---	0.0050	1	04/02/2022 22:20
Toluene	---	0.0050	1	04/02/2022 22:20
Ethylbenzene	---	0.0050	1	04/02/2022 22:20
m,p-Xylene	---	0.010	1	04/02/2022 22:20
o-Xylene	---	0.0050	1	04/02/2022 22:20
Xylenes	---	0.0050	1	04/02/2022 22:20

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	80	62-126	04/02/2022 22:20

Analyst(s): IA      Analytical Comments: d1

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/06/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5035  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** mg/Kg

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-5.0	2203L27-030A	Soil	03/29/2022 14:18	GC3 04022219.D	242521

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	1.1	1.0	1	04/02/2022 23:06
MTBE	---	0.050	1	04/02/2022 23:06
Benzene	---	0.0050	1	04/02/2022 23:06
Toluene	---	0.0050	1	04/02/2022 23:06
Ethylbenzene	---	0.0050	1	04/02/2022 23:06
m,p-Xylene	---	0.010	1	04/02/2022 23:06
o-Xylene	---	0.0050	1	04/02/2022 23:06
Xylenes	---	0.0050	1	04/02/2022 23:06

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	85	62-126	04/02/2022 23:06

Analyst(s): IA Analytical Comments: d1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-0.5	2203L27-033A	Soil	03/29/2022 13:50	GC3 04022223.D	242521

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	1.2	1.0	1	04/03/2022 01:06
MTBE	---	0.050	1	04/03/2022 01:06
Benzene	---	0.0050	1	04/03/2022 01:06
Toluene	---	0.0050	1	04/03/2022 01:06
Ethylbenzene	---	0.0050	1	04/03/2022 01:06
m,p-Xylene	---	0.010	1	04/03/2022 01:06
o-Xylene	---	0.0050	1	04/03/2022 01:06
Xylenes	---	0.0050	1	04/03/2022 01:06

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	84	62-126	04/03/2022 01:06

Analyst(s): IA Analytical Comments: d1

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/06/2022  
**Project:** 770681001; Hunters Point Block 54  
**WorkOrder:** 2203L27  
**Extraction Method:** SW5035  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** mg/Kg

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-1.5	2203L27-034A	Soil	03/29/2022 13:51	GC3 04022224.D	242521

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	1.3	1.0	1	04/03/2022 01:37
MTBE	---	0.050	1	04/03/2022 01:37
Benzene	---	0.0050	1	04/03/2022 01:37
Toluene	---	0.0050	1	04/03/2022 01:37
Ethylbenzene	---	0.0050	1	04/03/2022 01:37
m,p-Xylene	---	0.010	1	04/03/2022 01:37
o-Xylene	---	0.0050	1	04/03/2022 01:37
Xylenes	---	0.0050	1	04/03/2022 01:37

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	88	62-126	04/03/2022 01:37
Analyst(s): IA	Analytical Comments: d1		

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-7.5	2203L27-037A	Soil	03/29/2022 13:54	GC3 04022228.D	242521

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	1.2	1.0	1	04/03/2022 03:37
MTBE	---	0.050	1	04/03/2022 03:37
Benzene	---	0.0050	1	04/03/2022 03:37
Toluene	---	0.0050	1	04/03/2022 03:37
Ethylbenzene	---	0.0050	1	04/03/2022 03:37
m,p-Xylene	---	0.010	1	04/03/2022 03:37
o-Xylene	---	0.0050	1	04/03/2022 03:37
Xylenes	---	0.0050	1	04/03/2022 03:37

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	82	62-126	04/03/2022 03:37
Analyst(s): IA	Analytical Comments: d1		

(Cont.)



# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/06/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5035  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** mg/Kg

## Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-0.5	2203L27-039A	Soil	03/29/2022 15:05	GC3 04022230.D	242521

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	3.3	1.0	1	04/03/2022 04:37
MTBE	---	0.050	1	04/03/2022 04:37
Benzene	---	0.0050	1	04/03/2022 04:37
Toluene	---	0.0050	1	04/03/2022 04:37
Ethylbenzene	---	0.0050	1	04/03/2022 04:37
m,p-Xylene	---	0.010	1	04/03/2022 04:37
o-Xylene	---	0.0050	1	04/03/2022 04:37
Xylenes	---	0.0050	1	04/03/2022 04:37

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	81	62-126	04/03/2022 04:37

Analyst(s): IA Analytical Comments: d1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-3.0	2203L27-041A	Soil	03/29/2022 15:07	GC3 04022231.D	242521

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	04/03/2022 05:07
MTBE	---	0.050	1	04/03/2022 05:07
Benzene	---	0.0050	1	04/03/2022 05:07
Toluene	---	0.0050	1	04/03/2022 05:07
Ethylbenzene	---	0.0050	1	04/03/2022 05:07
m,p-Xylene	---	0.010	1	04/03/2022 05:07
o-Xylene	---	0.0050	1	04/03/2022 05:07
Xylenes	---	0.0050	1	04/03/2022 05:07

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	93	62-126	04/03/2022 05:07

Analyst(s): IA

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/06/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5035  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** mg/Kg

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-10.0	2203L27-044A	Soil	03/29/2022 15:10	GC3 04022232.D	242521

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	04/03/2022 05:37
MTBE	---	0.050	1	04/03/2022 05:37
Benzene	---	0.0050	1	04/03/2022 05:37
Toluene	---	0.0050	1	04/03/2022 05:37
Ethylbenzene	---	0.0050	1	04/03/2022 05:37
m,p-Xylene	---	0.010	1	04/03/2022 05:37
o-Xylene	---	0.0050	1	04/03/2022 05:37
Xylenes	---	0.0050	1	04/03/2022 05:37

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	100	62-126	04/03/2022 05:37

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-0.5	2203L27-045A	Soil	03/29/2022 15:30	GC3 04062224.D	242906

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	1.2	1.0	1	04/06/2022 23:37
MTBE	---	0.050	1	04/06/2022 23:37
Benzene	---	0.0050	1	04/06/2022 23:37
Toluene	---	0.0050	1	04/06/2022 23:37
Ethylbenzene	---	0.0050	1	04/06/2022 23:37
m,p-Xylene	---	0.010	1	04/06/2022 23:37
o-Xylene	---	0.0050	1	04/06/2022 23:37
Xylenes	---	0.0050	1	04/06/2022 23:37

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	91	62-126	04/06/2022 23:37

Analyst(s): IA

Analytical Comments: d1

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/06/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5035  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** mg/Kg

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-1.5	2203L27-046A	Soil	03/29/2022 15:31	GC3 04022233.D	242521

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	04/03/2022 06:07
MTBE	---	0.050	1	04/03/2022 06:07
Benzene	---	0.0050	1	04/03/2022 06:07
Toluene	---	0.0050	1	04/03/2022 06:07
Ethylbenzene	---	0.0050	1	04/03/2022 06:07
m,p-Xylene	---	0.010	1	04/03/2022 06:07
o-Xylene	---	0.0050	1	04/03/2022 06:07
Xylenes	---	0.0050	1	04/03/2022 06:07

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	79	62-126	04/03/2022 06:07

Analyst(s): IA

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-5.0	2203L27-048A	Soil	03/29/2022 15:33	GC3 04022235.D	242521

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	1.1	1.0	1	04/03/2022 07:08
MTBE	---	0.050	1	04/03/2022 07:08
Benzene	---	0.0050	1	04/03/2022 07:08
Toluene	---	0.0050	1	04/03/2022 07:08
Ethylbenzene	---	0.0050	1	04/03/2022 07:08
m,p-Xylene	---	0.010	1	04/03/2022 07:08
o-Xylene	---	0.0050	1	04/03/2022 07:08
Xylenes	---	0.0050	1	04/03/2022 07:08

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	85	62-126	04/03/2022 07:08

Analyst(s): IA

Analytical Comments: d1

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/06/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW5035  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** mg/Kg

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-0.5	2203L27-051A	Soil	03/29/2022 15:50	GC3 04022236.D	242521

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	2.8	1.0	1	04/03/2022 07:38
MTBE	---	0.050	1	04/03/2022 07:38
Benzene	---	0.0050	1	04/03/2022 07:38
Toluene	---	0.0050	1	04/03/2022 07:38
Ethylbenzene	---	0.0050	1	04/03/2022 07:38
m,p-Xylene	---	0.010	1	04/03/2022 07:38
o-Xylene	---	0.0050	1	04/03/2022 07:38
Xylenes	---	0.0050	1	04/03/2022 07:38

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	82	62-126	04/03/2022 07:38

Analyst(s): IA Analytical Comments: d1

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-3.0	2203L27-053A	Soil	03/29/2022 15:52	GC3 04022237.D	242521

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	ND	1.0	1	04/03/2022 08:09
MTBE	---	0.050	1	04/03/2022 08:09
Benzene	---	0.0050	1	04/03/2022 08:09
Toluene	---	0.0050	1	04/03/2022 08:09
Ethylbenzene	---	0.0050	1	04/03/2022 08:09
m,p-Xylene	---	0.010	1	04/03/2022 08:09
o-Xylene	---	0.0050	1	04/03/2022 08:09
Xylenes	---	0.0050	1	04/03/2022 08:09

Surrogates	REC (%)	Limits	Date Analyzed
aaa-TFT	94	72-123	04/03/2022 08:09

Analyst(s): IA

(Cont.)





## Analytical Report

<b>Client:</b> Langan	<b>WorkOrder:</b> 2203L27
<b>Date Received:</b> 03/31/2022 13:15	<b>Extraction Method:</b> SW5035
<b>Date Prepared:</b> 04/01/2022-04/06/2022	<b>Analytical Method:</b> SW8021B/8015Bm
<b>Project:</b> 770681001; Hunters Point Block 54	<b>Unit:</b> mg/Kg

### Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-10.0	2203L27-056A	Soil	03/29/2022 15:55	GC3 04042209.D	242521

Analytes	Result	RL	DF	Date Analyzed
TPH(g) (C6-C12)	14	1.0	1	04/04/2022 15:57
MTBE	---	0.050	1	04/04/2022 15:57
Benzene	---	0.0050	1	04/04/2022 15:57
Toluene	---	0.0050	1	04/04/2022 15:57
Ethylbenzene	---	0.0050	1	04/04/2022 15:57
m,p-Xylene	---	0.010	1	04/04/2022 15:57
o-Xylene	---	0.0050	1	04/04/2022 15:57
Xylenes	---	0.0050	1	04/04/2022 15:57

Surrogates	REC (%)	Limits	Date Analyzed
2-Fluorotoluene	84	62-126	04/04/2022 15:57

**Analyst(s):** IA **Analytical Comments:** d1



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### LUFT 5 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-3.0	2203L27-003A	Soil	03/29/2022 09:47	ICP-MS4 251SMPL.d	242485

Analytes	Result	RL	DF	Date Analyzed
Cadmium	ND	0.50	1	04/04/2022 19:56
Chromium	<b>1100</b>	5.0	10	04/05/2022 12:21
Lead	ND	0.50	1	04/04/2022 19:56
Nickel	<b>2100</b>	5.0	10	04/05/2022 12:21
Zinc	<b>23</b>	5.0	1	04/04/2022 19:56

Surrogates	REC (%)	Limits
Terbium	106	70-130

Analyst(s): AL, DB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-0.5	2203L27-013A	Soil	03/29/2022 12:05	ICP-MS4 255SMPL.d	242485

Analytes	Result	RL	DF	Date Analyzed
Cadmium	ND	0.50	1	04/04/2022 20:12
Chromium	<b>430</b>	0.50	1	04/04/2022 20:12
Lead	<b>4.8</b>	0.50	1	04/04/2022 20:12
Nickel	<b>750</b>	5.0	10	04/05/2022 12:42
Zinc	<b>43</b>	5.0	1	04/04/2022 20:12

Surrogates	REC (%)	Limits
Terbium	107	70-130

Analyst(s): AL, DB



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### LUFT 5 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-3.0	2203L27-019A	Soil	03/29/2022 13:07	ICP-MS4 258SMPL.d	242485

Analytes	Result	RL	DF	Date Analyzed
Cadmium	ND	0.50	1	04/04/2022 20:24
Chromium	<b>1200</b>	5.0	10	04/05/2022 13:58
Lead	ND	0.50	1	04/04/2022 20:24
Nickel	<b>1800</b>	5.0	10	04/05/2022 13:58
Zinc	<b>25</b>	5.0	1	04/04/2022 20:24

Surrogates	REC (%)	Limits
Terbium	106	70-130

**Analyst(s):** DB, MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-0.5	2203L27-024A	Soil	03/29/2022 14:35	ICP-MS4 269SMPL.d	242485

Analytes	Result	RL	DF	Date Analyzed
Cadmium	ND	0.50	1	04/04/2022 21:07
Chromium	<b>350</b>	0.50	1	04/04/2022 21:07
Lead	<b>7.3</b>	0.50	1	04/04/2022 21:07
Nickel	<b>630</b>	5.0	10	04/05/2022 14:05
Zinc	<b>72</b>	5.0	1	04/04/2022 21:07

Surrogates	REC (%)	Limits
Terbium	107	70-130

**Analyst(s):** DB, MIG



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### LUFT 5 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-0.5	2203L27-033A	Soil	03/29/2022 13:50	ICP-MS4 274SMPL.d	242523

Analytes	Result	RL	DF	Date Analyzed
Cadmium	ND	0.50	1	04/04/2022 21:27
Chromium	<b>360</b>	0.50	1	04/04/2022 21:27
Lead	<b>8.4</b>	0.50	1	04/04/2022 21:27
Nickel	<b>620</b>	5.0	10	04/05/2022 14:26
Zinc	<b>67</b>	5.0	1	04/04/2022 21:27

Surrogates	REC (%)	Limits
Terbium	104	70-130

Analyst(s): DB, MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-7.5	2203L27-037A	Soil	03/29/2022 13:54	ICP-MS4 276SMPL.d	242523

Analytes	Result	RL	DF	Date Analyzed
Cadmium	ND	0.50	1	04/04/2022 21:35
Chromium	<b>260</b>	0.50	1	04/04/2022 21:35
Lead	<b>4.6</b>	0.50	1	04/04/2022 21:35
Nickel	<b>560</b>	5.0	10	04/05/2022 14:33
Zinc	<b>65</b>	5.0	1	04/04/2022 21:35

Surrogates	REC (%)	Limits
Terbium	103	70-130

Analyst(s): DB, MIG



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

### LUFT 5 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-10.0	2203L27-044A	Soil	03/29/2022 15:10	ICP-MS4 279SMPL.d	242523

Analytes	Result	RL	DF	Date Analyzed
Cadmium	ND	0.50	1	04/04/2022 21:47
Chromium	71	0.50	1	04/04/2022 21:47
Lead	7.5	0.50	1	04/04/2022 21:47
Nickel	86	0.50	1	04/04/2022 21:47
Zinc	77	5.0	1	04/04/2022 21:47

Surrogates	REC (%)	Limits
Terbium	106	70-130

Analyst(s): DB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-1.5	2203L27-046A	Soil	03/29/2022 15:31	ICP-MS4 281SMPL.d	242523

Analytes	Result	RL	DF	Date Analyzed
Cadmium	ND	0.50	1	04/04/2022 21:55
Chromium	270	0.50	1	04/04/2022 21:55
Lead	3.9	0.50	1	04/04/2022 21:55
Nickel	380	0.50	1	04/04/2022 21:55
Zinc	74	5.0	1	04/04/2022 21:55

Surrogates	REC (%)	Limits
Terbium	104	70-130

Analyst(s): DB

(Cont.)



# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022-04/02/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/Kg

## LUFT 5 Metals

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-5.0	2203L27-048A	Soil	03/29/2022 15:33	ICP-MS4 282SMPL.d	242523

Analytes	Result	RL	DF	Date Analyzed
Cadmium	ND	0.50	1	04/04/2022 21:59
Chromium	390	0.50	1	04/04/2022 21:59
Lead	6.0	0.50	1	04/04/2022 21:59
Nickel	660	5.0	10	04/05/2022 14:43
Zinc	64	5.0	1	04/04/2022 21:59

Surrogates	REC (%)	Limits	
Terbium	105	70-130	04/04/2022 21:59

Analyst(s): DB, MIG



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/06/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW9045C  
**Analytical Method:** SW9045C  
**Unit:** pH units @ 25°C

### pH

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-3.0	2203L27-003A	Soil	03/29/2022 09:47	WetChem	242852

Analytes	Result	Accuracy	DF	Date Analyzed
pH	8.24	±0.1	1	04/06/2022 16:53

Analyst(s): JME

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-3.0	2203L27-041A	Soil	03/29/2022 15:07	WetChem	242852

Analytes	Result	Accuracy	DF	Date Analyzed
pH	8.47	±0.1	1	04/06/2022 16:56

Analyst(s): JME



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/08/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW9030B/E376.2  
**Analytical Method:** SM4500 S<sup>-2</sup> D  
**Unit:** mg/Kg

### Acid Soluble Sulfide - S

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-3.0	2203L27-003A	Soil	03/29/2022 09:47	SPECTROPHOTOMETER2	242974

Analytes	Result	RL	DF	Date Analyzed
Acid Soluble Sulfide - S	ND	1.0	1	04/08/2022 15:32

Analyst(s): NYG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-3.0	2203L27-041A	Soil	03/29/2022 15:07	SPECTROPHOTOMETER2	242974

Analytes	Result	RL	DF	Date Analyzed
Acid Soluble Sulfide - S	ND	1.0	1	04/08/2022 15:33

Analyst(s): NYG





## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B  
**Analytical Method:** SW8015B  
**Unit:** mg/Kg

### Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-0.5	2203L27-001A	Soil	03/29/2022 09:45	GC6A 04062264.D	242482
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	12		4.0	2	04/07/2022 17:18
TPH-Motor Oil (C18-C36)	170		20	2	04/07/2022 17:18
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
C9	93		70-130		04/07/2022 17:18
<u>Analyst(s):</u> JIS			<u>Analytical Comments:</u> e7,e2		

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-3.0	2203L27-003A	Soil	03/29/2022 09:47	GC39B 04012217.D	242482
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	ND		2.0	1	04/01/2022 22:58
TPH-Motor Oil (C18-C36)	ND		10	1	04/01/2022 22:58
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
C9	98		70-130		04/01/2022 22:58
<u>Analyst(s):</u> JIS					

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-2-0.5	2203L27-005A	Soil	03/29/2022 10:32	GC6B 04062263.D	242482
<u>Analytes</u>	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	33		20	10	04/07/2022 17:18
TPH-Motor Oil (C18-C36)	840		100	10	04/07/2022 17:18
<u>Surrogates</u>	<u>REC (%)</u>		<u>Limits</u>		
C9	81		70-130		04/07/2022 17:18
<u>Analyst(s):</u> JIS			<u>Analytical Comments:</u> e7,e2		

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B  
**Analytical Method:** SW8015B  
**Unit:** mg/Kg

### Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-2-1.5	2203L27-006A	Soil	03/29/2022 11:15	GC9a 04062222.D	242519
<u>Analytes</u>					
	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	ND		2.0	1	04/07/2022 00:17
TPH-Motor Oil (C18-C36)	ND		10	1	04/07/2022 00:17
<u>Surrogates</u>					
	<u>REC (%)</u>		<u>Limits</u>		
C9	96		70-130		04/07/2022 00:17
<u>Analyst(s):</u> JIS					

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-3-0.5	2203L27-009A	Soil	03/29/2022 11:30	GC9a 04062246.D	242519
<u>Analytes</u>					
	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	ND		2.0	1	04/07/2022 08:03
TPH-Motor Oil (C18-C36)	ND		10	1	04/07/2022 08:03
<u>Surrogates</u>					
	<u>REC (%)</u>		<u>Limits</u>		
C9	96		70-130		04/07/2022 08:03
<u>Analyst(s):</u> JIS					

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-3-3.0	2203L27-011A	Soil	03/29/2022 11:32	GC9a 04062250.D	242519
<u>Analytes</u>					
	<u>Result</u>		<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	ND		2.0	1	04/07/2022 09:20
TPH-Motor Oil (C18-C36)	ND		10	1	04/07/2022 09:20
<u>Surrogates</u>					
	<u>REC (%)</u>		<u>Limits</u>		
C9	92		70-130		04/07/2022 09:20
<u>Analyst(s):</u> JIS					

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B  
**Analytical Method:** SW8015B  
**Unit:** mg/Kg

### Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-0.5	2203L27-013A	Soil	03/29/2022 12:05	GC39B 04062245.D	242519
<u>Analytes</u>		<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)		ND	2.0	1	04/07/2022 08:55
TPH-Motor Oil (C18-C36)		14	10	1	04/07/2022 08:55
<u>Surrogates</u>		<u>REC (%)</u>	<u>Limits</u>		
C9		94	70-130		04/07/2022 08:55
<u>Analyst(s):</u> JIS			<u>Analytical Comments:</u> e7		

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-1.5	2203L27-014A	Soil	03/29/2022 12:06	GC9a 04062258.D	242519
<u>Analytes</u>		<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)		ND	2.0	1	04/07/2022 11:56
TPH-Motor Oil (C18-C36)		ND	10	1	04/07/2022 11:56
<u>Surrogates</u>		<u>REC (%)</u>	<u>Limits</u>		
C9		93	70-130		04/07/2022 11:56
<u>Analyst(s):</u> JIS					

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-0.5	2203L27-017A	Soil	03/29/2022 13:05	GC9b 04062219.D	242519
<u>Analytes</u>		<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)		ND	2.0	1	04/06/2022 23:38
TPH-Motor Oil (C18-C36)		ND	10	1	04/06/2022 23:38
<u>Surrogates</u>		<u>REC (%)</u>	<u>Limits</u>		
C9		96	70-130		04/06/2022 23:38
<u>Analyst(s):</u> JIS					

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B  
**Analytical Method:** SW8015B  
**Unit:** mg/Kg

### Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-3.0	2203L27-019A	Soil	03/29/2022 13:07	GC9a 04062260.D	242519

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	2.0	1	04/07/2022 12:35
TPH-Motor Oil (C18-C36)	ND	10	1	04/07/2022 12:35

Surrogates	REC (%)	Limits	Date Analyzed
C9	96	70-130	04/07/2022 12:35

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-0.5	2203L27-020A	Soil	03/29/2022 13:25	GC39A 04062218.D	242519

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	6.9	2.0	1	04/06/2022 23:47
TPH-Motor Oil (C18-C36)	84	10	1	04/06/2022 23:47

Surrogates	REC (%)	Limits	Date Analyzed
C9	96	70-130	04/06/2022 23:47

Analyst(s): JIS

Analytical Comments: e7,e2

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-5.0	2203L27-023A	Soil	03/29/2022 13:38	GC9a 04062262.D	242519

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	2.0	1	04/07/2022 13:14
TPH-Motor Oil (C18-C36)	ND	10	1	04/07/2022 13:14

Surrogates	REC (%)	Limits	Date Analyzed
C9	95	70-130	04/07/2022 13:14

Analyst(s): JIS

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B  
**Analytical Method:** SW8015B  
**Unit:** mg/Kg

### Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-0.5	2203L27-024A	Soil	03/29/2022 14:35	GC39A 04012220.D	242519

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	ND	2.0	1	04/01/2022 23:38
TPH-Motor Oil (C18-C36)	ND	10	1	04/01/2022 23:38

<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>	<u>Date Analyzed</u>
C9	94	70-130	04/01/2022 23:38

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-3.0	2203L27-026A	Soil	03/29/2022 14:37	GC9a 04062234.D	242519

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	ND	2.0	1	04/07/2022 04:10
TPH-Motor Oil (C18-C36)	ND	10	1	04/07/2022 04:10

<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>	<u>Date Analyzed</u>
C9	95	70-130	04/07/2022 04:10

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-0.5	2203L27-027A	Soil	03/29/2022 14:15	GC39A 04062228.D	242519

<u>Analytes</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)	4.4	4.0	2	04/07/2022 03:03
TPH-Motor Oil (C18-C36)	110	20	2	04/07/2022 03:03

<u>Surrogates</u>	<u>REC (%)</u>	<u>Limits</u>	<u>Date Analyzed</u>
C9	96	70-130	04/07/2022 03:03

Analyst(s): JIS

Analytical Comments: e7,e2

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B  
**Analytical Method:** SW8015B  
**Unit:** mg/Kg

### Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-1.5	2203L27-028A	Soil	03/29/2022 14:16	GC9b 04062213.D	242519
<u>Analytes</u>		<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)		2.5	2.0	1	04/06/2022 21:42
TPH-Motor Oil (C18-C36)		25	10	1	04/06/2022 21:42
<u>Surrogates</u>		<u>REC (%)</u>	<u>Limits</u>		
C9		95	70-130		04/06/2022 21:42
<u>Analyst(s):</u> JIS			<u>Analytical Comments:</u> e7,e2		

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-5.0	2203L27-030A	Soil	03/29/2022 14:18	GC39A 04012224.D	242519
<u>Analytes</u>		<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)		ND	2.0	1	04/02/2022 00:56
TPH-Motor Oil (C18-C36)		11	10	1	04/02/2022 00:56
<u>Surrogates</u>		<u>REC (%)</u>	<u>Limits</u>		
C9		94	70-130		04/02/2022 00:56
<u>Analyst(s):</u> JIS			<u>Analytical Comments:</u> e7		

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-0.5	2203L27-033A	Soil	03/29/2022 13:50	GC9b 04062217.D	242519
<u>Analytes</u>		<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Date Analyzed</u>
TPH-Diesel (C10-C23)		ND	2.0	1	04/06/2022 22:59
TPH-Motor Oil (C18-C36)		12	10	1	04/06/2022 22:59
<u>Surrogates</u>		<u>REC (%)</u>	<u>Limits</u>		
C9		95	70-130		04/06/2022 22:59
<u>Analyst(s):</u> JIS			<u>Analytical Comments:</u> e7		

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B  
**Analytical Method:** SW8015B  
**Unit:** mg/Kg

### Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-1.5	2203L27-034A	Soil	03/29/2022 13:51	GC9a 04062236.D	242519

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	2.0	1	04/07/2022 04:48
TPH-Motor Oil (C18-C36)	ND	10	1	04/07/2022 04:48

Surrogates	REC (%)	Limits	Date Analyzed
C9	95	70-130	04/07/2022 04:48

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-7.5	2203L27-037A	Soil	03/29/2022 13:54	GC9b 04062211.D	242519

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	2.0	1	04/06/2022 21:03
TPH-Motor Oil (C18-C36)	ND	10	1	04/06/2022 21:03

Surrogates	REC (%)	Limits	Date Analyzed
C9	96	70-130	04/06/2022 21:03

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-0.5	2203L27-039A	Soil	03/29/2022 15:05	GC9b 04062223.D	242519

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	2.0	1	04/07/2022 00:56
TPH-Motor Oil (C18-C36)	ND	10	1	04/07/2022 00:56

Surrogates	REC (%)	Limits	Date Analyzed
C9	95	70-130	04/07/2022 00:56

Analyst(s): JIS

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B  
**Analytical Method:** SW8015B  
**Unit:** mg/Kg

### Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-3.0	2203L27-041A	Soil	03/29/2022 15:07	GC9a 04062252.D	242519

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	2.0	1	04/07/2022 09:59
TPH-Motor Oil (C18-C36)	ND	10	1	04/07/2022 09:59

Surrogates	REC (%)	Limits	Date Analyzed
C9	94	70-130	04/07/2022 09:59

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-10.0	2203L27-044A	Soil	03/29/2022 15:10	GC9b 04062209.D	242519

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	2.0	1	04/06/2022 20:24
TPH-Motor Oil (C18-C36)	ND	10	1	04/06/2022 20:24

Surrogates	REC (%)	Limits	Date Analyzed
C9	94	70-130	04/06/2022 20:24

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-0.5	2203L27-045A	Soil	03/29/2022 15:30	GC9a 04062210.D	242520

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	2.0	1	04/06/2022 20:24
TPH-Motor Oil (C18-C36)	ND	10	1	04/06/2022 20:24

Surrogates	REC (%)	Limits	Date Analyzed
C9	93	70-130	04/06/2022 20:24

Analyst(s): JIS

(Cont.)





## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B  
**Analytical Method:** SW8015B  
**Unit:** mg/Kg

### Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-1.5	2203L27-046A	Soil	03/29/2022 15:31	GC9a 04062256.D	242520

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	2.0	1	04/07/2022 11:17
TPH-Motor Oil (C18-C36)	ND	10	1	04/07/2022 11:17

Surrogates	REC (%)	Limits	Date Analyzed
C9	93	70-130	04/07/2022 11:17

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-5.0	2203L27-048A	Soil	03/29/2022 15:33	GC9a 04062266.D	242520

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	2.0	1	04/07/2022 14:32
TPH-Motor Oil (C18-C36)	ND	10	1	04/07/2022 14:32

Surrogates	REC (%)	Limits	Date Analyzed
C9	94	70-130	04/07/2022 14:32

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-0.5	2203L27-051A	Soil	03/29/2022 15:50	GC9b 04062221.D	242520

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	2.0	1	04/07/2022 00:17
TPH-Motor Oil (C18-C36)	23	10	1	04/07/2022 00:17

Surrogates	REC (%)	Limits	Date Analyzed
C9	95	70-130	04/07/2022 00:17

Analyst(s): JIS

Analytical Comments: e7

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/01/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW3550B  
**Analytical Method:** SW8015B  
**Unit:** mg/Kg

### Total Extractable Petroleum Hydrocarbons w/out SG Clean-Up

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-3.0	2203L27-053A	Soil	03/29/2022 15:52	GC9a 04062264.D	242520

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	2.0	1	04/07/2022 13:53
TPH-Motor Oil (C18-C36)	ND	10	1	04/07/2022 13:53

Surrogates	REC (%)	Limits	Date Analyzed
C9	94	70-130	04/07/2022 13:53

Analyst(s): JIS

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-10.0	2203L27-056A	Soil	03/29/2022 15:55	GC9b 04062215.D	242520

Analytes	Result	RL	DF	Date Analyzed
TPH-Diesel (C10-C23)	ND	2.0	1	04/06/2022 22:21
TPH-Motor Oil (C18-C36)	ND	10	1	04/06/2022 22:21

Surrogates	REC (%)	Limits	Date Analyzed
C9	97	70-130	04/06/2022 22:21

Analyst(s): JIS



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/05/2022  
**Date Analyzed:** 04/06/2022  
**Instrument:** GC23  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242785  
**Extraction Method:** SW3550B/3640Am/3630Cm  
**Analytical Method:** SW8081A/8082  
**Unit:** mg/kg  
**Sample ID:** MB/LCS/LCSD-242785

### QC Summary Report for SW8081A/8082

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Aldrin	ND	0.000036	0.00010	-	-	-
a-BHC	ND	0.000025	0.00010	-	-	-
b-BHC	ND	0.00025	0.00030	-	-	-
d-BHC	ND	0.00013	0.00020	-	-	-
g-BHC	ND	0.000066	0.00010	-	-	-
Chlordane (Technical)	ND	0.00043	0.0025	-	-	-
a-Chlordane	ND	0.000095	0.00010	-	-	-
g-Chlordane	ND	0.000047	0.00010	-	-	-
p,p-DDD	ND	0.000043	0.00010	-	-	-
p,p-DDE	ND	0.000094	0.00010	-	-	-
p,p-DDT	ND	0.000092	0.00010	-	-	-
Dieldrin	ND	0.000061	0.00010	-	-	-
Endosulfan I	ND	0.000048	0.00010	-	-	-
Endosulfan II	ND	0.000076	0.00010	-	-	-
Endosulfan sulfate	ND	0.000078	0.00010	-	-	-
Endrin	ND	0.000035	0.00010	-	-	-
Endrin aldehyde	ND	0.000067	0.00010	-	-	-
Endrin ketone	ND	0.000084	0.00010	-	-	-
Heptachlor	ND	0.000040	0.00010	-	-	-
Heptachlor epoxide	ND	0.000054	0.00010	-	-	-
Hexachlorobenzene	ND	0.00011	0.0010	-	-	-
Hexachlorocyclopentadiene	ND	0.00034	0.0020	-	-	-
Methoxychlor	ND	0.00013	0.00020	-	-	-
Toxaphene	ND	0.0034	0.0050	-	-	-
Aroclor1016	ND	0.0020	0.0050	-	-	-
Aroclor1221	ND	0.0022	0.0050	-	-	-
Aroclor1232	ND	0.0022	0.0050	-	-	-
Aroclor1242	ND	0.0022	0.0050	-	-	-
Aroclor1248	ND	0.0022	0.0050	-	-	-
Aroclor1254	ND	0.0022	0.0050	-	-	-
Aroclor1260	ND	0.0022	0.0050	-	-	-
<b>Surrogate Recovery</b>						
Decachlorobiphenyl	0.0061			0.005	121	28-170

(Cont.)



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/05/2022  
**Date Analyzed:** 04/06/2022  
**Instrument:** GC23  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242785  
**Extraction Method:** SW3550B/3640Am/3630Cm  
**Analytical Method:** SW8081A/8082  
**Unit:** mg/kg  
**Sample ID:** MB/LCS/LCSD-242785

### QC Summary Report for SW8081A/8082

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Aldrin	0.0048	0.0049	0.0050	96	98	31-155	1.42	20
a-BHC	0.0052	0.0053	0.0050	105	106	32-160	1.48	20
b-BHC	0.0044	0.0046	0.0050	89	91	44-149	2.39	20
d-BHC	0.0054	0.0056	0.0050	108	113	37-157	4.36	20
g-BHC	0.0050	0.0051	0.0050	100	102	43-154	2.05	20
a-Chlordane	0.0048	0.0049	0.0050	95	99	39-150	3.38	20
g-Chlordane	0.0046	0.0048	0.0050	92	95	39-151	3.29	20
p,p-DDD	0.0054	0.0058	0.0050	109	117	30-158	7.00	20
p,p-DDE	0.0055	0.0057	0.0050	109	114	47-149	4.73	20
p,p-DDT	0.0054	0.0057	0.0050	107	115	56-166	6.68	20
Dieldrin	0.0050	0.0053	0.0050	100	105	50-163	4.82	20
Endosulfan I	0.0047	0.0049	0.0050	93	97	45-159	4.16	20
Endosulfan II	0.0052	0.0055	0.0050	103	111	41-155	6.87	20
Endosulfan sulfate	0.0052	0.0056	0.0050	103	113	45-156	9.02	20
Endrin	0.0055	0.0058	0.0050	109	115	54-154	5.57	20
Endrin aldehyde	0.0045	0.0049	0.0050	90	98	27-159	7.78	20
Endrin ketone	0.0051	0.0056	0.0050	102	111	40-147	8.72	20
Heptachlor	0.0048	0.0048	0.0050	96	97	52-165	0.661	20
Heptachlor epoxide	0.0048	0.0049	0.0050	95	99	46-145	3.55	20
Hexachlorobenzene	0.0048	0.0048	0.0050	96	97	22-156	0.901	20
Hexachlorocyclopentadiene	0.0071	0.0070	0.0050	142	139	43-173	1.75	20
Methoxychlor	0.0054	0.0059	0.0050	109	118	49-150	8.24	20
Aroclor1016	0.014	0.014	0.015	96	96	49-120	0.347	20
Aroclor1260	0.015	0.015	0.015	99	98	48-160	0.658	20
<b>Surrogate Recovery</b>								
Decachlorobiphenyl	0.0060	0.0062	0.0050	121	124	28-170	2.74	20



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/01/2022  
**Date Analyzed:** 04/03/2022 - 04/05/2022  
**Instrument:** GC38, GC45  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242510  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg  
**Sample ID:** MB/LCS/LCSD-242510

### QC Summary Report for SW8260B

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Acetone	ND	0.12	0.20	-	-	-
tert-Amyl methyl ether (TAME)	ND	0.0012	0.0050	-	-	-
Benzene	ND	0.00095	0.0050	-	-	-
Bromobenzene	ND	0.0012	0.0050	-	-	-
Bromochloromethane	ND	0.0011	0.0050	-	-	-
Bromodichloromethane	ND	0.00023	0.0050	-	-	-
Bromoform	ND	0.0038	0.0050	-	-	-
Bromomethane	ND	0.0018	0.0050	-	-	-
2-Butanone (MEK)	ND	0.040	0.10	-	-	-
t-Butyl alcohol (TBA)	ND	0.024	0.050	-	-	-
n-Butyl benzene	ND	0.0016	0.0050	-	-	-
sec-Butyl benzene	ND	0.0018	0.0050	-	-	-
tert-Butyl benzene	ND	0.0021	0.0050	-	-	-
Carbon Disulfide	ND	0.0011	0.0050	-	-	-
Carbon Tetrachloride	ND	0.00017	0.0050	-	-	-
Chlorobenzene	ND	0.0012	0.0050	-	-	-
Chloroethane	ND	0.0017	0.0050	-	-	-
Chloroform	ND	0.00032	0.0050	-	-	-
Chloromethane	ND	0.0017	0.0050	-	-	-
2-Chlorotoluene	ND	0.0016	0.0050	-	-	-
4-Chlorotoluene	ND	0.0013	0.0050	-	-	-
Dibromochloromethane	ND	0.00040	0.0050	-	-	-
1,2-Dibromo-3-chloropropane	ND	0.00048	0.00050	-	-	-
1,2-Dibromoethane (EDB)	ND	0.00013	0.00025	-	-	-
Dibromomethane	ND	0.0012	0.0050	-	-	-
1,2-Dichlorobenzene	ND	0.0017	0.0050	-	-	-
1,3-Dichlorobenzene	ND	0.0015	0.0050	-	-	-
1,4-Dichlorobenzene	ND	0.0015	0.0050	-	-	-
Dichlorodifluoromethane	ND	0.00063	0.0050	-	-	-
1,1-Dichloroethane	ND	0.0015	0.0050	-	-	-
1,2-Dichloroethane (1,2-DCA)	ND	0.000070	0.00010	-	-	-
1,1-Dichloroethene	ND	0.00011	0.0050	-	-	-
cis-1,2-Dichloroethene	ND	0.0012	0.0050	-	-	-
trans-1,2-Dichloroethene	ND	0.0012	0.0050	-	-	-
1,2-Dichloropropane	ND	0.0013	0.0050	-	-	-
1,3-Dichloropropane	ND	0.00088	0.0050	-	-	-
2,2-Dichloropropane	ND	0.0019	0.0050	-	-	-
1,1-Dichloropropene	ND	0.0018	0.0050	-	-	-

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## Quality Control Report

<b>Client:</b>	Langan	<b>WorkOrder:</b>	2203L27
<b>Date Prepared:</b>	04/01/2022	<b>BatchID:</b>	242510
<b>Date Analyzed:</b>	04/03/2022 - 04/05/2022	<b>Extraction Method:</b>	SW5030B
<b>Instrument:</b>	GC38, GC45	<b>Analytical Method:</b>	SW8260B
<b>Matrix:</b>	Soil	<b>Unit:</b>	mg/kg
<b>Project:</b>	770681001; Hunters Point Block 54	<b>Sample ID:</b>	MB/LCS/LCSD-242510

### QC Summary Report for SW8260B

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
cis-1,3-Dichloropropene	ND	0.00098	0.0050	-	-	-
trans-1,3-Dichloropropene	ND	0.00097	0.0050	-	-	-
Diisopropyl ether (DIPE)	ND	0.0018	0.0050	-	-	-
Ethylbenzene	ND	0.0011	0.0050	-	-	-
Ethyl tert-butyl ether (ETBE)	ND	0.0014	0.0050	-	-	-
Freon 113	ND	0.0011	0.0050	-	-	-
Hexachlorobutadiene	ND	0.0012	0.0050	-	-	-
Hexachloroethane	ND	0.00064	0.0050	-	-	-
2-Hexanone	ND	0.0027	0.0050	-	-	-
Isopropylbenzene	ND	0.0018	0.0050	-	-	-
4-Isopropyl toluene	ND	0.0019	0.0050	-	-	-
Methyl-t-butyl ether (MTBE)	ND	0.0015	0.0050	-	-	-
Methylene chloride	ND	0.012	0.020	-	-	-
4-Methyl-2-pentanone (MIBK)	ND	0.0017	0.0050	-	-	-
Naphthalene	ND	0.0030	0.0050	-	-	-
n-Propyl benzene	ND	0.0019	0.0050	-	-	-
Styrene	ND	0.0014	0.0050	-	-	-
1,1,1,2-Tetrachloroethane	ND	0.0013	0.0050	-	-	-
1,1,2,2-Tetrachloroethane	ND	0.00044	0.0050	-	-	-
Tetrachloroethene	ND	0.00029	0.0050	-	-	-
Toluene	ND	0.0016	0.0050	-	-	-
1,2,3-Trichlorobenzene	ND	0.0021	0.0050	-	-	-
1,2,4-Trichlorobenzene	ND	0.0016	0.0050	-	-	-
1,1,1-Trichloroethane	ND	0.0016	0.0050	-	-	-
1,1,2-Trichloroethane	ND	0.0012	0.0050	-	-	-
Trichloroethene	ND	0.0014	0.0050	-	-	-
Trichlorofluoromethane	ND	0.0013	0.0050	-	-	-
1,2,3-Trichloropropane	0.00020,J	0.00017	0.00025	-	-	-
1,2,4-Trimethylbenzene	ND	0.0016	0.0050	-	-	-
1,3,5-Trimethylbenzene	ND	0.0017	0.0050	-	-	-
Vinyl Chloride	ND	0.00012	0.00025	-	-	-
m,p-Xylene	ND	0.0026	0.0050	-	-	-
o-Xylene	ND	0.0014	0.0050	-	-	-

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## Quality Control Report

<b>Client:</b>	Langan	<b>WorkOrder:</b>	2203L27
<b>Date Prepared:</b>	04/01/2022	<b>BatchID:</b>	242510
<b>Date Analyzed:</b>	04/03/2022 - 04/05/2022	<b>Extraction Method:</b>	SW5030B
<b>Instrument:</b>	GC38, GC45	<b>Analytical Method:</b>	SW8260B
<b>Matrix:</b>	Soil	<b>Unit:</b>	mg/kg
<b>Project:</b>	770681001; Hunters Point Block 54	<b>Sample ID:</b>	MB/LCS/LCSD-242510

### QC Summary Report for SW8260B

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
<b>Surrogate Recovery</b>						
Dibromofluoromethane	0.11			0.125	86	70-140
Toluene-d8	0.15			0.125	123	70-140
4-BFB	0.012			0.0125	96	70-140
Benzene-d6	0.085			0.1	85	70-140
Ethylbenzene-d10	0.10			0.1	104	70-140
1,2-DCB-d4	0.077			0.1	77	70-140



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/01/2022  
**Date Analyzed:** 04/03/2022 - 04/05/2022  
**Instrument:** GC38, GC45  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242510  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg  
**Sample ID:** MB/LCS/LCSD-242510

### QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acetone	0.41	0.42	0.40	101	105	60-140	3.62	20
tert-Amyl methyl ether (TAME)	0.014	0.015	0.020	71	73	50-140	2.19	20
Benzene	0.016	0.017	0.020	82	83	60-140	1.09	20
Bromobenzene	0.019	0.020	0.020	97	98	60-140	1.56	20
Bromochloromethane	0.019	0.019	0.020	94	96	60-140	2.84	20
Bromodichloromethane	0.014	0.014	0.020	70	72	60-140	2.55	20
Bromoform	0.012	0.013	0.020	62	66	40-140	6.64	20
Bromomethane	0.022	0.021	0.020	112	106	30-140	5.30	20
2-Butanone (MEK)	0.076	0.065	0.080	95	82	50-140	15.4	20
t-Butyl alcohol (TBA)	0.092	0.092	0.080	115	115	50-140	0.124	20
n-Butyl benzene	0.024	0.024	0.020	119	122	60-150	2.12	20
sec-Butyl benzene	0.023	0.023	0.020	113	114	60-150	0.921	20
tert-Butyl benzene	0.023	0.022	0.020	113	109	60-140	3.33	20
Carbon Disulfide	0.019	0.019	0.020	94	94	50-140	0.504	20
Carbon Tetrachloride	0.018	0.018	0.020	88	89	60-140	1.67	20
Chlorobenzene	0.018	0.018	0.020	91	92	60-140	1.07	20
Chloroethane	0.023	0.022	0.020	114	112	50-140	1.38	20
Chloroform	0.017	0.018	0.020	86	88	60-140	1.56	20
Chloromethane	0.025	0.024	0.020	123	122	20-140	0.506	20
2-Chlorotoluene	0.021	0.021	0.020	104	105	60-140	0.873	20
4-Chlorotoluene	0.021	0.020	0.020	103	102	60-140	0.230	20
Dibromochloromethane	0.015	0.016	0.020	75	77	50-140	3.38	20
1,2-Dibromo-3-chloropropane	0.0063	0.0068	0.0080	79	85	30-140	6.35	20
1,2-Dibromoethane (EDB)	0.018	0.018	0.020	88	90	40-140	3.17	20
Dibromomethane	0.016	0.017	0.020	80	85	60-140	5.80	20
1,2-Dichlorobenzene	0.017	0.017	0.020	83	85	60-140	2.90	20
1,3-Dichlorobenzene	0.019	0.019	0.020	95	95	60-140	0.741	20
1,4-Dichlorobenzene	0.018	0.019	0.020	91	94	60-140	2.51	20
Dichlorodifluoromethane	0.020	0.020	0.020	102	101	10-140	1.19	20
1,1-Dichloroethane	0.017	0.017	0.020	86	87	60-140	1.86	20
1,2-Dichloroethane (1,2-DCA)	0.016	0.016	0.020	80	81	60-140	2.00	20
1,1-Dichloroethene	0.020	0.020	0.020	99	100	60-140	0.503	20
cis-1,2-Dichloroethene	0.018	0.018	0.020	89	92	60-140	2.71	20
trans-1,2-Dichloroethene	0.019	0.019	0.020	95	94	60-140	0.809	20
1,2-Dichloropropane	0.016	0.016	0.020	79	81	60-140	2.05	20
1,3-Dichloropropane	0.018	0.018	0.020	89	92	60-140	2.67	20
2,2-Dichloropropane	0.017	0.017	0.020	86	87	60-140	1.29	20
1,1-Dichloropropene	0.018	0.018	0.020	90	91	60-140	1.01	20

(Cont.)





## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/01/2022  
**Date Analyzed:** 04/03/2022 - 04/05/2022  
**Instrument:** GC38, GC45  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242510  
**Extraction Method:** SW5030B  
**Analytical Method:** SW8260B  
**Unit:** mg/kg  
**Sample ID:** MB/LCS/LCSD-242510

### QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
cis-1,3-Dichloropropene	0.017	0.017	0.020	84	85	60-140	1.24	20
trans-1,3-Dichloropropene	0.016	0.016	0.020	79	81	60-140	2.59	20
Diisopropyl ether (DIPE)	0.014	0.015	0.020	72	74	60-140	2.40	20
Ethylbenzene	0.019	0.019	0.020	96	96	60-140	0.00415	20
Ethyl tert-butyl ether (ETBE)	0.015	0.016	0.020	76	79	60-140	3.69	20
Freon 113	0.019	0.019	0.020	93	96	50-140	2.59	20
Hexachlorobutadiene	0.023	0.024	0.020	115	121	60-140	5.27	20
Hexachloroethane	0.019	0.020	0.020	95	99	60-140	4.28	20
2-Hexanone	0.014	0.015	0.020	68	73	40-140	6.90	20
Isopropylbenzene	0.023	0.023	0.020	114	114	60-140	0.381	20
4-Isopropyl toluene	0.022	0.022	0.020	111	112	60-150	1.24	20
Methyl-t-butyl ether (MTBE)	0.019	0.020	0.020	95	98	50-140	2.62	20
Methylene chloride	0.017	0.017	0.020	84	85	60-140	1.44	20
4-Methyl-2-pentanone (MIBK)	0.014	0.015	0.020	71	74	50-140	3.75	20
Naphthalene	0.0096	0.0098	0.020	48	49	30-140	2.78	20
n-Propyl benzene	0.023	0.023	0.020	115	114	60-140	1.05	20
Styrene	0.016	0.017	0.020	82	83	60-140	1.03	20
1,1,1,2-Tetrachloroethane	0.017	0.017	0.020	84	85	60-140	0.411	20
1,1,2,2-Tetrachloroethane	0.016	0.016	0.020	79	82	40-140	3.91	20
Tetrachloroethene	0.022	0.022	0.020	111	111	60-140	0.407	20
Toluene	0.019	0.019	0.020	96	95	60-140	1.04	20
1,2,3-Trichlorobenzene	0.013	0.012	0.020	63	62	40-140	0.670	20
1,2,4-Trichlorobenzene	0.016	0.016	0.020	78	78	50-140	0.751	20
1,1,1-Trichloroethane	0.017	0.017	0.020	86	87	60-140	1.21	20
1,1,2-Trichloroethane	0.017	0.018	0.020	86	89	60-140	2.99	20
Trichloroethene	0.018	0.019	0.020	93	94	60-140	2.06	20
Trichlorofluoromethane	0.019	0.020	0.020	97	98	50-140	1.17	20
1,2,3-Trichloropropane	0.018	0.019	0.020	92	95	60-130	3.60	20
1,2,4-Trimethylbenzene	0.019	0.019	0.020	95	96	30-140	1.27	20
1,3,5-Trimethylbenzene	0.021	0.021	0.020	103	103	60-140	0.579	20
Vinyl Chloride	0.023	0.023	0.020	114	114	30-140	0.0601	20
m,p-Xylene	0.038	0.038	0.040	94	95	60-140	0.619	20
o-Xylene	0.017	0.017	0.020	87	86	60-140	0.617	20

(Cont.)



## Quality Control Report

<b>Client:</b> Langan <b>Date Prepared:</b> 04/01/2022 <b>Date Analyzed:</b> 04/03/2022 - 04/05/2022 <b>Instrument:</b> GC38, GC45 <b>Matrix:</b> Soil <b>Project:</b> 770681001; Hunters Point Block 54	<b>WorkOrder:</b> 2203L27 <b>BatchID:</b> 242510 <b>Extraction Method:</b> SW5030B <b>Analytical Method:</b> SW8260B <b>Unit:</b> mg/kg <b>Sample ID:</b> MB/LCS/LCSD-242510
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### QC Summary Report for SW8260B

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
<b>Surrogate Recovery</b>								
Dibromofluoromethane	0.13	0.13	0.12	108	108	70-140	0.212	20
Toluene-d8	0.16	0.15	0.12	125	124	70-140	0.781	20
4-BFB	0.011	0.011	0.012	91	89	70-140	2.53	20
Benzene-d6	0.11	0.10	0.10	105	102	70-140	3.02	20
Ethylbenzene-d10	0.11	0.11	0.10	110	107	70-140	3.12	20
1,2-DCB-d4	0.089	0.089	0.10	89	89	70-140	0.452	20



## Quality Control Report

<b>Client:</b>	Langan	<b>WorkOrder:</b>	2203L27
<b>Date Prepared:</b>	04/05/2022	<b>BatchID:</b>	242737
<b>Date Analyzed:</b>	04/05/2022	<b>Extraction Method:</b>	SW3550B/3640A
<b>Instrument:</b>	GC47	<b>Analytical Method:</b>	SW8270C
<b>Matrix:</b>	Soil	<b>Unit:</b>	mg/Kg
<b>Project:</b>	770681001; Hunters Point Block 54	<b>Sample ID:</b>	MB/LCS/LCSD-242737

### QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
2,3,4,6-Tetrachlorophenol	ND	0.15	0.25	-	-	-
Benzoic Acid	ND	0.62	1.2	-	-	-
Acenaphthene	ND	0.00044	0.0013	-	-	-
Acenaphthylene	ND	0.00023	0.0013	-	-	-
Acetochlor	ND	0.11	0.25	-	-	-
Anthracene	ND	0.00060	0.0013	-	-	-
Benzidine	ND	0.40	1.2	-	-	-
Benzo (a) anthracene	ND	0.0030	0.013	-	-	-
Benzo (a) pyrene	ND	0.00078	0.0025	-	-	-
Benzo (b) fluoranthene	ND	0.0029	0.0063	-	-	-
Benzo (g,h,i) perylene	ND	0.00086	0.0025	-	-	-
Benzo (k) fluoranthene	ND	0.0012	0.0013	-	-	-
Benzyl Alcohol	ND	0.73	1.2	-	-	-
1,1-Biphenyl	ND	0.0054	0.013	-	-	-
Bis (2-chloroethoxy) Methane	ND	0.13	0.25	-	-	-
Bis (2-chloroethyl) Ether	ND	0.00033	0.0013	-	-	-
Bis (2-chloroisopropyl) Ether	ND	0.0012	0.0025	-	-	-
Bis (2-ethylhexyl) Adipate	ND	0.18	0.25	-	-	-
Bis (2-ethylhexyl) Phthalate	ND	0.0079	0.025	-	-	-
4-Bromophenyl Phenyl Ether	ND	0.12	0.25	-	-	-
Butylbenzyl Phthalate	ND	0.0057	0.025	-	-	-
4-Chloroaniline	ND	0.00099	0.0025	-	-	-
4-Chloro-3-methylphenol	ND	0.13	0.25	-	-	-
2-Chloronaphthalene	ND	0.12	0.25	-	-	-
2-Chlorophenol	ND	0.0061	0.013	-	-	-
4-Chlorophenyl Phenyl Ether	ND	0.12	0.25	-	-	-
Chrysene	ND	0.00073	0.0025	-	-	-
Dibenzo (a,h) anthracene	ND	0.0013	0.0025	-	-	-
Dibenzofuran	ND	0.00032	0.0013	-	-	-
Di-n-butyl Phthalate	ND	0.0070	0.013	-	-	-
1,2-Dichlorobenzene	ND	0.14	0.25	-	-	-
1,3-Dichlorobenzene	ND	0.13	0.25	-	-	-
1,4-Dichlorobenzene	ND	0.12	0.25	-	-	-
3,3-Dichlorobenzidine	ND	0.0022	0.0025	-	-	-
2,4-Dichlorophenol	ND	0.0012	0.0025	-	-	-
Diethyl Phthalate	ND	0.0053	0.013	-	-	-
2,4-Dimethylphenol	ND	0.11	0.25	-	-	-
Dimethyl Phthalate	ND	0.0010	0.0025	-	-	-

(Cont.)



## Quality Control Report

<b>Client:</b>	Langan	<b>WorkOrder:</b>	2203L27
<b>Date Prepared:</b>	04/05/2022	<b>BatchID:</b>	242737
<b>Date Analyzed:</b>	04/05/2022	<b>Extraction Method:</b>	SW3550B/3640A
<b>Instrument:</b>	GC47	<b>Analytical Method:</b>	SW8270C
<b>Matrix:</b>	Soil	<b>Unit:</b>	mg/Kg
<b>Project:</b>	770681001; Hunters Point Block 54	<b>Sample ID:</b>	MB/LCS/LCSD-242737

### QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
4,6-Dinitro-2-methylphenol	ND	0.55	1.2	-	-	-
2,4-Dinitrophenol	ND	0.11	0.25	-	-	-
2,4-Dinitrotoluene	ND	0.00041	0.013	-	-	-
2,6-Dinitrotoluene	ND	0.062	0.12	-	-	-
Di-n-octyl Phthalate	ND	0.31	0.50	-	-	-
1,2-Diphenylhydrazine	ND	0.11	0.25	-	-	-
Fluoranthene	ND	0.00073	0.0013	-	-	-
Fluorene	ND	0.00078	0.0025	-	-	-
Hexachlorobenzene	ND	0.00038	0.0013	-	-	-
Hexachlorobutadiene	ND	0.00028	0.0025	-	-	-
Hexachlorocyclopentadiene	ND	0.66	2.0	-	-	-
Hexachloroethane	ND	0.00065	0.013	-	-	-
Indeno (1,2,3-cd) pyrene	ND	0.0014	0.013	-	-	-
Isophorone	ND	0.055	0.25	-	-	-
1-Methylnaphthalene	ND	0.00035	0.0013	-	-	-
2-Methylnaphthalene	ND	0.00044	0.0025	-	-	-
2-Methylphenol (o-Cresol)	ND	0.15	0.25	-	-	-
3 & 4-Methylphenol (m,p-Cresol)	ND	0.14	0.25	-	-	-
Naphthalene	ND	0.0031	0.0062	-	-	-
2-Nitroaniline	ND	0.59	1.2	-	-	-
3-Nitroaniline	ND	0.73	1.2	-	-	-
4-Nitroaniline	ND	0.64	1.2	-	-	-
Nitrobenzene	ND	0.14	0.25	-	-	-
2-Nitrophenol	ND	0.63	1.2	-	-	-
4-Nitrophenol	ND	0.70	1.2	-	-	-
N-Nitrosodimethylamine	ND	0.61	1.2	-	-	-
N-Nitrosodiphenylamine	ND	0.11	0.25	-	-	-
N-Nitrosodi-n-propylamine	ND	0.14	0.25	-	-	-
Pentachlorophenol	ND	0.032	0.062	-	-	-
Phenanthrene	ND	0.0010	0.0050	-	-	-
Phenol	ND	0.0032	0.050	-	-	-
Pyrene	ND	0.00065	0.0025	-	-	-
Pyridine	ND	0.094	0.25	-	-	-
1,2,4-Trichlorobenzene	ND	0.13	0.25	-	-	-
2,4,5-Trichlorophenol	ND	0.00067	0.0025	-	-	-
2,4,6-Trichlorophenol	ND	0.00062	0.013	-	-	-

(Cont.)



## Quality Control Report

<b>Client:</b> Langan	<b>WorkOrder:</b> 2203L27
<b>Date Prepared:</b> 04/05/2022	<b>BatchID:</b> 242737
<b>Date Analyzed:</b> 04/05/2022	<b>Extraction Method:</b> SW3550B/3640A
<b>Instrument:</b> GC47	<b>Analytical Method:</b> SW8270C
<b>Matrix:</b> Soil	<b>Unit:</b> mg/Kg
<b>Project:</b> 770681001; Hunters Point Block 54	<b>Sample ID:</b> MB/LCS/LCSD-242737

### QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
<b>Surrogate Recovery</b>						
2-Fluorophenol	0.97			1.25	78	60-130
Phenol-d5	0.99			1.25	79	60-130
Nitrobenzene-d5	0.95			1.25	76	60-130
2-Fluorobiphenyl	1.1			1.25	90	60-130
2,4,6-Tribromophenol	0.64			1.25	51	50-130
4-Terphenyl-d14	1.1			1.25	90	50-130



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/05/2022  
**Date Analyzed:** 04/05/2022  
**Instrument:** GC47  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242737  
**Extraction Method:** SW3550B/3640A  
**Analytical Method:** SW8270C  
**Unit:** mg/Kg  
**Sample ID:** MB/LCS/LCSD-242737

### QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acenaphthene	0.050	0.041	0.062	81	65	60-130	21.4	30
Acenaphthylene	0.048	0.038	0.062	77	61	60-130	23.3	30
Acetochlor	0.95	0.81	1.25	76	65	60-130	16.4	30
Anthracene	0.049	0.040	0.062	78	65	60-130	18.4	30
Benzidine	2.5	2.1	6.25	40	34	30-130	16.8	30
Benzo (a) anthracene	0.054	0.045	0.062	86	72	60-130	17.7	30
Benzo (a) pyrene	0.049	0.041	0.062	79	65	60-130	18.5	30
Benzo (b) fluoranthene	0.052	0.042	0.062	83	68	40-130	20.5	30
Benzo (g,h,i) perylene	0.054	0.044	0.062	86	70	60-130	20.7	30
Benzo (k) fluoranthene	0.059	0.047	0.062	94	76	60-130	21.8	30
Benzyl Alcohol	5.0	4.1	6.25	80	66	60-130	18.7	30
1,1-Biphenyl	0.054	0.043	0.062	87	69	60-130	23.2	30
Bis (2-chloroethoxy) Methane	1.0	0.88	1.25	81	71	60-130	13.6	30
Bis (2-chloroethyl) Ether	0.048	0.040	0.062	76	64	60-130	16.9	30
Bis (2-chloroisopropyl) Ether	0.045	0.038	0.062	73	61	60-130	17.6	30
Bis (2-ethylhexyl) Adipate	0.92	0.75	1.25	73	60	40-130	20.5	30
Bis (2-ethylhexyl) Phthalate	0.039	0.035	0.062	62	56,F5	60-130	9.27	30
4-Bromophenyl Phenyl Ether	1.1	0.88	1.25	84	70	60-130	18.0	30
Butylbenzyl Phthalate	0.036	0.037	0.062	58,F5	59,F5	60-130	1.63	30
4-Chloroaniline	0.051	0.042	0.062	82	67	40-130	19.1	30
4-Chloro-3-methylphenol	1.1	0.92	1.25	89	73	60-130	19.5	30
2-Chloronaphthalene	1.1	0.93	1.25	91	74	60-130	20.3	30
2-Chlorophenol	0.052	0.041	0.062	83	66	60-130	23.2	30
4-Chlorophenyl Phenyl Ether	0.98	0.81	1.25	79	65	60-130	19.6	30
Chrysene	0.053	0.043	0.062	85	69	60-130	21.0	30
Dibenzo (a,h) anthracene	0.050	0.040	0.062	79	64	60-130	20.8	30
Dibenzofuran	0.053	0.043	0.062	85	69	60-130	20.9	30
Di-n-butyl Phthalate	0.046	0.038	0.062	74	61	60-130	18.9	30
1,2-Dichlorobenzene	0.93	0.79	1.25	75	63	60-130	16.6	30
1,3-Dichlorobenzene	0.90	0.77	1.25	72	62	60-130	15.8	30
1,4-Dichlorobenzene	0.85	0.76	1.25	68	61	60-130	10.6	30
3,3-Dichlorobenzidine	0.042	0.035	0.062	67	56	40-130	16.8	30
2,4-Dichlorophenol	0.058	0.047	0.062	92	75	60-130	20.8	30
Diethyl Phthalate	0.049	0.040	0.062	78	64	60-130	19.9	30
2,4-Dimethylphenol	1.0	0.89	1.25	82	71	60-130	14.0	30
Dimethyl Phthalate	0.050	0.040	0.062	81	64	60-130	23.2	30
4,6-Dinitro-2-methylphenol	4.2	3.4	6.25	67	55	30-130	19.6	30
2,4-Dinitrophenol	0.68	0.58	1.25	55	46	15-130	16.9	30

(Cont.)



## Quality Control Report

<b>Client:</b>	Langan	<b>WorkOrder:</b>	2203L27
<b>Date Prepared:</b>	04/05/2022	<b>BatchID:</b>	242737
<b>Date Analyzed:</b>	04/05/2022	<b>Extraction Method:</b>	SW3550B/3640A
<b>Instrument:</b>	GC47	<b>Analytical Method:</b>	SW8270C
<b>Matrix:</b>	Soil	<b>Unit:</b>	mg/Kg
<b>Project:</b>	770681001; Hunters Point Block 54	<b>Sample ID:</b>	MB/LCS/LCSD-242737

### QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
2,4-Dinitrotoluene	0.057	0.045	0.062	92	72	60-130	23.4	30
2,6-Dinitrotoluene	0.044	0.033	0.062	70	53,F5	60-130	27.2	30
Di-n-octyl Phthalate	0.91	0.76	1.25	72	60	60-130	18.0	30
1,2-Diphenylhydrazine	1.0	0.84	1.25	80	67	60-130	18.0	30
Fluoranthene	0.051	0.041	0.062	82	66	60-130	21.1	30
Fluorene	0.055	0.044	0.062	87	70	60-130	21.7	30
Hexachlorobenzene	0.051	0.042	0.062	82	68	60-130	18.9	30
Hexachlorobutadiene	0.053	0.044	0.062	84	71	60-130	17.2	30
Hexachlorocyclopentadiene	5.7	4.3	6.25	91	69	40-130	28.1	30
Hexachloroethane	0.045	0.052	0.062	72	83	60-130	14.5	30
Indeno (1,2,3-cd) pyrene	0.050	0.039	0.062	80	62	60-130	25.2	30
Isophorone	1.0	0.85	1.25	81	68	60-130	16.8	30
1-Methylnaphthalene	0.052	0.044	0.062	83	70	60-130	17.9	30
2-Methylnaphthalene	0.052	0.044	0.062	84	70	60-130	17.3	30
2-Methylphenol (o-Cresol)	0.97	0.84	1.25	78	67	60-130	14.9	30
3 & 4-Methylphenol (m,p-Cresol)	0.98	0.81	1.25	78	65	60-130	18.6	30
Naphthalene	0.054	0.046	0.062	86	73	60-130	16.8	30
2-Nitroaniline	5.0	3.9	6.25	80	62	60-130	24.6	30
3-Nitroaniline	5.1	4.0	6.25	81	65	30-130	22.5	30
4-Nitroaniline	6.1	4.9	6.25	98	79	60-130	22.4	30
Nitrobenzene	1.1	0.89	1.25	86	71	60-130	18.1	30
2-Nitrophenol	5.1	4.1	6.25	81	65	60-130	22.6	30
4-Nitrophenol	4.8	3.8	6.25	77	61	60-130	22.7	30
N-Nitrosodimethylamine	4.4	3.8	6.25	71	61	60-130	14.1	30
N-Nitrosodiphenylamine	1.0	0.89	1.25	83	71	60-130	16.3	30
N-Nitrosodi-n-propylamine	0.89	0.74	1.25	72	60	60-130	18.4	30
Pentachlorophenol	0.20	0.16	0.31	64	50	40-130	24.8	30
Phenanthrene	0.049	0.041	0.062	78	65	60-130	17.5	30
Phenol	0.21	0.18	0.25	85	71	60-130	18.1	30
Pyrene	0.053	0.043	0.062	84	68	60-130	20.7	30
Pyridine	0.65	0.56	1.25	52	45	30-130	13.8	30
1,2,4-Trichlorobenzene	1.0	0.89	1.25	83	71	60-130	15.6	30
2,4,5-Trichlorophenol	0.054	0.041	0.062	87	66	60-130	26.4	30
2,4,6-Trichlorophenol	0.053	0.039	0.062	85	63	60-130	29.7	30

(Cont.)



## Quality Control Report

<b>Client:</b>	Langan	<b>WorkOrder:</b>	2203L27
<b>Date Prepared:</b>	04/05/2022	<b>BatchID:</b>	242737
<b>Date Analyzed:</b>	04/05/2022	<b>Extraction Method:</b>	SW3550B/3640A
<b>Instrument:</b>	GC47	<b>Analytical Method:</b>	SW8270C
<b>Matrix:</b>	Soil	<b>Unit:</b>	mg/Kg
<b>Project:</b>	770681001; Hunters Point Block 54	<b>Sample ID:</b>	MB/LCS/LCSD-242737

### QC Summary Report for SW8270C (Low Level) w/ GPC

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
<b>Surrogate Recovery</b>								
2-Fluorophenol	1.1	0.85	1.25	85	68	60-130	22.4	30
Phenol-d5	1.1	0.87	1.25	85	70	60-130	20.1	30
Nitrobenzene-d5	1.1	0.84	1.25	88	68	60-130	26.4	30
2-Fluorobiphenyl	1.1	0.88	1.25	91	70	60-130	25.2	30
2,4,6-Tribromophenol	0.88	0.71	1.25	71	57	50-130	21.7	30
4-Terphenyl-d14	1.1	0.92	1.25	92	73	50-130	22.2	30





## Quality Control Report

<b>Client:</b> Langan	<b>WorkOrder:</b> 2203L27
<b>Date Prepared:</b> 04/02/2022	<b>BatchID:</b> 242485
<b>Date Analyzed:</b> 04/04/2022	<b>Extraction Method:</b> SW3050B
<b>Instrument:</b> ICP-MS4	<b>Analytical Method:</b> SW6020
<b>Matrix:</b> Soil	<b>Unit:</b> mg/kg
<b>Project:</b> 770681001; Hunters Point Block 54	<b>Sample ID:</b> MB/LCS/LCSD-242485

### QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Antimony	ND	0.16	0.50	-	-	-
Arsenic	ND	0.14	0.50	-	-	-
Barium	ND	0.68	5.0	-	-	-
Beryllium	ND	0.083	0.50	-	-	-
Cadmium	ND	0.094	0.50	-	-	-
Chromium	ND	0.13	0.50	-	-	-
Cobalt	ND	0.069	0.50	-	-	-
Copper	ND	0.23	0.50	-	-	-
Lead	ND	0.069	0.50	-	-	-
Mercury	ND	0.038	0.050	-	-	-
Molybdenum	ND	0.14	0.50	-	-	-
Nickel	ND	0.081	0.50	-	-	-
Selenium	ND	0.32	0.50	-	-	-
Silver	ND	0.11	0.50	-	-	-
Thallium	ND	0.072	0.50	-	-	-
Vanadium	ND	0.15	0.50	-	-	-
Zinc	ND	3.2	5.0	-	-	-
<b>Surrogate Recovery</b>						
Terbium	540			500	108	70-130



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/02/2022  
**Date Analyzed:** 04/04/2022  
**Instrument:** ICP-MS4  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242485  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/kg  
**Sample ID:** MB/LCS/LCSD-242485

### QC Summary Report for Metals

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Antimony	49	49	50	97	99	75-125	1.79	20
Arsenic	50	50	50	100	101	75-125	0.559	20
Barium	490	510	500	98	101	75-125	2.86	20
Beryllium	50	50	50	100	99	75-125	0.765	20
Cadmium	47	49	50	94	98	75-125	3.58	20
Chromium	49	50	50	99	100	75-125	1.71	20
Cobalt	50	50	50	100	99	75-125	0.960	20
Copper	49	49	50	97	99	75-125	1.48	20
Lead	48	48	50	95	97	75-125	1.43	20
Mercury	1.3	1.3	1.25	102	100	75-125	1.51	20
Molybdenum	50	51	50	99	102	75-125	2.93	20
Nickel	49	50	50	98	100	75-125	2.26	20
Selenium	49	50	50	97	100	75-125	2.60	20
Silver	48	49	50	96	98	75-125	2.45	20
Thallium	47	47	50	93	94	75-125	0.833	20
Vanadium	49	50	50	99	100	75-125	1.15	20
Zinc	500	500	500	99	100	75-125	0.976	20
<b>Surrogate Recovery</b>								
Terbium	530	530	500	106	107	70-130	0.695	20



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/01/2022  
**Date Analyzed:** 04/04/2022  
**Instrument:** ICP-MS4  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242523  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/kg  
**Sample ID:** MB/LCS/LCSD-242523  
 2203L27-026AMS/MSD

### QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Antimony	ND	0.16	0.50	-	-	-
Arsenic	ND	0.14	0.50	-	-	-
Barium	ND	0.68	5.0	-	-	-
Beryllium	ND	0.083	0.50	-	-	-
Cadmium	ND	0.094	0.50	-	-	-
Chromium	ND	0.13	0.50	-	-	-
Cobalt	ND	0.069	0.50	-	-	-
Copper	ND	0.23	0.50	-	-	-
Lead	ND	0.069	0.50	-	-	-
Mercury	ND	0.038	0.050	-	-	-
Molybdenum	ND	0.14	0.50	-	-	-
Nickel	ND	0.081	0.50	-	-	-
Selenium	ND	0.32	0.50	-	-	-
Silver	ND	0.11	0.50	-	-	-
Thallium	ND	0.072	0.50	-	-	-
Vanadium	ND	0.15	0.50	-	-	-
Zinc	ND	3.2	5.0	-	-	-
<b>Surrogate Recovery</b>						
Terbium	530			500	106	70-130



## Quality Control Report

<b>Client:</b>	Langan	<b>WorkOrder:</b>	2203L27
<b>Date Prepared:</b>	04/01/2022	<b>BatchID:</b>	242523
<b>Date Analyzed:</b>	04/04/2022	<b>Extraction Method:</b>	SW3050B
<b>Instrument:</b>	ICP-MS4	<b>Analytical Method:</b>	SW6020
<b>Matrix:</b>	Soil	<b>Unit:</b>	mg/kg
<b>Project:</b>	770681001; Hunters Point Block 54	<b>Sample ID:</b>	MB/LCS/LCSD-242523 2203L27-026AMS/MSD

### QC Summary Report for Metals

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Antimony	48	48	50	96	97	75-125	0.600	20
Arsenic	49	50	50	97	100	75-125	2.23	20
Barium	490	500	500	99	100	75-125	1.70	20
Beryllium	49	49	50	98	99	75-125	1.19	20
Cadmium	47	48	50	94	97	75-125	2.35	20
Chromium	48	49	50	96	99	75-125	2.52	20
Cobalt	47	49	50	95	98	75-125	3.67	20
Copper	49	49	50	98	98	75-125	0.763	20
Lead	47	47	50	94	95	75-125	0.982	20
Mercury	1.2	1.2	1.25	96	99	75-125	3.86	20
Molybdenum	49	51	50	99	101	75-125	2.48	20
Nickel	50	50	50	99	99	75-125	0.292	20
Selenium	49	49	50	97	98	75-125	0.634	20
Silver	48	49	50	95	98	75-125	2.91	20
Thallium	46	46	50	91	92	75-125	1.08	20
Vanadium	49	50	50	97	99	75-125	2.27	20
Zinc	490	500	500	99	100	75-125	1.41	20

#### Surrogate Recovery

Terbium	530	540	500	105	107	70-130	1.56	20
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Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Antimony	1	49	47	50	0.5680	96	93	75-125	3.33	20
Arsenic	1	60	58	50	7.169	105	102	75-125	2.95	20
Barium	1	550	530	500	25.57	104	101	75-125	3.31	20
Beryllium	1	49	48	50	ND	96	95	75-125	1.85	20
Cadmium	1	49	49	50	ND	98	97	75-125	1.27	20
Chromium	1	90	90	50	33.36	114	113	75-125	0.493	20
Cobalt	1	60	59	50	11.48	98	96	75-125	1.58	20
Copper	1	85	82	50	30.18	109	103	75-125	3.51	20
Lead	1	57	55	50	6.729	100	96	75-125	3.84	20
Mercury	1	1.3	1.3	1.25	0.06200	101	97	75-125	4.15	20
Molybdenum	1	52	49	50	ND	103	98	75-125	4.84	20
Nickel	1	96	95	50	40.07	111	109	75-125	1.15	20
Selenium	1	50	48	50	ND	99	95	75-125	4.43	20
Silver	1	49	47	50	ND	98	94	75-125	4.23	20

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## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/01/2022  
**Date Analyzed:** 04/04/2022  
**Instrument:** ICP-MS4  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242523  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/kg  
**Sample ID:** MB/LCS/LCSD-242523  
 2203L27-026AMS/MSD

### QC Summary Report for Metals

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Thallium	1	48	46	50	ND	97	91	75-125	6.11	20
Vanadium	1	120	120	50	53.81	122	123	75-125	0.472	20
Zinc	1	570	550	500	62.48	102	98	75-125	3.18	20
<b>Surrogate Recovery</b>										
Terbium	1	550	530	500		109	106	70-130	2.74	20

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Antimony	ND<2.5	0.5680	-	-
Arsenic	7.5	7.169	4.62	-
Barium	26	25.57	1.68	-
Beryllium	ND<2.5	ND	-	-
Cadmium	ND<2.5	ND	-	-
Chromium	35	33.36	4.92	20
Cobalt	13	11.48	13.2	20
Copper	31	30.18	2.72	20
Lead	7.0	6.729	4.03	-
Mercury	ND<0.25	0.06200	-	-
Molybdenum	ND<2.5	ND	-	-
Nickel	41	40.07	2.32	20
Selenium	ND<2.5	ND	-	-
Silver	ND<2.5	ND	-	-
Thallium	ND<2.5	ND	-	-
Vanadium	57	53.81	5.93	20
Zinc	63	62.48	0.832	-

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



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 03/31/2022  
**Date Analyzed:** 03/31/2022 - 04/02/2022  
**Instrument:** GC19, GC3, GC7  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242473  
**Extraction Method:** SW5035  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** mg/Kg  
**Sample ID:** MB/LCS/LCSD-242473

### QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	0.55	1.0	-	-	-
MTBE	ND	0.0026	0.050	-	-	-
Benzene	ND	0.0018	0.0050	-	-	-
Toluene	ND	0.0022	0.0050	-	-	-
Ethylbenzene	ND	0.0015	0.0050	-	-	-
m,p-Xylene	ND	0.0026	0.010	-	-	-
o-Xylene	ND	0.00098	0.0050	-	-	-

**Surrogate Recovery**

2-Fluorotoluene	0.093			0.1	93	75-134
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Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(btex)	0.53	0.55	0.60	88	91	82-118	3.01	20
MTBE	0.091	0.087	0.10	91	87	61-119	4.53	20
Benzene	0.086	0.093	0.10	86	93	77-128	7.64	20
Toluene	0.090	0.098	0.10	90	98	74-132	7.94	20
Ethylbenzene	0.091	0.098	0.10	91	98	84-127	8.02	20
m,p-Xylene	0.18	0.20	0.20	91	98	80-120	6.99	20
o-Xylene	0.091	0.098	0.10	91	98	80-120	7.23	20

**Surrogate Recovery**

2-Fluorotoluene	0.085	0.092	0.10	85	92	75-134	7.93	20
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## Quality Control Report

<b>Client:</b> Langan	<b>WorkOrder:</b> 2203L27
<b>Date Prepared:</b> 03/31/2022	<b>BatchID:</b> 242483
<b>Date Analyzed:</b> 04/01/2022 - 04/04/2022	<b>Extraction Method:</b> SW5035
<b>Instrument:</b> GC19, GC7	<b>Analytical Method:</b> SW8021B/8015Bm
<b>Matrix:</b> Soil	<b>Unit:</b> mg/Kg
<b>Project:</b> 770681001; Hunters Point Block 54	<b>Sample ID:</b> MB/LCS/LCSD-242483

### QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	0.55	1.0	-	-	-
MTBE	ND	0.0026	0.050	-	-	-
Benzene	ND	0.0018	0.0050	-	-	-
Toluene	ND	0.0022	0.0050	-	-	-
Ethylbenzene	ND	0.0015	0.0050	-	-	-
m,p-Xylene	ND	0.0026	0.010	-	-	-
o-Xylene	ND	0.00098	0.0050	-	-	-

**Surrogate Recovery**

2-Fluorotoluene	0.099		0.1	99	75-134
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Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(btex)	0.56	0.55	0.60	92	92	82-118	0.340	20
MTBE	0.083	0.087	0.10	83	87	61-119	4.32	20
Benzene	0.088	0.093	0.10	88	93	77-128	5.08	20
Toluene	0.094	0.097	0.10	94	97	74-132	3.22	20
Ethylbenzene	0.094	0.097	0.10	94	97	84-127	3.25	20
m,p-Xylene	0.19	0.19	0.20	94	97	80-120	2.78	20
o-Xylene	0.094	0.097	0.10	94	97	80-120	2.53	20

**Surrogate Recovery**

2-Fluorotoluene	0.086	0.090	0.10	86	90	75-134	4.18	20
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## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/01/2022  
**Date Analyzed:** 04/01/2022 - 04/04/2022  
**Instrument:** GC19  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242521  
**Extraction Method:** SW5035  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** mg/Kg  
**Sample ID:** MB/LCS/LCSD-242521  
 2203L27-027AMS/MSD

### QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	0.55	1.0	-	-	-
MTBE	ND	0.0026	0.050	-	-	-
Benzene	ND	0.0018	0.0050	-	-	-
Toluene	ND	0.0022	0.0050	-	-	-
Ethylbenzene	ND	0.0015	0.0050	-	-	-
m,p-Xylene	ND	0.0026	0.010	-	-	-
o-Xylene	ND	0.00098	0.0050	-	-	-
<b>Surrogate Recovery</b>						
2-Fluorotoluene	0.091			0.1	91	75-134





## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/01/2022  
**Date Analyzed:** 04/01/2022 - 04/04/2022  
**Instrument:** GC19  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242521  
**Extraction Method:** SW5035  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** mg/Kg  
**Sample ID:** MB/LCS/LCSD-242521  
 2203L27-027AMS/MSD

### QC Summary Report for SW8021B/8015Bm

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(btex)	0.58	0.56	0.60	96	94	82-118	2.22	20
MTBE	0.093	0.087	0.10	93	87	61-119	6.08	20
Benzene	0.093	0.095	0.10	93	95	77-128	2.24	20
Toluene	0.098	0.099	0.10	98	99	74-132	1.56	20
Ethylbenzene	0.099	0.099	0.10	99	99	84-127	0.102	20
m,p-Xylene	0.20	0.20	0.20	98	99	80-120	1.23	20
o-Xylene	0.099	0.098	0.10	99	98	80-120	1.01	20

#### Surrogate Recovery

2-Fluorotoluene	0.088	0.091	0.10	88	91	75-134	3.32	20
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Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH(btex)	1	0.86	0.97	0.60	0.5303	55,F1	73	58-129	11.5	20
MTBE	1	0.088	0.085	0.10	ND	88	85	47-118	2.86	20
Benzene	1	0.082	0.082	0.10	ND	82	82	55-129	0.525	20
Toluene	1	0.090	0.092	0.10	ND	86	87	56-130	1.59	20
Ethylbenzene	1	0.091	0.093	0.10	0.006940	84	86	63-129	2.48	20
m,p-Xylene	1	0.19	0.19	0.20	0.02297	83	85	80-120	1.23	20
o-Xylene	1	0.096	0.10	0.10	0.009889	87	91	80-120	4.10	20

#### Surrogate Recovery

2-Fluorotoluene	1	0.079	0.080	0.10		79	80	62-126	0.633	20
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## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/04/2022  
**Date Analyzed:** 04/05/2022  
**Instrument:** GC19, GC3  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242717  
**Extraction Method:** SW5035  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** mg/Kg  
**Sample ID:** MB/LCS/LCSD-242717

### QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	0.55	1.0	-	-	-
MTBE	ND	0.0026	0.050	-	-	-
Benzene	ND	0.0018	0.0050	-	-	-
Toluene	ND	0.0022	0.0050	-	-	-
Ethylbenzene	ND	0.0015	0.0050	-	-	-
m,p-Xylene	ND	0.0026	0.010	-	-	-
o-Xylene	ND	0.00098	0.0050	-	-	-

#### Surrogate Recovery

2-Fluorotoluene	0.095			0.1	95	75-134
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Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(btex)	0.54	0.55	0.60	89	91	82-118	2.14	20
MTBE	0.093	0.089	0.10	93	89	61-119	4.74	20
Benzene	0.086	0.092	0.10	86	92	77-128	7.34	20
Toluene	0.089	0.095	0.10	89	95	74-132	6.94	20
Ethylbenzene	0.090	0.096	0.10	90	96	84-127	7.11	20
m,p-Xylene	0.18	0.19	0.20	90	96	80-120	6.67	20
o-Xylene	0.089	0.096	0.10	89	96	80-120	7.02	20

#### Surrogate Recovery

2-Fluorotoluene	0.083	0.088	0.10	83	88	75-134	5.77	20
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## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/06/2022  
**Date Analyzed:** 04/06/2022 - 04/07/2022  
**Instrument:** GC3  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242906  
**Extraction Method:** SW5035  
**Analytical Method:** SW8021B/8015Bm  
**Unit:** mg/Kg  
**Sample ID:** MB/LCS/LCSD-242906

### QC Summary Report for SW8021B/8015Bm

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
TPH(g) (C6-C12)	ND	0.55	1.0	-	-	-
MTBE	ND	0.0026	0.050	-	-	-
Benzene	ND	0.0018	0.0050	-	-	-
Toluene	ND	0.0022	0.0050	-	-	-
Ethylbenzene	ND	0.0015	0.0050	-	-	-
m,p-Xylene	ND	0.0026	0.010	-	-	-
o-Xylene	ND	0.00098	0.0050	-	-	-

#### Surrogate Recovery

2-Fluorotoluene	0.097			0.1	97	75-134
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Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH(btex)	0.58	0.61	0.60	97	102	82-118	4.20	20
MTBE	0.092	0.10	0.10	92	100	61-119	8.92	20
Benzene	0.10	0.11	0.10	103	112	77-128	8.69	20
Toluene	0.10	0.11	0.10	103	112	74-132	8.78	20
Ethylbenzene	0.10	0.11	0.10	103	113	84-127	8.75	20
m,p-Xylene	0.21	0.22	0.20	103	112	80-120	8.93	20
o-Xylene	0.10	0.11	0.10	102	110	80-120	6.86	20

#### Surrogate Recovery

2-Fluorotoluene	0.098	0.11	0.10	98	106	75-134	8.06	20
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## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/02/2022  
**Date Analyzed:** 04/04/2022  
**Instrument:** ICP-MS4  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242485  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/kg  
**Sample ID:** MB/LCS/LCSD-242485

### QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Cadmium	ND	0.094	0.50	-	-	-
Chromium	ND	0.13	0.50	-	-	-
Lead	ND	0.069	0.50	-	-	-
Nickel	ND	0.081	0.50	-	-	-
Zinc	ND	3.2	5.0	-	-	-

#### Surrogate Recovery

Terbium	540			500	108	70-130
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Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Cadmium	47	49	50	94	98	75-125	3.58	20
Chromium	49	50	50	99	100	75-125	1.71	20
Lead	48	48	50	95	97	75-125	1.43	20
Nickel	49	50	50	98	100	75-125	2.26	20
Zinc	500	500	500	99	100	75-125	0.976	20

#### Surrogate Recovery

Terbium	530	530	500	106	107	70-130	0.695	20
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## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/01/2022  
**Date Analyzed:** 04/04/2022  
**Instrument:** ICP-MS4  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242523  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/kg  
**Sample ID:** MB/LCS/LCSD-242523  
 2203L27-026AMS/MSD

### QC Summary Report for Metals

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
Cadmium	ND	0.094	0.50	-	-	-
Chromium	ND	0.13	0.50	-	-	-
Lead	ND	0.069	0.50	-	-	-
Nickel	ND	0.081	0.50	-	-	-
Zinc	ND	3.2	5.0	-	-	-
<b>Surrogate Recovery</b>						
Terbium	530			500	106	70-130



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/01/2022  
**Date Analyzed:** 04/04/2022  
**Instrument:** ICP-MS4  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242523  
**Extraction Method:** SW3050B  
**Analytical Method:** SW6020  
**Unit:** mg/kg  
**Sample ID:** MB/LCS/LCSD-242523  
 2203L27-026AMS/MSD

### QC Summary Report for Metals

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Cadmium	47	48	50	94	97	75-125	2.35	20
Chromium	48	49	50	96	99	75-125	2.52	20
Lead	47	47	50	94	95	75-125	0.982	20
Nickel	50	50	50	99	99	75-125	0.292	20
Zinc	490	500	500	99	100	75-125	1.41	20

#### Surrogate Recovery

Terbium	530	540	500	105	107	70-130	1.56	20
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Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Cadmium	1	49	49	50	ND	98	97	75-125	1.27	20
Chromium	1	90	90	50	33.36	114	113	75-125	0.493	20
Lead	1	57	55	50	6.729	100	96	75-125	3.84	20
Nickel	1	96	95	50	40.07	111	109	75-125	1.15	20
Zinc	1	570	550	500	62.48	102	98	75-125	3.18	20

#### Surrogate Recovery

Terbium	1	550	530	500		109	106	70-130	2.74	20
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Analyte	DLT Result	DLTRef Val	%D	%D Limit
Cadmium	ND<2.5	ND	-	-
Chromium	35	33.36	4.92	20
Lead	7.0	6.729	4.03	-
Nickel	41	40.07	2.32	20
Zinc	63	62.48	0.832	-

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



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/06/2022  
**Date Analyzed:** 04/06/2022  
**Instrument:** WetChem  
**Matrix:** Water  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242852  
**Extraction Method:** SW9045C  
**Analytical Method:** SW9045C  
**Unit:** pH units @ 25°C  
**Sample ID:** CCV-242852

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### QC Summary Report for pH

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Analyte	CCV Result	CCV Limits
pH	7.02	6.9-7.1



## Quality Control Report

<b>Client:</b> Langan	<b>WorkOrder:</b> 2203L27
<b>Date Prepared:</b> 04/08/2022	<b>BatchID:</b> 242974
<b>Date Analyzed:</b> 04/08/2022	<b>Extraction Method:</b> SW9030B/E376.2
<b>Instrument:</b> SPECTROPHOTOMETER2	<b>Analytical Method:</b> SM4500 S <sup>-2</sup> D
<b>Matrix:</b> Soil	<b>Unit:</b> mg/Kg
<b>Project:</b> 770681001; Hunters Point Block 54	<b>Sample ID:</b> MB/LCS/LCSD-242974

### QC Summary Report for SM4500 S-2D

Analyte	MB Result	MDL	RL			
Acid Soluble Sulfide - S	0.43,J	0.22	1.0	-	-	-

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Acid Soluble Sulfide - S	46	46	50	92	93	80-120	0.742	20





## Quality Control Report

<b>Client:</b>	Langan	<b>WorkOrder:</b>	2203L27
<b>Date Prepared:</b>	03/31/2022	<b>BatchID:</b>	242482
<b>Date Analyzed:</b>	04/02/2022 - 04/06/2022	<b>Extraction Method:</b>	SW3550B
<b>Instrument:</b>	GC9a, GC9b	<b>Analytical Method:</b>	SW8015B
<b>Matrix:</b>	Soil	<b>Unit:</b>	mg/Kg
<b>Project:</b>	770681001; Hunters Point Block 54	<b>Sample ID:</b>	MB/LCS/LCSD-242482

### QC Report for SW8015B w/out SG Clean-Up

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
TPH-Diesel (C10-C23)	ND	0.78	2.0	-	-	-
TPH-Motor Oil (C18-C36)	ND	4.6	10	-	-	-
<b>Surrogate Recovery</b>						
C9	23			25	93	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	35	35	40	87	87	70-130	0.0949	20
<b>Surrogate Recovery</b>								
C9	23	23	25	92	92	70-130	0.202	20

(Cont.)



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/01/2022  
**Date Analyzed:** 04/02/2022 - 04/07/2022  
**Instrument:** GC9a  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242519  
**Extraction Method:** SW3550B  
**Analytical Method:** SW8015B  
**Unit:** mg/Kg  
**Sample ID:** MB/LCS/LCSD-242519  
 2203L27-006AMS/MSD

### QC Report for SW8015B w/out SG Clean-Up

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
TPH-Diesel (C10-C23)	ND	0.78	2.0	-	-	-
TPH-Motor Oil (C18-C36)	ND	4.6	10	-	-	-
<b>Surrogate Recovery</b>						
C9	23			25	93	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	34	35	40	85	87	70-130	2.37	20
<b>Surrogate Recovery</b>								
C9	23	23	25	92	93	70-130	0.211	20

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	1	37	37	40	ND	92	94	70-130	1.96	20
<b>Surrogate Recovery</b>										
C9	1	23	24	25		94	94	70-130	0.387	20

(Cont.)



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/01/2022  
**Date Analyzed:** 04/02/2022 - 04/06/2022  
**Instrument:** GC9a, GC9b  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 242520  
**Extraction Method:** SW3550B  
**Analytical Method:** SW8015B  
**Unit:** mg/Kg  
**Sample ID:** MB/LCS/LCSD-242520  
 2203L27-045AMS/MSD

### QC Report for SW8015B w/out SG Clean-Up

Analyte	MB Result	MDL	RL	SPK Val	MB SS %REC	MB SS Limits
TPH-Diesel (C10-C23)	ND	0.78	2.0	-	-	-
TPH-Motor Oil (C18-C36)	ND	4.6	10	-	-	-
<b>Surrogate Recovery</b>						
C9	24			25	95	70-130

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	40	40	40	99	99	70-130	0.00656	20
<b>Surrogate Recovery</b>								
C9	24	23	25	96	94	70-130	1.73	20

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
TPH-Diesel (C10-C23)	1	38	38	40	ND	94	93	70-130	0.304	20
<b>Surrogate Recovery</b>										
C9	1	23	23	25		94	93	70-130	0.836	20

1534 Willow Pass Rd  
Pittsburg, CA 94565-1701  
(925) 252-9262



# CHAIN-OF-CUSTODY RECORD

WorkOrder: 2203L27

ClientCode: TRSJ

- WaterTrax   
  CLIP   
  EDF   
  EQUIS   
  Dry-Weight   
  Email   
  HardCopy   
  ThirdParty   
  J-flag  
 Detection Summary   
  Excel

**Report to:**

Peter Cusack  
Langan  
1 Almaden Blvd, Suite 590  
San Jose, CA 95113  
(415) 955-5283    FAX:

Email: pcusack@Langan.com  
cc/3rd Party: dwood@langan.com;  
PO:  
Project: 770681001; Hunters Point Block 54

**Bill to:**

Accounts Payable  
Langan  
555 Montgomery St., Suite 1300  
San Francisco, CA 94111  
Langan\_InvoiceCapture@concur.solutio

**Requested TAT: 5 days;**

**Date Received: 03/31/2022**

**Date Logged: 04/01/2022**

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	
2203L27-001	E-1-0.5	Soil	3/29/2022 09:45	<input type="checkbox"/>	A	A	A	A				A			A		
2203L27-002	E-1-1.5	Soil	3/29/2022 09:46	<input checked="" type="checkbox"/>											A	A	
2203L27-003	E-1-3.0	Soil	3/29/2022 09:47	<input type="checkbox"/>		A	A		A	A	A	A	A	A			A
2203L27-004	E-1-5.0	Soil	3/29/2022 11:50	<input checked="" type="checkbox"/>											A	A	
2203L27-005	E-2-0.5	Soil	3/29/2022 10:32	<input type="checkbox"/>	A							A			A		
2203L27-006	E-2-1.5	Soil	3/29/2022 11:15	<input type="checkbox"/>		A	A	A				A			A		
2203L27-007	E-2-3.0	Soil	3/29/2022 11:16	<input checked="" type="checkbox"/>											A	A	
2203L27-008	E-2-5.0	Soil	3/29/2022 11:17	<input checked="" type="checkbox"/>											A	A	
2203L27-009	E-3-0.5	Soil	3/29/2022 11:30	<input type="checkbox"/>	A			A				A			A		
2203L27-010	E-3-1.5	Soil	3/29/2022 11:31	<input checked="" type="checkbox"/>											A	A	
2203L27-011	E-3-3.0	Soil	3/29/2022 11:32	<input type="checkbox"/>				A	A			A			A		
2203L27-012	E-3-5.0	Soil	3/29/2022 11:33	<input checked="" type="checkbox"/>											A	A	
2203L27-013	E-4-0.5	Soil	3/29/2022 12:05	<input type="checkbox"/>	A							A	A		A		
2203L27-014	E-4-1.5	Soil	3/29/2022 12:06	<input type="checkbox"/>		A	A	A				A			A		
2203L27-015	E-4-3.0	Soil	3/29/2022 12:07	<input checked="" type="checkbox"/>											A	A	

**Test Legend:**

1	8081pcB_ESL_LL_S	2	8260B_S	3	8270_SCSM_GPC_S	4	CAM17MS_TTLC_S
5	CARB435_400	6	CN_S	7	G-MBTEX_S	8	LUFTMS_6020_TTLC_S
9	PH_S	10	PRDisposal Fee	11	PRHOLD	12	SULFIDE_S

**Prepared by: Agustina Venegas**

The following Sample IDs: 001A, 003A, 005A, 006A, 009A, 011A, 013A, 014A, 017A, 019A, 020A, 023A, 024A, 026A, 027A, 028A, 030A, 033A, 034A, 037A, 039A, 041A, 044A, 045A, 046A, 048A, 051A, 053A, 056A contain testgroup Multi Range\_S.

**Comments:**

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Hazardous samples will be returned to client or disposed of at client expense.

1534 Willow Pass Rd  
Pittsburg, CA 94565-1701  
(925) 252-9262



# CHAIN-OF-CUSTODY RECORD

WorkOrder: 2203L27

ClientCode: TRSJ

- WaterTrax   
  CLIP   
  EDF   
  EQUIS   
  Dry-Weight   
  Email   
  HardCopy   
  ThirdParty   
  J-flag  
 Detection Summary   
  Excel

**Report to:**  
Peter Cusack  
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1 Almaden Blvd, Suite 590  
San Jose, CA 95113  
(415) 955-5283    FAX:

Email: pcusack@Langan.com  
cc/3rd Party: dwood@langan.com;  
PO:  
Project: 770681001; Hunters Point Block 54

**Bill to:**  
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555 Montgomery St., Suite 1300  
San Francisco, CA 94111  
Langan\_InvoiceCapture@conkursolutio

**Requested TAT: 5 days;**  
  
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Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
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2203L27-016	E-4-5.0	Soil	3/29/2022 12:08	<input checked="" type="checkbox"/>											A	A	
2203L27-017	E-5-0.5	Soil	3/29/2022 13:05	<input type="checkbox"/>	A			A				A			A		
2203L27-018	E-5-1.5	Soil	3/29/2022 13:06	<input checked="" type="checkbox"/>											A	A	
2203L27-019	E-5-3.0	Soil	3/29/2022 13:07	<input type="checkbox"/>		A	A		A		A	A			A		
2203L27-020	E-6-0.5	Soil	3/29/2022 13:25	<input type="checkbox"/>	A	A	A	A			A				A		
2203L27-021	E-6-1.5	Soil	3/29/2022 12:36	<input checked="" type="checkbox"/>											A	A	
2203L27-022	E-6-3.0	Soil	3/29/2022 12:37	<input checked="" type="checkbox"/>											A	A	
2203L27-023	E-6-5.0	Soil	3/29/2022 12:38	<input type="checkbox"/>				A	A		A				A		
2203L27-024	E-7-0.5	Soil	3/29/2022 14:35	<input type="checkbox"/>	A	A	A				A	A			A		
2203L27-025	E-7-1.5	Soil	3/29/2022 14:36	<input checked="" type="checkbox"/>											A	A	
2203L27-026	E-7-3.0	Soil	3/29/2022 14:37	<input type="checkbox"/>		A	A	A	A		A				A		
2203L27-027	E-8-0.5	Soil	3/29/2022 14:15	<input type="checkbox"/>	A			A			A				A		
2203L27-028	E-8-1.5	Soil	3/29/2022 14:16	<input type="checkbox"/>		A	A	A			A				A		
2203L27-029	E-8-3.0	Soil	3/29/2022 14:17	<input checked="" type="checkbox"/>											A	A	
2203L27-030	E-8-5.0	Soil	3/29/2022 14:18	<input type="checkbox"/>		A	A				A				A		

**Test Legend:**

1	8081pcB_ESL_LL_S	2	8260B_S	3	8270_SCSM_GPC_S	4	CAM17MS_TTLC_S
5	CARB435_400	6	CN_S	7	G-MBTEX_S	8	LUFTMS_6020_TTLC_S
9	PH_S	10	PRDisposal Fee	11	PRHOLD	12	SULFIDE_S

**Prepared by: Agustina Venegas**

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**Comments:**

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# CHAIN-OF-CUSTODY RECORD

WorkOrder: 2203L27

ClientCode: TRSJ

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 Detection Summary   
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					1	2	3	4	5	6	7	8	9	10	11	12	
2203L27-031	E-8-7.5	Soil	3/29/2022 14:19	<input checked="" type="checkbox"/>											A	A	
2203L27-032	E-8-10.0	Soil	3/29/2022 14:20	<input checked="" type="checkbox"/>											A	A	
2203L27-033	E-9-0.5	Soil	3/29/2022 13:50	<input type="checkbox"/>	A					A					A		
2203L27-034	E-9-1.5	Soil	3/29/2022 13:51	<input type="checkbox"/>		A	A	A				A			A		
2203L27-035	E-9-3.0	Soil	3/29/2022 13:52	<input checked="" type="checkbox"/>											A	A	
2203L27-036	E-9-5.0	Soil	3/29/2022 13:53	<input checked="" type="checkbox"/>											A	A	
2203L27-037	E-9-7.5	Soil	3/29/2022 13:54	<input type="checkbox"/>								A	A		A		
2203L27-038	E-9-10.0	Soil	3/29/2022 13:55	<input checked="" type="checkbox"/>											A	A	
2203L27-039	E-10-0.5	Soil	3/29/2022 15:05	<input type="checkbox"/>	A				A			A			A		
2203L27-040	E-10-1.5	Soil	3/29/2022 15:06	<input checked="" type="checkbox"/>											A	A	
2203L27-041	E-10-3.0	Soil	3/29/2022 15:07	<input type="checkbox"/>		A	A	A	A	A	A			A	A		A
2203L27-042	E-10-5.0	Soil	3/29/2022 15:08	<input checked="" type="checkbox"/>											A	A	
2203L27-043	E-10-7.5	Soil	3/29/2022 15:09	<input checked="" type="checkbox"/>											A	A	
2203L27-044	E-10-10.0	Soil	3/29/2022 15:10	<input type="checkbox"/>						A		A	A		A		
2203L27-045	E-11-0.5	Soil	3/29/2022 15:30	<input type="checkbox"/>	A					A					A		

**Test Legend:**

1	8081pcB_ESL_LL_S	2	8260B_S	3	8270_SCSM_GPC_S	4	CAM17MS_TTLC_S
5	CARB435_400	6	CN_S	7	G-MBTEX_S	8	LUFTMS_6020_TTLC_S
9	PH_S	10	PRDisposal Fee	11	PRHOLD	12	SULFIDE_S

**Prepared by: Agustina Venegas**

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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
2203L27-046	E-11-1.5	Soil	3/29/2022 15:31	<input type="checkbox"/>		A	A		A		A	A		A		
2203L27-047	E-11-3.0	Soil	3/29/2022 15:32	<input checked="" type="checkbox"/>										A	A	
2203L27-048	E-11-5.0	Soil	3/29/2022 15:33	<input type="checkbox"/>					A		A	A		A		
2203L27-049	E-11-7.5	Soil	3/29/2022 15:34	<input checked="" type="checkbox"/>										A	A	
2203L27-050	E-11-10.0	Soil	3/29/2022 15:35	<input checked="" type="checkbox"/>										A	A	
2203L27-051	E-12-0.5	Soil	3/29/2022 15:50	<input type="checkbox"/>	A			A	A		A			A		
2203L27-052	E-12-1.5	Soil	3/29/2022 15:51	<input checked="" type="checkbox"/>										A	A	
2203L27-053	E-12-3.0	Soil	3/29/2022 15:52	<input type="checkbox"/>		A	A	A			A			A		
2203L27-054	E-12-5.0	Soil	3/29/2022 15:53	<input checked="" type="checkbox"/>										A	A	
2203L27-055	E-12-7.5	Soil	3/29/2022 15:54	<input checked="" type="checkbox"/>										A	A	
2203L27-056	E-12-10.0	Soil	3/29/2022 15:55	<input type="checkbox"/>				A	A		A			A		
2203L27-057	E-1-7.5	Soil	3/29/2022 11:51	<input checked="" type="checkbox"/>										A	A	
2203L27-058	E-2-7.5	Soil	3/29/2022 11:18	<input checked="" type="checkbox"/>										A	A	
2203L27-059	E-3-7.5	Soil	3/29/2022 11:34	<input checked="" type="checkbox"/>										A	A	

**Test Legend:**

1	8081pcB_ESL_LL_S	2	8260B_S	3	8270_SCSM_GPC_S	4	CAM17MS_TTLC_S
5	CARB435_400	6	CN_S	7	G-MBTEX_S	8	LUFTMS_6020_TTLC_S
9	PH_S	10	PRDisposal Fee	11	PRHOLD	12	SULFIDE_S

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Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)														
					13	14	15	16	17	18	19	20	21	22	23	24			
2203L27-001	E-1-0.5	Soil	3/29/2022 09:45	<input type="checkbox"/>	A														
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2203L27-010	E-3-1.5	Soil	3/29/2022 11:31	<input checked="" type="checkbox"/>															
2203L27-011	E-3-3.0	Soil	3/29/2022 11:32	<input type="checkbox"/>	A														
2203L27-012	E-3-5.0	Soil	3/29/2022 11:33	<input checked="" type="checkbox"/>															
2203L27-013	E-4-0.5	Soil	3/29/2022 12:05	<input type="checkbox"/>	A														
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2203L27-015	E-4-3.0	Soil	3/29/2022 12:07	<input checked="" type="checkbox"/>															

**Test Legend:**

13	TPH(DMO)_S	14		15		16	
17		18		19		20	
21		22		23		24	

**Prepared by: Agustina Venegas**

The following SampIDs: 001A, 003A, 005A, 006A, 009A, 011A, 013A, 014A, 017A, 019A, 020A, 023A, 024A, 026A, 027A, 028A, 030A, 033A, 034A, 037A, 039A, 041A, 044A, 045A, 046A, 048A, 051A, 053A, 056A contain testgroup Multi Range\_S.

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2203L27-029	E-8-3.0	Soil	3/29/2022 14:17	<input checked="" type="checkbox"/>													
2203L27-030	E-8-5.0	Soil	3/29/2022 14:18	<input type="checkbox"/>	A												

**Test Legend:**

13	TPH(DMO)_S	14		15		16	
17		18		19		20	
21		22		23		24	

**Prepared by: Agustina Venegas**

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					13	14	15	16	17	18	19	20	21	22	23	24	
2203L27-031	E-8-7.5	Soil	3/29/2022 14:19	<input checked="" type="checkbox"/>													
2203L27-032	E-8-10.0	Soil	3/29/2022 14:20	<input checked="" type="checkbox"/>													
2203L27-033	E-9-0.5	Soil	3/29/2022 13:50	<input type="checkbox"/>	A												
2203L27-034	E-9-1.5	Soil	3/29/2022 13:51	<input type="checkbox"/>	A												
2203L27-035	E-9-3.0	Soil	3/29/2022 13:52	<input checked="" type="checkbox"/>													
2203L27-036	E-9-5.0	Soil	3/29/2022 13:53	<input checked="" type="checkbox"/>													
2203L27-037	E-9-7.5	Soil	3/29/2022 13:54	<input type="checkbox"/>	A												
2203L27-038	E-9-10.0	Soil	3/29/2022 13:55	<input checked="" type="checkbox"/>													
2203L27-039	E-10-0.5	Soil	3/29/2022 15:05	<input type="checkbox"/>	A												
2203L27-040	E-10-1.5	Soil	3/29/2022 15:06	<input checked="" type="checkbox"/>													
2203L27-041	E-10-3.0	Soil	3/29/2022 15:07	<input type="checkbox"/>	A												
2203L27-042	E-10-5.0	Soil	3/29/2022 15:08	<input checked="" type="checkbox"/>													
2203L27-043	E-10-7.5	Soil	3/29/2022 15:09	<input checked="" type="checkbox"/>													
2203L27-044	E-10-10.0	Soil	3/29/2022 15:10	<input type="checkbox"/>	A												
2203L27-045	E-11-0.5	Soil	3/29/2022 15:30	<input type="checkbox"/>	A												

**Test Legend:**

13	TPH(DMO)_S	14		15		16	
17		18		19		20	
21		22		23		24	

**Prepared by: Agustina Venegas**

The following SampIDs: 001A, 003A, 005A, 006A, 009A, 011A, 013A, 014A, 017A, 019A, 020A, 023A, 024A, 026A, 027A, 028A, 030A, 033A, 034A, 037A, 039A, 041A, 044A, 045A, 046A, 048A, 051A, 053A, 056A contain testgroup Multi Range\_S.

**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.



1534 Willow Pass Rd  
Pittsburg, CA 94565-1701  
(925) 252-9262

WaterTrax  CLIP  EDF

# CHAIN-OF-CUSTODY RECORD

WorkOrder: 2203L27

ClientCode: TRSJ

EQUIS  Dry-Weight  Email  HardCopy  ThirdParty  J-flag  
 Detection Summary  Excel

**Report to:**

Peter Cusack  
Langan  
1 Almaden Blvd, Suite 590  
San Jose, CA 95113  
(415) 955-5283 FAX:

Email: pcusack@Langan.com  
cc/3rd Party: dwood@langan.com;  
PO:  
Project: 770681001; Hunters Point Block 54

**Bill to:**

Accounts Payable  
Langan  
555 Montgomery St., Suite 1300  
San Francisco, CA 94111  
Langan\_InvoiceCapture@conkursolutio

**Requested TAT: 5 days;**

**Date Received: 03/31/2022**

**Date Logged: 04/01/2022**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)												
					13	14	15	16	17	18	19	20	21	22	23	24	
2203L27-046	E-11-1.5	Soil	3/29/2022 15:31	<input type="checkbox"/>	A												
2203L27-047	E-11-3.0	Soil	3/29/2022 15:32	<input checked="" type="checkbox"/>													
2203L27-048	E-11-5.0	Soil	3/29/2022 15:33	<input type="checkbox"/>	A												
2203L27-049	E-11-7.5	Soil	3/29/2022 15:34	<input checked="" type="checkbox"/>													
2203L27-050	E-11-10.0	Soil	3/29/2022 15:35	<input checked="" type="checkbox"/>													
2203L27-051	E-12-0.5	Soil	3/29/2022 15:50	<input type="checkbox"/>	A												
2203L27-052	E-12-1.5	Soil	3/29/2022 15:51	<input checked="" type="checkbox"/>													
2203L27-053	E-12-3.0	Soil	3/29/2022 15:52	<input type="checkbox"/>	A												
2203L27-054	E-12-5.0	Soil	3/29/2022 15:53	<input checked="" type="checkbox"/>													
2203L27-055	E-12-7.5	Soil	3/29/2022 15:54	<input checked="" type="checkbox"/>													
2203L27-056	E-12-10.0	Soil	3/29/2022 15:55	<input type="checkbox"/>	A												
2203L27-057	E-1-7.5	Soil	3/29/2022 11:51	<input checked="" type="checkbox"/>													
2203L27-058	E-2-7.5	Soil	3/29/2022 11:18	<input checked="" type="checkbox"/>													
2203L27-059	E-3-7.5	Soil	3/29/2022 11:34	<input checked="" type="checkbox"/>													

**Test Legend:**

13	TPH(DMO)_S	14		15		16	
17		18		19		20	
21		22		23		24	

**Prepared by: Agustina Venegas**

The following SampIDs: 001A, 003A, 005A, 006A, 009A, 011A, 013A, 014A, 017A, 019A, 020A, 023A, 024A, 026A, 027A, 028A, 030A, 033A, 034A, 037A, 039A, 041A, 044A, 045A, 046A, 048A, 051A, 053A, 056A contain testgroup Multi Range\_S.

**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.



### WORK ORDER SUMMARY

**Client Name:** LANGAN  
**Client Contact:** Peter Cusack  
**Contact's Email:** pcusack@Langan.com

**Project:** 770681001; Hunters Point Block 54

**Work Order:** 2203L27  
**QC Level:** LEVEL 2  
**Date Logged:** 4/1/2022

**Comments:**

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	E-1-0.5	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 9:45	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8270C (Low Level SVOCs) with GPC Cleanup			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8260B (VOCs)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
003A	E-1-3.0	Soil	SM4500S2D (Acid Soluble Sulfide)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 9:47	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW9045C (pH)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (LUFT)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Multi-Range TPH			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SM4500-CN <sup>-</sup> ABCE (Cyanide, Total)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input checked="" type="checkbox"/>
			Asbestos, CARB 435, 400 Point			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8270C (Low Level SVOCs) with GPC Cleanup			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
SW8260B (VOCs)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>			

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

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**Comments:**

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
005A	E-2-0.5	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 10:32	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
006A	E-2-1.5	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 11:15	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8270C (Low Level SVOCs) with GPC Cleanup			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8260B (VOCs)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
009A	E-3-0.5	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 11:30	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
011A	E-3-3.0	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 11:32	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Asbestos, CARB 435, 400 Point			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>

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**Comments:**

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
013A	E-4-0.5	Soil	SW6020 (LUFT)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 12:05	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Multi-Range TPH			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
014A	E-4-1.5	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 12:06	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8270C (Low Level SVOCs) with GPC Cleanup			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8260B (VOCs)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
017A	E-5-0.5	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:05	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
019A	E-5-3.0	Soil	SW6020 (LUFT)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:07	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Multi-Range TPH			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>

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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
019A	E-5-3.0	Soil	Asbestos, CARB 435, 400 Point	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:07	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8270C (Low Level SVOCs) with GPC Cleanup			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8260B (VOCs)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
020A	E-6-0.5	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:25	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8270C (Low Level SVOCs) with GPC Cleanup			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8260B (VOCs)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
023A	E-6-5.0	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 12:38	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Asbestos, CARB 435, 400 Point			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
024A	E-7-0.5	Soil	SW6020 (LUFT)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 14:35	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>

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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
024A	E-7-0.5	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 14:35	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8270C (Low Level SVOCs) with GPC Cleanup			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8260B (VOCs)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
026A	E-7-3.0	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 14:37	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Asbestos, CARB 435, 400 Point			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8270C (Low Level SVOCs) with GPC Cleanup			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
027A	E-8-0.5	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 14:15	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>

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**Comments:**

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
028A	E-8-1.5	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 14:16	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8270C (Low Level SVOCs) with GPC Cleanup			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8260B (VOCs)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
030A	E-8-5.0	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 14:18	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8270C (Low Level SVOCs) with GPC Cleanup			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8260B (VOCs)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
033A	E-9-0.5	Soil	SW6020 (LUFT)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:50	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Multi-Range TPH			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Asbestos, CARB 435, 400 Point			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
034A	E-9-1.5	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:51	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>

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

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### WORK ORDER SUMMARY

**Client Name:** LANGAN  
**Client Contact:** Peter Cusack  
**Contact's Email:** pcusack@Langan.com

**Project:** 770681001; Hunters Point Block 54

**Work Order:** 2203L27  
**QC Level:** LEVEL 2  
**Date Logged:** 4/1/2022

**Comments:**

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
034A	E-9-1.5	Soil	SW6020 (CAM 17)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:51	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8270C (Low Level SVOCs) with GPC Cleanup			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8260B (VOCs)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
037A	E-9-7.5	Soil	SW6020 (LUFT)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:54	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Multi-Range TPH			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
039A	E-10-0.5	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:05	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
041A	E-10-3.0	Soil	SM4500S2D (Acid Soluble Sulfide)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:07	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW9045C (pH)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Multi-Range TPH			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SM4500-CN <sup>-</sup> ABCE (Cyanide, Total)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input checked="" type="checkbox"/>

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**Comments:**

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
041A	E-10-3.0	Soil	Asbestos, CARB 435, 400 Point	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:07	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8270C (Low Level SVOCs) with GPC Cleanup			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8260B (VOCs)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
044A	E-10-10.0	Soil	SW6020 (LUFT)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:10	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Multi-Range TPH			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Asbestos, CARB 435, 400 Point			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
045A	E-11-0.5	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:30	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
046A	E-11-1.5	Soil	SW6020 (LUFT)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:31	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Multi-Range TPH			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>

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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
046A	E-11-1.5	Soil	Asbestos, CARB 435, 400 Point	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:31	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8270C (Low Level SVOCs) with GPC Cleanup			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8260B (VOCs)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
048A	E-11-5.0	Soil	SW6020 (LUFT)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:33	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Multi-Range TPH			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Asbestos, CARB 435, 400 Point			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
051A	E-12-0.5	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:50	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Asbestos, CARB 435, 400 Point			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8081A/8082 (OC Pesticides+PCBs) ESLs			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
053A	E-12-3.0	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:52	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>

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**Project:** 770681001; Hunters Point Block 54

**Work Order:** 2203L27  
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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
053A	E-12-3.0	Soil	SW8270C (Low Level SVOCs) with GPC Cleanup	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:52	5 days	4/11/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW8260B (VOCs)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
056A	E-12-10.0	Soil	Multi-Range TPH	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:55	5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			Asbestos, CARB 435, 400 Point			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>
			SW6020 (CAM 17)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		5 days	4/7/2022		<input type="checkbox"/>	<input type="checkbox"/>

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2203L27  
15757

**LANGAN**

**CHAIN OF CUSTODY RECORD**

- 135 Main Street, Suite 1500, San Francisco, CA 94105
- 501 14th Street, Third Floor, Oakland, CA 94612
- 3320 Data Drive, Suite 350, Rancho Cordova, CA 95670-7982
- 1 Almaden Boulevard, Suite 590, San Jose, CA 95113

Site Name: Hunters Point Block 54  
 Job Number: 770681001  
 Project Manager/Contact: Peter Cusak, Daniel Wood  
 Samplers: Daniel Wood  
 Recorder (Signature Required): [Signature]

Turnaround Time  
Standard

Field Sample Identification No.	Date	Time	Lab Sample No.	Matrix				No. Containers & Preservative				Analysis Requested										Silica gel clean-up	Hold	Remarks				
				Soil	Water	Air	Other	HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	Ice	TPH (G, D, mo)	VOCs	SVOCs	OCs	PCBs	CAM 17	LUFT 5	CARB 435	PH	Cyanide				Sulfides			
E-1-0.5	3-29-22	0945		X										X	X	X	X	X	X									
E-1-1.5		0946																							X			
E-1-3.0		0947												X	X	X			X	X	X	X	X					
E-1-5.0		1150																							X			
E-2-0.5		<del>1032</del>												X		X	X											
E-2-1.5		1115												X	X	X												
E-2-3.0		1116																							X			
E-2-5.0		1117																							X			
E-3-0.5		1130												X		X	X	X										
E-3-1.5		1131																							X			
E-3-3.0		1132												X				X										
E-3-5.0		1133																							X			
E-4-0.5		1205												X		X	X	X										
E-4-1.5		1206												X	X	X			X									

Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>3-31-22</u>	Time: <u>1135</u>	Received by: (Signature) <u>[Signature]</u>	Date: <u>3/31/22</u>	Time: <u>1135</u>
Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>3/31/22</u>	Time: <u>1315</u>	Received by: (Signature) <u>[Signature]</u>	Date: <u>3/31/2022</u>	Time: <u>1315</u>
Relinquished by: (Signature)	Date:	Time:	Received by Lab: (Signature)	Date:	Time:

Sent to Laboratory (Name): \_\_\_\_\_  
 Laboratory Comments/Notes: \_\_\_\_\_  
 Method of Shipment:  Lab courier  Fed Ex  Airborne  UPS  
 Hand Carried  Private Courier (Co. Name) \_\_\_\_\_



CHAIN OF CUSTODY RECORD

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- 1 Almaden Boulevard, Suite 590, San Jose, CA 95113

Site Name: Hunters Point Block 54  
 Job Number: 770681001  
 Project Manager/Contact: Peter Cusyle, Daniel Wood  
 Samplers: Daniel Wood  
 Recorder (Signature Required): [Signature]

Turnaround Time  
Standard

Field Sample Identification No.	Date	Time	Lab Sample No.	Matrix				No. Containers & Preservative				Analysis Requested										Silica gel clean-up	Hold	Remarks													
				Soil	Water	Air	Other	HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	Ice	TPH (G,D,Mo)	VOCs	SVOCs	OCBs	PCBs	CAM 17	LUFTS	CARB 435	PH	Cyanide				Sulfides												
E-4-3.0	3-29-22	1207		X									X																								
E-4-5.0		1208																																			
E-5-0.5		1305											X		X	X	X																				
E-5-1.5		1306																																			
E-5-3.0		1307											X	X	X			X	X																		
E-6-0.5		1325											X	X	X	X	X	X																			
E-6-1.5		1326																																			
E-6-3.0		1327																																			
E-6-5.0		1328											X			X		X																			
E-7-0.5		1435											X	X	X	X	X	X																			
E-7-1.5		1436																																			
E-7-3.0		1437											X	X	X		X	X																			
E-8-0.5		1415											X		X	X	X																				
E-8-1.5		1416											X	X	X		X																				

Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>3-31-22</u>	Time <u>1135</u>	Received by: (Signature) <u>[Signature]</u>	Date <u>3/31/22</u>	Time <u>1135</u>
Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>3/31/22</u>	Time <u>1315</u>	Received by: (Signature) <u>[Signature]</u>	Date <u>3/31/2022</u>	Time <u>1315</u>
Relinquished by: (Signature)	Date:	Time	Received by Lab: (Signature)	Date	Time

Sent to Laboratory (Name): \_\_\_\_\_  
 Laboratory Comments/Notes: \_\_\_\_\_

Method of Shipment  Lab courier  Fed Ex  Airborne  UPS  
 Hand Carried  Private Courier (Co. Name) \_\_\_\_\_

# LANGAN

## CHAIN OF CUSTODY RECORD

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- 3320 Data Drive, Suite 350, Rancho Cordova, CA 95670-7982
- 1 Almaden Boulevard, Suite 590, San Jose, CA 95113

Site Name: Hunters Point Block 54  
 Job Number: 77068/1001  
 Project Manager/Contact: Peter Cusack, Daniel Wood  
 Samplers: Daniel Wood  
 Recorder (Signature Required): [Signature]

Turnaround Time  
Standard

Field Sample Identification No.	Date	Time	Lab Sample No.	Matrix				No. Containers & Preservative				Analysis Requested										Silica gel clean-up	Hold	Remarks		
				Soil	Water	Air	Other	HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	Ice	TPH (G.D., Mo)	VOCs	SUOCs	OC/PC	PCBs	CAM 17	LUFT 5	CAKB 435	PH	Cyanide				Sulfides	
E-8-3.0	3-29-22	1417		X																				X		
E-8-5.0		1418		X										X	X	X										
E-8-7.5		1419		X																					X	
E-8-10.0		1420		X																					X	
E-9-0.5		1350		X										X		X	X				X	X				
E-9-1.5		1351		X										X	X	X					X					
E-9-3.0		1352		X																					X	
E-9-5.0		1353		X																					X	
E-9-7.5		1354		X										X							X					
E-9-10.0		1355		X																					X	
E-10-0.5		1505		X										X		X	X								X	
E-10-1.5		1506		X																					X	
E-10-3.0		1507		X										X	X	X					X	X	X	X		
E-10-5.0		1508		X																					X	

Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>3-31-22</u>	Time: <u>1135</u>	Received by: (Signature) <u>[Signature]</u>	Date: <u>3/31</u>	Time: <u>1135</u>
Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>3/31/22</u>	Time: <u>1315</u>	Received by: (Signature) <u>[Signature]</u>	Date: <u>3/31/2022</u>	Time: <u>1315</u>
Relinquished by: (Signature)	Date:	Time:	Received by Lab: (Signature)	Date:	Time:

Sent to Laboratory (Name): \_\_\_\_\_

Laboratory Comments/Notes: \_\_\_\_\_

Method of Shipment:  Lab courier  Fed Ex  Airborne  UPS  
 Hand Carried  Private Courier (Co. Name) \_\_\_\_\_

White Copy - Original

Yellow Copy - Laboratory

Pink Copy - Field

COC Number: \_\_\_\_\_



**LANGAN**

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- 1 Almaden Boulevard, Suite 590, San Jose, CA 95113

Site Name: Hunters Point Block 54

Job Number: 7706&1001

Project Manager/Contact: Peter Cuszyk, Daniel Wood

Samplers: Daniel Wood

Recorder (Signature Required): [Signature]

Turnaround  
Time  
Standard

Field Sample Identification No.	Date	Time	Lab Sample No.	Matrix								No. Containers & Preservative								Analysis Requested												Remarks
				Soil	Water	Air	Other	HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	Ice	TPH (G, P, M)	VOCs	SVOCs	OCPS	PCBS	CAM 17	LFT 5	CARB 435	PH	Cyanide	Sulfides	Silica gel clean-up	Hold								
E-10-7.5	3-29-22	1509		X																									X			
E-10-10.0	↓	1510																														
E-11-0.5		1530																														
E-11-1.5		1531																														
E-11-3.0		1532																												X		
E-11-5.0		1533																												X		
E-11-7.5		1534																												X		
E-11-10.0		1535																												X		
E-12-0.5		1550																												X		
E-12-7.5		1551																												X		
E-12-3.0		1552																												X		
E-12-5.0		1553																												X		
E-12-7.5		1554																												X		
E-12-10.0		1555																												X		

Relinquished by: (Signature)	Date: <u>3-31-22</u>	Time: <u>1135</u>	Received by: (Signature)	Date: <u>3/31 1135</u>
Relinquished by: (Signature)	Date: <u>3/31/22</u>	Time: <u>1315</u>	Received by: (Signature)	Date: <u>3/31/2022</u>
Relinquished by: (Signature)	Date:	Time:	Received by Lab: (Signature)	Date:

Sent to Laboratory (Name): \_\_\_\_\_

Laboratory Comments/Notes: \_\_\_\_\_

Method of Shipment  Lab courier  Fed Ex  Airborne  UPS  
 Hand Carried  Private Courier (Co. Name) \_\_\_\_\_



# McCAMPBELL ANALYTICAL, INC.

1534 Willow Pass Rd. Pittsburg, Ca. 94565-1701

Telephone: (877) 252-9262 / Fax: (925) 252-9269

www.mccampbell.com

main@mccampbell.com

## CHAIN OF CUSTODY RECORD

Turn Around Time: 1 Day Rush	2 Day Rush	3 Day Rush	STD	Quote #
J-Flag / MDL	ESL	Cleanup Approved	Dry Weight	Bottle Order #
Delivery Format: PDF	GeoTracker EDF	EDD	Write On (DW)	Detect Summary

Report To: PETER CUSACK Bill To:

Company: LANGAN

Address:

Email: Tele:

Project Name: HUNTERS POINT BLOCK #54 Project #

Project Location: PO #

Sampler Signature:

### Analysis Requested

SAMPLE ID Location / Field Point	Sampling		#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	HOLD	
	Date	Time																					
* E-1-7.5	3/29/2022	11:51	1	S	/																		X
* E-2-7.5	3/29/2022	11:18	1	S	/																		X
* E-3-7.5	3/29/2022	11:34	1	S	/																		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	Comments / Instructions
<u>MAI COURIER</u>			<u>3/31/2022</u>	<u>1315</u>	<u>MAI COURIER</u>			<u>3/31/2022</u>	<u>1135A</u>	
					<u>MAI COURIER</u>			<u>3/31/2022</u>	<u>1315</u>	

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<sub>2</sub>SO<sub>4</sub> 4=HNO<sub>3</sub> 5=NaOH 6=ZnOAc/NaOH 7=None

Temp \_\_\_\_\_ °C Initials \_\_\_\_\_

\* EXTRA SAMPLES RECEIVED & PLACED ON HOLD.





### Sample Receipt Checklist

Client Name: **Langan**  
Project: **770681001; Hunters Point Block 54**  
WorkOrder No: **2203L27** Matrix: Soil  
Carrier: Laurie Moore (MAI Courier)

Date and Time Received: **3/31/2022 13:15**  
Date Logged: **4/1/2022**  
Received by: **Agustina Venegas**  
Logged by: **Agustina Venegas**

#### Chain of Custody (COC) Information

Chain of custody present? Yes  No   
Chain of custody signed when relinquished and received? Yes  No   
Chain of custody agrees with sample labels? Yes  No   
Sample IDs noted by Client on COC? Yes  No   
Date and Time of collection noted by Client on COC? Yes  No   
Sampler's name noted on COC? Yes  No   
COC agrees with Quote? Yes  No  NA

#### Sample Receipt Information

Custody seals intact on shipping container/cooler? Yes  No  NA   
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: 2.2°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:



# McC Campbell Analytical, Inc.

"When Quality Counts"

## Analytical Report

**WorkOrder:** 2203L27 A

**Report Created for:** Langan

1 Almaden Blvd, Suite 590  
San Jose, CA 95113

**Project Contact:** Peter Cusack

**Project P.O.:**

**Project:** 770681001; Hunters Point Block 54

**Project Received:** 03/31/2022

Analytical Report reviewed & approved for release on 04/18/2022 by:

Christine Askari  
Project Manager

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





## Glossary of Terms & Qualifier Definitions

**Client:** Langan

**WorkOrder:** 2203L27 A

**Project:** 770681001; Hunters Point Block 54

### 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)



# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/16/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** CA Title 22  
**Analytical Method:** SW6020  
**Unit:** mg/L

## Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-10.0	2203L27-044A	Soil	03/29/2022 15:10	ICP-MS2 069SMPL.D	243649

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/18/2022 15:19

Analyst(s): AL



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/14/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW1311/SW3010  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (TCLP)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-0.5	2203L27-001A	Soil	03/29/2022 09:45	ICP-MS4 245SMPL.d	243533

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 20:21

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-3.0	2203L27-003A	Soil	03/29/2022 09:47	ICP-MS4 246SMPL.d	243535

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 20:25

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-2-1.5	2203L27-006A	Soil	03/29/2022 11:15	ICP-MS5 187SMPL.d	243533

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/16/2022 02:05

Analyst(s): DB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-3-0.5	2203L27-009A	Soil	03/29/2022 11:30	ICP-MS5 221SMPL.d	243436

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/14/2022 21:18

Analyst(s): DB

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/14/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW1311/SW3010  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (TCLP)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-3-3.0	2203L27-011A	Soil	03/29/2022 11:32	ICP-MS4 249SMPL.d	243533

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 20:37

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-0.5	2203L27-013A	Soil	03/29/2022 12:05	ICP-MS4 250SMPL.d	243535

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 20:40

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-1.5	2203L27-014A	Soil	03/29/2022 12:06	ICP-MS4 251SMPL.d	243535

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 20:44

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-0.5	2203L27-017A	Soil	03/29/2022 13:05	ICP-MS4 252SMPL.d	243535

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 20:48

Analyst(s): AL

(Cont.)





## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/14/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW1311/SW3010  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (TCLP)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-3.0	2203L27-019A	Soil	03/29/2022 13:07	ICP-MS4 253SMPL.d	243533

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 20:52

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-0.5	2203L27-020A	Soil	03/29/2022 13:25	ICP-MS4 254SMPL.d	243535

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 20:56

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-5.0	2203L27-023A	Soil	03/29/2022 13:38	ICP-MS4 255SMPL.d	243533

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 21:00

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-0.5	2203L27-024A	Soil	03/29/2022 14:35	ICP-MS4 256SMPL.d	243535

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 21:04

Analyst(s): AL

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/14/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW1311/SW3010  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (TCLP)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-0.5	2203L27-027A	Soil	03/29/2022 14:15	ICP-MS5 225SMPL.d	243436

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/14/2022 21:32

Analyst(s): DB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-1.5	2203L27-028A	Soil	03/29/2022 14:16	ICP-MS5 226SMPL.d	243436

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/14/2022 21:35

Analyst(s): DB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-0.5	2203L27-033A	Soil	03/29/2022 13:50	ICP-MS4 257SMPL.d	243535

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 21:08

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-1.5	2203L27-034A	Soil	03/29/2022 13:51	ICP-MS4 270SMPL.d	243533

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 21:59

Analyst(s): AL

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/14/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW1311/SW3010  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (TCLP)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-7.5	2203L27-037A	Soil	03/29/2022 13:54	ICP-MS4 273SMPL.d	243533

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 22:10

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-0.5	2203L27-039A	Soil	03/29/2022 15:05	ICP-MS4 274SMPL.d	243535

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 22:14

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-3.0	2203L27-041A	Soil	03/29/2022 15:07	ICP-MS4 275SMPL.d	243533

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 22:18

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-0.5	2203L27-045A	Soil	03/29/2022 15:30	ICP-MS4 276SMPL.d	243535

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 22:22

Analyst(s): AL

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/14/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW1311/SW3010  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (TCLP)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-1.5	2203L27-046A	Soil	03/29/2022 15:31	ICP-MS4 277SMPL.d	243533

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 22:26

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-5.0	2203L27-048A	Soil	03/29/2022 15:33	ICP-MS5 230SMPL.d	243436

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/14/2022 21:49

Analyst(s): DB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-0.5	2203L27-051A	Soil	03/29/2022 15:50	ICP-MS5 232SMPL.d	243436

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/14/2022 21:56

Analyst(s): DB

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-3.0	2203L27-053A	Soil	03/29/2022 15:52	ICP-MS4 241SMPL.d	243535

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 20:05

Analyst(s): AL

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/14/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** SW1311/SW3010  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (TCLP)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-10.0	2203L27-056A	Soil	03/29/2022 15:55	ICP-MS4 278SMPL.d	243533

Analytes	Result	RL	DF	Date Analyzed
Chromium	ND	0.10	1	04/15/2022 22:30

Analyst(s): AL



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/16/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** CA Title 22  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-0.5	2203L27-001A	Soil	03/29/2022 09:45	ICP-MS2 050SMPL.D	243648

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.76	0.10	1	04/18/2022 13:34
Nickel	12	0.10	1	04/18/2022 13:34

Analyst(s): MIG

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-1-3.0	2203L27-003A	Soil	03/29/2022 09:47	ICP-MS2 053SMPL.D	243655

Analytes	Result	RL	DF	Date Analyzed
Chromium	1.0	0.10	1	04/18/2022 13:50
Nickel	47	0.10	1	04/18/2022 13:50

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-2-1.5	2203L27-006A	Soil	03/29/2022 11:15	ICP-MS2 054SMPL.D	243648

Analytes	Result	RL	DF	Date Analyzed
Chromium	1.5	0.10	1	04/18/2022 13:56
Nickel	8.5	0.10	1	04/18/2022 13:56

Analyst(s): AL

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/16/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** CA Title 22  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-3-0.5	2203L27-009A	Soil	03/29/2022 11:30	ICP-MS2 055SMPL.D	243648

Analytes	Result	RL	DF	Date Analyzed
Chromium	2.5	0.10	1	04/18/2022 14:01
Nickel	42	0.10	1	04/18/2022 14:01

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-3-3.0	2203L27-011A	Soil	03/29/2022 11:32	ICP-MS2 056SMPL.D	243648

Analytes	Result	RL	DF	Date Analyzed
Chromium	2.1	0.10	1	04/18/2022 14:07
Nickel	71	0.10	1	04/18/2022 14:07

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-0.5	2203L27-013A	Soil	03/29/2022 12:05	ICP-MS2 057SMPL.D	243655

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.49	0.10	1	04/18/2022 14:12
Nickel	6.0	0.10	1	04/18/2022 14:12

Analyst(s): AL

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/16/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** CA Title 22  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-4-1.5	2203L27-014A	Soil	03/29/2022 12:06	ICP-MS2 058SMPL.D	243655

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.11	0.10	1	04/18/2022 14:18
Nickel	2.1	0.10	1	04/18/2022 14:18

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-0.5	2203L27-017A	Soil	03/29/2022 13:05	ICP-MS2 059SMPL.D	243655

Analytes	Result	RL	DF	Date Analyzed
Chromium	1.2	0.10	1	04/18/2022 14:24
Nickel	32	0.10	1	04/18/2022 14:24

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-5-3.0	2203L27-019A	Soil	03/29/2022 13:07	ICP-MS2 060SMPL.D	243648

Analytes	Result	RL	DF	Date Analyzed
Chromium	2.7	0.10	1	04/18/2022 14:29
Nickel	53	0.10	1	04/18/2022 14:29

Analyst(s): AL

(Cont.)





## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/16/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** CA Title 22  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-0.5	2203L27-020A	Soil	03/29/2022 13:25	ICP-MS2 061SMPL.D	243655

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.42	0.10	1	04/18/2022 14:35
Nickel	5.2	0.10	1	04/18/2022 14:35

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-6-5.0	2203L27-023A	Soil	03/29/2022 13:38	ICP-MS2 062SMPL.D	243648

Analytes	Result	RL	DF	Date Analyzed
Chromium	1.7	0.10	1	04/18/2022 14:40
Nickel	35	0.10	1	04/18/2022 14:40

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-7-0.5	2203L27-024A	Soil	03/29/2022 14:35	ICP-MS2 065SMPL.D	243655

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.37	0.10	1	04/18/2022 14:57
Nickel	4.1	0.10	1	04/18/2022 14:57

Analyst(s): AL

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/16/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** CA Title 22  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-0.5	2203L27-027A	Soil	03/29/2022 14:15	ICP-MS2 090SMPL.D	243417

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.62	0.10	1	04/15/2022 22:33
Nickel	5.3	0.10	1	04/15/2022 22:33

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-8-1.5	2203L27-028A	Soil	03/29/2022 14:16	ICP-MS2 091SMPL.D	243417

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.49	0.10	1	04/15/2022 22:39
Nickel	6.4	0.10	1	04/15/2022 22:39

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-0.5	2203L27-033A	Soil	03/29/2022 13:50	ICP-MS2 066SMPL.D	243655

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.24	0.10	1	04/18/2022 15:02
Nickel	6.1	0.10	1	04/18/2022 15:02

Analyst(s): AL

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/16/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** CA Title 22  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-1.5	2203L27-034A	Soil	03/29/2022 13:51	ICP-MS2 102SMPL.D	243417

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.51	0.10	1	04/15/2022 23:40
Nickel	5.4	0.10	1	04/15/2022 23:40

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-9-7.5	2203L27-037A	Soil	03/29/2022 13:54	ICP-MS2 103SMPL.D	243417

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.22	0.10	1	04/15/2022 23:45
Nickel	2.2	0.10	1	04/15/2022 23:45

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-0.5	2203L27-039A	Soil	03/29/2022 15:05	ICP-MS2 067SMPL.D	243655

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.27	0.10	1	04/18/2022 15:08
Nickel	2.0	0.10	1	04/18/2022 15:08

Analyst(s): AL

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/16/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** CA Title 22  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-10-3.0	2203L27-041A	Soil	03/29/2022 15:07	ICP-MS2 068SMPL.D	243648

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.23	0.10	1	04/18/2022 15:13
Nickel	2.6	0.10	1	04/18/2022 15:13

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-0.5	2203L27-045A	Soil	03/29/2022 15:30	ICP-MS2 070SMPL.D	243655

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.21	0.10	1	04/18/2022 15:24
Nickel	2.3	0.10	1	04/18/2022 15:24

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-1.5	2203L27-046A	Soil	03/29/2022 15:31	ICP-MS2 104SMPL.D	243440

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.24	0.10	1	04/15/2022 23:51
Nickel	2.4	0.10	1	04/15/2022 23:51

Analyst(s): AL

(Cont.)



## Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/16/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** CA Title 22  
**Analytical Method:** SW6020  
**Unit:** mg/L

### Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-11-5.0	2203L27-048A	Soil	03/29/2022 15:33	ICP-MS2 107SMPL.D	243440

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.34	0.10	1	04/16/2022 00:07
Nickel	3.0	0.10	1	04/16/2022 00:07

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-0.5	2203L27-051A	Soil	03/29/2022 15:50	ICP-MS2 071SMPL.D	243649

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.45	0.10	1	04/18/2022 15:30
Nickel	6.1	0.10	1	04/18/2022 15:30

Analyst(s): AL

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-3.0	2203L27-053A	Soil	03/29/2022 15:52	ICP-MS2 108SMPL.D	243440

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.33	0.10	1	04/16/2022 00:13
Nickel	4.8	0.10	1	04/16/2022 00:13

Analyst(s): AL

(Cont.)



# Analytical Report

**Client:** Langan  
**Date Received:** 03/31/2022 13:15  
**Date Prepared:** 04/13/2022-04/16/2022  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**Extraction Method:** CA Title 22  
**Analytical Method:** SW6020  
**Unit:** mg/L

## Metals (STLC)

Client ID	Lab ID	Matrix	Date Collected	Instrument	Batch ID
E-12-10.0	2203L27-056A	Soil	03/29/2022 15:55	ICP-MS2 109SMPL.D	243440

Analytes	Result	RL	DF	Date Analyzed
Chromium	0.39	0.10	1	04/16/2022 00:19
Nickel	2.3	0.10	1	04/16/2022 00:19

Analyst(s): AL



## Quality Control Report

<b>Client:</b> Langan	<b>WorkOrder:</b> 2203L27
<b>Date Prepared:</b> 04/13/2022	<b>BatchID:</b> 243436
<b>Date Analyzed:</b> 04/14/2022	<b>Extraction Method:</b> SW1311/SW3010
<b>Instrument:</b> ICP-MS5	<b>Analytical Method:</b> SW6020
<b>Matrix:</b> Soil	<b>Unit:</b> mg/L
<b>Project:</b> 770681001; Hunters Point Block 54	<b>Sample ID:</b> MB/LCS/LCSD-243436

### QC Summary Report for Metals (TCLP)

Analyte	MB Result	MDL	RL			
Chromium	ND	0.10	0.10	-	-	-

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Chromium	9.9	9.8	10	99	98	75-125	1.02	20



## Quality Control Report

<b>Client:</b> Langan	<b>WorkOrder:</b> 2203L27
<b>Date Prepared:</b> 04/14/2022	<b>BatchID:</b> 243533
<b>Date Analyzed:</b> 04/15/2022	<b>Extraction Method:</b> SW1311/SW3010
<b>Instrument:</b> ICP-MS5	<b>Analytical Method:</b> SW6020
<b>Matrix:</b> Soil	<b>Unit:</b> mg/L
<b>Project:</b> 770681001; Hunters Point Block 54	<b>Sample ID:</b> MB/LCS/LCSD-243533

### QC Summary Report for Metals (TCLP)

Analyte	MB Result	MDL	RL			
Chromium	ND	0.10	0.10	-	-	-

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Chromium	9.7	9.9	10	97	99	75-125	2.36	20





## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/14/2022  
**Date Analyzed:** 04/15/2022  
**Instrument:** ICP-MS4  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 243535  
**Extraction Method:** SW1311/SW3010  
**Analytical Method:** SW6020  
**Unit:** mg/L  
**Sample ID:** MB/LCS/LCSD-243535  
 2203L27-053AMS/MSD

### QC Summary Report for Metals (TCLP)

Analyte	MB Result	MDL	RL			
Chromium	ND	0.10	0.10	-	-	-

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Chromium	9.7	10	10	97	100	75-125	3.31	20

Analyte	MS DF	MS Result	MSD Result	SPK Val	SPKRef Val	MS %REC	MSD %REC	MS/MSD Limits	RPD	RPD Limit
Chromium	1	9.6	9.8	10	ND	96	98	75-125	1.13	20

Analyte	DLT Result	DLTRef Val	%D	%D Limit
Chromium	ND<0.50	ND	-	-

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



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/13/2022  
**Date Analyzed:** 04/15/2022  
**Instrument:** ICP-MS2  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 243417  
**Extraction Method:** CA Title 22  
**Analytical Method:** SW6020  
**Unit:** mg/L  
**Sample ID:** MB/LCS/LCSD-243417

### QC Summary Report for Metals (STLC)

Analyte	MB Result	MDL	RL			
Chromium	ND	0.10	0.10	-	-	-
Nickel	ND	0.10	0.10	-	-	-

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Chromium	9.5	9.5	10	95	95	75-125	0.0210	20
Nickel	9.3	9.4	10	93	94	75-125	0.342	20

(Cont.)



## Quality Control Report

<b>Client:</b> Langan	<b>WorkOrder:</b> 2203L27
<b>Date Prepared:</b> 04/13/2022	<b>BatchID:</b> 243440
<b>Date Analyzed:</b> 04/15/2022	<b>Extraction Method:</b> CA Title 22
<b>Instrument:</b> ICP-MS5	<b>Analytical Method:</b> SW6020
<b>Matrix:</b> Soil	<b>Unit:</b> mg/L
<b>Project:</b> 770681001; Hunters Point Block 54	<b>Sample ID:</b> MB/LCS/LCSD-243440

### QC Summary Report for Metals (STLC)

Analyte	MB Result	MDL	RL			
Chromium	ND	0.10	0.10	-	-	-
Nickel	ND	0.10	0.10	-	-	-

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Chromium	9.8	9.8	10	98	98	75-125	0.650	20
Nickel	9.7	9.8	10	97	98	75-125	0.716	20

(Cont.)



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/16/2022  
**Date Analyzed:** 04/18/2022  
**Instrument:** ICP-MS5  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 243648  
**Extraction Method:** CA Title 22  
**Analytical Method:** SW6020  
**Unit:** mg/L  
**Sample ID:** MB/LCS/LCSD-243648

### QC Summary Report for Metals (STLC)

Analyte	MB Result	MDL	RL			
Chromium	ND	0.10	0.10	-	-	-
Nickel	ND	0.10	0.10	-	-	-

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Chromium	10	10	10	102	105	75-125	2.48	20
Nickel	10	10	10	102	104	75-125	1.79	20

(Cont.)



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/16/2022  
**Date Analyzed:** 04/18/2022  
**Instrument:** ICP-MS5  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 243649  
**Extraction Method:** CA Title 22  
**Analytical Method:** SW6020  
**Unit:** mg/L  
**Sample ID:** MB/LCS/LCSD-243649

### QC Summary Report for Metals (STLC)

Analyte	MB Result	MDL	RL			
Chromium	ND	0.10	0.10	-	-	-
Nickel	ND	0.10	0.10	-	-	-

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Chromium	10	10	10	104	105	75-125	0.514	20
Nickel	11	11	10	106	106	75-125	0.578	20

(Cont.)



## Quality Control Report

**Client:** Langan  
**Date Prepared:** 04/16/2022  
**Date Analyzed:** 04/18/2022  
**Instrument:** ICP-MS5  
**Matrix:** Soil  
**Project:** 770681001; Hunters Point Block 54

**WorkOrder:** 2203L27  
**BatchID:** 243655  
**Extraction Method:** CA Title 22  
**Analytical Method:** SW6020  
**Unit:** mg/L  
**Sample ID:** MB/LCS/LCSD-243655

### QC Summary Report for Metals (STLC)

Analyte	MB Result	MDL	RL			
Chromium	ND	0.10	0.10	-	-	-
Nickel	ND	0.10	0.10	-	-	-

Analyte	LCS Result	LCSD Result	SPK Val	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Limit
Chromium	11	10	10	107	104	75-125	3.18	20
Nickel	11	10	10	106	104	75-125	2.28	20



1534 Willow Pass Rd  
Pittsburg, CA 94565-1701  
(925) 252-9262

# CHAIN-OF-CUSTODY RECORD

WorkOrder: 2203L27 A

ClientCode: TRSJ

- WaterTrax   
  CLIP   
  EDF   
  EQUIS   
  Dry-Weight   
 Email   
 HardCopy   
 ThirdParty   
 J-flag  
 Detection Summary   
 Excel

**Report to:**

Peter Cusack  
Langan  
1 Almaden Blvd, Suite 590  
San Jose, CA 95113  
(415) 955-5283    FAX:

Email: pcusack@Langan.com  
cc/3rd Party: dwood@langan.com;  
PO:  
Project: 770681001; Hunters Point Block 54

**Bill to:**

Accounts Payable  
Langan  
555 Montgomery St., Suite 1300  
San Francisco, CA 94111  
Langan\_InvoiceCapture@concur.solutio

**Requested TAT: 5 days;**

**Date Received: 03/31/2022**

**Date Logged: 04/01/2022**

**Date Add-On: 04/13/2022**

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
2203L27-001	E-1-0.5	Soil	3/29/2022 09:45	<input type="checkbox"/>		A	A									
2203L27-003	E-1-3.0	Soil	3/29/2022 09:47	<input type="checkbox"/>		A	A									
2203L27-006	E-2-1.5	Soil	3/29/2022 11:15	<input type="checkbox"/>		A	A									
2203L27-009	E-3-0.5	Soil	3/29/2022 11:30	<input type="checkbox"/>		A	A									
2203L27-011	E-3-3.0	Soil	3/29/2022 11:32	<input type="checkbox"/>		A	A									
2203L27-013	E-4-0.5	Soil	3/29/2022 12:05	<input type="checkbox"/>		A	A									
2203L27-014	E-4-1.5	Soil	3/29/2022 12:06	<input type="checkbox"/>		A	A									
2203L27-017	E-5-0.5	Soil	3/29/2022 13:05	<input type="checkbox"/>		A	A									
2203L27-019	E-5-3.0	Soil	3/29/2022 13:07	<input type="checkbox"/>		A	A									
2203L27-020	E-6-0.5	Soil	3/29/2022 13:25	<input type="checkbox"/>		A	A									
2203L27-023	E-6-5.0	Soil	3/29/2022 13:38	<input type="checkbox"/>		A	A									
2203L27-024	E-7-0.5	Soil	3/29/2022 14:35	<input type="checkbox"/>		A	A									
2203L27-027	E-8-0.5	Soil	3/29/2022 14:15	<input type="checkbox"/>		A	A									
2203L27-028	E-8-1.5	Soil	3/29/2022 14:16	<input type="checkbox"/>		A	A									
2203L27-033	E-9-0.5	Soil	3/29/2022 13:50	<input type="checkbox"/>		A	A									

**Test Legend:**

1	CRMS_STLC_S	2	CRMS_TCLP_S	3	METALSMS_STLC_S	4	
5		6		7		8	
9		10		11		12	

Prepared by: Agustina Venegas

Add-On Prepared By: Maria Venegas

Comments: STLCs & TCLPs added 4/13/22 STAT.

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.



1534 Willow Pass Rd  
Pittsburg, CA 94565-1701  
(925) 252-9262

# CHAIN-OF-CUSTODY RECORD

WorkOrder: 2203L27 A

ClientCode: TRSJ

- WaterTrax   
  CLIP   
  EDF   
  EQUIS   
  Dry-Weight   
 Email   
 HardCopy   
 ThirdParty   
 J-flag  
 Detection Summary   
 Excel

**Report to:**

Peter Cusack  
Langan  
1 Almaden Blvd, Suite 590  
San Jose, CA 95113  
(415) 955-5283    FAX:

Email: pcusack@Langan.com  
cc/3rd Party: dwood@langan.com;  
PO:  
Project: 770681001; Hunters Point Block 54

**Bill to:**

Accounts Payable  
Langan  
555 Montgomery St., Suite 1300  
San Francisco, CA 94111  
Langan\_InvoiceCapture@concur.solutio

**Requested TAT: 5 days;**

**Date Received: 03/31/2022**  
**Date Logged: 04/01/2022**  
**Date Add-On: 04/13/2022**

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
2203L27-034	E-9-1.5	Soil	3/29/2022 13:51	<input type="checkbox"/>		A	A									
2203L27-037	E-9-7.5	Soil	3/29/2022 13:54	<input type="checkbox"/>		A	A									
2203L27-039	E-10-0.5	Soil	3/29/2022 15:05	<input type="checkbox"/>		A	A									
2203L27-041	E-10-3.0	Soil	3/29/2022 15:07	<input type="checkbox"/>		A	A									
2203L27-044	E-10-10.0	Soil	3/29/2022 15:10	<input type="checkbox"/>	A											
2203L27-045	E-11-0.5	Soil	3/29/2022 15:30	<input type="checkbox"/>		A	A									
2203L27-046	E-11-1.5	Soil	3/29/2022 15:31	<input type="checkbox"/>		A	A									
2203L27-048	E-11-5.0	Soil	3/29/2022 15:33	<input type="checkbox"/>		A	A									
2203L27-051	E-12-0.5	Soil	3/29/2022 15:50	<input type="checkbox"/>		A	A									
2203L27-053	E-12-3.0	Soil	3/29/2022 15:52	<input type="checkbox"/>		A	A									
2203L27-056	E-12-10.0	Soil	3/29/2022 15:55	<input type="checkbox"/>		A	A									

**Test Legend:**

1	CRMS_STLC_S	2	CRMS_TCLP_S	3	METALSMS_STLC_S	4	
5		6		7		8	
9		10		11		12	

Prepared by: Agustina Venegas

Add-On Prepared By: Maria Venegas

Comments: STLCs & TCLPs added 4/13/22 STAT.

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.





### WORK ORDER SUMMARY

**Client Name:** LANGAN  
**Client Contact:** Peter Cusack  
**Contact's Email** pcusack@Langan.com

**Project:** 770681001; Hunters Point Block 54  
**Comments:** STLCs & TCLPs added 4/13/22 STAT.

**Work Order:** 2203L27  
**QC Level:** LEVEL 2  
**Date Logged:** 4/1/2022  
**Date Add-On:** 4/13/2022

LabID	ClientSampID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	SubOut
001A	E-1-0.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 9:45	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)						5 days*	4/22/2022			0
003A	E-1-3.0	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 9:47	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)						5 days*	4/22/2022			0
006A	E-2-1.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 11:15	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)						5 days*	4/22/2022			0
009A	E-3-0.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 11:30	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)						5 days*	4/22/2022			0
011A	E-3-3.0	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 11:32	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)						5 days*	4/22/2022			0
013A	E-4-0.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 12:05	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)						5 days*	4/22/2022			0
014A	E-4-1.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 12:06	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)						5 days*	4/22/2022			0

**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.



### WORK ORDER SUMMARY

**Client Name:** LANGAN  
**Client Contact:** Peter Cusack  
**Contact's Email** pcusack@Langan.com

**Project:** 770681001; Hunters Point Block 54  
**Comments:** STLCs & TCLPs added 4/13/22 STAT.

**Work Order:** 2203L27  
**QC Level:** LEVEL 2  
**Date Logged:** 4/1/2022  
**Date Add-On:** 4/13/2022

LabID	ClientSampID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	SubOut
017A	E-5-0.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:05	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)			<input type="checkbox"/>	<input type="checkbox"/>		5 days*			4/22/2022	<input type="checkbox"/>
019A	E-5-3.0	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:07	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)			<input type="checkbox"/>	<input type="checkbox"/>		5 days*			4/22/2022	<input type="checkbox"/>
020A	E-6-0.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:25	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)			<input type="checkbox"/>	<input type="checkbox"/>		5 days*			4/22/2022	<input type="checkbox"/>
023A	E-6-5.0	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:38	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)			<input type="checkbox"/>	<input type="checkbox"/>		5 days*			4/22/2022	<input type="checkbox"/>
024A	E-7-0.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 14:35	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)			<input type="checkbox"/>	<input type="checkbox"/>		5 days*			4/22/2022	<input type="checkbox"/>
027A	E-8-0.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 14:15	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)			<input type="checkbox"/>	<input type="checkbox"/>		5 days*			4/22/2022	<input type="checkbox"/>
028A	E-8-1.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 14:16	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)			<input type="checkbox"/>	<input type="checkbox"/>		5 days*			4/22/2022	<input type="checkbox"/>

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

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### WORK ORDER SUMMARY

**Client Name:** LANGAN  
**Client Contact:** Peter Cusack  
**Contact's Email** pcusack@Langan.com

**Project:** 770681001; Hunters Point Block 54  
**Comments:** STLCs & TCLPs added 4/13/22 STAT.

**Work Order:** 2203L27  
**QC Level:** LEVEL 2  
**Date Logged:** 4/1/2022  
**Date Add-On:** 4/13/2022

LabID	ClientSampID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	SubOut
033A	E-9-0.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:50	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)						5 days*	4/22/2022			
034A	E-9-1.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:51	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)						5 days*	4/22/2022			
037A	E-9-7.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 13:54	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)						5 days*	4/22/2022			
039A	E-10-0.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:05	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)						5 days*	4/22/2022			
041A	E-10-3.0	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:07	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)						5 days*	4/22/2022			
044A	E-10-10.0	Soil	SW6020 (Chromium) (STLC)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:10	5 days*	4/22/2022		<input type="checkbox"/>	0
045A	E-11-0.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:30	5 days*	4/22/2022		<input type="checkbox"/>	0
			SW6020 (Chromium) (TCLP)						5 days*	4/22/2022			
046A	E-11-1.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel>	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:31	5 days*	4/22/2022		<input type="checkbox"/>	0

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

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### WORK ORDER SUMMARY

**Client Name:** LANGAN  
**Client Contact:** Peter Cusack  
**Contact's Email** pcusack@Langan.com

**Project:** 770681001; Hunters Point Block 54  
**Comments:** STLCs & TCLPs added 4/13/22 STAT.

**Work Order:** 2203L27  
**QC Level:** LEVEL 2  
**Date Logged:** 4/1/2022  
**Date Add-On:** 4/13/2022

LabID	ClientSampID	Matrix	Test Name	Containers /Composites	Bottle & Preservative	Head Space	Dry-Weight	Collection Date & Time	TAT	Test Due Date	Sediment Content	Hold	SubOut
046A	E-11-1.5	Soil	SW6020 (Chromium) (TCLP)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:31	5 days*	4/22/2022		<input type="checkbox"/>	0
048A	E-11-5.0	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel> SW6020 (Chromium) (TCLP)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:33	5 days*	4/22/2022		<input type="checkbox"/>	0
						<input type="checkbox"/>	<input type="checkbox"/>		5 days*	4/22/2022		<input type="checkbox"/>	0
051A	E-12-0.5	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel> SW6020 (Chromium) (TCLP)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:50	5 days*	4/22/2022		<input type="checkbox"/>	0
						<input type="checkbox"/>	<input type="checkbox"/>		5 days*	4/22/2022		<input type="checkbox"/>	0
053A	E-12-3.0	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel> SW6020 (Chromium) (TCLP)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:52	5 days*	4/22/2022		<input type="checkbox"/>	0
						<input type="checkbox"/>	<input type="checkbox"/>		5 days*	4/22/2022		<input type="checkbox"/>	0
056A	E-12-10.0	Soil	SW6020 (Metals) (STLC) <Chromium, Nickel> SW6020 (Chromium) (TCLP)	1	Stainless Steel tube 2"x6"	<input type="checkbox"/>	<input type="checkbox"/>	3/29/2022 15:55	5 days*	4/22/2022		<input type="checkbox"/>	0
						<input type="checkbox"/>	<input type="checkbox"/>		5 days*	4/22/2022		<input type="checkbox"/>	0

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15757

# LANGAN

## CHAIN OF CUSTODY RECORD

- 135 Main Street, Suite 1500, San Francisco, CA 94105
- 501 14th Street, Third Floor, Oakland, CA 94612
- 3320 Data Drive, Suite 350, Rancho Cordova, CA 95670-7982
- 1 Almaden Boulevard, Suite 590, San Jose, CA 95113

Site Name: Hunters Point Blk 54  
 Job Number: 770681001  
 Project Manager/Contact: Peter Cusack, Daniel Wood  
 Samplers: Daniel Wood  
 Recorder (Signature Required): [Signature]

Turnaround Time  
Standard

Field Sample Identification No.	Date	Time	Lab Sample No.	Matrix				No. Containers & Preservative				Analysis Requested										Remarks				
				Soil	Water	Air	Other	HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	Ice	TPH (G, D, mo)	VOCs	SVOCs	OCs	PCBs	CAM 17	LUFT 5	CARB 435	PH	Cyanide		Sulfides	STLCCr, Ni	Silica gel clean-up	Hold
E-1-0.5	3-29-22	0945		X									X	X	X	X	X	X	X	X	X	X	X	X	X	
E-1-1.5		0946																							X	
E-1-3.0		0947											X	X	X		X	X	X	X	X	X	X	X	X	X
E-1-5.0		1150																							X	
E-2-0.5		<del>1072</del>											X		X	X										
E-2-1.5		1115											X	X	X		X							X	X	
E-2-3.0		1116																							X	
E-2-5.0		1117																							X	
E-3-0.5		1130											X		X	X								X	X	
E-3-1.5		1131																							X	
E-3-3.0		1132											X			X	X							X	X	
E-3-5.0		1133																							X	
E-4-0.5		1205											X		X	X								X	X	
E-4-1.5		1206											X	X	X		X							X	X	

Relinquished by: (Signature) <u>[Signature]</u>	Date: 3-31-22	Time <del>1135</del> 1135	Received by: (Signature) <u>MOORE</u>	Date 3/31/22	Time 1135
Relinquished by: (Signature) <u>[Signature]</u>	Date: 3/31/22	Time 1315	Received by: (Signature) <u>[Signature]</u>	Date 3/31/2022	Time 1315
Relinquished by: (Signature)	Date:	Time	Received by Lab: (Signature)	Date	Time

Sent to Laboratory (Name):	Method of Shipment	<input type="checkbox"/> Lab courier	<input type="checkbox"/> Fed Ex	<input type="checkbox"/> Airborne	<input type="checkbox"/> UPS
Laboratory Comments/Notes: <b>Added 4/13/22 STAT</b>	<input type="checkbox"/> Hand Carried	<input type="checkbox"/> Private Courier (Co. Name)			

White Copy - Original      Yellow Copy - Laboratory      Pink Copy - Field      COC Number:

2.20 WEA



# LANGAN

## CHAIN OF CUSTODY RECORD

- 135 Main Street, Suite 1500, San Francisco, CA 94105
- 501 14th Street, Third Floor, Oakland, CA 94612
- 3320 Data Drive, Suite 350, Rancho Cordova, CA 95670-7982
- 1 Almaden Boulevard, Suite 590, San Jose, CA 95113

Site Name: Hunters Point Block 54  
 Job Number: 770681001  
 Project Manager/Contact: Peter Cusyle, Daniel Wood  
 Samplers: Daniel Wood  
 Recorder (Signature Required): [Signature]

Turnaround  
Time  
Standard

Field Sample Identification No.	Date	Time	Lab Sample No.	Matrix				No. Containers & Preservative				Analysis Requested										Remarks				
				Soil	Water	Air	Other	HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	Ice	TPH (G,D,M)	VOCs	SVOCs	OCs	PCBs	CAM 17	LUFTS	CARB 435	PH	Cyanide		Sulfides	STL Cr. Ni	Silica gel clean-up	Hold
E-4-3.0	3-29-22	1207		X									X												X	
E-4-5.0		1208																							X	
E-5-0.5		1305											X		X	X	X						X		X	
E-5-1.5		1306																						X		
E-5-3.0		1307											X	X			X	X					X		X	
E-6-0.5		1325											X	X	X	X	X	X					X		X	
E-6-1.5		1326																						X		
E-6-3.0		1327																						X		
E-6-5.0		1328											X			X	X						X		X	
E-7-0.5		1435											X	X	X	X	X	X					X		X	
E-7-1.5		1436																						X		
E-7-3.0		1437											X	X	X		X	X								
E-8-0.5		1415											X		X	X	X						X		X	
E-8-1.5		1416											X	X	X		X						X		X	
Relinquished by: (Signature) <u>[Signature]</u>				Date: <u>3-31-22</u>	Time: <u>1135</u>				Received by: (Signature) <u>[Signature]</u>				Date: <u>3/31/22</u>	Time: <u>1135</u>												
Relinquished by: (Signature) <u>[Signature]</u>				Date: <u>3/31/22</u>	Time: <u>1315</u>				Received by: (Signature) <u>[Signature]</u>				Date: <u>3/31/2022</u>	Time: <u>1315</u>												
Relinquished by: (Signature) _____				Date: _____	Time: _____				Received by Lab: (Signature) _____				Date: _____	Time: _____												
Sent to Laboratory (Name): _____								Method of Shipment <input type="checkbox"/> Lab courier <input type="checkbox"/> Fed Ex <input type="checkbox"/> Airborne <input type="checkbox"/> UPS																		
Laboratory Comments/Notes: _____								<input type="checkbox"/> Hand Carried <input type="checkbox"/> Private Courier (Co. Name) _____																		

**LANGAN**

**CHAIN OF CUSTODY RECORD**

- 135 Main Street, Suite 1500, San Francisco, CA 94105
- 501 14th Street, Third Floor, Oakland, CA 94612
- 3320 Data Drive, Suite 350, Rancho Cordova, CA 95670-7982
- 1 Almaden Boulevard, Suite 590, San Jose, CA 95113

Site Name: Hunter's Point Block 54  
 Job Number: 770681001  
 Project Manager/Contact: Peter Cusack, Daniel Wost  
 Samplers: Daniel Wost  
 Recorder (Signature Required): [Signature]

**Turnaround Time**  
Standard

Field Sample Identification No.	Date	Time	Lab Sample No.	Matrix				No. Containers & Preservative				Analysis Requested										Remarks								
				Soil	Water	Air	Other	HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	Ice	TPH (G.P., Mo)	VOCs	SVOCs	OCPCs	PCBs	CAM17	LUF 5	CARB 435	PH	Cyanic		Sulfides	STL Cr. Ni	Silica gel clean-up	Hold	TECP Cr			
E-8-3.0	3-29-22	1417		X																										
E-8-5.0		1418																												
E-8-7.5		1419																												
E-8-10.0		1420																												
E-9-0.5		1350																				X				X				
E-9-1.5		1351																				X				X				
E-9-3.0		1352																				X				X				
E-9-5.0		1353																				X				X				
E-9-7.5		1354																				X				X				
E-9-10.0		1355																				X				X				
E-10-0.5		1505																				X				X				
E-10-1.5		1506																				X				X				
E-10-3.0		1507																				X				X				
E-10-5.0		1508																				X				X				
Relinquished by: (Signature)				Date:		Time		Received by: (Signature)				Date		Time																
<u>[Signature]</u>				3-31-22		1135		<u>[Signature]</u>				3/31		1135																
Relinquished by: (Signature)				Date:		Time		Received by: (Signature)				Date		Time																
<u>[Signature]</u>				3/31/22		1315		<u>[Signature]</u>				3/31/2022		1315																
Relinquished by: (Signature)				Date:		Time		Received by Lab: (Signature)				Date		Time																
<u>[Signature]</u>								<u>[Signature]</u>																						
Sent to Laboratory (Name):								Method of Shipment																						
Laboratory Comments/Notes:								<input type="checkbox"/> Lab courier <input type="checkbox"/> Fed Ex <input type="checkbox"/> Airborne <input type="checkbox"/> UPS <input type="checkbox"/> Hand Carried <input type="checkbox"/> Private Courier (Co. Name)																						



# LANGAN

## CHAIN OF CUSTODY RECORD

- 135 Main Street, Suite 1500, San Francisco, CA 94105
- 501 14th Street, Third Floor, Oakland, CA 94612
- 3320 Data Drive, Suite 350, Rancho Cordova, CA 95670-7982
- 1 Almaden Boulevard, Suite 590, San Jose, CA 95113

Site Name: Hunters Point Block 54  
 Job Number: 7706&1001  
 Project Manager/Contact: Peter Cosyck, Daniel Wood  
 Samplers: Daniel Wood  
 Recorder (Signature Required): [Signature]

Turnaround Time  
Standard

Field Sample Identification No.	Date	Time	Lab Sample No.	Matrix & Preservative											Analysis Requested					Remarks					
				Soil	Water	Air	Other	HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	Ice	TPH (G,P,M)	VOCs	SVOCs	OCPr	PCBs	CAM 17	LUFF S	CARB 435		PH	Cyanide	Sulfides	STLC Cr	Silica-geotextiles
E-10-7.5	3-29-22	1509		X									X										X		
E-10-10.0		1510											X									X			
E-11-0.5		1530											X		X	X						X	X	X	
E-11-1.5		1531											X	X	X							X	X	X	
E-11-3.0		1532																					X		
E-11-5.0		1533											X									X	X	X	
E-11-7.5		1534																					X		
E-11-10.0		1535																					X		
E-12-0.5		1550											X		X	X						X	X	X	
E-12-7.5		1551																					X		
E-12-3.0		1552											X	X	X							X	X	X	
E-12-5.0		1553																					X		
E-12-7.5		1554																					X		
E-12-10.0		1555											X			X	X					X	X	X	
Relinquished by: (Signature)			Date:		Time		Received by: (Signature)			Date		Time													
<u>[Signature]</u>			3-31-22		1135		<u>[Signature]</u>			5/31		1135													
Relinquished by: (Signature)			Date:		Time		Received by: (Signature)			Date		Time													
<u>[Signature]</u>			3/31/22		1315		<u>[Signature]</u>			3/31/2022		1315													
Relinquished by: (Signature)			Date:		Time		Received by Lab: (Signature)			Date		Time													
<u>[Signature]</u>							<u>[Signature]</u>																		
Sent to Laboratory (Name):							Method of Shipment																		
Laboratory Comments/Notes:							<input type="checkbox"/> Lab courier <input type="checkbox"/> Fed Ex <input type="checkbox"/> Airborne <input type="checkbox"/> UPS <input type="checkbox"/> Hand Carried <input type="checkbox"/> Private Courier (Co. Name)																		

White Copy - Original

Yellow Copy - Laboratory

Pink Copy - Field

COC Number:



## ANALYTICAL REPORT

Eurofins Seattle  
5755 8th Street East  
Tacoma, WA 98424  
Tel: (253)922-2310

Laboratory Job ID: 580-112355-1  
Client Project/Site: 2203L27

For:  
McCampbell Analytical, Inc.  
1534 Willow Pass Road  
Pittsburg, California 94565

Attn: Sub Data



*Authorized for release by:  
4/18/2022 2:48:59 PM*

Pauline Matlock, Project Manager  
(253)922-2310  
[Pauline.Matlock@et.eurofinsus.com](mailto:Pauline.Matlock@et.eurofinsus.com)

### LINKS

Review your project  
results through  
**Total Access**

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[www.eurofinsus.com/Env](http://www.eurofinsus.com/Env)

*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*



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# Case Narrative

Client: McCampbell Analytical, Inc.  
Project/Site: 2203L27

Job ID: 580-112355-1

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**Job ID: 580-112355-1**

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**Laboratory: Eurofins Seattle**

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**Narrative**

**Job Narrative**  
**580-112355-1**

**Comments**

No additional comments.

**Receipt**

The samples were received on 4/7/2022 9:50 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 6.6° C.

**General Chemistry**

Method 9012B: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 580-387118 and 580-387133 and analytical batch 580-387225 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



# Definitions/Glossary

Client: McCampbell Analytical, Inc.  
Project/Site: 2203L27

Job ID: 580-112355-1

## Qualifiers

### General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Client Sample Results

Client: McCampbell Analytical, Inc.  
Project/Site: 2203L27

Job ID: 580-112355-1

**Client Sample ID: E-1-3.0**  
**Date Collected: 03/29/22 09:47**  
**Date Received: 04/07/22 09:50**

**Lab Sample ID: 580-112355-1**  
**Matrix: Solid**

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND	F1	1.9	0.48	mg/Kg		04/11/22 17:34	04/11/22 17:34	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

# Client Sample Results

Client: McCampbell Analytical, Inc.  
Project/Site: 2203L27

Job ID: 580-112355-1

**Client Sample ID: E-10-3.0**  
**Date Collected: 03/29/22 15:07**  
**Date Received: 04/07/22 09:50**

**Lab Sample ID: 580-112355-2**  
**Matrix: Solid**

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		2.0	0.50	mg/Kg		04/11/22 17:34	04/11/22 17:34	1

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

# QC Sample Results

Client: McCampbell Analytical, Inc.  
Project/Site: 2203L27

Job ID: 580-112355-1

## Method: 9012B - Cyanide, Total and/or Amenable

**Lab Sample ID: MB 580-387118/1-B**  
**Matrix: Solid**  
**Analysis Batch: 387225**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 387133**

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		2.0	0.51	mg/Kg		04/11/22 17:34	04/11/22 17:34	1

**Lab Sample ID: LCS 580-387118/2-B**  
**Matrix: Solid**  
**Analysis Batch: 387225**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 387133**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	6.01	5.31		mg/Kg		88	80 - 120

**Lab Sample ID: LCSD 580-387118/3-B**  
**Matrix: Solid**  
**Analysis Batch: 387225**

**Client Sample ID: Lab Control Sample Dup**  
**Prep Type: Total/NA**  
**Prep Batch: 387133**

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Cyanide, Total	6.01	5.75		mg/Kg		96	80 - 120	8	20

**Lab Sample ID: 580-112355-1 MS**  
**Matrix: Solid**  
**Analysis Batch: 387225**

**Client Sample ID: E-1-3.0**  
**Prep Type: Total/NA**  
**Prep Batch: 387133**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Cyanide, Total	ND	F1	5.74	4.26	F1	mg/Kg		74	80 - 120

**Lab Sample ID: 580-112355-1 MSD**  
**Matrix: Solid**  
**Analysis Batch: 387225**

**Client Sample ID: E-1-3.0**  
**Prep Type: Total/NA**  
**Prep Batch: 387133**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	Limit
Cyanide, Total	ND	F1	5.34	3.60	F1	mg/Kg		67	80 - 120	17	20

**Lab Sample ID: 580-112355-1 DU**  
**Matrix: Solid**  
**Analysis Batch: 387225**

**Client Sample ID: E-1-3.0**  
**Prep Type: Total/NA**  
**Prep Batch: 387133**

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Cyanide, Total	ND	F1	ND		mg/Kg		NC	20

# Lab Chronicle

Client: McCampbell Analytical, Inc.  
Project/Site: 2203L27

Job ID: 580-112355-1

**Client Sample ID: E-1-3.0**

**Date Collected: 03/29/22 09:47**

**Date Received: 04/07/22 09:50**

**Lab Sample ID: 580-112355-1**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	9013			387118	04/11/22 17:34	R1K	FGS SEA
Total/NA	Prep	9012B			387133	04/11/22 17:34	R1K	FGS SEA
Total/NA	Analysis	9012B		1	387225	04/11/22 17:34	R1K	FGS SEA

**Client Sample ID: E-10-3.0**

**Date Collected: 03/29/22 15:07**

**Date Received: 04/07/22 09:50**

**Lab Sample ID: 580-112355-2**

**Matrix: Solid**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	9013			387118	04/11/22 17:34	R1K	FGS SEA
Total/NA	Prep	9012B			387133	04/11/22 17:34	R1K	FGS SEA
Total/NA	Analysis	9012B		1	387225	04/11/22 17:34	R1K	FGS SEA

**Laboratory References:**

FGS SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310



# Accreditation/Certification Summary

Client: McCampbell Analytical, Inc.  
Project/Site: 2203L27

Job ID: 580-112355-1

## Laboratory: Eurofins Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
California	State	2954	07-07-22

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte
9012B	9012B	Solid	Cyanide, Total
Washington		State	C788
			07-13-22



# Sample Summary

Client: McCampbell Analytical, Inc.  
Project/Site: 2203L27

Job ID: 580-112355-1

---

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-112355-1	E-1-3.0	Solid	03/29/22 09:47	04/07/22 09:50
580-112355-2	E-10-3.0	Solid	03/29/22 15:07	04/07/22 09:50

1

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1534 Willow Pass Rd  
 Pittsburg, CA 94565-1701  
 Phone: (925) 252-9262  
 Fax: (925) 252-9269

WorkOrder: 2203L27

ClientCode: TRSJ

EDF: NO

J-flag

**Subcontractor:**

Eurofins TestAmerica  
 5755 8th Street East  
 Tacoma, WA 98424

TEL: (949) 333-9055  
 FAX:  
 ProjectNo: Hunters Point Block 54  
 Acct #:

Date Received: 04/01/2022

Lab ID	Client ID	Matrix	Collection Date	TAT	Requested Tests (see Legend below)								
					1	2	3	4	5	6	7	8	
2203L27-003A	E-1-3.0	Soil	3/29/2022 9:47	STD	1								
2203L27-041A	E-10-3.0	Soil	3/29/2022 15:07	STD	1								

PLEASE ANALYZE FOR total cyanide By method 9012 ON A STANDARD TAT.



580-112355 Chain of Custody

Test Legend:

1	CN_S	2		3		4	
5		6		7		8	

Comments: **PLEASE USE 'CLIENT ID' AS THE SAMPLE ID AND EMAIL ASAP!**

Therm. ID: 1R8 Cor: 6.6° Unc: 6.8°  
 Cooler Dsc: STRO  
 Packing: Bub FedEx:  
 Cust. Seal: Yes No UPS: NDA  
 Blue Ice: Wet, Dry, None Lab Cour:  
 Other:

Please email results to Agustina Venegas at subdata@mccampbell.com upon completion.

Relinquished by: <i>Agustina V.</i>	Date/Time: 4/4/2022	Received by: <i>AM</i>	Date/Time: 4/7/22 0950
Relinquished by:	Date/Time:	Received by:	Date/Time:

## Login Sample Receipt Checklist

Client: McCampbell Analytical, Inc.

Job Number: 580-112355-1

**Login Number: 112355**

**List Number: 1**

**Creator: Vallelunga, Diana L**

**List Source: Eurofins Seattle**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

**APPENDIX C**  
**RADIOLOGICAL LABORATORY ANALYTICAL REPORTS**

## ANALYTICAL REPORT

Eurofins St. Louis  
13715 Rider Trail North  
Earth City, MO 63045  
Tel: (314)298-8566

Laboratory Job ID: 160-45061-1  
Client Project/Site: HPNS Block 54

**For:**

Langan Engineering & Environmental Svcs  
1 Almaden Boulevard  
Suite 590  
San Jose, California 95113

Attn: Peter Cusack



*Authorized for release by:*  
6/8/2022 5:01:31 PM

Jayna Awalt, Project Manager II  
(314)298-8566  
[Jayna.Awalt@et.eurofinsus.com](mailto:Jayna.Awalt@et.eurofinsus.com)

### LINKS

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results through



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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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# Case Narrative

Client: Langan Engineering & Environmental Svcs  
Project/Site: HPNS Block 54

Job ID: 160-45061-1

**Job ID: 160-45061-1**

**Laboratory: Eurofins St. Louis**

**Narrative**

## CASE NARRATIVE

**Client: Langan Engineering & Environmental Services**

**Project: HPNS Block 54**

**Report Number: 160-45061-1**

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition, all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Eurofins TestAmerica attests to the validity of the laboratory data generated by Eurofins TestAmerica facilities reported herein. All analyses performed by Eurofins TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. Eurofins TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

All soil/sediment sample results for radiochemistry analyses are based upon sample as dried and disaggregated with the exception of tritium, carbon-14, and iodine-129 by gamma spectroscopy unless requested as wet weight by the client.

Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

The matrix for the Method Blank and LCS/LCSD is as close to the samples as can be reasonably achieved. Detailed information can be found in the most current revision of the associated SOP.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

Reference the chain of custody and condition upon receipt report for any variations on receipt conditions and temperature of samples on receipt.

ROIs were performed only when necessary and are in compliance with the laboratory's standard operating procedure. Detailed information can be found in the raw data section of the level IV report.

This laboratory report is confidential and is intended for the sole use of Eurofins TestAmerica and its client.

### **RECEIPT**

The samples were received on 5/9/2022 2:10 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved. The temperatures of the 3 coolers at receipt time were 17.3° C, 18.1° C and 26.6° C.



# Case Narrative

Client: Langan Engineering & Environmental Svcs  
Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Job ID: 160-45061-1 (Continued)

### Laboratory: Eurofins St. Louis (Continued)

#### ISOTOPIC PLUTONIUM (ALPHA SPECTROMETRY)

Samples E-1-0.5 (160-45061-1), E-1-1.5 (160-45061-2), E-2-0.5 (160-45061-3), E-3-0.5 (160-45061-4), E-4-0.5 (160-45061-5), E-4-1.5 (160-45061-6), E-5-0.5 (160-45061-7), E-5-1.5 (160-45061-8), E-6-0.5 (160-45061-9), E-6-1.5 (160-45061-10), E-7-0.5 (160-45061-11), E-7-3.0 (160-45061-12), E-8-1.5 (160-45061-13), E-8-5.0 (160-45061-14), E-9-0.5 (160-45061-15), E-9-1.5 (160-45061-16), E-10-1.5 (160-45061-17), E-10-5.0 (160-45061-18), E-11-1.5 (160-45061-19), E-11-5.0 (160-45061-20), E-12-1.5 (160-45061-21) and E-12-3.0 (160-45061-22) were analyzed for Isotopic Plutonium (Alpha Spectrometry) in accordance with A-01-R. The samples were dried on 05/09/2022, prepared on 05/12/2022 and 05/13/2022 and analyzed on 05/26/2022, 05/27/2022, 05/31/2022 and 06/01/2022.

The following samples were prepared at a reduced aliquot due to matrix interference: E-1-0.5 (160-45061-1), E-1-1.5 (160-45061-2), E-2-0.5 (160-45061-3), E-3-0.5 (160-45061-4), E-4-0.5 (160-45061-5), E-4-1.5 (160-45061-6), E-5-0.5 (160-45061-7), E-5-1.5 (160-45061-8), E-6-0.5 (160-45061-9), E-6-1.5 (160-45061-10), E-7-0.5 (160-45061-11), E-7-3.0 (160-45061-12), E-8-1.5 (160-45061-13), E-8-5.0 (160-45061-14), E-9-0.5 (160-45061-15), E-9-1.5 (160-45061-16), E-10-1.5 (160-45061-17) and E-10-5.0 (160-45061-18), E-11-1.5 (160-45061-19), E-11-5.0 (160-45061-20), E-12-1.5 (160-45061-21) and E-12-3.0 (160-45061-22).

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### ISOTOPIC THORIUM (ALPHA SPECTROMETRY)

Samples E-1-0.5 (160-45061-1), E-1-1.5 (160-45061-2), E-2-0.5 (160-45061-3), E-3-0.5 (160-45061-4), E-4-0.5 (160-45061-5), E-4-1.5 (160-45061-6), E-5-0.5 (160-45061-7), E-5-1.5 (160-45061-8), E-6-0.5 (160-45061-9), E-6-1.5 (160-45061-10), E-7-0.5 (160-45061-11), E-7-3.0 (160-45061-12), E-8-1.5 (160-45061-13), E-8-5.0 (160-45061-14), E-9-0.5 (160-45061-15), E-9-1.5 (160-45061-16), E-10-1.5 (160-45061-17), E-10-5.0 (160-45061-18), E-11-1.5 (160-45061-19), E-11-5.0 (160-45061-20), E-12-1.5 (160-45061-21) and E-12-3.0 (160-45061-22) were analyzed for Isotopic Thorium (Alpha Spectrometry) in accordance with DOE A01R\_Th. The samples were dried on 05/09/2022, prepared on 05/12/2022 and 05/13/2022 and analyzed on 06/01/2022 and 06/02/2022.

A blank population correction was applied to account for contributions to the analyte count rate from sources other than the sample itself. Interferences may include, but are not limited to, impurities in reagents, tracers, or glassware, or effects due to the measurement process (such as tailing).

The following samples were prepared at a reduced aliquot due to matrix interference: E-1-0.5 (160-45061-1), E-1-1.5 (160-45061-2), E-2-0.5 (160-45061-3), E-3-0.5 (160-45061-4), E-4-0.5 (160-45061-5), E-4-1.5 (160-45061-6), E-5-0.5 (160-45061-7), E-5-1.5 (160-45061-8), E-6-0.5 (160-45061-9), E-6-1.5 (160-45061-10), E-7-0.5 (160-45061-11), E-7-3.0 (160-45061-12), E-8-1.5 (160-45061-13), E-8-5.0 (160-45061-14), E-9-0.5 (160-45061-15), E-9-1.5 (160-45061-16), E-10-1.5 (160-45061-17) and E-10-5.0 (160-45061-18), E-11-1.5 (160-45061-19), E-11-5.0 (160-45061-20), E-12-1.5 (160-45061-21) and E-12-3.0 (160-45061-22).

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### ISOTOPIC URANIUM (ALPHA SPECTROMETRY)

Samples E-1-0.5 (160-45061-1), E-1-1.5 (160-45061-2), E-2-0.5 (160-45061-3), E-3-0.5 (160-45061-4), E-4-0.5 (160-45061-5), E-4-1.5 (160-45061-6), E-5-0.5 (160-45061-7), E-5-1.5 (160-45061-8), E-6-0.5 (160-45061-9), E-6-1.5 (160-45061-10), E-7-0.5 (160-45061-11), E-7-3.0 (160-45061-12), E-8-1.5 (160-45061-13), E-8-5.0 (160-45061-14), E-9-0.5 (160-45061-15), E-9-1.5 (160-45061-16), E-10-1.5 (160-45061-17), E-10-5.0 (160-45061-18), E-11-1.5 (160-45061-19), E-11-5.0 (160-45061-20), E-12-1.5 (160-45061-21) and E-12-3.0 (160-45061-22) were analyzed for Isotopic Uranium (Alpha Spectrometry) in accordance with DOE. The samples were dried on 05/09/2022, prepared on 05/12/2022 and 05/13/2022 and analyzed on 05/24/2022, 05/25/2022 and 05/26/2022.

The following samples were prepared at a reduced aliquot due to matrix interference: E-1-0.5 (160-45061-1), E-1-1.5 (160-45061-2), E-2-0.5 (160-45061-3), E-3-0.5 (160-45061-4), E-4-0.5 (160-45061-5), E-4-1.5 (160-45061-6), E-5-0.5 (160-45061-7), E-5-1.5 (160-45061-8), E-6-0.5 (160-45061-9), E-6-1.5 (160-45061-10), E-7-0.5 (160-45061-11), E-7-3.0 (160-45061-12), E-8-1.5 (160-45061-13), E-8-5.0 (160-45061-14), E-9-0.5 (160-45061-15), E-9-1.5 (160-45061-16), E-10-1.5 (160-45061-17) and E-10-5.0 (160-45061-18), E-11-1.5 (160-45061-19), E-11-5.0 (160-45061-20), E-12-1.5 (160-45061-21) and E-12-3.0 (160-45061-22).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

#### RADIUM-226 BY GAMMA SPEC (21 DAY INGROWTH)

Samples E-1-0.5 (160-45061-1), E-1-1.5 (160-45061-2), E-2-0.5 (160-45061-3), E-3-0.5 (160-45061-4), E-4-0.5 (160-45061-5), E-4-1.5 (160-45061-6), E-5-0.5 (160-45061-7), E-5-1.5 (160-45061-8), E-6-0.5 (160-45061-9), E-6-1.5 (160-45061-10), E-7-0.5 (160-45061-11),

# Case Narrative

Client: Langan Engineering & Environmental Svcs  
Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Job ID: 160-45061-1 (Continued)

### Laboratory: Eurofins St. Louis (Continued)

E-7-3.0 (160-45061-12), E-8-1.5 (160-45061-13), E-8-5.0 (160-45061-14), E-9-0.5 (160-45061-15), E-9-1.5 (160-45061-16), E-10-1.5 (160-45061-17), E-10-5.0 (160-45061-18), E-11-1.5 (160-45061-19), E-11-5.0 (160-45061-20), E-12-1.5 (160-45061-21) and E-12-3.0 (160-45061-22) were analyzed for Radium-226 by gamma spec (21 day ingrowth) in accordance with EPA GA\_01\_R. The samples were dried on 05/09/2022, prepared on 05/13/2022 and analyzed on 06/03/2022, 06/06/2022 and 06/07/2022.

Many isotopes requested for analysis do not have any gamma emissions, or the gamma emissions they do have are very poor. Often, such analytes are reported by gamma spectrometry assuming secular equilibrium with a longer-lived parent. The client should ensure that such inference is acceptable for their sample based upon process knowledge. The following assumptions were made for this report:

Inferred from	Reported to Analyte
Th-234	Pa-234
Th-234	U-238
Pb-210	Po-210
Pb-210	Bi-210
Cs-137	Ba-137m
Pb-212	Po-216
Xe-131m	Xe-131
Sb-125	Te-125m
Ag-108m	Ag-108
Rh-106	Ru-106
Pb-212	Th-228
Pb-212	Ra-224
U-235	Th-231
Ac-228	Th-232
Ac-228	Ra-228
Th-227	Ra-223
Th-227	Ac-227
Th-227	Bi-211
Th-227	Pb-211
Bi-214	Ra-226

The cesium-137 detection goal of 0.0700 pCi/g was not met. This is caused by statistical fluctuations in the Compton background due to low level activity in the samples in conjunction with the software attempting to fit a peak into the noise of this baseline.  
E-10-5.0 (160-45061-18)

The MB z-score for Ra-226 does not meet QC criteria. However, the activity for Co-60 in the MB was less than the DLC. Results are reported with this narrative. (MB 160-565417/1-A)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

### **STRONTIUM TOTAL BY EICHROM (GFPC)**

Samples E-1-0.5 (160-45061-1), E-1-1.5 (160-45061-2), E-2-0.5 (160-45061-3), E-3-0.5 (160-45061-4), E-4-0.5 (160-45061-5), E-4-1.5 (160-45061-6), E-5-0.5 (160-45061-7), E-5-1.5 (160-45061-8), E-6-0.5 (160-45061-9), E-6-1.5 (160-45061-10), E-7-0.5 (160-45061-11), E-7-3.0 (160-45061-12), E-8-1.5 (160-45061-13), E-8-5.0 (160-45061-14), E-9-0.5 (160-45061-15), E-9-1.5 (160-45061-16), E-10-1.5 (160-45061-17), E-10-5.0 (160-45061-18), E-11-1.5 (160-45061-19), E-11-5.0 (160-45061-20), E-12-1.5 (160-45061-21) and E-12-3.0 (160-45061-22) were analyzed for Strontium Total by Eichrom (GFPC) in accordance with ST-RC-0058. The samples were dried on 05/09/2022, prepared on 05/11/2022 and 05/16/2022 and analyzed on 05/22/2022 and 06/03/2022.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

# Case Narrative

Client: Langan Engineering & Environmental Svcs  
Project/Site: HPNS Block 54

Job ID: 160-45061-1

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**Job ID: 160-45061-1 (Continued)**

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**Laboratory: Eurofins St. Louis (Continued)**

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# CHAIN OF CUSTODY RECORD

# LANGAN

- 135 Main Street, Suite 1500, San Francisco, CA 94105
- 501 14th Street, Third Floor, Oakland, CA 94612
- 3320 Data Drive, Suite 350, Rancho Cordova, CA 95670-7982
- 1 Almaden Boulevard, Suite 590, San Jose, CA 95113

Site Name: Hunters Point Blk 54  
 Job Number: 770681001  
 Project Manager/Contact: Peter Cusack, Daniel Wood  
 Samplers: Daniel Wood  
 Recorder (Signature Required): [Signature]

Turnaround Time  
Standard

Field Sample Identification No.	Date	Time	Lab Sample No.	Matrix			No. Containers & Preservative				Analysis Requested	Hold	Remarks	
				Soil	Water	Air	Other	HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>				Ice
E-1-0.5	3-24-22	0945		X										★ = U-235/236, Pu-239, Th-232
E-1-1.5		0946												★ ★ = Total Beta Sr-90 by GFPC.
E-2-0.5		1032												★ ★ ★ = Am-241, Cs-137, Ra-226 - No Cs-60 Analysis needed.
E-3-0.5		1130												
E-4-0.5		1205												
E-4-1.5		1206												
E-5-0.5		1305												
E-5-1.5		1306												
E-6-0.5		1725												
E-6-1.5		1326												
E-7-0.5		1435												
E-7-3.0		1437												
E-8-1.5		1416												
E-8-5.0		1418												
Relinquished by: (Signature) <u>[Signature]</u>				Date:	4-1-22	Time:	1330	Received by: (Signature) <u>[Signature]</u>						
Relinquished by: (Signature) <b>FED EX</b>				Date:		Time:		Received by: (Signature) <u>[Signature]</u>						
Relinquished by: (Signature)				Date:		Time:		Received by: (Signature) <u>[Signature]</u>						
Sent to Laboratory (Name): _____												Method of Shipment: <input type="checkbox"/> Hand Carried <input type="checkbox"/> Private Courier (Co. Name) _____ <input type="checkbox"/> Lab courier <input type="checkbox"/> Fed Ex <input type="checkbox"/> Airborne <input type="checkbox"/> UPS		
Laboratory Comments/Notes:												Date: APR 06 2022 Time: 1310		



White Copy - Original      Yellow Copy - Laboratory      Pink Copy - Field      COC Number: \_\_\_\_\_



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 3320 Data Drive, Suite 350, Rancho Cordova, CA 95670-7982  
 1 Almaden Boulevard, Suite 590, San Jose, CA 95113

Site Name: Hunters Point Block 54

Job Number: 770681001

Project Manager/Contact: Peter Cusack, Daniel Wood

Samplers: Daniel Wood

Recorder (Signature Required): [Signature]

Turnaround Time  
5-7 business days

Field Sample Identification No.	Date	Time	Lab Sample No.	Matrix							Soil	Analysis Requested	Hold	Remarks		
				Water	Air	Other	HCL	H <sub>2</sub> O <sub>4</sub>	HNO <sub>3</sub>	Ice					No. Containers & Preservative	
E-9-0.5	3-24-22	1350		X								X	Alpha Spec			X = V-235/236, 160-239, Th-232
E-9-1.5		1357		X								X	Beta Spec			
E-10-1.5		1506		X								X				X = Total Beta Sr-90 by GFPC.
E-10-5.0		1508		X								X				
E-11-1.5		1537		X								X				
E-11-5.0		1533		X								X				
E-12-1.5		1551		X								X				
E-12-3.0		1552		X								X				X = As-241, Cs-137, Ra-226, No Co-60 Analysis needed.
Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>4-1-22</u>	Time: <u>1330</u>										Received by: (Signature) <u>FEDEX</u>	Date	Time		
Relinquished by: (Signature) <u>FEDEX</u>	Date:	Time:										Received by: (Signature) <u>[Signature]</u>	Date	Time		
Relinquished by: (Signature)	Date:	Time:										Received by: (Signature) <u>Johnson</u>	Date	Time		

Sent to Laboratory (Name): \_\_\_\_\_  
Laboratory Comments/Notes: \_\_\_\_\_

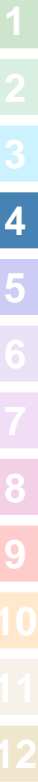
Method of Shipment  
 Hand Carried  Private Courier (Co. Name)  
 Lab courier  Fed Ex  Airborne  UPS

White Copy - Original

Yellow Copy - Laboratory

Pink Copy - Field

COC Number:



# LANGAN

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 1 Almaden Boulevard, Suite 590, San Jose, CA 95113

Turnaround Time  
1410

Analysis Requested  
 Silica gel clean-up  
 Hold

Field Sample Identification No.	Date	Time	Lab Sample No.	Matrix							No. Containers & Preservative	Remarks	
				Soil	Water	Air	Other	HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>			Ice
1-1-13	5-2-22	10:41											
1-1-13		10:46											
1-1-13		11:30											
1-1-13		12:45											
1-1-13		12:46											
1-1-13		13:03											
1-1-13		13:06											
1-1-13		13:26											
1-1-13		14:15											
1-1-13		14:37											
1-1-13		14:46											
1-1-13		14:52											



Relinquished by: (Signature) \_\_\_\_\_ Date: 4-1-22 Time: 17:30  
 Relinquished by: (Signature) Dev Date: 5-2-22 Time: 15:30  
 Relinquished by: (Signature) Fotex Date: \_\_\_\_\_ Time: \_\_\_\_\_

Received by: (Signature) \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Received by: (Signature) Fele Date: \_\_\_\_\_ Time: \_\_\_\_\_  
 Received by: (Signature) AB Date: 5/19/22 Time: 1410

Method of Shipment:  Hand Carried  Private Courier (Co. Name) \_\_\_\_\_  
 Lab courier  Fed Ex  Airborne  UPS

Sent to Laboratory (Name): \_\_\_\_\_  
 Laboratory Comments/Notes: \_\_\_\_\_

White Copy - Original      Yellow Copy - Laboratory      Pink Copy - Field      COC Number: \_\_\_\_\_





# CHAIN OF CUSTODY RECORD

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 1 Almaden Boulevard, Suite 590, San Jose, CA 95113

<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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Site Name: Hunters Point Block 54  
 Job Number: 772681001  
 Project Manager/Contact: Peter Casey, Duct Dool  
 Samplers: Duct Dool  
 Recorder (Signature Required): [Signature]

Turnaround Time  
[Signature]

Field Sample Identification No.	Date	Time	Lab Sample No.	Matrix							No. Containers & Preservative				Remarks
				Soil	Water	Air	Other	HCL	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	Ice	Hold			
E-9-05	3-24-22	1350													X V 237/486 No 239
E-9-15		1351													Th 232
E-10-15		1506													AA - 531.1 Duct 5140
E-10-50		1508													60 G.P.C.
E-11-15		1531													
E-11-50		1533													
E-12-15		1551													
E-12-30		1552													AA* An 241, 65137
															Re-246, No Co 60
															Analytical needed

Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>4-1-22</u>	Time: <u>1370</u>
Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>5-2-22</u>	Time: <u>1530</u>
Relinquished by: (Signature) <u>[Signature]</u>	Date: <u>5/9/22</u>	Time: <u>1410</u>

Sent to Laboratory (Name): \_\_\_\_\_  
 Laboratory Comments/Notes: \_\_\_\_\_

Method of Shipment:  Hand Carried  Private Courier (Co. Name)  Lab courier  Fed Ex  Airborne  UPS

White Copy - Original      Yellow Copy - Laboratory      Pink Copy - Field      COC Number: \_\_\_\_\_



# Login Sample Receipt Checklist

Client: Langan Engineering & Environmental Svcs

Job Number: 160-45061-1

**Login Number: 45061**

**List Source: Eurofins St. Louis**

**List Number: 1**

**Creator: Booker, Autumn R**

Question	Answer	Comment
Radioactivity wasn't checked or is <math>\leq</math> background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	There was insufficient volume received on 4/9 for the requested analyses.
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	Additional volume for last two samples was received on 5/6.
Multiphasic samples are not present.	True	Remaining volume was received on 5/9/22.
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	



# Definitions/Glossary

Client: Langan Engineering & Environmental Svcs  
Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Qualifiers

### Rad

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

# Method Summary

Client: Langan Engineering & Environmental Svcs  
Project/Site: HPNS Block 54

Job ID: 160-45061-1

Method	Method Description	Protocol	Laboratory
A-01-R	Isotopic Plutonium (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Thorium (Alpha Spectrometry)	DOE	TAL SL
A-01-R	Isotopic Uranium (Alpha Spectrometry)	DOE	TAL SL
GA-01-R	Radium-226 & Other Gamma Emitters (GS)	DOE	TAL SL
ST-RC-0058	Total Beta Strontium by GFPC (Extraction Chromatography)	TAL-STL	TAL SL
Dry and Grind	Preparation, Dry and Grind	None	TAL SL
ExtChrom	Preparation, Extraction Chromatography Resin Actinide Separation	None	TAL SL
ExtChrom	Preparation, Extraction Chromatography Resin, Strontium	None	TAL SL
Fill_Geo-21	Fill Geometry, 21-Day In-Growth	None	TAL SL

#### Protocol References:

DOE = U.S. Department of Energy

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

#### Laboratory References:

TAL SL = Eurofins St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

# Sample Summary

Client: Langan Engineering & Environmental Svcs  
Project/Site: HPNS Block 54

Job ID: 160-45061-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
160-45061-1	E-1-0.5	Solid	03/29/22 09:45	04/06/22 13:10
160-45061-2	E-1-1.5	Solid	03/29/22 09:46	04/06/22 13:10
160-45061-3	E-2-0.5	Solid	03/29/22 10:32	04/06/22 13:10
160-45061-4	E-3-0.5	Solid	03/29/22 11:30	04/06/22 13:10
160-45061-5	E-4-0.5	Solid	03/29/22 12:05	04/06/22 13:10
160-45061-6	E-4-1.5	Solid	03/29/22 12:06	04/06/22 13:10
160-45061-7	E-5-0.5	Solid	03/29/22 13:05	04/06/22 13:10
160-45061-8	E-5-1.5	Solid	03/29/22 13:06	04/06/22 13:10
160-45061-9	E-6-0.5	Solid	03/29/22 13:25	04/06/22 13:10
160-45061-10	E-6-1.5	Solid	03/29/22 13:26	04/06/22 13:10
160-45061-11	E-7-0.5	Solid	03/29/22 14:35	04/06/22 13:10
160-45061-12	E-7-3.0	Solid	03/29/22 14:37	04/06/22 13:10
160-45061-13	E-8-1.5	Solid	03/29/22 14:16	04/06/22 13:10
160-45061-14	E-8-5.0	Solid	03/29/22 14:18	04/06/22 13:10
160-45061-15	E-9-0.5	Solid	03/29/22 13:50	04/06/22 13:10
160-45061-16	E-9-1.5	Solid	03/29/22 13:51	04/06/22 13:10
160-45061-17	E-10-1.5	Solid	03/29/22 15:06	04/06/22 13:10
160-45061-18	E-10-5.0	Solid	03/29/22 15:08	04/06/22 13:10
160-45061-19	E-11-1.5	Solid	03/29/22 15:31	04/06/22 13:10
160-45061-20	E-11-5.0	Solid	03/29/22 15:33	04/06/22 13:10
160-45061-21	E-12-1.5	Solid	03/29/22 15:51	04/06/22 13:10
160-45061-22	E-12-3.0	Solid	03/29/22 15:52	04/06/22 13:10



# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

**Client Sample ID: E-1-0.5**  
**Date Collected: 03/29/22 09:45**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-1**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	0.00230	U	0.0145	0.0145	0.200	0.0102	pCi/g	05/12/22 16:36	05/26/22 14:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	84.2		30 - 110					05/12/22 16:36	05/26/22 14:47	1

**Client Sample ID: E-1-1.5**  
**Date Collected: 03/29/22 09:46**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-2**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	-0.00326	U	0.0246	0.0246	0.200	0.0216	pCi/g	05/12/22 16:36	05/26/22 14:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	81.9		30 - 110					05/12/22 16:36	05/26/22 14:47	1

**Client Sample ID: E-2-0.5**  
**Date Collected: 03/29/22 10:32**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-3**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	0.0146		0.0226	0.0226	0.200	0.0102	pCi/g	05/12/22 16:36	05/26/22 14:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	91.8		30 - 110					05/12/22 16:36	05/26/22 14:47	1

**Client Sample ID: E-3-0.5**  
**Date Collected: 03/29/22 11:30**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-4**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	0.00915	U	0.0206	0.0206	0.200	0.0110	pCi/g	05/12/22 16:36	05/26/22 14:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	84.0		30 - 110					05/12/22 16:36	05/26/22 14:47	1

**Client Sample ID: E-4-0.5**  
**Date Collected: 03/29/22 12:05**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-5**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	0.00521	U	0.0232	0.0232	0.200	0.0163	pCi/g	05/12/22 16:36	05/26/22 14:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	73.9		30 - 110					05/12/22 16:36	05/26/22 14:47	1

# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

**Client Sample ID: E-4-1.5**  
**Date Collected: 03/29/22 12:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-6**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	0.000820	U	0.0234	0.0234	0.200	0.0188	pCi/g	05/12/22 16:36	05/26/22 14:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	82.4		30 - 110					05/12/22 16:36	05/26/22 14:47	1

**Client Sample ID: E-5-0.5**  
**Date Collected: 03/29/22 13:05**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-7**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	-0.00334	U	0.0252	0.0252	0.200	0.0222	pCi/g	05/12/22 16:36	05/27/22 11:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	86.5		30 - 110					05/12/22 16:36	05/27/22 11:38	1

**Client Sample ID: E-5-1.5**  
**Date Collected: 03/29/22 13:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-8**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	0.00448	U	0.0199	0.0199	0.200	0.0140	pCi/g	05/12/22 16:36	05/27/22 11:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	84.0		30 - 110					05/12/22 16:36	05/27/22 11:38	1

**Client Sample ID: E-6-0.5**  
**Date Collected: 03/29/22 13:25**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-9**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	0.00328	U	0.0280	0.0280	0.200	0.0217	pCi/g	05/12/22 16:36	05/27/22 11:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	78.9		30 - 110					05/12/22 16:36	05/27/22 11:38	1

**Client Sample ID: E-6-1.5**  
**Date Collected: 03/29/22 13:26**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-10**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	-0.00323	U	0.0244	0.0244	0.200	0.0215	pCi/g	05/12/22 16:36	05/27/22 11:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	84.7		30 - 110					05/12/22 16:36	05/27/22 11:38	1

# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

**Client Sample ID: E-7-0.5**  
**Date Collected: 03/29/22 14:35**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-11**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	-0.0101	U	0.0217	0.0217	0.200	0.0224	pCi/g	05/12/22 16:36	05/27/22 11:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	80.5		30 - 110					05/12/22 16:36	05/27/22 11:38	1

**Client Sample ID: E-7-3.0**  
**Date Collected: 03/29/22 14:37**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-12**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	-0.00496	U	0.0167	0.0167	0.200	0.0163	pCi/g	05/12/22 16:36	05/27/22 11:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	90.9		30 - 110					05/12/22 16:36	05/27/22 11:38	1

**Client Sample ID: E-8-1.5**  
**Date Collected: 03/29/22 14:16**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-13**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	0.00339	U	0.0290	0.0290	0.200	0.0225	pCi/g	05/12/22 16:36	05/31/22 19:40	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	84.3		30 - 110					05/12/22 16:36	05/31/22 19:40	1

**Client Sample ID: E-8-5.0**  
**Date Collected: 03/29/22 14:18**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-14**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
<b>Plutonium-239/240</b>	<b>0.0209</b>		0.0241	0.0242	0.200	0.0115	pCi/g	05/12/22 16:36	05/27/22 11:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	79.6		30 - 110					05/12/22 16:36	05/27/22 11:38	1

**Client Sample ID: E-9-0.5**  
**Date Collected: 03/29/22 13:50**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-15**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	-0.00346	U	0.0261	0.0261	0.200	0.0229	pCi/g	05/12/22 16:36	05/27/22 11:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	80.0		30 - 110					05/12/22 16:36	05/27/22 11:38	1

# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

**Client Sample ID: E-9-1.5**  
**Date Collected: 03/29/22 13:51**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-16**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	0.00610	U	0.0122	0.0122	0.200	0.0101	pCi/g	05/12/22 16:36	05/27/22 11:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	85.8		30 - 110					05/12/22 16:36	05/27/22 11:38	1

**Client Sample ID: E-10-1.5**  
**Date Collected: 03/29/22 15:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-17**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	0.00245	U	0.0154	0.0154	0.200	0.0108	pCi/g	05/12/22 16:36	05/27/22 11:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	81.7		30 - 110					05/12/22 16:36	05/27/22 11:38	1

**Client Sample ID: E-10-5.0**  
**Date Collected: 03/29/22 15:08**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-18**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	-0.00393	U	0.00787	0.00787	0.200	0.0104	pCi/g	05/12/22 16:36	05/27/22 11:38	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	82.2		30 - 110					05/12/22 16:36	05/27/22 11:38	1

**Client Sample ID: E-11-1.5**  
**Date Collected: 03/29/22 15:31**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-19**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	0.0107	U	0.0337	0.0338	0.200	0.0237	pCi/g	05/13/22 15:42	06/01/22 19:13	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	76.3		30 - 110					05/13/22 15:42	06/01/22 19:13	1

**Client Sample ID: E-11-5.0**  
**Date Collected: 03/29/22 15:33**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-20**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
<b>Plutonium-239/240</b>	<b>0.0257</b>		0.0257	0.0258	0.200	0.0107	pCi/g	05/13/22 15:42	06/01/22 19:13	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	87.4		30 - 110					05/13/22 15:42	06/01/22 19:13	1

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# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

**Client Sample ID: E-12-1.5**  
**Date Collected: 03/29/22 15:51**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-21**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	-0.0127	U	0.0147	0.0148	0.200	0.0195	pCi/g	05/13/22 15:42	06/01/22 19:13	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	81.0		30 - 110					05/13/22 15:42	06/01/22 19:13	1

**Client Sample ID: E-12-3.0**  
**Date Collected: 03/29/22 15:52**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-22**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Plutonium-239/240	-0.00347	U	0.0262	0.0262	0.200	0.0230	pCi/g	05/13/22 15:42	06/01/22 19:13	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Pu-242 (T)	80.4		30 - 110					05/13/22 15:42	06/01/22 19:13	1

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

**Client Sample ID: E-1-0.5**  
**Date Collected: 03/29/22 09:45**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-1**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.320		0.141	0.144	0.200	0.0299	pCi/g	05/12/22 12:51	06/02/22 18:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	35.8		30 - 110					05/12/22 12:51	06/02/22 18:25	1

**Client Sample ID: E-1-1.5**  
**Date Collected: 03/29/22 09:46**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-2**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.226		0.111	0.113	0.200	0.0266	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	42.4		30 - 110					05/12/22 12:51	06/01/22 10:47	1

**Client Sample ID: E-2-0.5**  
**Date Collected: 03/29/22 10:32**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-3**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.313		0.106	0.110	0.200	0.0193	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	64.5		30 - 110					05/12/22 12:51	06/01/22 10:47	1

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# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

**Client Sample ID: E-3-0.5**  
**Date Collected: 03/29/22 11:30**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-4**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.211		0.0979	0.0995	0.200	0.0303	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	61.1		30 - 110					05/12/22 12:51	06/01/22 10:47	1

**Client Sample ID: E-4-0.5**  
**Date Collected: 03/29/22 12:05**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-5**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.388		0.150	0.153	0.200	0.0275	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	37.9		30 - 110					05/12/22 12:51	06/01/22 10:47	1

**Client Sample ID: E-4-1.5**  
**Date Collected: 03/29/22 12:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-6**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.601		0.185	0.192	0.200	0.0350	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	41.6		30 - 110					05/12/22 12:51	06/01/22 10:47	1

**Client Sample ID: E-5-0.5**  
**Date Collected: 03/29/22 13:05**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-7**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.334		0.158	0.161	0.200	0.0424	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	34.6		30 - 110					05/12/22 12:51	06/01/22 10:47	1

**Client Sample ID: E-5-1.5**  
**Date Collected: 03/29/22 13:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-8**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.242		0.142	0.144	0.200	0.0506	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	30.2		30 - 110					05/12/22 12:51	06/01/22 10:47	1

# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

**Client Sample ID: E-6-0.5**  
**Date Collected: 03/29/22 13:25**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-9**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.293		0.111	0.114	0.200	0.0324	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	63.3		30 - 110					05/12/22 12:51	06/01/22 10:47	1

**Client Sample ID: E-6-1.5**  
**Date Collected: 03/29/22 13:26**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-10**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.475		0.130	0.136	0.200	0.0266	pCi/g	05/12/22 12:51	06/02/22 18:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	68.3		30 - 110					05/12/22 12:51	06/02/22 18:25	1

**Client Sample ID: E-7-0.5**  
**Date Collected: 03/29/22 14:35**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-11**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.403		0.148	0.152	0.200	0.0262	pCi/g	05/12/22 12:51	06/02/22 18:25	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	41.5		30 - 110					05/12/22 12:51	06/02/22 18:25	1

**Client Sample ID: E-7-3.0**  
**Date Collected: 03/29/22 14:37**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-12**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.334		0.105	0.108	0.200	0.0176	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	65.7		30 - 110					05/12/22 12:51	06/01/22 10:47	1

**Client Sample ID: E-8-1.5**  
**Date Collected: 03/29/22 14:16**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-13**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.447		0.125	0.131	0.200	0.0316	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	67.1		30 - 110					05/12/22 12:51	06/01/22 10:47	1

# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

**Client Sample ID: E-8-5.0**  
**Date Collected: 03/29/22 14:18**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-14**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.277		0.140	0.142	0.200	0.0330	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	32.7		30 - 110					05/12/22 12:51	06/01/22 10:47	1

**Client Sample ID: E-9-0.5**  
**Date Collected: 03/29/22 13:50**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-15**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.391		0.119	0.123	0.200	0.0233	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	70.3		30 - 110					05/12/22 12:51	06/01/22 10:47	1

**Client Sample ID: E-9-1.5**  
**Date Collected: 03/29/22 13:51**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-16**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.331		0.122	0.125	0.200	0.0316	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	50.8		30 - 110					05/12/22 12:51	06/01/22 10:47	1

**Client Sample ID: E-10-1.5**  
**Date Collected: 03/29/22 15:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-17**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.597		0.158	0.166	0.200	0.0271	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	52.2		30 - 110					05/12/22 12:51	06/01/22 10:47	1

**Client Sample ID: E-10-5.0**  
**Date Collected: 03/29/22 15:08**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-18**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.424		0.169	0.173	0.200	0.0314	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	33.9		30 - 110					05/12/22 12:51	06/01/22 10:47	1

# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

**Client Sample ID: E-11-1.5**  
**Date Collected: 03/29/22 15:31**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-19**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.310		0.0942	0.0977	0.200	0.0159	pCi/g	05/13/22 13:49	06/02/22 13:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	80.2		30 - 110					05/13/22 13:49	06/02/22 13:32	1

**Client Sample ID: E-11-5.0**  
**Date Collected: 03/29/22 15:33**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-20**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.447		0.113	0.119	0.200	0.0162	pCi/g	05/13/22 13:49	06/02/22 13:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	80.6		30 - 110					05/13/22 13:49	06/02/22 13:32	1

**Client Sample ID: E-12-1.5**  
**Date Collected: 03/29/22 15:51**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-21**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.477		0.117	0.123	0.200	0.0265	pCi/g	05/13/22 13:49	06/02/22 13:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	82.6		30 - 110					05/13/22 13:49	06/02/22 13:32	1

**Client Sample ID: E-12-3.0**  
**Date Collected: 03/29/22 15:52**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-22**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Thorium-232	0.514		0.121	0.129	0.200	0.0196	pCi/g	05/13/22 13:49	06/02/22 13:32	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Thorium-229	87.2		30 - 110					05/13/22 13:49	06/02/22 13:32	1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

**Client Sample ID: E-1-0.5**  
**Date Collected: 03/29/22 09:45**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-1**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0269		0.0428	0.0429	0.145	0.0247	pCi/g	05/12/22 16:30	05/24/22 17:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	74.6		30 - 110					05/12/22 16:30	05/24/22 17:47	1

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# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

**Client Sample ID: E-1-1.5**  
**Date Collected: 03/29/22 09:46**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-2**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.000	U	0.0108	0.0108	0.145	0.0143	pCi/g	05/12/22 16:30	05/24/22 17:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.7		30 - 110					05/12/22 16:30	05/24/22 17:47	1

**Client Sample ID: E-2-0.5**  
**Date Collected: 03/29/22 10:32**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-3**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0114	U	0.0256	0.0256	0.145	0.0137	pCi/g	05/12/22 16:30	05/24/22 17:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.2		30 - 110					05/12/22 16:30	05/24/22 17:47	1

**Client Sample ID: E-3-0.5**  
**Date Collected: 03/29/22 11:30**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-4**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.000	U	0.0108	0.0108	0.145	0.0143	pCi/g	05/12/22 16:30	05/26/22 14:36	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	84.5		30 - 110					05/12/22 16:30	05/26/22 14:36	1

**Client Sample ID: E-4-0.5**  
**Date Collected: 03/29/22 12:05**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-5**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0249		0.0395	0.0396	0.145	0.0212	pCi/g	05/12/22 16:30	05/24/22 17:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	71.8		30 - 110					05/12/22 16:30	05/24/22 17:47	1

**Client Sample ID: E-4-1.5**  
**Date Collected: 03/29/22 12:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-6**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.00906	U	0.0329	0.0329	0.145	0.0231	pCi/g	05/12/22 16:30	05/24/22 17:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.1		30 - 110					05/12/22 16:30	05/24/22 17:47	1

# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

**Client Sample ID: E-5-0.5**  
**Date Collected: 03/29/22 13:05**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-7**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0521		0.0426	0.0428	0.145	0.0144	pCi/g	05/12/22 16:30	05/24/22 17:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	78.9		30 - 110					05/12/22 16:30	05/24/22 17:47	1

**Client Sample ID: E-5-1.5**  
**Date Collected: 03/29/22 13:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-8**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0304		0.0390	0.0391	0.145	0.0190	pCi/g	05/12/22 16:30	05/24/22 17:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	83.5		30 - 110					05/12/22 16:30	05/24/22 17:47	1

**Client Sample ID: E-6-0.5**  
**Date Collected: 03/29/22 13:25**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-9**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0219		0.0349	0.0349	0.145	0.0187	pCi/g	05/12/22 16:30	05/24/22 17:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.6		30 - 110					05/12/22 16:30	05/24/22 17:47	1

**Client Sample ID: E-6-1.5**  
**Date Collected: 03/29/22 13:26**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-10**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	-0.0284	U	0.0460	0.0461	0.145	0.0459	pCi/g	05/12/22 16:30	05/24/22 17:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	76.6		30 - 110					05/12/22 16:30	05/24/22 17:47	1

**Client Sample ID: E-7-0.5**  
**Date Collected: 03/29/22 14:35**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-11**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0254		0.0404	0.0404	0.145	0.0216	pCi/g	05/12/22 16:30	05/24/22 17:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.4		30 - 110					05/12/22 16:30	05/24/22 17:47	1

# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

**Client Sample ID: E-7-3.0**  
**Date Collected: 03/29/22 14:37**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-12**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0319		0.0319	0.0320	0.145	0.0132	pCi/g	05/12/22 16:30	05/24/22 17:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	78.0		30 - 110					05/12/22 16:30	05/24/22 17:50	1

**Client Sample ID: E-8-1.5**  
**Date Collected: 03/29/22 14:16**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-13**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0351		0.0351	0.0353	0.145	0.0146	pCi/g	05/12/22 16:30	05/24/22 17:50	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	76.4		30 - 110					05/12/22 16:30	05/24/22 17:50	1

**Client Sample ID: E-8-5.0**  
**Date Collected: 03/29/22 14:18**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-14**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.00354	U	0.0223	0.0223	0.145	0.0157	pCi/g	05/12/22 16:30	05/24/22 17:47	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	73.5		30 - 110					05/12/22 16:30	05/24/22 17:47	1

**Client Sample ID: E-9-0.5**  
**Date Collected: 03/29/22 13:50**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-15**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0569		0.0430	0.0433	0.145	0.0135	pCi/g	05/12/22 16:30	05/25/22 19:29	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.4		30 - 110					05/12/22 16:30	05/25/22 19:29	1

**Client Sample ID: E-9-1.5**  
**Date Collected: 03/29/22 13:51**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-16**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0346		0.0346	0.0347	0.145	0.0143	pCi/g	05/12/22 16:30	05/25/22 19:29	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.4		30 - 110					05/12/22 16:30	05/25/22 19:29	1

# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

**Client Sample ID: E-10-1.5**  
**Date Collected: 03/29/22 15:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-17**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0307		0.0394	0.0395	0.145	0.0192	pCi/g	05/12/22 16:30	05/25/22 19:29	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	81.6		30 - 110					05/12/22 16:30	05/25/22 19:29	1

**Client Sample ID: E-10-5.0**  
**Date Collected: 03/29/22 15:08**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-18**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0234		0.0372	0.0373	0.145	0.0200	pCi/g	05/12/22 16:30	05/25/22 19:29	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	77.8		30 - 110					05/12/22 16:30	05/25/22 19:29	1

**Client Sample ID: E-11-1.5**  
**Date Collected: 03/29/22 15:31**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-19**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0407		0.0364	0.0366	0.145	0.0135	pCi/g	05/13/22 15:45	05/24/22 17:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	79.9		30 - 110					05/13/22 15:45	05/24/22 17:44	1

**Client Sample ID: E-11-5.0**  
**Date Collected: 03/29/22 15:33**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-20**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0214		0.0332	0.0332	0.145	0.0149	pCi/g	05/13/22 15:45	05/24/22 17:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	75.5		30 - 110					05/13/22 15:45	05/24/22 17:44	1

**Client Sample ID: E-12-1.5**  
**Date Collected: 03/29/22 15:51**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-21**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0471		0.0443	0.0445	0.145	0.0145	pCi/g	05/13/22 15:45	05/24/22 17:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	76.4		30 - 110					05/13/22 15:45	05/24/22 17:44	1



# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

**Client Sample ID: E-12-3.0**  
**Date Collected: 03/29/22 15:52**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-22**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Uranium-235/236	0.0249		0.0288	0.0289	0.145	0.0138	pCi/g	05/13/22 15:45	05/24/22 17:44	1
Tracer	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Uranium-232	82.0		30 - 110					05/13/22 15:45	05/24/22 17:44	1

## Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

**Client Sample ID: E-1-0.5**  
**Date Collected: 03/29/22 09:45**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-1**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	-0.00489	U	0.152	0.152	0.500	0.101	pCi/g	05/13/22 10:59	06/06/22 19:41	1
Cesium-137	-0.0432	U	0.0550	0.0552	0.0700	0.0588	pCi/g	05/13/22 10:59	06/06/22 19:41	1
Cobalt-60	0.0413		0.0761	0.0762	0.100	0.0352	pCi/g	05/13/22 10:59	06/06/22 19:41	1
Radium-226	0.327		0.126	0.132	0.500	0.0447	pCi/g	05/13/22 10:59	06/06/22 19:41	1

**Client Sample ID: E-1-1.5**  
**Date Collected: 03/29/22 09:46**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-2**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	-0.0656	U	0.159	0.160	0.500	0.129	pCi/g	05/13/22 10:59	06/06/22 20:24	1
Cesium-137	-0.00968	U	0.0553	0.0553	0.0700	0.0445	pCi/g	05/13/22 10:59	06/06/22 20:24	1
Cobalt-60	0.0259		0.0231	0.0233	0.100	0.0121	pCi/g	05/13/22 10:59	06/06/22 20:24	1
Radium-226	0.413		0.133	0.140	0.500	0.0433	pCi/g	05/13/22 10:59	06/06/22 20:24	1

**Client Sample ID: E-2-0.5**  
**Date Collected: 03/29/22 10:32**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-3**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	0.0152	U	0.120	0.120	0.500	0.0981	pCi/g	05/13/22 10:59	06/06/22 20:26	1
Cesium-137	-0.0266	U	0.0488	0.0489	0.0700	0.0381	pCi/g	05/13/22 10:59	06/06/22 20:26	1
Cobalt-60	-0.00778	U	0.0537	0.0537	0.100	0.0262	pCi/g	05/13/22 10:59	06/06/22 20:26	1
Radium-226	0.0794	U	0.139	0.139	0.500	0.108	pCi/g	05/13/22 10:59	06/06/22 20:26	1

**Client Sample ID: E-3-0.5**  
**Date Collected: 03/29/22 11:30**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-4**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	-0.00162	U	0.0922	0.0922	0.500	0.0625	pCi/g	05/13/22 10:59	06/06/22 21:25	1
Cesium-137	-0.0157	U	0.0638	0.0638	0.0700	0.0537	pCi/g	05/13/22 10:59	06/06/22 21:25	1
Cobalt-60	0.0165	U	0.0680	0.0680	0.100	0.0333	pCi/g	05/13/22 10:59	06/06/22 21:25	1

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# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

**Client Sample ID: E-3-0.5**  
**Date Collected: 03/29/22 11:30**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-4**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0721	U	0.211	0.211	0.500	0.115	pCi/g	05/13/22 10:59	06/06/22 21:25	1

**Client Sample ID: E-4-0.5**  
**Date Collected: 03/29/22 12:05**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-5**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	-0.0818	U	0.211	0.211	0.500	0.171	pCi/g	05/13/22 10:59	06/06/22 21:25	1
Cesium-137	-0.0498	U	0.0790	0.0792	0.0700	0.0612	pCi/g	05/13/22 10:59	06/06/22 21:25	1
Cobalt-60	0.00210	U	0.00426	0.00427	0.100	0.0406	pCi/g	05/13/22 10:59	06/06/22 21:25	1
<b>Radium-226</b>	<b>0.493</b>		0.158	0.166	0.500	0.0531	pCi/g	05/13/22 10:59	06/06/22 21:25	1

**Client Sample ID: E-4-1.5**  
**Date Collected: 03/29/22 12:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-6**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	-0.0342	U	0.135	0.135	0.500	0.110	pCi/g	05/13/22 10:59	06/06/22 21:26	1
Cesium-137	0.00958	U	0.0479	0.0479	0.0700	0.0256	pCi/g	05/13/22 10:59	06/06/22 21:26	1
<b>Cobalt-60</b>	<b>0.0422</b>		0.0267	0.0270	0.100	0.00983	pCi/g	05/13/22 10:59	06/06/22 21:26	1
<b>Radium-226</b>	<b>0.408</b>		0.124	0.131	0.500	0.0519	pCi/g	05/13/22 10:59	06/06/22 21:26	1

**Client Sample ID: E-5-0.5**  
**Date Collected: 03/29/22 13:05**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-7**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	0.0412	U	0.114	0.114	0.500	0.0914	pCi/g	05/13/22 10:59	06/06/22 22:05	1
Cesium-137	-0.0255	U	0.0566	0.0567	0.0700	0.0442	pCi/g	05/13/22 10:59	06/06/22 22:05	1
<b>Cobalt-60</b>	<b>0.0128</b>		0.0222	0.0222	0.100	0.0112	pCi/g	05/13/22 10:59	06/06/22 22:05	1
<b>Radium-226</b>	<b>0.334</b>		0.111	0.116	0.500	0.0440	pCi/g	05/13/22 10:59	06/06/22 22:05	1

**Client Sample ID: E-5-1.5**  
**Date Collected: 03/29/22 13:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-8**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Americium-241	-0.0162	U	0.115	0.115	0.500	0.0838	pCi/g	05/13/22 10:59	06/06/22 22:06	1
Cesium-137	0.00709	U	0.0831	0.0831	0.0700	0.0679	pCi/g	05/13/22 10:59	06/06/22 22:06	1
Cobalt-60	0.0121	U	0.00938	0.00949	0.100	0.0458	pCi/g	05/13/22 10:59	06/06/22 22:06	1
<b>Radium-226</b>	<b>0.374</b>		0.163	0.169	0.500	0.0745	pCi/g	05/13/22 10:59	06/06/22 22:06	1

# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

**Client Sample ID: E-6-0.5**  
**Date Collected: 03/29/22 13:25**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-9**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	0.0670	U	0.162	0.162	0.500	0.131	pCi/g	05/13/22 10:59	06/06/22 22:06	1
Cesium-137	0.00239	U	0.0533	0.0533	0.0700	0.0436	pCi/g	05/13/22 10:59	06/06/22 22:06	1
Cobalt-60	0.0105	U	0.0369	0.0369	0.100	0.0273	pCi/g	05/13/22 10:59	06/06/22 22:06	1
<b>Radium-226</b>	<b>0.588</b>		0.134	0.147	0.500	0.0353	pCi/g	05/13/22 10:59	06/06/22 22:06	1

**Client Sample ID: E-6-1.5**  
**Date Collected: 03/29/22 13:26**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-10**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	-0.0746	U	0.259	0.260	0.500	0.212	pCi/g	05/13/22 10:59	06/06/22 22:08	1
Cesium-137	0.00692	U	0.0527	0.0527	0.0700	0.0429	pCi/g	05/13/22 10:59	06/06/22 22:08	1
Cobalt-60	-0.0221	U	0.0759	0.0759	0.100	0.0367	pCi/g	05/13/22 10:59	06/06/22 22:08	1
<b>Radium-226</b>	<b>0.0969</b>		0.125	0.125	0.500	0.0886	pCi/g	05/13/22 10:59	06/06/22 22:08	1

**Client Sample ID: E-7-0.5**  
**Date Collected: 03/29/22 14:35**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-11**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	-0.0716	U	0.163	0.164	0.500	0.132	pCi/g	05/13/22 10:59	06/06/22 22:40	1
Cesium-137	-0.00282	U	0.0583	0.0583	0.0700	0.0478	pCi/g	05/13/22 10:59	06/06/22 22:40	1
Cobalt-60	0.00485	U	0.00835	0.00836	0.100	0.0335	pCi/g	05/13/22 10:59	06/06/22 22:40	1
<b>Radium-226</b>	<b>0.474</b>		0.120	0.129	0.500	0.0413	pCi/g	05/13/22 10:59	06/06/22 22:40	1

**Client Sample ID: E-7-3.0**  
**Date Collected: 03/29/22 14:37**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-12**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	0.0218	U	0.102	0.102	0.500	0.0694	pCi/g	05/13/22 10:59	06/06/22 22:41	1
Cesium-137	0.0101	U	0.0427	0.0427	0.0700	0.0339	pCi/g	05/13/22 10:59	06/06/22 22:41	1
Cobalt-60	-0.00789	U	0.0542	0.0542	0.100	0.0262	pCi/g	05/13/22 10:59	06/06/22 22:41	1
<b>Radium-226</b>	<b>0.451</b>		0.128	0.139	0.500	0.0469	pCi/g	05/13/22 10:59	06/06/22 22:41	1

**Client Sample ID: E-8-1.5**  
**Date Collected: 03/29/22 14:16**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-13**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	-0.0749	U	0.172	0.172	0.500	0.139	pCi/g	05/13/22 10:59	06/06/22 22:41	1
Cesium-137	-0.000857	U	0.0524	0.0524	0.0700	0.0431	pCi/g	05/13/22 10:59	06/06/22 22:41	1
Cobalt-60	0.00142	U	0.0478	0.0478	0.100	0.0236	pCi/g	05/13/22 10:59	06/06/22 22:41	1
<b>Radium-226</b>	<b>0.539</b>		0.126	0.138	0.500	0.0350	pCi/g	05/13/22 10:59	06/06/22 22:41	1

# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

**Client Sample ID: E-8-5.0**  
**Date Collected: 03/29/22 14:18**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-14**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	-0.0255	U	0.139	0.139	0.500	0.114	pCi/g	05/13/22 10:59	06/06/22 22:42	1
Cesium-137	0.00281	U	0.0342	0.0342	0.0700	0.0278	pCi/g	05/13/22 10:59	06/06/22 22:42	1
Cobalt-60	-0.00224	U	0.00540	0.00540	0.100	0.0396	pCi/g	05/13/22 10:59	06/06/22 22:42	1
<b>Radium-226</b>	<b>0.268</b>		0.0924	0.0965	0.500	0.0417	pCi/g	05/13/22 10:59	06/06/22 22:42	1

**Client Sample ID: E-9-0.5**  
**Date Collected: 03/29/22 13:50**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-15**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	-0.0711	U	0.0908	0.0912	0.500	0.102	pCi/g	05/13/22 10:59	06/06/22 22:42	1
Cesium-137	0.00813	U	0.0546	0.0547	0.0700	0.0436	pCi/g	05/13/22 10:59	06/06/22 22:42	1
Cobalt-60	0.0118	U	0.0293	0.0294	0.100	0.0134	pCi/g	05/13/22 10:59	06/06/22 22:42	1
<b>Radium-226</b>	<b>0.519</b>		0.128	0.142	0.500	0.0261	pCi/g	05/13/22 10:59	06/06/22 22:42	1

**Client Sample ID: E-9-1.5**  
**Date Collected: 03/29/22 13:51**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-16**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	0.0477	U	0.123	0.123	0.500	0.0836	pCi/g	05/13/22 10:59	06/07/22 06:31	1
Cesium-137	-0.0470	U	0.0808	0.0810	0.0700	0.0635	pCi/g	05/13/22 10:59	06/07/22 06:31	1
Cobalt-60	0.00151	U	0.0510	0.0510	0.100	0.0252	pCi/g	05/13/22 10:59	06/07/22 06:31	1
<b>Radium-226</b>	<b>0.128</b>	U	0.195	0.195	0.500	0.172	pCi/g	05/13/22 10:59	06/07/22 06:31	1

**Client Sample ID: E-10-1.5**  
**Date Collected: 03/29/22 15:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-17**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	-0.0757	U	0.163	0.163	0.500	0.132	pCi/g	05/13/22 10:59	06/07/22 06:33	1
Cesium-137	0.00533	U	0.0502	0.0502	0.0700	0.0408	pCi/g	05/13/22 10:59	06/07/22 06:33	1
Cobalt-60	-0.0193	U	0.0624	0.0624	0.100	0.0399	pCi/g	05/13/22 10:59	06/07/22 06:33	1
<b>Radium-226</b>	<b>0.683</b>		0.141	0.158	0.500	0.0436	pCi/g	05/13/22 10:59	06/07/22 06:33	1

**Client Sample ID: E-10-5.0**  
**Date Collected: 03/29/22 15:08**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-18**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert.	Uncert.						
			(2σ+/-)	(2σ+/-)						
Americium-241	0.0221	U	0.123	0.123	0.500	0.0838	pCi/g	05/13/22 10:59	06/07/22 07:16	1
Cesium-137	-0.0529	U	0.0911	0.0913	0.0700	0.0713	pCi/g	05/13/22 10:59	06/07/22 07:16	1
Cobalt-60	-0.00223	U	0.00187	0.00188	0.100	0.0448	pCi/g	05/13/22 10:59	06/07/22 07:16	1
<b>Radium-226</b>	<b>0.207</b>	U	0.107	0.110	0.500	0.227	pCi/g	05/13/22 10:59	06/07/22 07:16	1

# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

**Client Sample ID: E-11-1.5**  
**Date Collected: 03/29/22 15:31**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-19**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Americium-241	0.0565	U	0.129	0.129	0.500	0.104	pCi/g	05/13/22 10:59	06/07/22 07:24	1
Cesium-137	-0.0254	U	0.0680	0.0680	0.0700	0.0544	pCi/g	05/13/22 10:59	06/07/22 07:24	1
Cobalt-60	0.00663	U	0.0306	0.0306	0.100	0.0225	pCi/g	05/13/22 10:59	06/07/22 07:24	1
<b>Radium-226</b>	<b>0.472</b>		0.0975	0.109	0.500	0.0238	pCi/g	05/13/22 10:59	06/07/22 07:24	1

**Client Sample ID: E-11-5.0**  
**Date Collected: 03/29/22 15:33**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-20**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Americium-241	-0.0551	U	0.0999	0.100	0.500	0.116	pCi/g	05/13/22 10:59	06/06/22 22:07	1
Cesium-137	-0.0217	U	0.0804	0.0805	0.0700	0.0679	pCi/g	05/13/22 10:59	06/06/22 22:07	1
<b>Cobalt-60</b>	<b>0.0561</b>		0.0424	0.0429	0.100	0.0187	pCi/g	05/13/22 10:59	06/06/22 22:07	1
<b>Radium-226</b>	<b>0.780</b>		0.176	0.199	0.500	0.0230	pCi/g	05/13/22 10:59	06/06/22 22:07	1

**Client Sample ID: E-12-1.5**  
**Date Collected: 03/29/22 15:51**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-21**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Americium-241	0.0108	U	0.142	0.142	0.500	0.117	pCi/g	05/13/22 11:12	06/03/22 09:54	1
Cesium-137	0.00125	U	0.0393	0.0393	0.0700	0.0322	pCi/g	05/13/22 11:12	06/03/22 09:54	1
<b>Cobalt-60</b>	<b>0.0223</b>		0.0352	0.0352	0.100	0.0217	pCi/g	05/13/22 11:12	06/03/22 09:54	1
<b>Radium-226</b>	<b>0.503</b>		0.118	0.129	0.500	0.0395	pCi/g	05/13/22 11:12	06/03/22 09:54	1

**Client Sample ID: E-12-3.0**  
**Date Collected: 03/29/22 15:52**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-22**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Americium-241	0.0617	U	0.138	0.138	0.500	0.111	pCi/g	05/13/22 11:12	06/03/22 09:56	1
Cesium-137	-0.00915	U	0.0438	0.0438	0.0700	0.0352	pCi/g	05/13/22 11:12	06/03/22 09:56	1
Cobalt-60	-0.0582	U	0.0936	0.0937	0.100	0.0442	pCi/g	05/13/22 11:12	06/03/22 09:56	1
<b>Radium-226</b>	<b>0.392</b>		0.0925	0.101	0.500	0.0312	pCi/g	05/13/22 11:12	06/03/22 09:56	1

## Method: ST-RC-0058 - Total Beta Strontium by GFPC (Extraction Chromatography)

**Client Sample ID: E-1-0.5**  
**Date Collected: 03/29/22 09:45**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-1**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
			Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Strontium 89/90	0.0144	U	0.0307	0.0307	0.150	0.0341	pCi/g	05/11/22 13:32	05/22/22 12:47	1

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# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: ST-RC-0058 - Total Beta Strontium by GFPC (Extraction Chromatography) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	79.6		40 - 110	05/11/22 13:32	05/22/22 12:47	1

**Client Sample ID: E-1-1.5**  
**Date Collected: 03/29/22 09:46**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-2**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0406		0.0384	0.0386	0.150	0.0406	pCi/g	05/11/22 13:32	05/22/22 12:47	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	72.9		40 - 110	05/11/22 13:32	05/22/22 12:47	1

**Client Sample ID: E-2-0.5**  
**Date Collected: 03/29/22 10:32**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-3**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0111	U	0.0364	0.0364	0.150	0.0411	pCi/g	05/11/22 13:32	05/22/22 12:47	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	69.6		40 - 110	05/11/22 13:32	05/22/22 12:47	1

**Client Sample ID: E-3-0.5**  
**Date Collected: 03/29/22 11:30**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-4**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	-0.00641	U	0.0461	0.0461	0.150	0.0545	pCi/g	05/11/22 13:32	05/22/22 12:47	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	51.3		40 - 110	05/11/22 13:32	05/22/22 12:47	1

**Client Sample ID: E-4-0.5**  
**Date Collected: 03/29/22 12:05**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-5**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	-0.0133	U	0.0296	0.0297	0.150	0.0360	pCi/g	05/11/22 13:32	05/22/22 12:47	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	82.4		40 - 110	05/11/22 13:32	05/22/22 12:47	1

**Client Sample ID: E-4-1.5**  
**Date Collected: 03/29/22 12:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-6**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0426		0.0326	0.0329	0.150	0.0334	pCi/g	05/11/22 13:32	05/22/22 12:47	1

# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: ST-RC-0058 - Total Beta Strontium by GFPC (Extraction Chromatography) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	82.4		40 - 110	05/11/22 13:32	05/22/22 12:47	1

**Client Sample ID: E-5-0.5**  
**Date Collected: 03/29/22 13:05**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-7**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.00457	U	0.0315	0.0315	0.150	0.0361	pCi/g	05/11/22 13:32	05/22/22 12:47	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	72.4		40 - 110	05/11/22 13:32	05/22/22 12:47	1

**Client Sample ID: E-5-1.5**  
**Date Collected: 03/29/22 13:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-8**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	-0.0109	U	0.0332	0.0332	0.150	0.0400	pCi/g	05/11/22 13:32	05/22/22 12:47	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	64.2		40 - 110	05/11/22 13:32	05/22/22 12:47	1

**Client Sample ID: E-6-0.5**  
**Date Collected: 03/29/22 13:25**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-9**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.00224	U	0.0334	0.0334	0.150	0.0387	pCi/g	05/11/22 13:32	05/22/22 12:48	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	72.3		40 - 110	05/11/22 13:32	05/22/22 12:48	1

**Client Sample ID: E-6-1.5**  
**Date Collected: 03/29/22 13:26**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-10**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0359	U	0.0373	0.0374	0.150	0.0392	pCi/g	05/11/22 13:32	05/22/22 12:48	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	67.7		40 - 110	05/11/22 13:32	05/22/22 12:48	1

**Client Sample ID: E-7-0.5**  
**Date Collected: 03/29/22 14:35**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-11**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.00914	U	0.0360	0.0360	0.150	0.0409	pCi/g	05/11/22 13:32	05/22/22 12:48	1



# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: ST-RC-0058 - Total Beta Strontium by GFPC (Extraction Chromatography) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	69.8		40 - 110	05/11/22 13:32	05/22/22 12:48	1

**Client Sample ID: E-7-3.0**  
**Date Collected: 03/29/22 14:37**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-12**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0254	U	0.0330	0.0331	0.150	0.0353	pCi/g	05/11/22 13:32	05/22/22 12:48	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	71.4		40 - 110	05/11/22 13:32	05/22/22 12:48	1

**Client Sample ID: E-8-1.5**  
**Date Collected: 03/29/22 14:16**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-13**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.00126	U	0.0283	0.0283	0.150	0.0328	pCi/g	05/11/22 13:32	05/22/22 12:49	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	74.9		40 - 110	05/11/22 13:32	05/22/22 12:49	1

**Client Sample ID: E-8-5.0**  
**Date Collected: 03/29/22 14:18**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-14**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0101	U	0.0313	0.0313	0.150	0.0351	pCi/g	05/11/22 13:32	05/22/22 12:50	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	67.4		40 - 110	05/11/22 13:32	05/22/22 12:50	1

**Client Sample ID: E-9-0.5**  
**Date Collected: 03/29/22 13:50**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-15**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	-0.00152	U	0.0290	0.0290	0.150	0.0340	pCi/g	05/11/22 13:32	05/22/22 12:50	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	77.7		40 - 110	05/11/22 13:32	05/22/22 12:50	1

**Client Sample ID: E-9-1.5**  
**Date Collected: 03/29/22 13:51**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-16**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0205	U	0.0351	0.0351	0.150	0.0384	pCi/g	05/11/22 13:32	05/22/22 12:50	1



# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: ST-RC-0058 - Total Beta Strontium by GFPC (Extraction Chromatography) (Continued)

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	67.0		40 - 110	05/11/22 13:32	05/22/22 12:50	1

**Client Sample ID: E-10-1.5**  
**Date Collected: 03/29/22 15:06**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-17**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	-0.00946	U	0.0299	0.0299	0.150	0.0360	pCi/g	05/11/22 13:32	05/22/22 12:50	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	75.1		40 - 110	05/11/22 13:32	05/22/22 12:50	1

**Client Sample ID: E-10-5.0**  
**Date Collected: 03/29/22 15:08**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-18**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0506		0.0336	0.0339	0.150	0.0330	pCi/g	05/11/22 13:32	05/22/22 12:50	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	74.7		40 - 110	05/11/22 13:32	05/22/22 12:50	1

**Client Sample ID: E-11-1.5**  
**Date Collected: 03/29/22 15:31**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-19**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0485		0.0366	0.0369	0.150	0.0370	pCi/g	05/11/22 13:32	05/22/22 12:50	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	67.9		40 - 110	05/11/22 13:32	05/22/22 12:50	1

**Client Sample ID: E-11-5.0**  
**Date Collected: 03/29/22 15:33**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-20**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.0377		0.0323	0.0325	0.150	0.0330	pCi/g	05/11/22 13:32	05/22/22 12:50	1

Carrier	%Yield	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Sr Carrier	73.8		40 - 110	05/11/22 13:32	05/22/22 12:50	1

**Client Sample ID: E-12-1.5**  
**Date Collected: 03/29/22 15:51**  
**Date Received: 04/06/22 13:10**

**Lab Sample ID: 160-45061-21**  
**Matrix: Solid**

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Strontium 89/90	0.00300	U	0.0223	0.0223	0.150	0.0256	pCi/g	05/16/22 12:40	06/03/22 18:04	1

# Client Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: ST-RC-0058 - Total Beta Strontium by GFPC (Extraction Chromatography) (Continued)

<u>Carrier</u>	<u>%Yield</u>	<u>Qualifier</u>	<u>Limits</u>					<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Sr Carrier	80.0		40 - 110					05/16/22 12:40	06/03/22 18:04	1
<b>Client Sample ID: E-12-3.0</b> <b>Date Collected: 03/29/22 15:52</b> <b>Date Received: 04/06/22 13:10</b>				<b>Lab Sample ID: 160-45061-22</b> <b>Matrix: Solid</b>						
<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>Count Uncert. (2σ+/-)</u>	<u>Total Uncert. (2σ+/-)</u>	<u>LOQ</u>	<u>DLC</u>	<u>Unit</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Strontium 89/90	-0.00502	U	0.0250	0.0250	0.150	0.0298	pCi/g	05/16/22 12:40	06/03/22 18:06	1
<u>Carrier</u>	<u>%Yield</u>	<u>Qualifier</u>	<u>Limits</u>					<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Sr Carrier	81.9		40 - 110					05/16/22 12:40	06/03/22 18:06	1



# QC Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

**Lab Sample ID: MB 160-565206/1-A**  
**Matrix: Solid**  
**Analysis Batch: 567974**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 565206**

Analyte	MB		Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
	Result	MB Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Thorium-232	-0.01260	U	0.0162	0.0162	0.200	0.0150	pCi/g	05/12/22 12:51	06/01/22 10:47	1
Tracer	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Thorium-229	90.3		30 - 110		05/12/22 12:51	06/01/22 10:47	1			

**Lab Sample ID: LCS 160-565206/2-A**  
**Matrix: Solid**  
**Analysis Batch: 567975**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 565206**

Analyte	Spike Added	LCS Result	LCS Qual	Total	LOQ	DLC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Thorium-230	24.5	21.88		1.98	1.00	0.0417	pCi/g	89	75 - 125
Tracer	LCS %Yield	LCS Qualifier	Limits						
Thorium-229	97.8		30 - 110						

**Lab Sample ID: MB 160-565430/1-A**  
**Matrix: Solid**  
**Analysis Batch: 568010**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 565430**

Analyte	MB		Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
	Result	MB Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Thorium-232	-0.008709	U	0.0155	0.0155	0.200	0.0133	pCi/g	05/13/22 13:49	06/01/22 10:52	1
Tracer	MB %Yield	MB Qualifier	Limits		Prepared	Analyzed	Dil Fac			
Thorium-229	87.4		30 - 110		05/13/22 13:49	06/01/22 10:52	1			

**Lab Sample ID: LCS 160-565430/2-A**  
**Matrix: Solid**  
**Analysis Batch: 568018**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 565430**

Analyte	Spike Added	LCS Result	LCS Qual	Total	LOQ	DLC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Thorium-230	24.5	22.22		2.02	1.00	0.0501	pCi/g	91	75 - 125
Tracer	LCS %Yield	LCS Qualifier	Limits						
Thorium-229	86.8		30 - 110						

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

**Lab Sample ID: MB 160-565285/1-A**  
**Matrix: Solid**  
**Analysis Batch: 567140**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 565285**

Analyte	MB		Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
	Result	MB Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Uranium-235/236	0.003960	U	0.00792	0.00793	0.145	0.00656	pCi/g	05/12/22 16:30	05/24/22 17:45	1

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# QC Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry) (Continued)

Tracer	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	89.8		30 - 110	05/12/22 16:30	05/24/22 17:45	1

Lab Sample ID: LCS 160-565285/2-A  
 Matrix: Solid  
 Analysis Batch: 567141

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA  
 Prep Batch: 565285

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	%Rec	%Rec Limits	
Uranium-234	3.18	3.293		0.352	1.00	0.0103	pCi/g	103	75 - 125	
Uranium-238	3.26	3.468		0.367	1.00	0.00593	pCi/g	107	75 - 125	

Tracer	LCS %Yield	LCS Qualifier	Limits
Uranium-232	78.2		30 - 110

Lab Sample ID: MB 160-565435/1-A  
 Matrix: Solid  
 Analysis Batch: 567162

Client Sample ID: Method Blank  
 Prep Type: Total/NA  
 Prep Batch: 565435

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac

Tracer	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Uranium-232	86.6		30 - 110	05/13/22 15:45	05/24/22 17:43	1

Lab Sample ID: LCS 160-565435/2-A  
 Matrix: Solid  
 Analysis Batch: 567163

Client Sample ID: Lab Control Sample  
 Prep Type: Total/NA  
 Prep Batch: 565435

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	%Rec	%Rec Limits	
Uranium-234	3.18	3.188		0.350	1.00	0.0132	pCi/g	100	75 - 125	
Uranium-238	3.26	3.309		0.361	1.00	0.0132	pCi/g	102	75 - 125	

Tracer	LCS %Yield	LCS Qualifier	Limits
Uranium-232	68.2		30 - 110

## Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Lab Sample ID: MB 160-565286/1-A  
 Matrix: Solid  
 Analysis Batch: 567443

Client Sample ID: Method Blank  
 Prep Type: Total/NA  
 Prep Batch: 565286

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac

Tracer	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Pu-242 (T)	83.4		30 - 110	05/12/22 16:36	05/26/22 14:43	1

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# QC Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry) (Continued)

**Lab Sample ID: LCS 160-565286/2-A**  
**Matrix: Solid**  
**Analysis Batch: 567545**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 565286**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	%Rec	%Rec Limits	
									75	125
Plutonium-239/240	2.64	3.019		0.324	0.200	0.00793	pCi/g	114	75	125
40										
Tracer	LCS %Yield	LCS Qualifier	Limits							
Pu-242 (T)	82.7		30 - 110							

**Lab Sample ID: MB 160-565434/1-A**  
**Matrix: Solid**  
**Analysis Batch: 567774**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 565434**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared		Analyzed		Dil Fac
								05/13/22 15:42	05/31/22 19:43	05/13/22 15:42	05/31/22 19:43	
Plutonium-239/240	0.003528	U	0.00706	0.00706	0.200	0.00585	pCi/g	05/13/22 15:42	05/31/22 19:43	05/13/22 15:42	05/31/22 19:43	1
40												
Tracer	MB %Yield	MB Qualifier	Limits					Prepared	Analyzed	Dil Fac		
Pu-242 (T)	93.6		30 - 110					05/13/22 15:42	05/31/22 19:43	1		

**Lab Sample ID: LCS 160-565434/2-A**  
**Matrix: Solid**  
**Analysis Batch: 567775**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 565434**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	%Rec	%Rec Limits	
									75	125
Plutonium-239/240	2.64	2.916		0.320	0.200	0.0120	pCi/g	110	75	125
40										
Tracer	LCS %Yield	LCS Qualifier	Limits							
Pu-242 (T)	75.0		30 - 110							

## Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS)

**Lab Sample ID: MB 160-565414/1-A**  
**Matrix: Solid**  
**Analysis Batch: 568548**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 565414**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared		Analyzed		Dil Fac
								05/13/22 10:59	06/06/22 21:23	05/13/22 10:59	06/06/22 21:23	
Americium-241	-0.04360	U	0.101	0.101	0.500	0.0801	pCi/g	05/13/22 10:59	06/06/22 21:23	05/13/22 10:59	06/06/22 21:23	1
Cesium-137	0.02545	U	0.0484	0.0484	0.0700	0.0368	pCi/g	05/13/22 10:59	06/06/22 21:23	05/13/22 10:59	06/06/22 21:23	1
Cobalt-60	0.002858	U	0.0567	0.0567	0.100	0.0290	pCi/g	05/13/22 10:59	06/06/22 21:23	05/13/22 10:59	06/06/22 21:23	1
Radium-226	0.04628	U	0.0695	0.0697	0.500	0.0921	pCi/g	05/13/22 10:59	06/06/22 21:23	05/13/22 10:59	06/06/22 21:23	1

# QC Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: GA-01-R - Radium-226 & Other Gamma Emitters (GS) (Continued)

**Lab Sample ID: LCS 160-565414/2-A**  
**Matrix: Solid**  
**Analysis Batch: 568549**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 565414**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	%Rec	%Rec Limits	
Americium-241	96.2	99.25		11.9	0.500	0.497	pCi/g	103	75 - 125	
Cesium-137	25.8	25.75		3.13	0.0700	0.0840	pCi/g	100	75 - 125	
Cobalt-60	7.79	7.787		1.01	0.100	0.0120	pCi/g	100	75 - 125	

**Lab Sample ID: 160-45061-20 DU**  
**Matrix: Solid**  
**Analysis Batch: 568760**

**Client Sample ID: E-11-5.0**  
**Prep Type: Total/NA**  
**Prep Batch: 565414**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	RER	RER Limit
Americium-241	-0.0551	U	-0.06165	U	0.122	0.500	0.106	pCi/g	0.03	1
Cesium-137	-0.0217	U	-0.00136	U	0.0654	0.0700	0.0537	pCi/g	0.14	1
Cobalt-60	0.0561		0.06685		0.0411	0.100	0.0142	pCi/g	0.13	1
Radium-226	0.780		0.4745		0.165	0.500	0.0593	pCi/g	0.84	1

**Lab Sample ID: MB 160-565417/1-A**  
**Matrix: Solid**  
**Analysis Batch: 568234**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 565417**

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
Cesium-137	0.0000	U	0.00639	0.00639	0.0700	0.0269	pCi/g	05/13/22 11:12	06/03/22 10:31	1
Cobalt-60	0.006238	U	0.00472	0.00476	0.100	0.0260	pCi/g	05/13/22 11:12	06/03/22 10:31	1
Radium-226	0.07448	U	0.0449	0.0456	0.500	0.128	pCi/g	05/13/22 11:12	06/03/22 10:31	1

**Lab Sample ID: LCS 160-565417/2-A**  
**Matrix: Solid**  
**Analysis Batch: 568238**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 565417**

Analyte	Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	%Rec	%Rec Limits	
Americium-241	96.2	97.58		11.7	0.500	0.564	pCi/g	101	75 - 125	
Cesium-137	25.8	26.24		3.19	0.0700	0.0929	pCi/g	102	75 - 125	
Cobalt-60	7.80	7.887		0.981	0.100	0.0124	pCi/g	101	75 - 125	

**Lab Sample ID: 160-45061-22 DU**  
**Matrix: Solid**  
**Analysis Batch: 568236**

**Client Sample ID: E-12-3.0**  
**Prep Type: Total/NA**  
**Prep Batch: 565417**

Analyte	Sample Result	Sample Qual	DU Result	DU Qual	Total Uncert. (2σ+/-)	LOQ	DLC	Unit	RER	RER Limit
Americium-241	0.0617	U	0.05670	U	0.137	0.500	0.111	pCi/g	0.02	1
Cesium-137	-0.00915	U	0.01934	U	0.0390	0.0700	0.0300	pCi/g	0.34	1
Cobalt-60	-0.0582	U	0.01710	U	0.0457	0.100	0.0220	pCi/g	0.54	1
Radium-226	0.392		0.3264		0.103	0.500	0.0387	pCi/g	0.32	1

# QC Sample Results

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: ST-RC-0058 - Total Beta Strontium by GFPC (Extraction Chromatography)

**Lab Sample ID: MB 160-564990/23-A**  
**Matrix: Solid**  
**Analysis Batch: 566861**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 564990**

Analyte	MB MB		Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Strontium 89/90	0.03256	U	0.0325	0.0326	0.150	0.0340	pCi/g	05/11/22 13:32	05/22/22 12:50	1
Carrier	MB MB		Limits							
Sr Carrier	%Yield	Qualifier		Prepared	Analyzed	Dil Fac				
Sr Carrier	75.2		40 - 110	05/11/22 13:32	05/22/22 12:50	1				

**Lab Sample ID: LCS 160-564990/1-A**  
**Matrix: Solid**  
**Analysis Batch: 566860**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 564990**

Analyte	Spike Added	LCS Result	LCS Qual	Total	LOQ	DLC	Unit	%Rec	%Rec Limits	
				Uncert. (2σ+/-)						
Strontium 89/90	3.00	2.820		0.301	0.150	0.0350	pCi/g	94	75 - 125	
Carrier	LCS LCS		Limits							
Sr Carrier	%Yield	Qualifier		Prepared	Analyzed	Dil Fac				
Sr Carrier	79.0		40 - 110							

**Lab Sample ID: 160-45061-20 DU**  
**Matrix: Solid**  
**Analysis Batch: 566861**

**Client Sample ID: E-11-5.0**  
**Prep Type: Total/NA**  
**Prep Batch: 564990**

Analyte	Sample Sample		DU	DU	Total	LOQ	DLC	Unit	RER	RER Limit
	Result	Qual	Result	Qual	Uncert. (2σ+/-)					
Strontium 89/90	0.0377		0.02255	U	0.0331	0.150	0.0356	pCi/g	0.23	1
Carrier	DU DU		Limits							
Sr Carrier	%Yield	Qualifier		Prepared	Analyzed	Dil Fac				
Sr Carrier	68.9		40 - 110							

**Lab Sample ID: MB 160-565791/11-A**  
**Matrix: Solid**  
**Analysis Batch: 568317**

**Client Sample ID: Method Blank**  
**Prep Type: Total/NA**  
**Prep Batch: 565791**

Analyte	MB MB		Count	Total	LOQ	DLC	Unit	Prepared	Analyzed	Dil Fac
	Result	Qualifier	Uncert. (2σ+/-)	Uncert. (2σ+/-)						
Strontium 89/90	0.002177	U	0.0196	0.0196	0.150	0.0226	pCi/g	05/18/22 09:54	06/03/22 18:07	1
Carrier	MB MB		Limits							
Sr Carrier	%Yield	Qualifier		Prepared	Analyzed	Dil Fac				
Sr Carrier	97.1		40 - 110	05/18/22 09:54	06/03/22 18:07	1				

**Lab Sample ID: LCS 160-565791/1-A**  
**Matrix: Solid**  
**Analysis Batch: 568342**

**Client Sample ID: Lab Control Sample**  
**Prep Type: Total/NA**  
**Prep Batch: 565791**

Analyte	Spike Added	LCS Result	LCS Qual	Total	LOQ	DLC	Unit	%Rec	%Rec Limits
				Uncert. (2σ+/-)					
Strontium 89/90	3.00	3.104		0.325	0.150	0.0334	pCi/g	104	75 - 125

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# QC Sample Results

Client: Langan Engineering & Environmental Svcs  
Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: ST-RC-0058 - Total Beta Strontium by GFPC (Extraction Chromatography) (Continued)

Lab Sample ID: LCS 160-565791/1-A  
Matrix: Solid  
Analysis Batch: 568342

Client Sample ID: Lab Control Sample  
Prep Type: Total/NA  
Prep Batch: 565791

<i>Carrier</i>	<i>%Yield</i>	<i>Qualifier</i>	<i>Limits</i>
Sr Carrier	86.7		40 - 110

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# QC Association Summary

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Rad

### Leach Batch: 564571

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-45061-1	E-1-0.5	Total/NA	Solid	Dry and Grind	
160-45061-2	E-1-1.5	Total/NA	Solid	Dry and Grind	
160-45061-3	E-2-0.5	Total/NA	Solid	Dry and Grind	
160-45061-4	E-3-0.5	Total/NA	Solid	Dry and Grind	
160-45061-5	E-4-0.5	Total/NA	Solid	Dry and Grind	
160-45061-6	E-4-1.5	Total/NA	Solid	Dry and Grind	
160-45061-7	E-5-0.5	Total/NA	Solid	Dry and Grind	
160-45061-8	E-5-1.5	Total/NA	Solid	Dry and Grind	
160-45061-9	E-6-0.5	Total/NA	Solid	Dry and Grind	
160-45061-10	E-6-1.5	Total/NA	Solid	Dry and Grind	
160-45061-11	E-7-0.5	Total/NA	Solid	Dry and Grind	
160-45061-12	E-7-3.0	Total/NA	Solid	Dry and Grind	
160-45061-13	E-8-1.5	Total/NA	Solid	Dry and Grind	
160-45061-14	E-8-5.0	Total/NA	Solid	Dry and Grind	
160-45061-15	E-9-0.5	Total/NA	Solid	Dry and Grind	
160-45061-16	E-9-1.5	Total/NA	Solid	Dry and Grind	
160-45061-17	E-10-1.5	Total/NA	Solid	Dry and Grind	
160-45061-18	E-10-5.0	Total/NA	Solid	Dry and Grind	
160-45061-19	E-11-1.5	Total/NA	Solid	Dry and Grind	
160-45061-20	E-11-5.0	Total/NA	Solid	Dry and Grind	
160-45061-21	E-12-1.5	Total/NA	Solid	Dry and Grind	
160-45061-22	E-12-3.0	Total/NA	Solid	Dry and Grind	
160-45061-20 DU	E-11-5.0	Total/NA	Solid	Dry and Grind	
160-45061-22 DU	E-12-3.0	Total/NA	Solid	Dry and Grind	

### Prep Batch: 564990

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-45061-1	E-1-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-2	E-1-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-3	E-2-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-4	E-3-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-5	E-4-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-6	E-4-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-7	E-5-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-8	E-5-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-9	E-6-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-10	E-6-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-11	E-7-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-12	E-7-3.0	Total/NA	Solid	ExtChrom	564571
160-45061-13	E-8-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-14	E-8-5.0	Total/NA	Solid	ExtChrom	564571
160-45061-15	E-9-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-16	E-9-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-17	E-10-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-18	E-10-5.0	Total/NA	Solid	ExtChrom	564571
160-45061-19	E-11-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-20	E-11-5.0	Total/NA	Solid	ExtChrom	564571
MB 160-564990/23-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-564990/1-A	Lab Control Sample	Total/NA	Solid	ExtChrom	
160-45061-20 DU	E-11-5.0	Total/NA	Solid	ExtChrom	564571

# QC Association Summary

Client: Langan Engineering & Environmental Svcs  
Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Rad

### Prep Batch: 565206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-45061-1	E-1-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-2	E-1-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-3	E-2-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-4	E-3-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-5	E-4-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-6	E-4-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-7	E-5-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-8	E-5-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-9	E-6-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-10	E-6-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-11	E-7-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-12	E-7-3.0	Total/NA	Solid	ExtChrom	564571
160-45061-13	E-8-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-14	E-8-5.0	Total/NA	Solid	ExtChrom	564571
160-45061-15	E-9-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-16	E-9-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-17	E-10-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-18	E-10-5.0	Total/NA	Solid	ExtChrom	564571
MB 160-565206/1-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-565206/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	

### Prep Batch: 565285

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-45061-1	E-1-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-2	E-1-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-3	E-2-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-4	E-3-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-5	E-4-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-6	E-4-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-7	E-5-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-8	E-5-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-9	E-6-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-10	E-6-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-11	E-7-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-12	E-7-3.0	Total/NA	Solid	ExtChrom	564571
160-45061-13	E-8-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-14	E-8-5.0	Total/NA	Solid	ExtChrom	564571
160-45061-15	E-9-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-16	E-9-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-17	E-10-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-18	E-10-5.0	Total/NA	Solid	ExtChrom	564571
MB 160-565285/1-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-565285/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	

### Prep Batch: 565286

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-45061-1	E-1-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-2	E-1-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-3	E-2-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-4	E-3-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-5	E-4-0.5	Total/NA	Solid	ExtChrom	564571

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# QC Association Summary

Client: Langan Engineering & Environmental Svcs  
 Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Rad (Continued)

### Prep Batch: 565286 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-45061-6	E-4-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-7	E-5-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-8	E-5-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-9	E-6-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-10	E-6-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-11	E-7-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-12	E-7-3.0	Total/NA	Solid	ExtChrom	564571
160-45061-13	E-8-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-14	E-8-5.0	Total/NA	Solid	ExtChrom	564571
160-45061-15	E-9-0.5	Total/NA	Solid	ExtChrom	564571
160-45061-16	E-9-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-17	E-10-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-18	E-10-5.0	Total/NA	Solid	ExtChrom	564571
MB 160-565286/1-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-565286/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	

### Prep Batch: 565414

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-45061-1	E-1-0.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-2	E-1-1.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-3	E-2-0.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-4	E-3-0.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-5	E-4-0.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-6	E-4-1.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-7	E-5-0.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-8	E-5-1.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-9	E-6-0.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-10	E-6-1.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-11	E-7-0.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-12	E-7-3.0	Total/NA	Solid	Fill_Geo-21	564571
160-45061-13	E-8-1.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-14	E-8-5.0	Total/NA	Solid	Fill_Geo-21	564571
160-45061-15	E-9-0.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-16	E-9-1.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-17	E-10-1.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-18	E-10-5.0	Total/NA	Solid	Fill_Geo-21	564571
160-45061-19	E-11-1.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-20	E-11-5.0	Total/NA	Solid	Fill_Geo-21	564571
MB 160-565414/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	
LCS 160-565414/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
160-45061-20 DU	E-11-5.0	Total/NA	Solid	Fill_Geo-21	564571

### Prep Batch: 565417

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-45061-21	E-12-1.5	Total/NA	Solid	Fill_Geo-21	564571
160-45061-22	E-12-3.0	Total/NA	Solid	Fill_Geo-21	564571
MB 160-565417/1-A	Method Blank	Total/NA	Solid	Fill_Geo-21	
LCS 160-565417/2-A	Lab Control Sample	Total/NA	Solid	Fill_Geo-21	
160-45061-22 DU	E-12-3.0	Total/NA	Solid	Fill_Geo-21	564571

# QC Association Summary

Client: Langan Engineering & Environmental Svcs  
Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Rad

### Prep Batch: 565430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-45061-19	E-11-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-20	E-11-5.0	Total/NA	Solid	ExtChrom	564571
160-45061-21	E-12-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-22	E-12-3.0	Total/NA	Solid	ExtChrom	564571
MB 160-565430/1-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-565430/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	

### Prep Batch: 565434

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-45061-19	E-11-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-20	E-11-5.0	Total/NA	Solid	ExtChrom	564571
160-45061-21	E-12-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-22	E-12-3.0	Total/NA	Solid	ExtChrom	564571
MB 160-565434/1-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-565434/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	

### Prep Batch: 565435

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-45061-19	E-11-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-20	E-11-5.0	Total/NA	Solid	ExtChrom	564571
160-45061-21	E-12-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-22	E-12-3.0	Total/NA	Solid	ExtChrom	564571
MB 160-565435/1-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-565435/2-A	Lab Control Sample	Total/NA	Solid	ExtChrom	

### Prep Batch: 565791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
160-45061-21	E-12-1.5	Total/NA	Solid	ExtChrom	564571
160-45061-22	E-12-3.0	Total/NA	Solid	ExtChrom	564571
MB 160-565791/11-A	Method Blank	Total/NA	Solid	ExtChrom	
LCS 160-565791/1-A	Lab Control Sample	Total/NA	Solid	ExtChrom	

# Tracer/Carrier Summary

Client: Langan Engineering & Environmental Svcs  
Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Plutonium (Alpha Spectrometry)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Pu-242 (T)	(30-110)
160-45061-1	E-1-0.5	84.2	
160-45061-2	E-1-1.5	81.9	
160-45061-3	E-2-0.5	91.8	
160-45061-4	E-3-0.5	84.0	
160-45061-5	E-4-0.5	73.9	
160-45061-6	E-4-1.5	82.4	
160-45061-7	E-5-0.5	86.5	
160-45061-8	E-5-1.5	84.0	
160-45061-9	E-6-0.5	78.9	
160-45061-10	E-6-1.5	84.7	
160-45061-11	E-7-0.5	80.5	
160-45061-12	E-7-3.0	90.9	
160-45061-13	E-8-1.5	84.3	
160-45061-14	E-8-5.0	79.6	
160-45061-15	E-9-0.5	80.0	
160-45061-16	E-9-1.5	85.8	
160-45061-17	E-10-1.5	81.7	
160-45061-18	E-10-5.0	82.2	
160-45061-19	E-11-1.5	76.3	
160-45061-20	E-11-5.0	87.4	
160-45061-21	E-12-1.5	81.0	
160-45061-22	E-12-3.0	80.4	
LCS 160-565286/2-A	Lab Control Sample	82.7	
LCS 160-565434/2-A	Lab Control Sample	75.0	
MB 160-565286/1-A	Method Blank	83.4	
MB 160-565434/1-A	Method Blank	93.6	

### Tracer/Carrier Legend

Pu-242 (T) = Pu-242 (T)

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry)

Matrix: Solid

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Yield (Acceptance Limits)	
		Th-229	(30-110)
160-45061-1	E-1-0.5	35.8	
160-45061-2	E-1-1.5	42.4	
160-45061-3	E-2-0.5	64.5	
160-45061-4	E-3-0.5	61.1	
160-45061-5	E-4-0.5	37.9	
160-45061-6	E-4-1.5	41.6	
160-45061-7	E-5-0.5	34.6	
160-45061-8	E-5-1.5	30.2	
160-45061-9	E-6-0.5	63.3	
160-45061-10	E-6-1.5	68.3	
160-45061-11	E-7-0.5	41.5	
160-45061-12	E-7-3.0	65.7	
160-45061-13	E-8-1.5	67.1	
160-45061-14	E-8-5.0	32.7	

Eurofins St. Louis

# Tracer/Carrier Summary

Client: Langan Engineering & Environmental Svcs  
Project/Site: HPNS Block 54

Job ID: 160-45061-1

## Method: A-01-R - Isotopic Thorium (Alpha Spectrometry) (Continued)

Matrix: Solid

Prep Type: Total/NA

### Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	Th-229 (30-110)
160-45061-15	E-9-0.5	70.3
160-45061-16	E-9-1.5	50.8
160-45061-17	E-10-1.5	52.2
160-45061-18	E-10-5.0	33.9
160-45061-19	E-11-1.5	80.2
160-45061-20	E-11-5.0	80.6
160-45061-21	E-12-1.5	82.6
160-45061-22	E-12-3.0	87.2
LCS 160-565206/2-A	Lab Control Sample	97.8
LCS 160-565430/2-A	Lab Control Sample	86.8
MB 160-565206/1-A	Method Blank	90.3
MB 160-565430/1-A	Method Blank	87.4

#### Tracer/Carrier Legend

Th-229 = Thorium-229

## Method: A-01-R - Isotopic Uranium (Alpha Spectrometry)

Matrix: Solid

Prep Type: Total/NA

### Percent Yield (Acceptance Limits)

Lab Sample ID	Client Sample ID	U-232 (30-110)
160-45061-1	E-1-0.5	74.6
160-45061-2	E-1-1.5	81.7
160-45061-3	E-2-0.5	82.2
160-45061-4	E-3-0.5	84.5
160-45061-5	E-4-0.5	71.8
160-45061-6	E-4-1.5	81.1
160-45061-7	E-5-0.5	78.9
160-45061-8	E-5-1.5	83.5
160-45061-9	E-6-0.5	82.6
160-45061-10	E-6-1.5	76.6
160-45061-11	E-7-0.5	75.4
160-45061-12	E-7-3.0	78.0
160-45061-13	E-8-1.5	76.4
160-45061-14	E-8-5.0	73.5
160-45061-15	E-9-0.5	81.4
160-45061-16	E-9-1.5	75.4
160-45061-17	E-10-1.5	81.6
160-45061-18	E-10-5.0	77.8
160-45061-19	E-11-1.5	79.9
160-45061-20	E-11-5.0	75.5
160-45061-21	E-12-1.5	76.4
160-45061-22	E-12-3.0	82.0
LCS 160-565285/2-A	Lab Control Sample	78.2
LCS 160-565435/2-A	Lab Control Sample	68.2
MB 160-565285/1-A	Method Blank	89.8
MB 160-565435/1-A	Method Blank	86.6

#### Tracer/Carrier Legend

U-232 = Uranium-232

# Tracer/Carrier Summary

Client: Langan Engineering & Environmental Svcs  
Project/Site: HPNS Block 54

Job ID: 160-45061-1

**Method: ST-RC-0058 - Total Beta Strontium by GFPC (Extraction Chromatography)**

**Matrix: Solid**

**Prep Type: Total/NA**

Lab Sample ID	Client Sample ID	Sr (40-110)	Percent Yield (Acceptance Limits)
160-45061-1	E-1-0.5	79.6	
160-45061-2	E-1-1.5	72.9	
160-45061-3	E-2-0.5	69.6	
160-45061-4	E-3-0.5	51.3	
160-45061-5	E-4-0.5	82.4	
160-45061-6	E-4-1.5	82.4	
160-45061-7	E-5-0.5	72.4	
160-45061-8	E-5-1.5	64.2	
160-45061-9	E-6-0.5	72.3	
160-45061-10	E-6-1.5	67.7	
160-45061-11	E-7-0.5	69.8	
160-45061-12	E-7-3.0	71.4	
160-45061-13	E-8-1.5	74.9	
160-45061-14	E-8-5.0	67.4	
160-45061-15	E-9-0.5	77.7	
160-45061-16	E-9-1.5	67.0	
160-45061-17	E-10-1.5	75.1	
160-45061-18	E-10-5.0	74.7	
160-45061-19	E-11-1.5	67.9	
160-45061-20	E-11-5.0	73.8	
160-45061-20 DU	E-11-5.0	68.9	
160-45061-21	E-12-1.5	80.0	
160-45061-22	E-12-3.0	81.9	
LCS 160-564990/1-A	Lab Control Sample	79.0	
LCS 160-565791/1-A	Lab Control Sample	86.7	
MB 160-564990/23-A	Method Blank	75.2	
MB 160-565791/11-A	Method Blank	97.1	

## Tracer/Carrier Legend

Sr = Sr Carrier

**APPENDIX D**  
**RADIOLOGICAL CALCULATIONS**



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**APPENDIX D  
RADIOLOGICAL EVALUATION  
Block 54  
San Francisco, California**

*Prepared For:*

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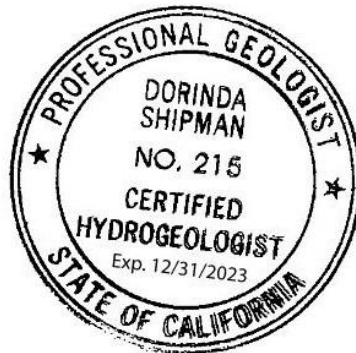
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**12 October 2022  
770681001**

**LANGAN**

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## **APPENDIX D RADIOLOGICAL EVALUATION**

### **Block 54**

### **San Francisco, California**

#### **D1.0 INTRODUCTION**

Appendix D presents estimated dose and risk associated with exposure to radionuclides detected in site soils. Results confirm that the concentrations of the radionuclides detected in site soils do not pose a risk to the public or to future residents.

Everyone is exposed to radiation every day from both natural sources (such as minerals in the ground) to man-made sources (such as medical x-rays). The average annual radiation dose per person in the United States is 620 millirem (mrem).<sup>1</sup> In general, exposure to this dose has not been shown to impact human health.<sup>2</sup> To provide a perspective on typical radiation dose or the amount of radiation energy absorbed by the body in everyday life, we provide a summary of the relative doses from common radiation sources in Figure D1. As presented in Figure D1, medical x-rays may result in exposure to four mrem of radiation during a single procedure. Living at sea level results in an exposure to cosmic radiation of 24 mrem per year. Radon, emitted from rock and soil, in an average home also may result in 200 mrem of radiation exposure on an annual basis. The U.S. Nuclear Regulatory Commission (NRC) annual dose rate criterion is 25 mrem per year.<sup>3</sup>

The USEPA recommends evaluating potential radiological exposure based on a risk range of E-06 to E-04. The risk range equates to the chance in 1,000,000 to the chance in 10,000 of a person exposed to developing cancer over a lifetime.

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<sup>1</sup> National Council on Radiation Protection and Measurement. Doses are commonly reported in millirems (mrem). A mrem is one thousandth of a rem (roentgen equivalent man), which is a unit used to measure adsorbed radiation dose.

<sup>2</sup> <https://www.nrc.gov/about-nrc/radiation/around-us/doses-daily-lives.html>

<sup>3</sup> NRC. 10 CFR 20 Subpart E, Radiological Criteria for License Termination, commonly referred to as the License Termination Rule (LTR).

## D2.0 RESRAD TOOL

The RESidual RADiation or RESRAD tool was used to evaluate the potential radiation dose of radionuclides detected in site soils. The RESRAD tool was developed by Argonne National Laboratory for the U.S. Department of Energy and is the most extensively verified and used tool to evaluate risk associated with the presence of radionuclides. This tool was used to review and confirm that the Block 54 test results presented in Table 3 of the main report do not pose a health risk to the public or to future residential users. The RESRAD tool is not intended to be used to evaluate background concentrations of radionuclides, such as those detected at Block 54, therefore, this evaluation is conservative and intended for informational purposes only.<sup>4</sup>

The RESRAD tool calculated the dose and the relative risk associated with exposure to average and 95<sup>th</sup> percentile concentrations in picocuries per gram (pCi/g) for each of the radionuclides. The calculations assumed radionuclide concentrations were uniformly distributed at the applicable concentration to a depth of two meters across the entirety of the site.

The following is a tabulated summary of the dose and risk computed for the radionuclides that showed a positive average concentration. Dose and risk values were not calculated for the radionuclides that showed a negative average (as presented in Table 3 of the main report) and denoted by an "NA" in the table below (i.e., not applicable). Additional information regarding the RESRAD calculations (including assumptions) is presented in Attachment D1.

### Dose and Risk Associated with Exposure to Average Radionuclide Concentrations:

Radionuclide	Site mean concentration (pCi/g)	Maximum annual dose rate (mrem/yr)	Mean concentration carcinogenic risk
Am-241	-0.0140	NA	NA
Cs-137	-0.0126	NA	NA
Co-60	0.0067	0.05241	3.358E-07 (0.0000003358)
Pu-239	0.0028	0.0001494	6.597E-10 (0.000000006597)

<sup>4</sup> The RESRAD Tool is intended for estimating radiation doses and cancer risks to an individual located on top of radioactively contaminated soils, within which radionuclides are present in above-background concentrations. All radionuclides detected at Block 54 are considered background. Refer to: <https://resrad.evs.anl.gov/>

Radionuclide	Site mean concentration (pCi/g)	Maximum annual dose rate (mrem/yr)	Mean concentration carcinogenic risk
Ra-226	0.3910	2.344	5.243E-05 (0.00005243)
Sr-90	0.0141	0.0003634	3.697E-09 (0.000000003697)
Th-232	0.3798	3.003	6.996E-05 (0.00006996)
U-235	0.0238	0.009843	2.200E-07 (0.00000022)

The following is a tabulated summary of the dose and risk computed for the 95<sup>th</sup> percentile for all radionuclides (as presented in Table 3 of the main report). Additional information regarding the RESRAD calculations (including assumptions) is presented in Attachment D1.

**Dose and Risk Associated with Exposure to 95th Percentile Radionuclide Concentrations:**

Radionuclide	95 <sup>th</sup> percentile concentration (pCi/g)	Maximum annual dose rate (mrem/yr)	95 <sup>th</sup> percentile concentration carcinogenic risk
Am-241	0.0614	0.003963	3.435E-08 (0.00000003435)
Cs-137	0.0095	0.01614	2.815E-07 (0.0000002815)
Co-60	0.0422	0.3301	2.115E-06 (0.000002115)
Pu-239	0.0206	0.001099	4.853E-09 (0.00000004853)
Ra-226	0.6783	4.067	9.096E-05 (0.00009096)
Sr-90	0.0482	0.001242	1.264E-08 (0.0000001264)
Th-232	0.5929	4.689	1.092E-04 (0.0001092)
U-235	0.0519	0.02146	4.798E-07 (0.0000004798)

As presented in the tables above, the maximum annual dose rates for the radionuclides range from 0.0003634 mrem/yr to 4.689 mrem/yr, which are well below the NRC's dose rate criteria of 25 mrem/yr. In addition, the risk values associated with these maximum annual dose rates range from 3.697E-09 to 1.092E-04, which are below or within the USEPA's risk range of E-06 to E-04. The risk range equates to the chance in 1,000,000 to the chance in 10,000 of a person exposed to developing cancer over a lifetime.

### **D3.0 PRG CALCULATOR**

The USEPA's *Preliminary Remediation Goals (PRG) for Radionuclide Contaminants at Superfund Sites* calculator (PRG Calculator) is also used to evaluate radionuclides in soil.<sup>5</sup> Although Block 54 is not a remediation site, the PRG Calculator can also be used to analyze radionuclide concentrations at Block 54 as a basis of comparison against USEPA screening levels. The PRG Calculator calculates PRGs based on theoretical cancer risk levels. In consultation with USEPA, USEPA recommended considering a risk range of E-06 to E-04, which equates to the chance in 1,000,000 to the chance in 10,000 of a person exposed to developing cancer over a lifetime. The PRG Calculator is not intended to be used to evaluate background concentrations of radionuclides, such as those detected at Block 54, therefore, this evaluation is conservative and intended for informational purposes only.<sup>6</sup>

The PRG Calculator was used to calculate PRGs for the eight radionuclides. Two PRGs were calculated for each radionuclide to represent the USEPA's target risk range of E-06 to E-04. A summary of the methods and assumptions used to calculate the PRGs is provided in Attachment D1.

A summary of the calculated PRGs for the eight radionuclides of interest is presented in the table below. As presented below, the mean, 95<sup>th</sup> percentile, and maximum sampling results obtained for each radionuclide were compared to the PRGs for the E-06 to E-04 risk range. The maximum concentrations were considered to provide a conservative assessment of risk; however, an overall concentration comparison (i.e., mean or 95<sup>th</sup> percentile concentration) is generally

---

<sup>5</sup> <https://epa-prgs.ornl.gov/radionuclides/>

<sup>6</sup> The PRG Calculator User's Guide states that natural background radiation should be considered prior to applying PRGs as cleanup levels. Background and site-related levels of radiation will be addressed as they are for other contaminants at CERCLA sites. The CERCLA program, generally, does not clean up to concentrations below natural or anthropogenic background levels. All radionuclides detected at Block 54 are considered background. Refer to: [https://epa-prgs.ornl.gov/radionuclides/users\\_guide.html](https://epa-prgs.ornl.gov/radionuclides/users_guide.html)

applicable for scenarios where the potential risk from direct human contact exposure is being evaluated.

<b>Radionuclide</b>	<b>Site mean concentration (pCi/g)</b>	<b>Site 95<sup>th</sup> percentile concentration (pCi/g)</b>	<b>Site maximum concentration (pCi/g)</b>	<b>PRG E-06 to E-04 (pCi/g)</b>
Am-241	-0.0140	0.0614	0.0670	2.46 – 246
Cs-137	-0.0126	0.0095	0.0101	0.0719 – 7.19
Co-60	0.0067	0.0422	0.0561	0.0388 – 3.88
Pu-239	0.0028	0.0206	0.0257	3.88 – 388
Ra-226	0.3910	0.6783	0.7800	0.0148 – 1.48
Sr-90	0.0141	0.0482	0.0506	4.21 – 421
Th-232	0.3798	0.5929	0.6010	0.0113 – 1.13
U-235	0.0238	0.0519	0.0569	0.277 – 27.7

All of the mean (i.e., average) and 95<sup>th</sup> percentile concentrations of radionuclides detected in site soil were within or below their respective risk range.

#### **D4.0 CONCLUSIONS**

As presented in the main report, the radiological testing results do not indicate the presence of radionuclides above background levels or the presence of radionuclides at levels that would indicate a release from a contaminant source at the site. In addition, the calculated maximum annual dose rate and relative risk associated with exposure to the maximum annual dose rate were calculated using RESRAD for each radionuclide considered. The maximum annual dose rates were well below the NRC's dose rate criteria of 25 mrem/yr. The risk values associated with these maximum annual dose rates were below or within the USEPA's acceptable risk range of E-06 to E-04. PRGs were also calculated using the USEPA's acceptable risk range of E-06 to E-04. All of the mean (i.e., average), 95<sup>th</sup> percentile, or maximum concentrations of radionuclides detected in site soil were below or within the accepted risk range or otherwise within expected background ranges. Based on the above dose and risk evaluations, the sampling results make it clear that the concentrations of the radionuclides tested do not pose a risk to the public or to future residents.



## **D5.0 REFERENCES**

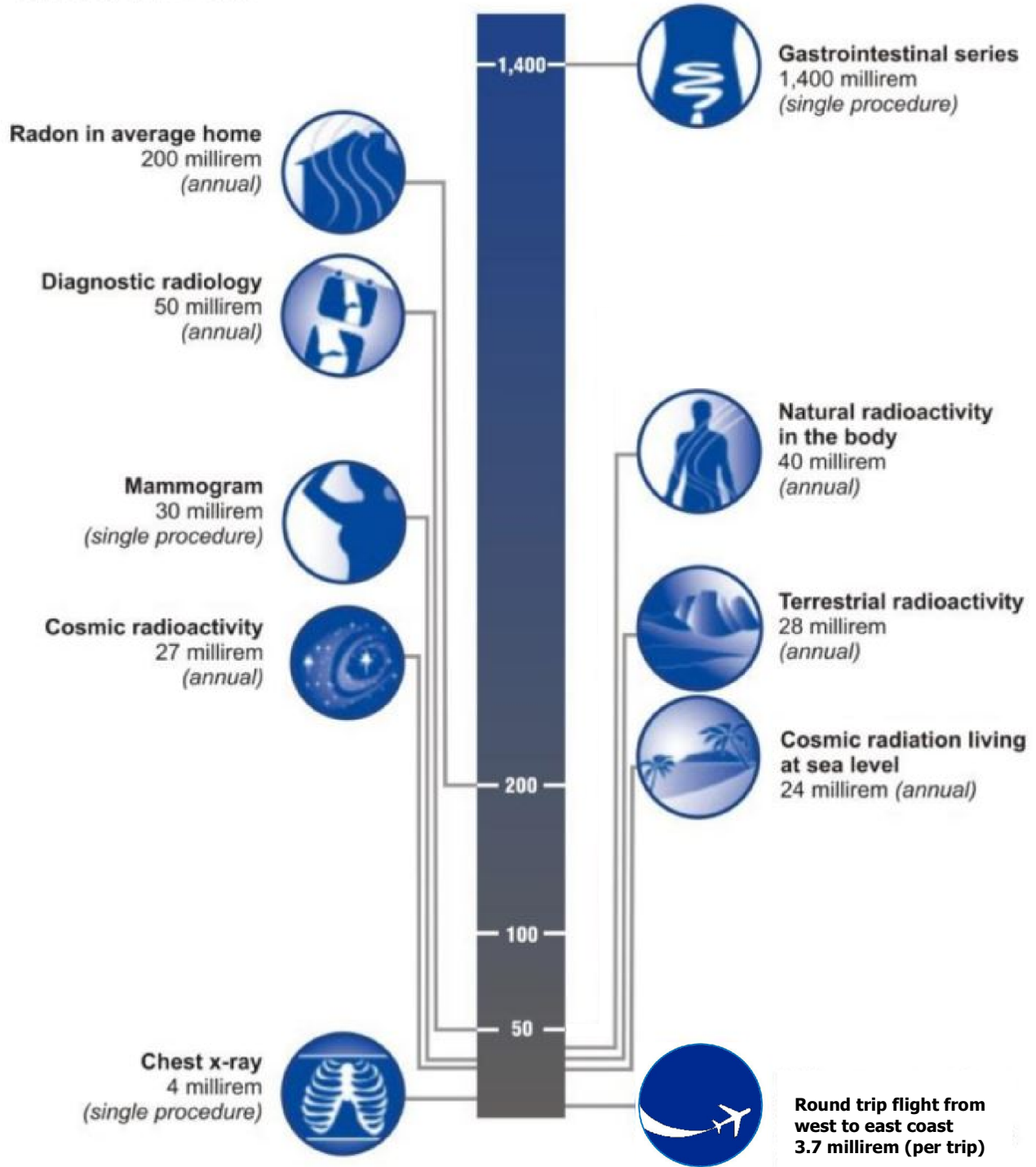
United States Nuclear Regulatory Commission (NRC), Doses in Our Daily Lives, dated 13 May 2021. <https://www.nrc.gov/about-nrc/radiation/around-us/doses-daily-lives.html>

NRC. 10 CFR 20 Subpart E, Radiological Criteria for License Termination, commonly referred to as the License Termination Rule (LTR).

**FIGURE**

# RELATIVE DOSES FROM RADIATION SOURCES

## Millirem Doses



Notes:  
 1. Diagram based on diagram as presented in the United States Department of Energy, Idaho Operations Office's Draft Environmental Assessment for the Resumption of Transient Testing of Nuclear Fuels and Materials dated November 2013.

<b>LANGAN</b> Langan Engineering and Environmental Services, Inc. 135 Main Street, Suite 1500 San Francisco, CA 94105 T: 415.955.5200 F: 415.955.5201 www.langan.com	Project	Figure Title	Project No. 731744801	Figure
	BLOCK 54 SAN FRANCISCO SAN FRANCISCO COUNTY CALIFORNIA	EXAMPLES OF RELATIVE DOSES OF RADIATION SOURCES	Date OCTOBER 2022 Scale SEE MAP FOR SCALE Drawn By JNE	D1

**ATTACHMENT D1**  
**RADIOLOGICAL CALCULATIONS**

## Attachment D1 Radiological Calculations

### D1.1.0 RESRAD CALCULATIONS – MEAN CONCENTRATIONS

RESRAD calculations were performed using an assumption that the mean concentration for each radionuclide was uniformly distributed through the entirety of the site (1,821 square meters = 0.45 acres) to a depth of two meters. The exposure pathways considered external gamma, inhalation, and soil ingestion.

The RESRAD calculation for Cobalt-60 (Co-60) used a mean concentration of 0.0067 picocuries per gram (pCi/g). The maximum dose and risk results are shown below.

Contaminated Zone Dimensions				Initial Soil Concentrations, pCi/g								
Area:	1821.00 square meters			Co-60	6.700E-03							
Thickness:	2.00 meters											
Cover Depth:	0.00 meters											
Total Dose TDOSE(t), mrem/yr Basic Radiation Dose Limit = 2.500E+01 mrem/yr Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)												
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03				
TDOSE(t):	5.241E-02	4.594E-02	3.531E-02	1.405E-02	1.009E-03	1.003E-07	3.677E-19	0.000E+00				
M(t):	2.096E-03	1.838E-03	1.412E-03	5.615E-04	4.037E-05	4.013E-09	1.471E-20	0.000E+00				
Maximum TDOSE(t): 5.241E-02 mrem/yr at t = 0.000E+00 years												
Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.358E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.358E-07	1.0000
** Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways												

The RESRAD calculation for Plutonium-239 (Pu-239) used a mean concentration of 0.0028 picocuries per gram (pCi/g). The maximum dose and risk results are shown below.

Contaminated Zone Dimensions				Initial Soil Concentrations, pCi/g								
Area:	1821.00 square meters			Pu-239	2.800E-03							
Thickness:	2.00 meters											
Cover Depth:	0.00 meters											
Total Dose TDOSE(t), mrem/yr Basic Radiation Dose Limit = 2.500E+01 mrem/yr Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)												
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03				
TDOSE(t):	1.454E-04	1.454E-04	1.493E-04	1.492E-04	1.489E-04	1.477E-04	1.444E-04	1.335E-04				
M(t):	5.975E-06	5.974E-06	5.973E-06	5.968E-06	5.955E-06	5.908E-06	5.777E-06	5.341E-06				
Maximum TDOSE(t): 1.454E-04 mrem/yr at t = 0.000E+00 years												

## Attachment D1 Radiological Calculations

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.443E-20	0.0000
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.004E-20	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.597E-10	1.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.881E-16	0.0000
<b>Total</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>6.597E-10</b>	<b>1.0000</b>

\*\* Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways

The RESRAD calculation for Radium-226 (Ra-226) used a mean concentration of 0.3910 picocuries per gram (pCi/g). The calculation included Lead-210 (Pb-210) at the same concentration, representing an assumption of equilibrium throughout the decay chain. The maximum dose and risk results are shown below.

Contaminated Zone Dimensions				Initial Soil Concentrations, pCi/g			
Area:	1821.00	square meters		Pb-210	3.910E-01		
Thickness:	2.00	meters		Ra-226	3.910E-01		
Cover Depth:	0.00	meters					

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	2.344E+00	2.338E+00	2.325E+00	2.280E+00	2.157E+00	1.774E+00	1.012E+00	1.418E-01
M(t):	9.377E-02	9.351E-02	9.300E-02	9.122E-02	8.629E-02	7.094E-02	4.047E-02	5.673E-03

Maximum TDOSE(t): 2.344E+00 mrem/yr at t = 0.000E+00 years												
Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.120E-06	0.0214
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.131E-05	0.9786
<b>Total</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>5.243E-05</b>	<b>1.0000</b>

\*\* Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways

The RESRAD calculation for Strontium-90 (Sr-90) used a mean concentration of 0.0141 pCi/g. The maximum dose and risk results are shown below.

Contaminated Zone Dimensions				Initial Soil Concentrations, pCi/g			
Area:	1821.00	square meters		Sr-90	1.410E-02		
Thickness:	2.00	meters					
Cover Depth:	0.00	meters					

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	3.634E-04	3.528E-04	3.325E-04	2.703E-04	1.496E-04	1.884E-05	5.068E-08	5.112E-17
M(t):	1.453E-05	1.411E-05	1.330E-05	1.081E-05	5.982E-06	7.538E-07	2.027E-09	2.045E-18

Maximum TDOSE(t): 3.634E-04 mrem/yr at t = 0.000E+00 years											
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## Attachment D1 Radiological Calculations

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.697E-09	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.697E-09	1.0000

\*\* Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways

The RESRAD calculation for Thorium-232 (Th-232) used a mean concentration of 0.3798 pCi/g. The calculation included Radium-228 (Ra-228) and Thorium-228 (Th-228) at the same concentration, representing an assumption of equilibrium throughout the decay chain. The maximum dose and risk results are shown below.

Contaminated Zone Dimensions				Initial Soil Concentrations, pCi/g			
Area:	1821.00	square meters		Ra-228	3.798E-01		
Thickness:	2.00	meters		Th-228	3.798E-01		
Cover Depth:	0.00	meters		Th-232	3.798E-01		

Total Dose IDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
IDOSE(t):	3.003E+00	3.000E+00	2.992E+00	2.968E+00	2.949E+00	2.947E+00	2.945E+00	2.939E+00
M(t):	1.201E-01	1.200E-01	1.197E-01	1.187E-01	1.180E-01	1.179E-01	1.178E-01	1.176E-01

Maximum IDOSE(t): 3.003E+00 mrem/yr at t = 0.000E+00 years

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.488E-05	0.3557
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.501E-05	0.6433
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.046E-08	0.0010
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.996E-05	1.0000

\*\* Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways

The RESRAD calculation for Uranium-235 (U-235) used a mean concentration of 0.0238 pCi/g. The maximum dose and risk results are shown below.

Contaminated Zone Dimensions				Initial Soil Concentrations, pCi/g			
Area:	1821.00	square meters		U-235	2.380E-02		
Thickness:	2.00	meters					
Cover Depth:	0.00	meters					

Total Dose IDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
IDOSE(t):	9.843E-03	9.811E-03	9.746E-03	9.524E-03	8.919E-03	7.098E-03	3.701E-03	3.784E-04
M(t):	3.937E-04	3.924E-04	3.898E-04	3.809E-04	3.568E-04	2.839E-04	1.481E-04	1.514E-05

Maximum IDOSE(t): 9.843E-03 mrem/yr at t = 0.000E+00 years

## Attachment D1 Radiological Calculations

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.804E-11	0.0002
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.703E-11	0.0001
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.199E-07	0.9997
<b>Total</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>2.200E-07</b>	<b>1.0000</b>

\*\* Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways

### D1.2.0 RESRAD CALCULATIONS – 95<sup>TH</sup> PERCENTILE CONCENTRATIONS

RESRAD calculations were performed using an assumption that the 95<sup>th</sup> percentile concentration for each radionuclide was uniformly distributed through the entirety of the site (1,821 square meters = 0.45 acres) to a depth of two meters. The exposure pathways considered external gamma, inhalation, and soil ingestion.

The RESRAD calculation for Americium-241 (Am-241) used a 95<sup>th</sup> percentile concentration of 0.0614 pCi/g. The maximum dose and risk results are shown below.

Contaminated Zone Dimensions			Initial Soil Concentrations, pCi/g					
Area:	1821.00	square meters	Am-241	6.140E-02				
Thickness:	2.00	meters						
Cover Depth:	0.00	meters						

Total Dose TDOSE(t), mrem/yr								
Basic Radiation Dose Limit = 2.500E+01 mrem/yr								
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	3.963E-03	3.924E-03	3.847E-03	3.591E-03	2.949E-03	1.481E-03	2.075E-04	9.119E-07
M(t):	1.585E-04	1.570E-04	1.539E-04	1.436E-04	1.180E-04	5.923E-05	8.299E-06	3.648E-08

Maximum TDOSE(t): 3.963E-03 mrem/yr at t = 0.000E+00 years

Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.435E-08	0.9999
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.839E-12	0.0001
Th-229	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.653E-19	0.0000
U-233	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.603E-18	0.0000
<b>Total</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>0.000E+00</b>	<b>0.0000</b>	<b>3.435E-08</b>	<b>1.0000</b>

\*\* Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways

The RESRAD calculation for Cesium-137 (Cs-137) used a 95<sup>th</sup> percentile concentration of 0.0095 pCi/g. The maximum dose and risk results are shown below.



## Attachment D1 Radiological Calculations

Contaminated Zone Dimensions				Initial Soil Concentrations, pCi/g				
Area:	1821.00 square meters			Cs-137	9.500E-03			
Thickness:	2.00 meters							
Cover Depth:	0.00 meters							
Total Dose TDOSE(t), mrem/yr Basic Radiation Dose Limit = 2.500E+01 mrem/yr Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	1.614E-02	1.578E-02	1.507E-02	1.282E-02	8.094E-03	1.616E-03	1.620E-05	1.635E-12
M(t):	6.457E-04	6.310E-04	6.026E-04	5.130E-04	3.237E-04	6.465E-05	6.482E-07	6.540E-14
Maximum TDOSE(t): 1.614E-02 mrem/yr at t = 0.000E+00 years								

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.815E-07	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.815E-07	1.0000

\*\* Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways

The RESRAD calculation for Co-60 used a 95<sup>th</sup> percentile concentration of 0.0422 pCi/g. The maximum dose and risk results are shown below.

Contaminated Zone Dimensions				Initial Soil Concentrations, pCi/g				
Area:	1821.00 square meters			Co-60	4.220E-02			
Thickness:	2.00 meters							
Cover Depth:	0.00 meters							
Total Dose TDOSE(t), mrem/yr Basic Radiation Dose Limit = 2.500E+01 mrem/yr Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)								
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
TDOSE(t):	3.301E-01	2.894E-01	2.224E-01	8.848E-02	6.357E-03	6.319E-07	2.316E-18	0.000E+00
M(t):	1.320E-02	1.158E-02	8.895E-03	3.539E-03	2.543E-04	2.528E-08	9.264E-20	0.000E+00
Maximum TDOSE(t): 3.301E-01 mrem/yr at t = 0.000E+00 years								

Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.115E-06	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.115E-06	1.0000

\*\* Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways

The RESRAD calculation for Pu-239 used a 95<sup>th</sup> percentile concentration of 0.0206 pCi/g. The maximum dose and risk results are shown below.

## Attachment D1 Radiological Calculations

Contaminated Zone Dimensions				Initial Soil Concentrations, pCi/g								
Area:	1821.00	square meters			Pu-239	2.060E-02						
Thickness:	2.00	meters										
Cover Depth:	0.00	meters										
Total Dose TDOSE(t), mrem/yr Basic Radiation Dose Limit = 2.500E+01 mrem/yr Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)												
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03				
TDOSE(t):	1.099E-03	1.099E-03	1.099E-03	1.098E-03	1.095E-03	1.087E-03	1.063E-03	9.824E-04				
M(t):	4.396E-05	4.395E-05	4.394E-05	4.391E-05	4.381E-05	4.347E-05	4.251E-05	3.930E-05				
Maximum TDOSE(t): 1.099E-03 mrem/yr at t = 0.000E+00 years												
Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.269E-19	0.0000
Pu-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.474E-19	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.853E-09	1.0000
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.855E-15	0.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.853E-09	1.0000
** Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways												

The RESRAD calculation for Ra-226 used a 95<sup>th</sup> percentile concentration of 0.6783 pCi/g. The calculation included Pb-210 at the same concentration, representing an assumption of equilibrium throughout the decay chain. The maximum dose and risk results are shown below.

Contaminated Zone Dimensions				Initial Soil Concentrations, pCi/g								
Area:	1821.00	square meters			Pb-210	6.783E-01						
Thickness:	2.00	meters			Ra-226	6.783E-01						
Cover Depth:	0.00	meters										
Total Dose TDOSE(t), mrem/yr Basic Radiation Dose Limit = 2.500E+01 mrem/yr Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)												
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03				
TDOSE(t):	4.067E+00	4.056E+00	4.033E+00	3.956E+00	3.742E+00	3.077E+00	1.755E+00	2.460E-01				
M(t):	1.627E-01	1.622E-01	1.613E-01	1.582E-01	1.497E-01	1.231E-01	7.021E-02	9.841E-03				
Maximum TDOSE(t): 4.067E+00 mrem/yr at t = 0.000E+00 years												
Radio-Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Pb-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.943E-06	0.0214
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.902E-05	0.9786
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.096E-05	1.0000
** Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways												

The RESRAD calculation for Sr-90 used a 95<sup>th</sup> percentile concentration of 0.0482 pCi/g. The maximum dose and risk results are shown below.

## Attachment D1 Radiological Calculations

Contaminated Zone Dimensions				Initial Soil Concentrations, pCi/g								
Area:	1821.00	square meters			Sr-90	4.820E-02						
Thickness:	2.00	meters										
Cover Depth:	0.00	meters										
Total Dose TDOSE(t), mrem/yr Basic Radiation Dose Limit = 2.500E+01 mrem/yr Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)												
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03				
TDOSE(t):	1.242E-03	1.206E-03	1.137E-03	9.240E-04	5.112E-04	6.442E-05	1.732E-07	1.748E-16				
M(t):	4.969E-05	4.824E-05	4.547E-05	3.696E-05	2.045E-05	2.577E-06	6.930E-09	6.591E-18				
Maximum TDOSE(t): 1.242E-03 mrem/yr at t = 0.000E+00 years												
Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.264E-08	1.0000
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.264E-08	1.0000
** Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways												

The RESRAD calculation for Th-232 used a 95<sup>th</sup> percentile concentration of 0.5929 pCi/g. The calculation included Ra-228 and Th-228 at the same concentration, representing an assumption of equilibrium throughout the decay chain. The maximum dose and risk results are shown below.

Contaminated Zone Dimensions				Initial Soil Concentrations, pCi/g								
Area:	1821.00	square meters			Ra-228	5.929E-01						
Thickness:	2.00	meters			Th-228	5.929E-01						
Cover Depth:	0.00	meters			Th-232	5.929E-01						
Total Dose TDOSE(t), mrem/yr Basic Radiation Dose Limit = 2.500E+01 mrem/yr Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)												
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03				
TDOSE(t):	4.689E+00	4.683E+00	4.670E+00	4.633E+00	4.604E+00	4.600E+00	4.597E+00	4.588E+00				
M(t):	1.875E-01	1.873E-01	1.868E-01	1.853E-01	1.841E-01	1.840E-01	1.839E-01	1.835E-01				
Maximum TDOSE(t): 4.689E+00 mrem/yr at t = 0.000E+00 years												
Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.884E-05	0.3557
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.026E-05	0.6433
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.100E-07	0.0010
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.092E-04	1.0000
** Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways												

The RESRAD calculation for U-235 used a 95<sup>th</sup> percentile concentration of 0.0519 pCi/g. The maximum dose and risk results are shown below.



## Attachment D1 Radiological Calculations

Contaminated Zone Dimensions				Initial Soil Concentrations, pCi/g								
Area:	1821.00	square meters		U-235	5.190E-02							
Thickness:	2.00	meters										
Cover Depth:	0.00	meters										
Total Dose TDOSE(t), mrem/yr Basic Radiation Dose Limit = 2.500E+01 mrem/yr Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)												
t (years):	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03				
TDOSE(t):	2.146E-02	2.139E-02	2.125E-02	2.077E-02	1.945E-02	1.548E-02	8.072E-03	8.251E-04				
M(t):	8.586E-04	8.558E-04	8.501E-04	8.307E-04	7.780E-04	6.192E-04	3.229E-04	3.301E-05				
Maximum TDOSE(t): 2.146E-02 mrem/yr at t = 0.000E+00 years												
Radio- Nuclide	Water		Fish		Plant		Meat		Milk		All Pathways**	
	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.	risk	fract.
Ac-227	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.048E-10	0.0002
Pa-231	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.713E-11	0.0001
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.796E-07	0.9997
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.798E-07	1.0000
** Sum of water independent ground, inhalation, plant, meat, milk, soil and water dependent water, fish, plant, meat, milk pathways												

### D1.3.0 PRG CALCULATIONS

The USEPA's Preliminary Remediation Goals (PRG) for Radionuclide Contaminants at Superfund Sites calculator (PRG Calculator) was used to calculate PRGs for the following eight radionuclides of interest: Am-241, Cs-137, Co-60, Pu-239/240, Ra-226, Sr-90, Th-232, and U-235. The PRG Calculator can be accessed via the following website: [https://epa-prgs.ornl.gov/cgi-bin/radionuclides/rprg\\_search](https://epa-prgs.ornl.gov/cgi-bin/radionuclides/rprg_search)

#### D1.3.1 Calculator Inputs and Assumptions

The following is a list of common input parameters used to calculate the PRGs.

- Target Risk = 1E-06 and 1E-04
  - The results scale linearly with risk, so a PRG for a 1E-04 risk would be 100 times that for 1E-06.
- Resident scenario, soil media.
- Soil area = 2,000 square meters.
- Climate zone for particulate emission factor = San Francisco, California.
- No exposure from produce.

The following is the list of source and decay options selected for each radionuclide:

- Am-241, Co-60, Sr-90, Cs-137, and Pu-239 were run on a peak risk basis, with decay and ingrowth accounted for.
- Ra-226 and Th-232 were run assuming an equilibrated decay chain without decay.
- U-235 was run without progeny since the decay products would not be present for separated material. The only decay product that would be present with separated U-235 would be Protactinium-231 (Pa-231), which is a negligible contributor to the PRG.

## Attachment D1 Radiological Calculations

### D1.3.2 Calculator Outputs (Target Risk 1E-06)

The following is a summary of the PRG Calculator for the eight radionuclides of interest for a target risk of 1E-06. Similar calculations were performed for a target risk of 1E-04. PRGs for both target risks are presented in the table presented in Section 4.3.2.

#### D1.3.2.1 Results for Am-241

Results for 1E-06 total risk from Am-241 are shown below.

Peak PRG Results	Ingestion PRG TR=1.0E-06 (pCi/g)	Inhalation PRG TR=1.0E-06 (pCi/g)	External Exposure PRG TR=1.0E-06 (pCi/g)	Produce Consumption PRG TR=1.0E-06 (pCi/g)	Total PRG TR=1.0E-06 (pCi/g)
<i>Peak PRG for Am-241 @ PRG units</i>	4.95E+00	1.87E+03	4.90E+00	-	2.46E+00
<i>Peak start time for maximum risk (yrs)</i>	1.00E-08	1.00E-08	1.00E-08	-	1.00E-08
<i>Maximum risk during peak interval (unitless)</i>	2.02E-07	5.34E-10	2.04E-07	-	4.07E-07
<i>Maximum risk-rate during peak interval (risk/yr)</i>	7.94E-09	2.10E-11	8.02E-09	-	1.60E-08

#### D1.3.2.2 Results for Cs-137

Results for 1E-06 total risk from Cs-137 are shown below.

Peak PRG Results	Ingestion PRG TR=1.0E-06 (pCi/g)	Inhalation PRG TR=1.0E-06 (pCi/g)	External Exposure PRG TR=1.0E-06 (pCi/g)	Produce Consumption PRG TR=1.0E-06 (pCi/g)	Total PRG TR=1.0E-06 (pCi/g)
<i>Peak PRG for Cs-137 @ PRG units</i>	2.79E+01	8.17E+05	7.21E-02	-	7.19E-02
<i>Peak start time for maximum risk (yrs)</i>	1.00E-08	1.00E-08	1.00E-08	-	1.00E-08
<i>Maximum risk during peak interval (unitless)</i>	3.59E-08	1.22E-12	1.39E-05	-	1.39E-05
<i>Maximum risk-rate during peak interval (risk/yr)</i>	1.83E-09	6.25E-14	7.09E-07	-	7.09E-07

#### D1.3.2.3 Results for Co-60

Results for 1E-06 total risk from Co-60 are shown below.

Peak PRG Results	Ingestion PRG TR=1.0E-06 (pCi/g)	Inhalation PRG TR=1.0E-06 (pCi/g)	External Exposure PRG TR=1.0E-06 (pCi/g)	Produce Consumption PRG TR=1.0E-06 (pCi/g)	Total PRG TR=1.0E-06 (pCi/g)
<i>Peak PRG for Co-60 @ PRG units</i>	8.28E+01	2.43E+06	3.88E-02	-	3.88E-02
<i>Peak start time for maximum risk (yrs)</i>	1.00E-08	1.00E-08	1.00E-08	-	1.00E-08
<i>Maximum risk during peak interval (unitless)</i>	1.21E-08	4.11E-13	2.58E-05	-	2.58E-05
<i>Maximum risk-rate during peak interval (risk/yr)</i>	1.64E-09	5.59E-14	3.51E-06	-	3.51E-06

## Attachment D1 Radiological Calculations

### D1.3.2.4 Results for Pu-239

Results for 1E-06 total risk from Pu-239 are shown below.

	Ingestion PRG TR=1.0E-06 (pCi/g)	Inhalation PRG TR=1.0E-06 (pCi/g)	External Exposure PRG TR=1.0E-06 (pCi/g)	Produce Consumption PRG TR=1.0E-06 (pCi/g)	Total PRG TR=1.0E-06 (pCi/g)
<b>Peak PRG Results</b>					
<i>Peak PRG for Pu-239 @ PRG units</i>	3.92E+00	1.25E+03	5.54E+02	-	3.88E+00
<i>Peak start time for maximum risk (yrs)</i>	1.00E-08	1.00E-08	1.00E-08	-	1.00E-08
<i>Maximum risk during peak interval (unitless)</i>	2.55E-07	8.01E-10	1.81E-09	-	2.58E-07
<i>Maximum risk-rate during peak interval (risk/yr)</i>	9.82E-09	3.08E-11	6.95E-11	-	9.92E-09

### D1.3.2.5 Results for Ra-226

Results for 1E-06 total risk from Ra-226 are shown below.

	Ingestion PRG TR=1.0E-06 (pCi/g)	Inhalation PRG TR=1.0E-06 (pCi/g)	External Exposure PRG TR=1.0E-06 (pCi/g)	Produce Consumption PRG TR=1.0E-06 (pCi/g)	Total PRG TR=1.0E-06 (pCi/g)
<b>Isotope</b>					
<i>Secular Equilibrium PRG for Ra-226</i>	1.57E-01	1.17E+03	1.63E-02	-	1.48E-02

### D1.3.2.6 Results for Sr-90

Results for 1E-06 total risk from Sr-90 are shown below.

	Ingestion PRG TR=1.0E-06 (pCi/g)	Inhalation PRG TR=1.0E-06 (pCi/g)	External Exposure PRG TR=1.0E-06 (pCi/g)	Produce Consumption PRG TR=1.0E-06 (pCi/g)	Total PRG TR=1.0E-06 (pCi/g)
<b>Peak PRG Results</b>					
<i>Peak PRG for Sr-90 @ PRG units</i>	8.87E+00	2.15E+05	8.00E+00	-	4.21E+00
<i>Peak start time for maximum risk (yrs)</i>	1.00E-08	1.00E-08	1.00E-08	-	1.00E-08
<i>Maximum risk during peak interval (unitless)</i>	1.13E-07	4.66E-12	1.25E-07	-	2.38E-07
<i>Maximum risk-rate during peak interval (risk/yr)</i>	3.71E-09	2.36E-13	6.31E-09	-	8.43E-09

### D1.3.2.7 Results for Th-232

Results for 1E-06 total risk from Th-232 are shown below.

	Ingestion PRG TR=1.0E-06 (pCi/g)	Inhalation PRG TR=1.0E-06 (pCi/g)	External Exposure PRG TR=1.0E-06 (pCi/g)	Produce Consumption PRG TR=1.0E-06 (pCi/g)	Total PRG TR=1.0E-06 (pCi/g)
<b>Isotope</b>					
<i>Secular Equilibrium PRG for Th-232</i>	3.08E-01	2.99E+02	1.17E-02	-	1.13E-02

## Attachment D1 Radiological Calculations

### D1.32.8 Results for U-235

Results for 1E-06 total risk from U-235 are shown below.

Isotope	ICRP Lung Absorption Type	Inhalation Slope Factor (risk/pCi)	External Exposure Slope Factor (risk/yr per pCi/g)	Food Ingestion Slope Factor (risk/pCi)	Soil Ingestion Slope Factor (risk/pCi)	Lambda (1/yr)	Half-life (yr)	2000 m <sup>2</sup> Soil Volume Area Correction Factor	Particulate Emission Factor (m <sup>3</sup> /kg)	Ingestion PRG TR=1.0E-06 (pCi/g)
U-235	S	2.50E-08	5.51E-07	9.44E-11	1.48E-10	9.84E-10	7.04E+08	7.23E-01	1.11E+10	6.05E+00

Isotope	Inhalation PRG TR=1.0E-06 (pCi/g)	External Exposure PRG TR=1.0E-06 (pCi/g)	Produce Consumption PRG TR=1.0E-06 (pCi/g)	Total PRG TR=1.0E-06 (pCi/g)	Total PRG TR=1.0E-06 (mg/kg)
U-235	2.77E+03	2.90E-01	-	2.77E-01	1.28E-01