



Reference: 024141.200

May 13, 2025

Jeremy Svehla, PE
GHD
PO Box 1010
Eureka, CA 95502

Subject: Incremental Sampling Testing Results, Living Shoreline Project Site, Humboldt Bay, California–Amendment-01

Dear Jeremy Svehla:

This letter presents results for incremental sampling methodology (ISM) conducted at the Living Shoreline project site in Humboldt County, California (Figure 1, Appendix 1). The Living Shoreline project intends to provide adaptive mitigation against sea level rise for the existing natural shoreline infrastructure and habitat along a vulnerable stretch of U.S. Highway 101 parallel with the bay shoreline (GHD, 2022). Incremental Sampling Methodology (ISM) testing is designed to provide baseline information of existing conditions for use to evaluate suitability of import material that best matches the natural infrastructure.

1.0 Sample Collection Methodology

The study area consists of a 1.25-mile-long segment of the Humboldt Bay shoreline along U.S. Highway 101 between the Brainard and Bracut industrial areas. Work was performed to characterize the sediment in the salt marsh that extends from the rock slope protected shoreline to a distance of approximately 200-feet offshore. ISM is used to evaluate the physical and chemical characteristics of sediments present over large areas through a structured composite sample collection, processing, and testing program (ITRC, 2020). The results are intended to provide reasonably unbiased, reproducible estimates of the mean concentration of analytes present in areas that are not known to have contamination present or impacts from surrounding areas. The Living Shoreline project site is more than 30 acres in size, so this methodology was chosen to reduce data variability for representative soil samples within the study area.

On October 29, 2024, SHN staff completed sample collection activities during a low-tide event according to ISM protocols. The sediment characterization field program consisted of partitioning the study area into 30 roughly equal sections for the collection of three composite samples. Each composite sample was comprised of 30 individual sediment increments along the 1.25-mile-long project site shown in Figure 2, Appendix 1. Sample collection stations within the Living Shoreline Unit (LSU) were randomly generated on a grid and were located in the field by using a Trimble GPS system. Sediment sample increments were collected using a gouge core sample tool from a depth of approximately 0.25 to 1-foot below the sediment surface at each sample location. All sampling equipment was cleaned prior to use on site and cleaned of loose material between the collection of each discrete sample increment.



2.0 Laboratory Analyses

The testing program consisted of three LSU composite samples submitted for the analysis of the following:

- Cam 17 Metals by U.S. Environmental Protection Agency (EPA) Method No. SW6020,
- Dioxins and furans (including dioxin toxic equivalent [TEQ]) in accordance with EPA Method No. 1613
- Polynuclear aromatic hydrocarbons (PAHs/PNAs) by EPA Method No. 8270-SIM
- Polychlorinated biphenyls (PCBs) and Organochlorine Pesticides by EPA Method No. 8082/8081
- Semi-volatile organic compounds (SVOCs) by EPA Method No. 8270E
- Total petroleum hydrocarbons as diesel (TPHD) and as motor oil (TPHMO) in accordance with EPA Method No. 8015B with silica gel clean up
- Total organic carbon (TOC) by EPA Method No. 9060A
- Particle size analysis according to ASTM-International (ASTM) method No. D422
- Plasticity index according to ASTM method D4318

Testing for chemical analytes was performed by McCampbell Analytical, Inc., a state-certified laboratory located in Pittsburg, California. Physical property testing for texture and plasticity index of sediment samples was completed by the SHN Materials Testing Laboratory located in Eureka, California.

3.0 Sample Testing Results

Testing of sediment collected from the Humboldt Bay Living Shoreline project site shows that concentrations present are consistent within all three composite samples collected based on the following observations:

- There are no detectable concentrations of petroleum hydrocarbons, PCBs, pesticides, or herbicides.
- Concentrations of metals are consistent with regional background levels for this area.
- Dioxin Toxic Equivalent (TEQ) and some SVOCs are present at very low levels.
- Texture analysis showing the material to be predominately comprised of silt and clay

To assess the significance of the concentrations in Living Shoreline samples, the results were compared to similar sites around Humboldt Bay that have incorporated ISM (Table 1, Appendix 2). A study completed in 2015 for the beneficial reuse of dredge material evaluated three sites that included the Arcata Marsh Wildlife Sanctuary, Salmon Creek and White Slough (SHN, 2015). These areas were not known to have been impacted by contributing sources of contaminants and would serve as a reference for the levels occurring naturally and as baseline conditions that are specific to the Humboldt Bay region. The results for LSU samples showed no significant statistical differences at lower levels when compared to similar



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site locations around Humboldt Bay. Tabulated sample results, available background data for reference, and relevant environmental screening levels for comparison purposes are provided in Table 1, Appendix 2. The complete laboratory testing reports are provided in Appendix 3.

4.0 Summary of Findings

ISM testing of three composite samples collected from study area shows consistency in the results that are reasonably unbiased, with reproducible estimates of the mean concentration of analytes. Although some constituents are present at concentrations exceeding environmental screening levels (specifically metals), the levels are consistent with naturally occurring background concentrations observed for the Humboldt Bay area and do not indicate a source of contamination present. This summary of results for ISM testing in the LSU study area shall be used during future studies for comparison of import fill material suitability of placement.

Please contact me at (707) 441-8855 if you have any questions or if I can be of further assistance in this matter.

Respectfully,

SHN

Roland Rueber
FOR

Erik J. Nielsen, PG, CHG
Senior Environmental Hydrogeologist

EJN:JPA:lam

- Appendices:
1. Figures
 2. Tables
 3. Laboratory Analytical Reports



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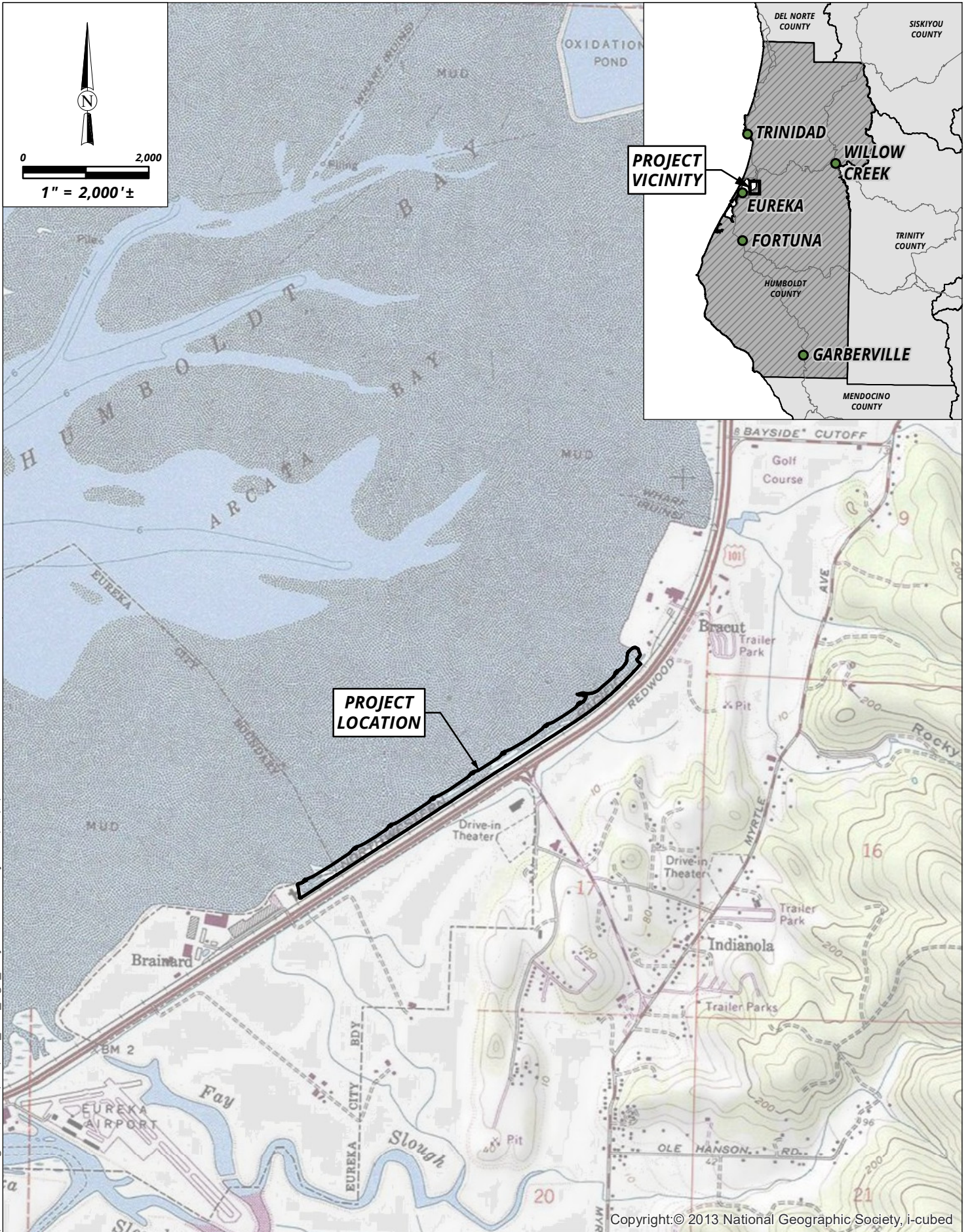
References

- GHD. (September 2022). *Natural Shoreline Infrastructure in Humboldt Bay for Intertidal Coastal Marsh Restoration and Transportation Corridor Protection: 50% Design Report.* Eureka, CA:GHD.
- Interstate Technology & Regulatory Council. (October 2020). *Incremental Sampling Methodology.* ISM-2. Washinton DC: ITRC, Incremental Sampling Methodology Team Technical/Regulatory Guidance. <https://ism-2.itrcweb.org/>
- SHN. (July 2015). *Feasibility Study Beneficial Reuse of Dredged Materials for Tidal Marsh Restoration and Sea Level Rise Adaptation in Humboldt Bay, California.* Eureka, CA:SHN.
- . (September 2024). *Environmental Assessment of Shoreline Sediments, Living Shoreline Project, Humboldt County, California. Work Plan.* Eureka, CA:SHN.



Figures

1



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Humboldt County Department of Public Works
 Living Shoreline Sediment Analysis, Report of Findings
 Eureka, California

Project Location Map Figure

December 2024 - 024141.200

1

EXPLANATION

-  LIVING SHORELINE UNIT
-  LSU SAMPLE GRID
-  LSU RANDOM SAMPLE 1
-  LSU RANDOM SAMPLE 2
-  LSU RANDOM SAMPLE 3

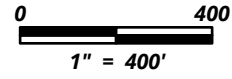


PHOTO SOURCE:
USDA NAIP, 2022



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Humboldt County Department of Public Works
Living Shoreline Sediment Analysis, Report of Findings
Eureka, California

Living Shoreline Unit ISM
Incremental Sampling Methodology
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Figure
2

Tables **2**

Table 1
Incremental Sampling Methodology Testing Results, Humboldt Bay Sediment Results, and Relative Screening Levels
Living Shoreline Sediment, Humboldt Bay California

| | | Living Shoreline Sample Results | | | 2015 Humboldt Bay Sample Results | | | | | Screening Levels (mg/kg) | | | |
|-------------------------------|--------------------|---------------------------------|----------------------|----------------------|----------------------------------|----------------------|------------------------|------------------------|------------------------|--------------------------|----------------|---------|-------------------------------|
| Analyte | Units | LSU-1 (Oct. 2024) | LSU-2 (Oct. 2024) | LSU-3 (Oct. 2024) | SCU (Nov. 2014) | AMWS (Dec. 2014) | WSU – 1 (Nov. 2014) | WSU – 2 (Nov. 2014) | WSU – 3 (Nov. 2014) | DTSC SL (Res. Soil) | SFRWQCB ESL | Eco-SSL | LANL ECORISK Benchmarks |
| Total Organic Carbon | g/kg ¹ | 12 | 12 | 11 | 34 | 12 | 37 | 37 | 43 | NC | NC | NC | NC |
| TPH ³ as Motor Oil | mg/kg | <4.3 | <4.3 | <4.3 | 190 | 310 | 210 | 130 | 140 | NC | 1600 | NC | NC |
| TPH ³ as Diesel | mg/kg | <1.7 | <1.7 | <1.7 | 30 B | 90 | 31 | 19 | 22 | NC | 255 | NC | NC |
| Metals | | | | | | | | | | | | | |
| Silver | mg/kg | <0.084 | <0.084 | <0.084 | <0.090 | 0.090 J ⁵ | <0.089 | <0.098 | <0.093 | NC ²² | 25 | 4.2 | 2.6 |
| Arsenic | mg/kg | 4.7 | 4.8 | 4.9 | 8.0 | 8.3 | 9.1 | 9.5 | 9.5 | 0.11 | 0.067 | 18 | 6.8 |
| Barium | mg/kg | 59 | 60 | 39 | 45 | 62 | 50 | 56 | 51 | NC | 390 | 330 | 110 |
| Beryllium | mg/kg | 0.36 J | 0.39 J | 0.35 J | 0.54 | 0.6 | 0.54 | 0.60 | 0.56 | 16 | 5 | 21 | 2.5 |
| Cadmium | mg/kg | 0.10 J | <0.080 | 0.097 J | 0.047 J | 0.16 J | 0.030 J | <0.033 | <0.031 | NC | 1.9 | 0.36 | 0.27 |
| Cobalt | mg/kg | 8.6 | 8.1 | 8.1 | 8.1 | 16 | 7.8 | 8.6 | 8.1 | NC | 23 | 13 | 13 |
| Chromium | mg/kg | 60 | 61 | 59 | 89 | 100 | 85 | 90 | 93 | NC | 160 | NC | 23 |
| Copper | mg/kg | 21 | 20 | 21 | 29 | 40 B ⁶ | 29 | 29 | 29 | NC | 180 | 28 | 14 |
| Nickel | mg/kg | 68 | 68 | 71 | 81 | 120 | 84 | 88 | 85 | 820 | 86.34 | 38 | 10 |
| Lead | mg/kg | 6.8 | 6.6 | 6.3 | 14 | 15 | 22 | 18 | 33 | 80 | 32 | 11 | 11 |
| Molybdenum | mg/kg | 2 | 2 | 2.1 | 4 | 3.0 | 2.9 | 3.5 B | 3.6 B | NC | 6.9 | NC | 15 |
| Selenium | mg/kg | <0.21 | <0.21 | <0.21 | <1.4 | <1.4 | 1.6 J | <1.5 | <1.5 | NC | 2.4 | 0.52 | 0.52 |
| Thallium | mg/kg | 0.084 J | 0.084 J | 0.075 J | <0.84 | 0.97 J | <0.83 | <0.91 | <0.87 | NC | 0.78 | NC | 0.05 |
| Antimony | mg/kg | 0.10 J | 0.14 J | 0.17 J | 1.3 J | <0.94 | 1.1 J | <1.0 | 1.2 J | NC | 10.95 | 0.27 | 2.3 |
| Vanadium | mg/kg | 43 | 44 | 40 | 58 | 59 | 58 | 62 | 62 | NC | 18 | 7.8 | 4.7 |
| Zinc | mg/kg | 53 | 51 | 55 | 75 | 96 | 74 | 77 | 77 | NC | 340 | NC | 47 |
| Total Mercury | mg/kg | 0.051 | 0.065 | 0.064 | 0.071 | 0.13 | 0.095 | 0.078 | 0.022 J | 1 | 12.51 | NC | 0.01 |
| PCBs⁷ | | | | | | | | | | | | | |
| PCB 1016 | mg/kg | <0.074 | <0.074 | <0.074 | ND | ND | ND | ND | ND | 4 | NC | NC | 1.1 |
| PCB 1221 | mg/kg | <0.074 | <0.074 | <0.074 | ND | ND | ND | ND | ND | 0.2 | NC | NC | NC |
| PCB 1232 | mg/kg | <0.074 | <0.074 | <0.074 | ND | ND | ND | ND | ND | 0.17 | NC | NC | NC |
| PCB 1242 | mg/kg | <0.074 | <0.074 | <0.074 | ND | ND | ND | ND | ND | 0.23 | NC | NC | 0.04 |
| PCB 1248 | mg/kg | <0.074 | <0.074 | <0.074 | ND | ND | ND | ND | ND | 0.23 | NC | NC | 0.01 |
| PCB 1254 | mg/kg | <0.074 | <0.074 | <0.074 | ND | ND | ND | ND | ND | 0.24 | NC | NC | 0.04 |
| PCB 1260 | mg/kg | <0.074 | <0.074 | <0.074 | ND | 4.2 J | ND | ND | ND | 0.24 | NC | NC | 0.88 |
| Semi-Volatile Organics | | | | | | | | | | | | | |
| Naphthalene | µg/kg ⁸ | <0.84 | <0.84 | <0.84 | 5.2 | 29 B | 6.2 | 6.6 | 8.7 | 2 | 0.042 | 29 | 1 |
| Acenaphthylene | µg/kg | <0.56 | <0.56 | <0.56 | ND | 3.0 J | ND | ND | ND | NC | NC | 29 | 120 |
| Acenaphthene | µg/kg | <0.70 | <0.70 | <0.70 | 1.3 J | 5.8 J | 1.7 J | 1.9 J | 2.3 J | 3300 | NC | 29 | 0.25 |
| Fluorene | µg/kg | <2.0 | <2.0 | <2.0 | 2.0 J | 33 | 3.3 J | 4.1 J | 4.6 J | 2300 | 5.96 | 29 | 3.7 |
| Phenanthrene | µg/kg | <1.4 | <1.4 | <1.4 | 23 | 91 | 27 | 28 | 32 | NC | 7.8 | 29 | 5.5 |
| Anthracene | µg/kg | <1.1 | <1.1 | <1.1 | ND | 7.7 J | 0.53 J | 0.49 J | ND | 17,000 | 1.94 | 29 | 6.8 |
| Fluoranthene | µg/kg | 1.6 J | <1.6 | <1.6 | 3.7 J | 46 | 8.2 | 4.4 J | 4.6 J | NC | NC | NC | NC |
| Pyrene | µg/kg | <1.3 | <1.3 | <1.3 | 4.9 J | 59 | 11 | 7.2 | 8 | 1800 | 45 | 1.1 | 10 |
| Benzo(a)anthracene | µg/kg | <0.72 | <0.72 | <0.72 | 1.1 J | 14 J | 1.8 J | 1.7 J | 1.9 J | 1 | 0.63 | 1.1 | 0.73 |
| Chrysene | µg/kg | <1.3 | <1.3 | <1.3 | 8.3 | 35 | 11 | 10 | 11 | 110 | 2.16 | 1.1 | 3.1 |
| Benzofluoranthene | µg/kg | <2.2 | 2.3 J | 2.4 J | 7.9 | 15 J | 10 | 10 | 12 | 1 | 1.15 | 1.1 | 18 |

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| Analyte | Units | LSU-1 (Oct. 2024) | LSU-2 (Oct. 2024) | LSU-3 (Oct. 2024) | SCU (Nov. 2014) | AMWS (Dec. 2014) | WSU – 1 (Nov. 2014) | WSU – 2 (Nov. 2014) | WSU – 3 (Nov. 2014) | DTSC SL (Res. Soil) | SFRWQCB ESL | Eco-SSL | LANL ECORISK Benchmarks |
| Benzo(a)pyrene | µg/kg | <1.4 | <1.4 | <1.4 | 0.51 J | 17 J | 1.7 J | 1.2 J | 1.3 J | 0.11 | 0.11 | 1.1 | 62 |
| Indeno(1,2,3-cd)pyrene | µg/kg | <3.2 | <3.2 | <3.2 | 0.93 J | 17 J | 1.9 J | 1.4 J | 1.3 J | 1 | 0.48 | 1.1 | 71 |
| Dibenz(a,h)anth-racene | µg/kg | <2.2 | <2.2 | <2.2 | ND | ND | ND | ND | ND | 0.028 | 0.11 | 1.1 | 14 |
| Benzo(g,h,i)perylene | µg/kg | <1.8 | 2.7 J | 2.5 J | 2.5 J | 28 | 5.1 | 4.6 J | 4.4 J | NC | 2.5 | 1.1 | 25 |
| Organochlorine Pesticides | | | | | | | | | | | | | |
| 4,4'-DDD | µg/kg | <2.0 | <2.0 | <2.0 | ND | 0.42 J p ⁹ | ND | ND | ND | 1.9 | 2.67 | NC | 0.01 |
| 4,4'-DDE | µg/kg | <2.0 | <2.0 | <2.0 | ND | 0.46 J | ND | ND | ND | 2 | 0.33 | NC | 0.11 |
| 4,4'-DDT | µg/kg | <2.0 | <2.0 | <2.0 | ND | ND | ND | ND | ND | 1.9 | 0.0011 | NC | 0.04 |
| Aldrin | µg/kg | <2.0 | <2.0 | <2.0 | ND | ND | ND | ND | ND | 0.039 | NC | NC | 0.04 |
| Alpha-BHC | µg/kg | <2.0 | <2.0 | <2.0 | ND | ND | ND | ND | ND | 0.1 | NC | NC | 59 |
| Beta-BHC | µg/kg | <2.0 | <2.0 | <2.0 | ND | ND | ND | ND | ND | 0.3 | NC | NC | 0.27 |
| Delta-BHC | µg/kg | <2.0 | <2.0 | <2.0 | ND | ND | ND | ND | ND | NC | NC | NC | NC |
| Dieldrin | µg/kg | <2.0 | <2.0 | <2.0 | 0.78 J | 0.35 J p ¹⁰ | ND | ND | ND | 0.034 | 0.00046 | NC | 0.0045 |
| Endosulfan-I | µg/kg | <2.0 | <2.0 | <2.0 | ND | ND | ND | ND | ND | NC | NC | NC | NC |
| Endosulfan-II | µg/kg | <2.0 | <2.0 | <2.0 | ND | 0.61 J P | 0.13 J H ¹¹ | ND | ND | NC | NC | NC | NC |
| Endosulfan sulfate | µg/kg | <2.0 | <2.0 | <2.0 | ND | 1.3 J P | ND | ND | ND | 380 | NC | NC | NC |
| Endrin | µg/kg | <2.0 | <2.0 | <2.0 | ND | ND | ND | ND | ND | 19 | 0.0011 | NC | 0.0014 |
| Endrin aldehyde | µg/kg | <2.0 | <2.0 | <2.0 | ND | ND | ND | ND | ND | NC | NC | NC | NC |
| Endrin ketone | µg/kg | <0.84 | <0.84 | <0.84 | ND | ND | ND | ND | ND | NC | NC | NC | NC |
| Gamma-BHC (Lindane) | µg/kg | <2.0 | <2.0 | <2.0 | ND | ND | ND | ND | ND | 0.6 | 0.01 | NC | 0.01 |
| Gamma-Chlordane | µg/kg | <2.0 | <2.0 | <2.0 | ND | ND | ND | ND | ND | | | | |
| Heptochlor | µg/kg | <2.0 | <2.0 | <2.0 | ND | ND | ND | ND | ND | 0.1 | 0.12 | NC | 0.06 |
| Heptochlor epoxide | µg/kg | <2.0 | <2.0 | <2.0 | ND | ND | 1.0 J H | 1.2 J | 1.5 J | 0.1 | 0.00018 | NC | NC |
| Methoxychlor | µg/kg | <2.0 | <2.0 | <2.0 | ND | ND | ND | ND | ND | 320 | 0.013 | NC | 5.1 |
| Toxaphene | µg/kg | <400 | <400 | <400 | ND | ND | ND | ND | ND | 0.5 | 0.51 | NC | 4.1 |
| Herbicides | | | | | | | | | | | | | |
| Pentachloro-phenol | µg/kg | <0.12 | <0.12 | <0.12 | ND | ND | ND | ND | ND | 1 | 0.013 | NC | 0.36 |
| Dioxins and Furans | | | | | | | | | | | | | |
| 2,3,7,8-TCDD TEQ | pg/g ¹² | 0.21 | 0.287 | 0.254 | 0.62 | 38 | 0.21 | 0.35 | 0.22 | 50 | NC | NC | NC |
| 2,3,7,8-TCDD | pg/g | <1.0 | <1.0 | <1.0 | ND | 0.68 J | ND | 0.12 J q ¹³ | ND | 4.8 | 4.8 | NC | 0.29 |
| 2,3,7,8-TCDF | pg/g | 0.940 J | 1.24 | 1.22 | 0.56 J | 2.2 | 0.56 J q | 0.64 J | 0.67 J | NC | NC | NC | NC |
| 1,2,3,7,8-PeCDD | pg/g | <5.0 | <5.0 | <5.0 | 0.21 J | 4.8 J | ND | ND | ND | NC | NC | NC | NC |
| 1,2,3,7,8-PeCDF | pg/g | <5.0 | <5.0 | <5.0 | 0.20 J | 6.6 | ND | ND | ND | NC | NC | NC | NC |
| 2,3,4,7,8-PeCDF | pg/g | <5.0 | <5.0 | <5.0 | 0.20 J | 12 | ND | ND | ND | NC | NC | NC | NC |
| 1,2,3,4,7,8-HxCDD | pg/g | <5.0 | <5.0 | <5.0 | 0.23 J q | 8.8 | ND | 0.13 J q | 0.16 J | NC | NC | NC | NC |
| 1,2,3,6,7,8-HxCDD | pg/g | <5.0 | <5.0 | <5.0 | 0.48 J | 30 | ND | 0.16 J q | 0.29 J | NC | NC | NC | NC |
| 1,2,3,7,8,9-HxCDD | pg/g | <5.0 | <5.0 | <5.0 | 0.62 J | 18 | ND | 0.50 J | 0.44 J | NC | NC | NC | NC |

Table 1
Incremental Sampling Methodology Testing Results, Humboldt Bay Sediment Results, and Relative Screening Levels
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| Analyte | Units | Living Shoreline Sample Results | | | 2015 Humboldt Bay Sample Results | | | | | Screening Levels (mg/kg) | | | |
|---------------------|-------|---------------------------------|----------------------|----------------------|----------------------------------|--------------------------|------------------------|------------------------|------------------------|--------------------------|----------------|---------|-------------------------------|
| | | LSU-1 (Oct. 2024) | LSU-2 (Oct. 2024) | LSU-3 (Oct. 2024) | SCU (Nov. 2014) | AMWS (Dec. 2014) | WSU – 1 (Nov. 2014) | WSU – 2 (Nov. 2014) | WSU – 3 (Nov. 2014) | DTSC SL (Res. Soil) | SFRWQCB ESL | Eco-SSL | LANL ECORISK Benchmarks |
| 1,2,3,4,7,8-HxCDF | pg/g | <5.0 | <5.0 | <5.0 | 0.21 J q | 74 G ¹⁵ | ND | 0.21 J | 0.10 J q | NC | NC | NC | NC |
| 1,2,3,6,7,8-HxCDF | pg/g | <5.0 | <5.0 | <5.0 | 0.15 J q | 25 | ND | 0.063 J | ND | NC | NC | NC | NC |
| 1,2,3,7,8,9-HxCDF | pg/g | <5.0 | <5.0 | <5.0 | 0.37 J q | ND G | 0.95 J | ND | ND | NC | NC | NC | NC |
| 2,3,4,6,7,8-HxCDF | pg/g | <5.0 | <5.0 | <5.0 | 0.23 J | 9.1 | ND | 0.13 J | ND | NC | NC | NC | NC |
| 1,2,3,4,6,7,8-HpCDD | pg/g | 8.42 | 11.6 | 9.46 | 4.4 J B | 760 G | 4.1 J B | 3.5 J | 3.8 J | NC | NC | NC | NC |
| 1,2,3,4,6,7,8-HpCDF | pg/g | 1.82 J | 2.24 J | 1.70 J | 0.49 J B | 280 G | 0.62 J q B | 0.57 J B | 0.59 J B | NC | NC | NC | NC |
| 1,2,3,4,7,8,9-HpCDF | pg/g | <5.0 | <5.0 | <5.0 | 0.14 J | ND G | 0.20 J | ND | ND | NC | NC | NC | NC |
| OCDD | pg/g | 50.6 | 78.3 | 64.2 | 23 B | 4600 E ²¹ G B | 21 B | 16 B | 18 B | NC | NC | NC | NC |
| OCDF | pg/g | 2.36 J | 3.88 J | 2.74 J | 0.85 J B | 430 B | 1.3 J B | 1.1 J | 1.0 J q | NC | NC | NC | NC |

1. g/kg: grams per kilogram
2. mg/kg: milligrams per kilogram
3. TPH: total petroleum hydrocarbons
4. ND: nondetectable
5. J: below reporting limit, estimate above or equal to the method detection limit
6. B: compound was found in the blank and sample
7. PCBs: polychlorinated biphenyls
8. µg/kg: micrograms per kilogram
9. p: the relative percent difference (% RPD) between the primary and confirmation column/detector is greater than 40% and the lower value has been reported
10. P: the % RPD between the primary and confirmation column/detector is greater than 40% and the higher value has been reported
11. H: sample was prepped or analyzed beyond the specified holding time
12. pg/g: picograms per gram
13. q: The reported result is the estimated maximum possible concentration of this analyte, quantitated using the theoretical ion ratio. The measured ion ratio does not meet qualitative identification criteria and indicates a possible interference
14. Reporting limit for AMWS-1 (Lab ID #5) was raised to 5.2 pg/g
15. G: the reported quantitation limit has been raised due to an exhibited elevated noise or matrix interference
16. Reporting limit for AMWS-1 (Lab ID #5) was raised to 6.0 pg/g
17. Reporting limit for AMWS-1 (Lab ID #5) was raised to 44 pg/g
18. Reporting limit for AMWS-1 (Lab ID #5) was raised to 15 pg/g
19. Reporting limit for AMWS-1 (Lab ID #5) was raised to 27 pg/g
20. Reporting limit for AMWS-1 (Lab ID #5) was raised to 51 pg/g
21. E: result exceeded calibration range
22. NC: No criterion

Laboratory Analytical Reports

3



McC Campbell Analytical, Inc.

"When Quality Counts"

Analytical Report

WorkOrder: 2410N54

Report Created for: SHN Consulting Engineers & Geologists, Inc.
812 W. Wabash Ave.
Eureka, CA 95501

Project Contact: Erik Nielsen
Project P.O.:
Project: 024141.200; Living Shoreline

Project Location: Humboldt Bay, California
Project Received: 10/31/2024

Analytical Report reviewed & approved for release on 11/15/2024 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 regulatory standards, where applicable, unless otherwise stated in a case narrative.





Glossary of Terms & Qualifier Definitions

Client: SHN Consulting Engineers & Geologists, Inc.

WorkOrder: 2410N54

Project: 024141.200; Living Shoreline

Glossary Abbreviation

| | |
|----------------|--|
| %D | Serial Dilution Percent Difference |
| 95% Interval | 95% Confident Interval |
| CCV | Continuing Calibration Verification. |
| CCV REC (%) | % recovery of Continuing Calibration Verification. |
| 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 |
| LCS2 | Second LCS for the batch. Spike level is lower than that for the first LCS; applicable to method 1633. |
| LQL | Lowest Quantitation Level |
| MB | Method Blank |
| MB IS/SS % Rec | % Recovery of Internal Standard or Surrogate in Method Blank, if applicable |
| MB SS % Rec | % Recovery of Surrogate in Method Blank, if applicable |
| MDL | Method Detection Limit ¹ |
| 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 |
| PF | Prep Factor |
| RD | Relative Difference |
| RL | Reporting Limit ² |
| RPD | Relative Percent Difference |
| RRT | Relative Retention Time |
| RSD | Relative Standard Deviation |
| SNR | Surrogate is diluted out of the calibration range |

¹ MDL is the minimum measured concentration of a substance that can be reported with 99% confidence that the measured concentration is distinguishable from method blank results. Definition and Procedure for the Determination of the Method Detection Limit, Revision 2, 40CFR, Part 136, Appendix B, EPA 821-R-16-006, December 2016. Values are based upon our default extraction volume/amount and are subject to change.

² RL is the lowest level that can be reliably determined within specified limits of precision and accuracy during routine laboratory operating conditions. (The RL cannot be lower than the lowest calibration standard used in the initial calibration of the instrument and must be greater than the MDL.) Values are based upon our default extraction volume/amount and are subject to change.



Glossary of Terms & Qualifier Definitions

Client: SHN Consulting Engineers & Geologists, Inc.

WorkOrder: 2410N54

Project: 024141.200; Living Shoreline

| | |
|------------|--|
| 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 |
| TNTC | "Too Numerous to Count;" greater than 250 colonies observed on the plate. |
| TZA | TimeZone Net Adjustment for sample collected outside of MAI's Coordinated Universal Time (UTC). (Adjustment for Daylight Saving is not accounted.) |
| WET (STLC) | Waste Extraction Test (Soluble Threshold Limit Concentration) |

Analytical Qualifiers

| | |
|-----|---|
| J | Result is less than the RL/ML but greater than the MDL. The reported concentration is an estimated value. |
| M | Estimated Maximum Possible Concentration. |
| a3 | Sample diluted due to high organic content interfering with quantitative/or qualitative analysis. |
| a14 | Reporting limit raised due to the physical nature of the sample. |
| h2 | Silica-gel (EPA 3630) cleanup |

Quality Control Qualifiers

| | |
|-----|---|
| F2 | LCS/LCSD recovery and/or RPD/RSD is out of acceptance criteria. |
| F3 | The surrogate standard recovery and/or RPD is outside of acceptance limits. |
| F5 | LCS/LCSD recovery is outside of acceptance limits; however, the data is acceptable based upon the TNI allowable marginal exceedances. |
| F10 | MS/MSD outside control limits. Physical or chemical interferences exist due to sample matrix. |



Analytical Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Received: 10/31/2024 9:30
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
Extraction Method: E1613B
Analytical Method: E1613B
Unit: pg/g-dry

Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans

| Client ID | Lab ID | Matrix | Date Collected |
|-----------|--------------|--------|------------------|
| LSU-01 | 2410N54-001A | Soil | 10/29/2024 17:45 |

| Analytes | TEF WHO '05 | Result | Qualifiers | MDL | ML | DF | Ion Ratio | RRT | TEQ | Date Analyzed |
|---------------------|----------------|--------------|------------|-------|------|----|--------------|------|----------|------------------|
| 2,3,7,8-TCDD | | ND | | 0.190 | 1.00 | 1 | | | | 11/14/2024 17:41 |
| 1,2,3,7,8-PeCDD | | ND | | 0.540 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| 1,2,3,4,7,8-HxCDD | | ND | | 0.620 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| 1,2,3,6,7,8-HxCDD | | ND | | 0.750 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| 1,2,3,7,8,9-HxCDD | | ND | | 0.880 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| 1,2,3,4,6,7,8-HpCDD | 0.01 | 8.42 | | 0.900 | 5.00 | 1 | 1.14 | 1 | 0.0842 | 11/14/2024 17:41 |
| OCDD | 0.0003 | 50.6 | | 1.90 | 10.0 | 1 | 1.00 | 1 | 0.01518 | 11/14/2024 17:41 |
| 2,3,7,8-TCDF | 0.1 | 0.940 | J | 0.240 | 1.00 | 1 | 0.78 | 1 | 0.094 | 11/14/2024 17:41 |
| 1,2,3,7,8-PeCDF | | ND | | 0.600 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| 2,3,4,7,8-PeCDF | | ND | | 0.610 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| 1,2,3,4,7,8-HxCDF | | ND | | 0.750 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| 1,2,3,6,7,8-HxCDF | | ND | | 0.730 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| 1,2,3,7,8,9-HxCDF | | ND | | 0.860 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| 2,3,4,6,7,8-HxCDF | | ND | | 0.790 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| 1,2,3,4,6,7,8-HpCDF | 0.01 | 1.62 | J | 0.880 | 5.00 | 1 | 1.12 | 1 | 0.0162 | 11/14/2024 17:41 |
| 1,2,3,4,7,8,9-HpCDF | | ND | | 0.880 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| OCDF | 0.0003 | 2.36 | J | 1.90 | 10.0 | 1 | 0.77 | 1.01 | 0.000708 | 11/14/2024 17:41 |
| Total-Tetradoxins | | 1.06 | M | 0.190 | 1.00 | 1 | | | | 11/14/2024 17:41 |
| Total-Pentadoxins | | ND | | 0.540 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| Total-Hexadoxins | | 7.66 | | 0.880 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| Total-Heptadoxins | | 22.4 | | 0.900 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| Total-Tetrafurans | | 19.1 | M | 0.240 | 1.00 | 1 | | | | 11/14/2024 17:41 |
| Total-Pentafurans | | 1.86 | J | 0.610 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| Total-Hexafurans | | 4.72 | J | 0.860 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| Total-Heptafurans | | 4.76 | J | 0.880 | 5.00 | 1 | | | | 11/14/2024 17:41 |
| Total PCDD+PCDF | | 115 | J | NA | 1.00 | 1 | | | | 11/14/2024 17:41 |

Total Toxicity Equivalence (TEQ): **0.210**

| Cleanup Standard | REC (%) | Limits | Date Analyzed |
|---------------------------|---------|--------|------------------|
| 37Cl-2,3,7,8-TCDD | 77 | 35-197 | 11/14/2024 17:41 |
| Labeled Compound Recovery | REC (%) | Limits | Date Analyzed |
| 13C-2,3,7,8-TCDD | 75 | 25-164 | 11/14/2024 17:41 |
| 13C-1,2,3,7,8-PeCDD | 92 | 25-181 | 11/14/2024 17:41 |
| 13C-1,2,3,4,7,8-HxCDD | 60 | 32-141 | 11/14/2024 17:41 |
| 13C-1,2,3,6,7,8-HxCDD | 82 | 28-130 | 11/14/2024 17:41 |
| 13C-1,2,3,4,6,7,8-HpCDD | 66 | 23-140 | 11/14/2024 17:41 |

(Cont.)



Analytical Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Received: 10/31/2024 9:30
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
Extraction Method: E1613B
Analytical Method: E1613B
Unit: pg/g-dry

Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans

| Client ID | Lab ID | Matrix | Date Collected |
|-----------|--------------|--------|------------------|
| LSU-01 | 2410N54-001A | Soil | 10/29/2024 17:45 |

| Analytes | TEF WHO '05 | Result | Qualifiers | MDL | ML | DF | Ion Ratio | RRT | TEQ | Date Analyzed |
|----------------------------------|----------------|----------------|------------|-----|---------------|----|--------------|-----|-----|------------------|
| <u>Labeled Compound Recovery</u> | | <u>REC (%)</u> | | | <u>Limits</u> | | | | | |
| 13C-OCDD | | 55 | | | 17-157 | | | | | 11/14/2024 17:41 |
| 13C-2,3,7,8-TCDF | | 87 | | | 24-169 | | | | | 11/14/2024 17:41 |
| 13C-1,2,3,7,8-PeCDF | | 93 | | | 24-185 | | | | | 11/14/2024 17:41 |
| 13C-2,3,4,7,8-PeCDF | | 106 | | | 21-178 | | | | | 11/14/2024 17:41 |
| 13C-1,2,3,4,7,8-HxCDF | | 63 | | | 26-152 | | | | | 11/14/2024 17:41 |
| 13C-1,2,3,6,7,8-HxCDF | | 78 | | | 26-123 | | | | | 11/14/2024 17:41 |
| 13C-2,3,4,6,7,8-HxCDF | | 79 | | | 28-136 | | | | | 11/14/2024 17:41 |
| 13C-1,2,3,7,8,9-HxCDF | | 64 | | | 29-147 | | | | | 11/14/2024 17:41 |
| 13C-1,2,3,4,6,7,8-HpCDF | | 72 | | | 28-143 | | | | | 11/14/2024 17:41 |
| 13C-1,2,3,4,7,8,9-HpCDF | | 64 | | | 26-138 | | | | | 11/14/2024 17:41 |

| Date Analyzed | InstrumentID | FileID | Analyst | Comments | BatchID | Date Prepared |
|------------------|--------------|----------|---------|----------|---------|------------------|
| 11/14/2024 17:41 | GC36 | 11142408 | DVU | - | 305688 | 11/11/2024 11:15 |



Analytical Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Received: 10/31/2024 9:30
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
Extraction Method: E1613B
Analytical Method: E1613B
Unit: pg/g-dry

Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans

| Client ID | Lab ID | Matrix | Date Collected |
|-----------|--------------|--------|------------------|
| LSU-02 | 2410N54-002A | Soil | 10/29/2024 18:00 |

| Analytes | TEF WHO '05 | Result | Qualifiers | MDL | ML | DF | Ion Ratio | RRT | TEQ | Date Analyzed |
|---------------------|----------------|--------------|------------|-------|------|----|--------------|------|----------|------------------|
| 2,3,7,8-TCDD | | ND | | 0.190 | 1.00 | 1 | | | | 11/14/2024 18:38 |
| 1,2,3,7,8-PeCDD | | ND | | 0.540 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| 1,2,3,4,7,8-HxCDD | | ND | | 0.620 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| 1,2,3,6,7,8-HxCDD | | ND | | 0.750 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| 1,2,3,7,8,9-HxCDD | | ND | | 0.880 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| 1,2,3,4,6,7,8-HpCDD | 0.01 | 11.6 | | 0.900 | 5.00 | 1 | 1.11 | 1 | 0.116 | 11/14/2024 18:38 |
| OCDD | 0.0003 | 78.3 | | 1.90 | 10.0 | 1 | 0.88 | 1 | 0.02349 | 11/14/2024 18:38 |
| 2,3,7,8-TCDF | 0.1 | 1.24 | | 0.240 | 1.00 | 1 | 0.8 | 1 | 0.124 | 11/14/2024 18:38 |
| 1,2,3,7,8-PeCDF | | ND | | 0.600 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| 2,3,4,7,8-PeCDF | | ND | | 0.610 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| 1,2,3,4,7,8-HxCDF | | ND | | 0.750 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| 1,2,3,6,7,8-HxCDF | | ND | | 0.730 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| 1,2,3,7,8,9-HxCDF | | ND | | 0.860 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| 2,3,4,6,7,8-HxCDF | | ND | | 0.790 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| 1,2,3,4,6,7,8-HpCDF | 0.01 | 2.24 | J | 0.880 | 5.00 | 1 | 1.01 | 1 | 0.0224 | 11/14/2024 18:38 |
| 1,2,3,4,7,8,9-HpCDF | | ND | | 0.880 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| OCDF | 0.0003 | 3.88 | J | 1.90 | 10.0 | 1 | 0.93 | 1.01 | 0.001164 | 11/14/2024 18:38 |
| Total-Tetradoxins | | 0.700 | J | 0.190 | 1.00 | 1 | | | | 11/14/2024 18:38 |
| Total-Pentadoxins | | 0.780 | JM | 0.540 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| Total-Hexadoxins | | 10.6 | | 0.880 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| Total-Heptadoxins | | 33.4 | | 0.900 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| Total-Tetrafurans | | 24.7 | M | 0.240 | 1.00 | 1 | | | | 11/14/2024 18:38 |
| Total-Pentafurans | | 3.00 | J | 0.610 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| Total-Hexafurans | | 6.26 | | 0.860 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| Total-Heptafurans | | 7.90 | | 0.880 | 5.00 | 1 | | | | 11/14/2024 18:38 |
| Total PCDD+PCDF | | 170 | J | NA | 1.00 | 1 | | | | 11/14/2024 18:38 |

Total Toxicity Equivalence (TEQ):

0.287

| Cleanup Standard | REC (%) | Limits | Date Analyzed |
|---------------------------|---------|--------|------------------|
| 37Cl-2,3,7,8-TCDD | 80 | 35-197 | 11/14/2024 18:38 |
| Labeled Compound Recovery | REC (%) | Limits | Date Analyzed |
| 13C-2,3,7,8-TCDD | 77 | 25-164 | 11/14/2024 18:38 |
| 13C-1,2,3,7,8-PeCDD | 88 | 25-181 | 11/14/2024 18:38 |
| 13C-1,2,3,4,7,8-HxCDD | 66 | 32-141 | 11/14/2024 18:38 |
| 13C-1,2,3,6,7,8-HxCDD | 86 | 28-130 | 11/14/2024 18:38 |
| 13C-1,2,3,4,6,7,8-HpCDD | 79 | 23-140 | 11/14/2024 18:38 |

(Cont.)



Analytical Report

| | | | |
|-----------------------|---|---------------------------|----------|
| Client: | SHN Consulting Engineers & Geologists, Inc. | WorkOrder: | 2410N54 |
| Date Received: | 10/31/2024 9:30 | Extraction Method: | E1613B |
| Project: | 024141.200; Living Shoreline | Analytical Method: | E1613B |
| | | Unit: | pg/g-dry |

Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans

| Client ID | Lab ID | Matrix | Date Collected |
|-----------|--------------|--------|------------------|
| LSU-02 | 2410N54-002A | Soil | 10/29/2024 18:00 |

| Analytes | TEF WHO '05 | Result | Qualifiers | MDL | ML | DF | Ion Ratio | RRT | TEQ | Date Analyzed |
|----------------------------------|----------------|----------------|------------|-----|---------------|----|--------------|-----|-----|------------------|
| <u>Labeled Compound Recovery</u> | | <u>REC (%)</u> | | | <u>Limits</u> | | | | | |
| 13C-OCDD | | 67 | | | 17-157 | | | | | 11/14/2024 18:38 |
| 13C-2,3,7,8-TCDF | | 89 | | | 24-169 | | | | | 11/14/2024 18:38 |
| 13C-1,2,3,7,8-PeCDF | | 97 | | | 24-185 | | | | | 11/14/2024 18:38 |
| 13C-2,3,4,7,8-PeCDF | | 98 | | | 21-178 | | | | | 11/14/2024 18:38 |
| 13C-1,2,3,4,7,8-HxCDF | | 76 | | | 26-152 | | | | | 11/14/2024 18:38 |
| 13C-1,2,3,6,7,8-HxCDF | | 89 | | | 26-123 | | | | | 11/14/2024 18:38 |
| 13C-2,3,4,6,7,8-HxCDF | | 85 | | | 28-136 | | | | | 11/14/2024 18:38 |
| 13C-1,2,3,7,8,9-HxCDF | | 75 | | | 29-147 | | | | | 11/14/2024 18:38 |
| 13C-1,2,3,4,6,7,8-HpCDF | | 80 | | | 28-143 | | | | | 11/14/2024 18:38 |
| 13C-1,2,3,4,7,8,9-HpCDF | | 75 | | | 26-138 | | | | | 11/14/2024 18:38 |

| Date Analyzed | InstrumentID | FileID | Analyst | Comments | BatchID | Date Prepared |
|------------------|--------------|----------|---------|----------|---------|------------------|
| 11/14/2024 18:38 | GC36 | 11142409 | DVU | - | 305688 | 11/11/2024 11:15 |

(Cont.)



Analytical Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Received: 10/31/2024 9:30
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
Extraction Method: E1613B
Analytical Method: E1613B
Unit: pg/g-dry

Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans

| Client ID | Lab ID | Matrix | Date Collected |
|-----------|--------------|--------|------------------|
| LSU-03 | 2410N54-003A | Soil | 10/29/2024 18:15 |

| Analytes | TEF WHO '05 | Result | Qualifiers | MDL | ML | DF | Ion Ratio | RRT | TEQ | Date Analyzed |
|---------------------|----------------|--------------|------------|-------|------|----|--------------|------|----------|------------------|
| 2,3,7,8-TCDD | | ND | | 0.190 | 1.00 | 1 | | | | 11/14/2024 19:36 |
| 1,2,3,7,8-PeCDD | | ND | | 0.540 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| 1,2,3,4,7,8-HxCDD | | ND | | 0.620 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| 1,2,3,6,7,8-HxCDD | | ND | | 0.750 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| 1,2,3,7,8,9-HxCDD | | ND | | 0.880 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| 1,2,3,4,6,7,8-HpCDD | 0.01 | 9.46 | | 0.900 | 5.00 | 1 | 1.14 | 1 | 0.0946 | 11/14/2024 19:36 |
| OCDD | 0.0003 | 64.2 | | 1.90 | 10.0 | 1 | 0.89 | 1 | 0.01926 | 11/14/2024 19:36 |
| 2,3,7,8-TCDF | 0.1 | 1.22 | | 0.240 | 1.00 | 1 | 0.86 | 1 | 0.122 | 11/14/2024 19:36 |
| 1,2,3,7,8-PeCDF | | ND | | 0.600 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| 2,3,4,7,8-PeCDF | | ND | | 0.610 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| 1,2,3,4,7,8-HxCDF | | ND | | 0.750 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| 1,2,3,6,7,8-HxCDF | | ND | | 0.730 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| 1,2,3,7,8,9-HxCDF | | ND | | 0.860 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| 2,3,4,6,7,8-HxCDF | | ND | | 0.790 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| 1,2,3,4,6,7,8-HpCDF | 0.01 | 1.70 | J | 0.880 | 5.00 | 1 | 1.07 | 1 | 0.017 | 11/14/2024 19:36 |
| 1,2,3,4,7,8,9-HpCDF | | ND | | 0.880 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| OCDF | 0.0003 | 2.74 | J | 1.90 | 10.0 | 1 | 0.99 | 1.01 | 0.000822 | 11/14/2024 19:36 |
| Total-Tetradoxins | | 1.20 | | 0.190 | 1.00 | 1 | | | | 11/14/2024 19:36 |
| Total-Pentadoxins | | 0.740 | J | 0.540 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| Total-Hexadoxins | | 7.94 | | 0.880 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| Total-Heptadoxins | | 26.9 | | 0.900 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| Total-Tetrafurans | | 20.6 | M | 0.240 | 1.00 | 1 | | | | 11/14/2024 19:36 |
| Total-Pentafurans | | 2.20 | J | 0.610 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| Total-Hexafurans | | 4.58 | JM | 0.860 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| Total-Heptafurans | | 4.78 | J | 0.880 | 5.00 | 1 | | | | 11/14/2024 19:36 |
| Total PCDD+PCDF | | 136 | J | NA | 1.00 | 1 | | | | 11/14/2024 19:36 |

Total Toxicity Equivalence (TEQ): 0.254

| Cleanup Standard | REC (%) | Limits | Date Analyzed |
|---------------------------|---------|--------|------------------|
| 37Cl-2,3,7,8-TCDD | 81 | 35-197 | 11/14/2024 19:36 |
| Labeled Compound Recovery | REC (%) | Limits | Date Analyzed |
| 13C-2,3,7,8-TCDD | 83 | 25-164 | 11/14/2024 19:36 |
| 13C-1,2,3,7,8-PeCDD | 97 | 25-181 | 11/14/2024 19:36 |
| 13C-1,2,3,4,7,8-HxCDD | 73 | 32-141 | 11/14/2024 19:36 |
| 13C-1,2,3,6,7,8-HxCDD | 91 | 28-130 | 11/14/2024 19:36 |
| 13C-1,2,3,4,6,7,8-HpCDD | 79 | 23-140 | 11/14/2024 19:36 |

(Cont.)



Analytical Report

| | | | |
|-----------------------|---|---------------------------|----------|
| Client: | SHN Consulting Engineers & Geologists, Inc. | WorkOrder: | 2410N54 |
| Date Received: | 10/31/2024 9:30 | Extraction Method: | E1613B |
| Project: | 024141.200; Living Shoreline | Analytical Method: | E1613B |
| | | Unit: | pg/g-dry |

Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans

| Client ID | Lab ID | Matrix | Date Collected |
|-----------|--------------|--------|------------------|
| LSU-03 | 2410N54-003A | Soil | 10/29/2024 18:15 |

| Analytes | TEF WHO '05 | Result | Qualifiers | MDL | ML | DF | Ion Ratio | RRT | TEQ | Date Analyzed |
|----------------------------------|----------------|----------------|------------|-----|---------------|----|--------------|-----|-----|------------------|
| <u>Labeled Compound Recovery</u> | | <u>REC (%)</u> | | | <u>Limits</u> | | | | | |
| 13C-OCDD | | 67 | | | 17-157 | | | | | 11/14/2024 19:36 |
| 13C-2,3,7,8-TCDF | | 99 | | | 24-169 | | | | | 11/14/2024 19:36 |
| 13C-1,2,3,7,8-PeCDF | | 108 | | | 24-185 | | | | | 11/14/2024 19:36 |
| 13C-2,3,4,7,8-PeCDF | | 106 | | | 21-178 | | | | | 11/14/2024 19:36 |
| 13C-1,2,3,4,7,8-HxCDF | | 82 | | | 26-152 | | | | | 11/14/2024 19:36 |
| 13C-1,2,3,6,7,8-HxCDF | | 93 | | | 26-123 | | | | | 11/14/2024 19:36 |
| 13C-2,3,4,6,7,8-HxCDF | | 89 | | | 28-136 | | | | | 11/14/2024 19:36 |
| 13C-1,2,3,7,8,9-HxCDF | | 77 | | | 29-147 | | | | | 11/14/2024 19:36 |
| 13C-1,2,3,4,6,7,8-HpCDF | | 81 | | | 28-143 | | | | | 11/14/2024 19:36 |
| 13C-1,2,3,4,7,8,9-HpCDF | | 75 | | | 26-138 | | | | | 11/14/2024 19:36 |

| Date Analyzed | InstrumentID | FileID | Analyst | Comments | BatchID | Date Prepared |
|------------------|--------------|----------|---------|----------|---------|------------------|
| 11/14/2024 19:36 | GC36 | 11142410 | DVU | - | 305688 | 11/11/2024 11:15 |



Analytical Report

Client: SHN Consulting Engineers & Geologists, Inc. **WorkOrder:** 2410N54
Date Received: 10/31/2024 9:30 **Extraction Method:** SW3546
Date Prepared: 10/31/2024 **Analytical Method:** SW8081B/8082A
Project: 024141.200; Living Shoreline **Unit:** mg/kg

Organochlorine Pesticides + PCBs

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-----------------|----------|
| LSU-01 | 2410N54-001A | Soil | 10/29/2024 17:45 | GC20 11072417.D | 305132 |

| Analytes | Result | MDL | RL | DF | Date Analyzed |
|---------------------------|--------|---------|--------|----|------------------|
| Aldrin | ND | 0.00084 | 0.0020 | 2 | 11/07/2024 12:13 |
| a-BHC | ND | 0.00090 | 0.0020 | 2 | 11/07/2024 12:13 |
| b-BHC | ND | 0.00076 | 0.0020 | 2 | 11/07/2024 12:13 |
| d-BHC | ND | 0.00072 | 0.0020 | 2 | 11/07/2024 12:13 |
| g-BHC | ND | 0.00072 | 0.0020 | 2 | 11/07/2024 12:13 |
| Chlordane (Technical) | ND | 0.020 | 0.050 | 2 | 11/07/2024 12:13 |
| a-Chlordane | ND | 0.00070 | 0.0020 | 2 | 11/07/2024 12:13 |
| g-Chlordane | ND | 0.0013 | 0.0020 | 2 | 11/07/2024 12:13 |
| p,p-DDD | ND | 0.0011 | 0.0020 | 2 | 11/07/2024 12:13 |
| p,p-DDE | ND | 0.00068 | 0.0020 | 2 | 11/07/2024 12:13 |
| p,p-DDT | ND | 0.00086 | 0.0020 | 2 | 11/07/2024 12:13 |
| Dieldrin | ND | 0.00082 | 0.0020 | 2 | 11/07/2024 12:13 |
| Endosulfan I | ND | 0.00080 | 0.0020 | 2 | 11/07/2024 12:13 |
| Endosulfan II | ND | 0.0010 | 0.0020 | 2 | 11/07/2024 12:13 |
| Endosulfan sulfate | ND | 0.00080 | 0.0020 | 2 | 11/07/2024 12:13 |
| Endrin | ND | 0.00090 | 0.0020 | 2 | 11/07/2024 12:13 |
| Endrin aldehyde | ND | 0.00090 | 0.0020 | 2 | 11/07/2024 12:13 |
| Endrin ketone | ND | 0.00084 | 0.0020 | 2 | 11/07/2024 12:13 |
| Heptachlor | ND | 0.0013 | 0.0020 | 2 | 11/07/2024 12:13 |
| Heptachlor epoxide | ND | 0.00082 | 0.0020 | 2 | 11/07/2024 12:13 |
| Hexachlorobenzene | ND | 0.00076 | 0.020 | 2 | 11/07/2024 12:13 |
| Hexachlorocyclopentadiene | ND | 0.0013 | 0.040 | 2 | 11/07/2024 12:13 |
| Methoxychlor | ND | 0.0013 | 0.0020 | 2 | 11/07/2024 12:13 |
| Toxaphene | ND | 0.13 | 0.40 | 2 | 11/07/2024 12:13 |
| Aroclor1016 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:13 |
| Aroclor1221 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:13 |
| Aroclor1232 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:13 |
| Aroclor1242 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:13 |
| Aroclor1248 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:13 |
| Aroclor1254 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:13 |
| Aroclor1260 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:13 |
| PCBs, total | ND | NA | 0.10 | 2 | 11/07/2024 12:13 |

(Cont.)

CA ELAP 1644 • NELAP 4033ORELAP



Analytical Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Received: 10/31/2024 9:30
Date Prepared: 10/31/2024
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
Extraction Method: SW3546
Analytical Method: SW8081B/8082A
Unit: mg/kg

Organochlorine Pesticides + PCBs

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-----------------|----------|
| LSU-01 | 2410N54-001A | Soil | 10/29/2024 17:45 | GC20 11072417.D | 305132 |

| Analytes | Result | MDL | RL | DF | Date Analyzed |
|----------|--------|-----|----|----|---------------|
|----------|--------|-----|----|----|---------------|

| Surrogates | REC (%) | Limits |
|--------------------|---------|--------|
| Decachlorobiphenyl | 93 | 60-130 |

Analyst(s): CK **Analytical Comments:** a3



Analytical Report

| | | | |
|-----------------------|---|---------------------------|---------------|
| Client: | SHN Consulting Engineers & Geologists, Inc. | WorkOrder: | 2410N54 |
| Date Received: | 10/31/2024 9:30 | Extraction Method: | SW3546 |
| Date Prepared: | 10/31/2024 | Analytical Method: | SW8081B/8082A |
| Project: | 024141.200; Living Shoreline | Unit: | mg/kg |

Organochlorine Pesticides + PCBs

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-----------------|----------|
| LSU-02 | 2410N54-002A | Soil | 10/29/2024 18:00 | GC20 11072418.D | 305132 |

| Analytes | Result | MDL | RL | DF | Date Analyzed |
|---------------------------|--------|---------|--------|----|------------------|
| Aldrin | ND | 0.00084 | 0.0020 | 2 | 11/07/2024 12:28 |
| a-BHC | ND | 0.00090 | 0.0020 | 2 | 11/07/2024 12:28 |
| b-BHC | ND | 0.00076 | 0.0020 | 2 | 11/07/2024 12:28 |
| d-BHC | ND | 0.00072 | 0.0020 | 2 | 11/07/2024 12:28 |
| g-BHC | ND | 0.00072 | 0.0020 | 2 | 11/07/2024 12:28 |
| Chlordane (Technical) | ND | 0.020 | 0.050 | 2 | 11/07/2024 12:28 |
| a-Chlordane | ND | 0.00070 | 0.0020 | 2 | 11/07/2024 12:28 |
| g-Chlordane | ND | 0.0013 | 0.0020 | 2 | 11/07/2024 12:28 |
| p,p-DDD | ND | 0.0011 | 0.0020 | 2 | 11/07/2024 12:28 |
| p,p-DDE | ND | 0.00068 | 0.0020 | 2 | 11/07/2024 12:28 |
| p,p-DDT | ND | 0.00086 | 0.0020 | 2 | 11/07/2024 12:28 |
| Dieldrin | ND | 0.00082 | 0.0020 | 2 | 11/07/2024 12:28 |
| Endosulfan I | ND | 0.00080 | 0.0020 | 2 | 11/07/2024 12:28 |
| Endosulfan II | ND | 0.0010 | 0.0020 | 2 | 11/07/2024 12:28 |
| Endosulfan sulfate | ND | 0.00080 | 0.0020 | 2 | 11/07/2024 12:28 |
| Endrin | ND | 0.00090 | 0.0020 | 2 | 11/07/2024 12:28 |
| Endrin aldehyde | ND | 0.00090 | 0.0020 | 2 | 11/07/2024 12:28 |
| Endrin ketone | ND | 0.00084 | 0.0020 | 2 | 11/07/2024 12:28 |
| Heptachlor | ND | 0.0013 | 0.0020 | 2 | 11/07/2024 12:28 |
| Heptachlor epoxide | ND | 0.00082 | 0.0020 | 2 | 11/07/2024 12:28 |
| Hexachlorobenzene | ND | 0.00076 | 0.020 | 2 | 11/07/2024 12:28 |
| Hexachlorocyclopentadiene | ND | 0.0013 | 0.040 | 2 | 11/07/2024 12:28 |
| Methoxychlor | ND | 0.0013 | 0.0020 | 2 | 11/07/2024 12:28 |
| Toxaphene | ND | 0.13 | 0.40 | 2 | 11/07/2024 12:28 |
| Aroclor1016 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:28 |
| Aroclor1221 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:28 |
| Aroclor1232 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:28 |
| Aroclor1242 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:28 |
| Aroclor1248 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:28 |
| Aroclor1254 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:28 |
| Aroclor1260 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:28 |
| PCBs, total | ND | NA | 0.10 | 2 | 11/07/2024 12:28 |

(Cont.)



Analytical Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Received: 10/31/2024 9:30
Date Prepared: 10/31/2024
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
Extraction Method: SW3546
Analytical Method: SW8081B/8082A
Unit: mg/kg

Organochlorine Pesticides + PCBs

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-----------------|----------|
| LSU-02 | 2410N54-002A | Soil | 10/29/2024 18:00 | GC20 11072418.D | 305132 |

| Analytes | Result | MDL | RL | DF | Date Analyzed |
|----------|--------|-----|----|----|---------------|
|----------|--------|-----|----|----|---------------|

| Surrogates | REC (%) | Limits |
|--------------------|---------|--------|
| Decachlorobiphenyl | 95 | 60-130 |

Analyst(s): CK **Analytical Comments:** a3



Analytical Report

Client: SHN Consulting Engineers & Geologists, Inc. **WorkOrder:** 2410N54
Date Received: 10/31/2024 9:30 **Extraction Method:** SW3546
Date Prepared: 10/31/2024 **Analytical Method:** SW8081B/8082A
Project: 024141.200; Living Shoreline **Unit:** mg/kg

Organochlorine Pesticides + PCBs

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-----------------|----------|
| LSU-03 | 2410N54-003A | Soil | 10/29/2024 18:15 | GC20 11072419.D | 305132 |

| Analytes | Result | MDL | RL | DF | Date Analyzed |
|---------------------------|--------|---------|--------|----|------------------|
| Aldrin | ND | 0.00084 | 0.0020 | 2 | 11/07/2024 12:43 |
| a-BHC | ND | 0.00090 | 0.0020 | 2 | 11/07/2024 12:43 |
| b-BHC | ND | 0.00076 | 0.0020 | 2 | 11/07/2024 12:43 |
| d-BHC | ND | 0.00072 | 0.0020 | 2 | 11/07/2024 12:43 |
| g-BHC | ND | 0.00072 | 0.0020 | 2 | 11/07/2024 12:43 |
| Chlordane (Technical) | ND | 0.020 | 0.050 | 2 | 11/07/2024 12:43 |
| a-Chlordane | ND | 0.00070 | 0.0020 | 2 | 11/07/2024 12:43 |
| g-Chlordane | ND | 0.0013 | 0.0020 | 2 | 11/07/2024 12:43 |
| p,p-DDD | ND | 0.0011 | 0.0020 | 2 | 11/07/2024 12:43 |
| p,p-DDE | ND | 0.00068 | 0.0020 | 2 | 11/07/2024 12:43 |
| p,p-DDT | ND | 0.00086 | 0.0020 | 2 | 11/07/2024 12:43 |
| Dieldrin | ND | 0.00082 | 0.0020 | 2 | 11/07/2024 12:43 |
| Endosulfan I | ND | 0.00080 | 0.0020 | 2 | 11/07/2024 12:43 |
| Endosulfan II | ND | 0.0010 | 0.0020 | 2 | 11/07/2024 12:43 |
| Endosulfan sulfate | ND | 0.00080 | 0.0020 | 2 | 11/07/2024 12:43 |
| Endrin | ND | 0.00090 | 0.0020 | 2 | 11/07/2024 12:43 |
| Endrin aldehyde | ND | 0.00090 | 0.0020 | 2 | 11/07/2024 12:43 |
| Endrin ketone | ND | 0.00084 | 0.0020 | 2 | 11/07/2024 12:43 |
| Heptachlor | ND | 0.0013 | 0.0020 | 2 | 11/07/2024 12:43 |
| Heptachlor epoxide | ND | 0.00082 | 0.0020 | 2 | 11/07/2024 12:43 |
| Hexachlorobenzene | ND | 0.00076 | 0.020 | 2 | 11/07/2024 12:43 |
| Hexachlorocyclopentadiene | ND | 0.0013 | 0.040 | 2 | 11/07/2024 12:43 |
| Methoxychlor | ND | 0.0013 | 0.0020 | 2 | 11/07/2024 12:43 |
| Toxaphene | ND | 0.13 | 0.40 | 2 | 11/07/2024 12:43 |
| Aroclor1016 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:43 |
| Aroclor1221 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:43 |
| Aroclor1232 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:43 |
| Aroclor1242 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:43 |
| Aroclor1248 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:43 |
| Aroclor1254 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:43 |
| Aroclor1260 | ND | 0.074 | 0.10 | 2 | 11/07/2024 12:43 |
| PCBs, total | ND | NA | 0.10 | 2 | 11/07/2024 12:43 |

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Analytical Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Received: 10/31/2024 9:30
Date Prepared: 10/31/2024
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
Extraction Method: SW3546
Analytical Method: SW8081B/8082A
Unit: mg/kg

Organochlorine Pesticides + PCBs

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-----------------|----------|
| LSU-03 | 2410N54-003A | Soil | 10/29/2024 18:15 | GC20 11072419.D | 305132 |

| Analytes | Result | MDL | RL | DF | Date Analyzed |
|----------|--------|-----|----|----|---------------|
|----------|--------|-----|----|----|---------------|

| Surrogates | REC (%) | Limits |
|--------------------|---------|--------|
| Decachlorobiphenyl | 95 | 60-130 |

Analyst(s): CK **Analytical Comments:** a3



Analytical Report

Client: SHN Consulting Engineers & Geologists, Inc. **WorkOrder:** 2410N54
Date Received: 10/31/2024 9:30 **Extraction Method:** SW3550B
Date Prepared: 11/05/2024 **Analytical Method:** SW8270E
Project: 024141.200; Living Shoreline **Unit:** mg/kg

Polynuclear Aromatic Hydrocarbons (PAHs / PNAs) using SIM Mode

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-----------------|----------|
| LSU-01 | 2410N54-001A | Soil | 10/29/2024 17:45 | GC47 11052411.D | 305325 |

| Analytes | Result | Qualifiers | MDL | RL | DF | Date Analyzed |
|--------------------------|----------------|------------|---------|--------|----|------------------|
| Acenaphthene | ND | | 0.00070 | 0.0026 | 2 | 11/05/2024 18:30 |
| Acenaphthylene | ND | | 0.00056 | 0.0026 | 2 | 11/05/2024 18:30 |
| Anthracene | ND | | 0.0011 | 0.0026 | 2 | 11/05/2024 18:30 |
| Benzo (a) anthracene | ND | | 0.0072 | 0.025 | 2 | 11/05/2024 18:30 |
| Benzo (a) pyrene | ND | | 0.0014 | 0.0026 | 2 | 11/05/2024 18:30 |
| Benzo (b) fluoranthene | ND | | 0.0022 | 0.0050 | 2 | 11/05/2024 18:30 |
| Benzo (g,h,i) perylene | ND | | 0.0018 | 0.0050 | 2 | 11/05/2024 18:30 |
| Benzo (k) fluoranthene | ND | | 0.0020 | 0.0050 | 2 | 11/05/2024 18:30 |
| Chrysene | ND | | 0.0013 | 0.0026 | 2 | 11/05/2024 18:30 |
| Dibenzo (a,h) anthracene | ND | | 0.0022 | 0.0050 | 2 | 11/05/2024 18:30 |
| Fluoranthene | 0.0016 | J | 0.0016 | 0.0050 | 2 | 11/05/2024 18:30 |
| Fluorene | ND | | 0.0020 | 0.0050 | 2 | 11/05/2024 18:30 |
| Indeno (1,2,3-cd) pyrene | ND | | 0.0032 | 0.0050 | 2 | 11/05/2024 18:30 |
| 1-Methylnaphthalene | 0.00085 | J | 0.00066 | 0.0026 | 2 | 11/05/2024 18:30 |
| 2-Methylnaphthalene | 0.0014 | J | 0.00096 | 0.0026 | 2 | 11/05/2024 18:30 |
| Naphthalene | ND | | 0.00084 | 0.0050 | 2 | 11/05/2024 18:30 |
| Phenanthrene | ND | | 0.0014 | 0.0026 | 2 | 11/05/2024 18:30 |
| Pyrene | ND | | 0.0013 | 0.0026 | 2 | 11/05/2024 18:30 |

| Surrogates | REC (%) | Limits | Date Analyzed |
|------------------|---------|--------|------------------|
| 2-Fluorobiphenyl | 96 | 60-130 | 11/05/2024 18:30 |
| 2-Fluorophenol | 122 | 60-130 | 11/05/2024 18:30 |

Analyst(s): MV

Analytical Comments: a3

(Cont.)

CA ELAP 1644 • NELAP 4033ORELAP



Analytical Report

Client: SHN Consulting Engineers & Geologists, Inc. **WorkOrder:** 2410N54
Date Received: 10/31/2024 9:30 **Extraction Method:** SW3550B
Date Prepared: 11/05/2024 **Analytical Method:** SW8270E
Project: 024141.200; Living Shoreline **Unit:** mg/kg

Polynuclear Aromatic Hydrocarbons (PAHs / PNAs) using SIM Mode

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-----------------|----------|
| LSU-02 | 2410N54-002A | Soil | 10/29/2024 18:00 | GC47 11052412.D | 305325 |

| Analytes | Result | Qualifiers | MDL | RL | DF | Date Analyzed |
|--------------------------|---------------|------------|---------|--------|----|------------------|
| Acenaphthene | ND | | 0.00070 | 0.0026 | 2 | 11/05/2024 18:57 |
| Acenaphthylene | ND | | 0.00056 | 0.0026 | 2 | 11/05/2024 18:57 |
| Anthracene | ND | | 0.0011 | 0.0026 | 2 | 11/05/2024 18:57 |
| Benzo (a) anthracene | ND | | 0.0072 | 0.025 | 2 | 11/05/2024 18:57 |
| Benzo (a) pyrene | ND | | 0.0014 | 0.0026 | 2 | 11/05/2024 18:57 |
| Benzo (b) fluoranthene | 0.0023 | J | 0.0022 | 0.0050 | 2 | 11/05/2024 18:57 |
| Benzo (g,h,i) perylene | 0.0027 | J | 0.0018 | 0.0050 | 2 | 11/05/2024 18:57 |
| Benzo (k) fluoranthene | ND | | 0.0020 | 0.0050 | 2 | 11/05/2024 18:57 |
| Chrysene | ND | | 0.0013 | 0.0026 | 2 | 11/05/2024 18:57 |
| Dibenzo (a,h) anthracene | ND | | 0.0022 | 0.0050 | 2 | 11/05/2024 18:57 |
| Fluoranthene | ND | | 0.0016 | 0.0050 | 2 | 11/05/2024 18:57 |
| Fluorene | ND | | 0.0020 | 0.0050 | 2 | 11/05/2024 18:57 |
| Indeno (1,2,3-cd) pyrene | ND | | 0.0032 | 0.0050 | 2 | 11/05/2024 18:57 |
| 1-Methylnaphthalene | ND | | 0.00066 | 0.0026 | 2 | 11/05/2024 18:57 |
| 2-Methylnaphthalene | ND | | 0.00096 | 0.0026 | 2 | 11/05/2024 18:57 |
| Naphthalene | ND | | 0.00084 | 0.0050 | 2 | 11/05/2024 18:57 |
| Phenanthrene | ND | | 0.0014 | 0.0026 | 2 | 11/05/2024 18:57 |
| Pyrene | ND | | 0.0013 | 0.0026 | 2 | 11/05/2024 18:57 |

| Surrogates | REC (%) | Limits | Date Analyzed |
|------------------|---------|--------|------------------|
| 2-Fluorobiphenyl | 81 | 60-130 | 11/05/2024 18:57 |
| 2-Fluorophenol | 112 | 60-130 | 11/05/2024 18:57 |

Analyst(s): MV

Analytical Comments: a3

(Cont.)

CA ELAP 1644 • NELAP 4033ORELAP



Analytical Report

| | | | |
|-----------------------|---|---------------------------|---------|
| Client: | SHN Consulting Engineers & Geologists, Inc. | WorkOrder: | 2410N54 |
| Date Received: | 10/31/2024 9:30 | Extraction Method: | SW3550B |
| Date Prepared: | 11/05/2024 | Analytical Method: | SW8270E |
| Project: | 024141.200; Living Shoreline | Unit: | mg/kg |

Polynuclear Aromatic Hydrocarbons (PAHs / PNAs) using SIM Mode

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-----------------|----------|
| LSU-03 | 2410N54-003A | Soil | 10/29/2024 18:15 | GC47 11052413.D | 305325 |

| Analytes | Result | Qualifiers | MDL | RL | DF | Date Analyzed |
|--------------------------|---------------|------------|---------|--------|----|------------------|
| Acenaphthene | ND | | 0.00070 | 0.0026 | 2 | 11/05/2024 19:24 |
| Acenaphthylene | ND | | 0.00056 | 0.0026 | 2 | 11/05/2024 19:24 |
| Anthracene | ND | | 0.0011 | 0.0026 | 2 | 11/05/2024 19:24 |
| Benzo (a) anthracene | ND | | 0.0072 | 0.025 | 2 | 11/05/2024 19:24 |
| Benzo (a) pyrene | ND | | 0.0014 | 0.0026 | 2 | 11/05/2024 19:24 |
| Benzo (b) fluoranthene | 0.0024 | J | 0.0022 | 0.0050 | 2 | 11/05/2024 19:24 |
| Benzo (g,h,i) perylene | 0.0025 | J | 0.0018 | 0.0050 | 2 | 11/05/2024 19:24 |
| Benzo (k) fluoranthene | ND | | 0.0020 | 0.0050 | 2 | 11/05/2024 19:24 |
| Chrysene | ND | | 0.0013 | 0.0026 | 2 | 11/05/2024 19:24 |
| Dibenzo (a,h) anthracene | ND | | 0.0022 | 0.0050 | 2 | 11/05/2024 19:24 |
| Fluoranthene | ND | | 0.0016 | 0.0050 | 2 | 11/05/2024 19:24 |
| Fluorene | ND | | 0.0020 | 0.0050 | 2 | 11/05/2024 19:24 |
| Indeno (1,2,3-cd) pyrene | ND | | 0.0032 | 0.0050 | 2 | 11/05/2024 19:24 |
| 1-Methylnaphthalene | 0.0012 | J | 0.00066 | 0.0026 | 2 | 11/05/2024 19:24 |
| 2-Methylnaphthalene | 0.0018 | J | 0.00096 | 0.0026 | 2 | 11/05/2024 19:24 |
| Naphthalene | ND | | 0.00084 | 0.0050 | 2 | 11/05/2024 19:24 |
| Phenanthrene | ND | | 0.0014 | 0.0026 | 2 | 11/05/2024 19:24 |
| Pyrene | ND | | 0.0013 | 0.0026 | 2 | 11/05/2024 19:24 |

| Surrogates | REC (%) | Limits | Date Analyzed |
|------------------|---------|--------|------------------|
| 2-Fluorobiphenyl | 87 | 60-130 | 11/05/2024 19:24 |
| 2-Fluorophenol | 112 | 60-130 | 11/05/2024 19:24 |

Analyst(s): MV

Analytical Comments: a3



Analytical Report

| | | | |
|-----------------------|---|---------------------------|---------|
| Client: | SHN Consulting Engineers & Geologists, Inc. | WorkOrder: | 2410N54 |
| Date Received: | 10/31/2024 9:30 | Extraction Method: | SW3550B |
| Date Prepared: | 11/05/2024 | Analytical Method: | SW8270E |
| Project: | 024141.200; Living Shoreline | Unit: | mg/Kg |

Semi-Volatile Organics

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-----------------|----------|
| LSU-01 | 2410N54-001A | Soil | 10/29/2024 17:45 | GC47 11052411.D | 305325 |

| Analytes | Result | Qualifiers | MDL | RL | DF | Date Analyzed |
|--------------------------|----------------|------------|---------|--------|----|------------------|
| Acenaphthene | ND | | 0.00070 | 0.0026 | 2 | 11/05/2024 18:30 |
| Acenaphthylene | ND | | 0.00056 | 0.0026 | 2 | 11/05/2024 18:30 |
| Anthracene | ND | | 0.0011 | 0.0026 | 2 | 11/05/2024 18:30 |
| Benzo (a) anthracene | ND | | 0.0072 | 0.025 | 2 | 11/05/2024 18:30 |
| Benzo (a) pyrene | ND | | 0.0014 | 0.0026 | 2 | 11/05/2024 18:30 |
| Benzo (b) fluoranthene | ND | | 0.0022 | 0.0050 | 2 | 11/05/2024 18:30 |
| Benzo (g,h,i) perylene | ND | | 0.0018 | 0.0050 | 2 | 11/05/2024 18:30 |
| Benzo (k) fluoranthene | ND | | 0.0020 | 0.0050 | 2 | 11/05/2024 18:30 |
| Chrysene | ND | | 0.0013 | 0.0026 | 2 | 11/05/2024 18:30 |
| Dibenzo (a,h) anthracene | ND | | 0.0022 | 0.0050 | 2 | 11/05/2024 18:30 |
| Fluoranthene | 0.0016 | J | 0.0016 | 0.0050 | 2 | 11/05/2024 18:30 |
| Fluorene | ND | | 0.0020 | 0.0050 | 2 | 11/05/2024 18:30 |
| Indeno (1,2,3-cd) pyrene | ND | | 0.0032 | 0.0050 | 2 | 11/05/2024 18:30 |
| 1-Methylnaphthalene | 0.00085 | J | 0.00066 | 0.0026 | 2 | 11/05/2024 18:30 |
| 2-Methylnaphthalene | 0.0014 | J | 0.00096 | 0.0026 | 2 | 11/05/2024 18:30 |
| Naphthalene | ND | | 0.00084 | 0.0050 | 2 | 11/05/2024 18:30 |
| Pentachlorophenol | ND | | 0.058 | 0.12 | 2 | 11/05/2024 18:30 |
| Phenanthrene | ND | | 0.0014 | 0.0026 | 2 | 11/05/2024 18:30 |
| Pyrene | ND | | 0.0013 | 0.0026 | 2 | 11/05/2024 18:30 |

| Surrogates | REC (%) | Limits | Date Analyzed |
|----------------------|---------|--------|------------------|
| 2-Fluorophenol | 122 | 60-130 | 11/05/2024 18:30 |
| Phenol-d5 | 116 | 50-130 | 11/05/2024 18:30 |
| Nitrobenzene-d5 | 97 | 60-130 | 11/05/2024 18:30 |
| 2-Fluorobiphenyl | 96 | 60-130 | 11/05/2024 18:30 |
| 2,4,6-Tribromophenol | 90 | 50-130 | 11/05/2024 18:30 |
| 4-Terphenyl-d14 | 103 | 50-130 | 11/05/2024 18:30 |

Analyst(s): LAT

(Cont.)



Analytical Report

| | | | |
|-----------------------|---|---------------------------|---------|
| Client: | SHN Consulting Engineers & Geologists, Inc. | WorkOrder: | 2410N54 |
| Date Received: | 10/31/2024 9:30 | Extraction Method: | SW3550B |
| Date Prepared: | 11/05/2024 | Analytical Method: | SW8270E |
| Project: | 024141.200; Living Shoreline | Unit: | mg/Kg |

Semi-Volatile Organics

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-----------------|----------|
| LSU-02 | 2410N54-002A | Soil | 10/29/2024 18:00 | GC47 11052412.D | 305325 |

| Analytes | Result | Qualifiers | MDL | RL | DF | Date Analyzed |
|--------------------------|---------------|------------|---------|--------|----|------------------|
| Acenaphthene | ND | | 0.00070 | 0.0026 | 2 | 11/05/2024 18:57 |
| Acenaphthylene | ND | | 0.00056 | 0.0026 | 2 | 11/05/2024 18:57 |
| Anthracene | ND | | 0.0011 | 0.0026 | 2 | 11/05/2024 18:57 |
| Benzo (a) anthracene | ND | | 0.0072 | 0.025 | 2 | 11/05/2024 18:57 |
| Benzo (a) pyrene | ND | | 0.0014 | 0.0026 | 2 | 11/05/2024 18:57 |
| Benzo (b) fluoranthene | 0.0023 | J | 0.0022 | 0.0050 | 2 | 11/05/2024 18:57 |
| Benzo (g,h,i) perylene | 0.0027 | J | 0.0018 | 0.0050 | 2 | 11/05/2024 18:57 |
| Benzo (k) fluoranthene | ND | | 0.0020 | 0.0050 | 2 | 11/05/2024 18:57 |
| Chrysene | ND | | 0.0013 | 0.0026 | 2 | 11/05/2024 18:57 |
| Dibenzo (a,h) anthracene | ND | | 0.0022 | 0.0050 | 2 | 11/05/2024 18:57 |
| Fluoranthene | ND | | 0.0016 | 0.0050 | 2 | 11/05/2024 18:57 |
| Fluorene | ND | | 0.0020 | 0.0050 | 2 | 11/05/2024 18:57 |
| Indeno (1,2,3-cd) pyrene | ND | | 0.0032 | 0.0050 | 2 | 11/05/2024 18:57 |
| 1-Methylnaphthalene | ND | | 0.00066 | 0.0026 | 2 | 11/05/2024 18:57 |
| 2-Methylnaphthalene | ND | | 0.00096 | 0.0026 | 2 | 11/05/2024 18:57 |
| Naphthalene | ND | | 0.00084 | 0.0050 | 2 | 11/05/2024 18:57 |
| Pentachlorophenol | ND | | 0.058 | 0.12 | 2 | 11/05/2024 18:57 |
| Phenanthrene | ND | | 0.0014 | 0.0026 | 2 | 11/05/2024 18:57 |
| Pyrene | ND | | 0.0013 | 0.0026 | 2 | 11/05/2024 18:57 |

| Surrogates | REC (%) | Limits | Date Analyzed |
|----------------------|---------|--------|------------------|
| 2-Fluorophenol | 112 | 60-130 | 11/05/2024 18:57 |
| Phenol-d5 | 106 | 50-130 | 11/05/2024 18:57 |
| Nitrobenzene-d5 | 80 | 60-130 | 11/05/2024 18:57 |
| 2-Fluorobiphenyl | 81 | 60-130 | 11/05/2024 18:57 |
| 2,4,6-Tribromophenol | 68 | 50-130 | 11/05/2024 18:57 |
| 4-Terphenyl-d14 | 89 | 50-130 | 11/05/2024 18:57 |

Analyst(s): LAT

(Cont.)



Analytical Report

| | | | |
|-----------------------|---|---------------------------|---------|
| Client: | SHN Consulting Engineers & Geologists, Inc. | WorkOrder: | 2410N54 |
| Date Received: | 10/31/2024 9:30 | Extraction Method: | SW3550B |
| Date Prepared: | 11/05/2024 | Analytical Method: | SW8270E |
| Project: | 024141.200; Living Shoreline | Unit: | mg/Kg |

Semi-Volatile Organics

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-----------------|----------|
| LSU-03 | 2410N54-003A | Soil | 10/29/2024 18:15 | GC47 11052413.D | 305325 |

| Analytes | Result | Qualifiers | MDL | RL | DF | Date Analyzed |
|--------------------------|---------------|------------|---------|--------|----|------------------|
| Acenaphthene | ND | | 0.00070 | 0.0026 | 2 | 11/05/2024 19:24 |
| Acenaphthylene | ND | | 0.00056 | 0.0026 | 2 | 11/05/2024 19:24 |
| Anthracene | ND | | 0.0011 | 0.0026 | 2 | 11/05/2024 19:24 |
| Benzo (a) anthracene | ND | | 0.0072 | 0.025 | 2 | 11/05/2024 19:24 |
| Benzo (a) pyrene | ND | | 0.0014 | 0.0026 | 2 | 11/05/2024 19:24 |
| Benzo (b) fluoranthene | 0.0024 | J | 0.0022 | 0.0050 | 2 | 11/05/2024 19:24 |
| Benzo (g,h,i) perylene | 0.0025 | J | 0.0018 | 0.0050 | 2 | 11/05/2024 19:24 |
| Benzo (k) fluoranthene | ND | | 0.0020 | 0.0050 | 2 | 11/05/2024 19:24 |
| Chrysene | ND | | 0.0013 | 0.0026 | 2 | 11/05/2024 19:24 |
| Dibenzo (a,h) anthracene | ND | | 0.0022 | 0.0050 | 2 | 11/05/2024 19:24 |
| Fluoranthene | ND | | 0.0016 | 0.0050 | 2 | 11/05/2024 19:24 |
| Fluorene | ND | | 0.0020 | 0.0050 | 2 | 11/05/2024 19:24 |
| Indeno (1,2,3-cd) pyrene | ND | | 0.0032 | 0.0050 | 2 | 11/05/2024 19:24 |
| 1-Methylnaphthalene | 0.0012 | J | 0.00066 | 0.0026 | 2 | 11/05/2024 19:24 |
| 2-Methylnaphthalene | 0.0018 | J | 0.00096 | 0.0026 | 2 | 11/05/2024 19:24 |
| Naphthalene | ND | | 0.00084 | 0.0050 | 2 | 11/05/2024 19:24 |
| Pentachlorophenol | ND | | 0.058 | 0.12 | 2 | 11/05/2024 19:24 |
| Phenanthrene | ND | | 0.0014 | 0.0026 | 2 | 11/05/2024 19:24 |
| Pyrene | ND | | 0.0013 | 0.0026 | 2 | 11/05/2024 19:24 |

| Surrogates | REC (%) | Limits | Date Analyzed |
|----------------------|---------|--------|------------------|
| 2-Fluorophenol | 112 | 60-130 | 11/05/2024 19:24 |
| Phenol-d5 | 106 | 50-130 | 11/05/2024 19:24 |
| Nitrobenzene-d5 | 90 | 60-130 | 11/05/2024 19:24 |
| 2-Fluorobiphenyl | 87 | 60-130 | 11/05/2024 19:24 |
| 2,4,6-Tribromophenol | 74 | 50-130 | 11/05/2024 19:24 |
| 4-Terphenyl-d14 | 97 | 50-130 | 11/05/2024 19:24 |

Analyst(s): LAT



Analytical Report

| | | | |
|-----------------------|---|---------------------------|---------|
| Client: | SHN Consulting Engineers & Geologists, Inc. | WorkOrder: | 2410N54 |
| Date Received: | 10/31/2024 9:30 | Extraction Method: | SW3050B |
| Date Prepared: | 11/01/2024-11/05/2024 | Analytical Method: | SW6020 |
| Project: | 024141.200; Living Shoreline | Unit: | mg/Kg |

CAM / CCR 17 Metals

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-------------------|----------|
| LSU-01 | 2410N54-001A | Soil | 10/29/2024 17:45 | ICP-MS5 142SMPL.d | 305301 |

| Analytes | Result | Qualifiers | MDL | RL | DF | Date Analyzed |
|------------|--------|------------|-------|-------|----|------------------|
| Antimony | 0.10 | J | 0.10 | 0.50 | 1 | 11/06/2024 12:12 |
| Arsenic | 4.7 | | 0.084 | 0.50 | 1 | 11/06/2024 12:12 |
| Barium | 59 | | 0.73 | 5.0 | 1 | 11/06/2024 12:12 |
| Beryllium | 0.36 | J | 0.086 | 0.50 | 1 | 11/06/2024 12:12 |
| Cadmium | 0.10 | J | 0.080 | 0.50 | 1 | 11/06/2024 12:12 |
| Chromium | 60 | | 0.17 | 0.50 | 1 | 11/06/2024 12:12 |
| Cobalt | 8.6 | | 0.063 | 0.50 | 1 | 11/06/2024 12:12 |
| Copper | 21 | | 0.19 | 0.50 | 1 | 11/06/2024 12:12 |
| Lead | 6.8 | | 0.089 | 0.50 | 1 | 11/06/2024 12:12 |
| Mercury | 0.051 | | 0.039 | 0.050 | 1 | 11/06/2024 12:12 |
| Molybdenum | 2.0 | | 0.093 | 0.50 | 1 | 11/06/2024 12:12 |
| Nickel | 68 | | 0.28 | 0.50 | 1 | 11/06/2024 12:12 |
| Selenium | ND | | 0.21 | 0.50 | 1 | 11/06/2024 12:12 |
| Silver | ND | | 0.084 | 0.50 | 1 | 11/06/2024 12:12 |
| Thallium | 0.084 | J | 0.073 | 0.50 | 1 | 11/06/2024 12:12 |
| Vanadium | 43 | | 0.097 | 0.50 | 1 | 11/06/2024 12:12 |
| Zinc | 53 | | 1.8 | 5.0 | 1 | 11/06/2024 12:12 |

| Surrogates | REC (%) | Limits | Date Analyzed |
|------------|---------|--------|------------------|
| Terbium | 107 | 70-130 | 11/06/2024 12:12 |

Analyst(s): AL

(Cont.)



Analytical Report

| | | | |
|-----------------------|---|---------------------------|---------|
| Client: | SHN Consulting Engineers & Geologists, Inc. | WorkOrder: | 2410N54 |
| Date Received: | 10/31/2024 9:30 | Extraction Method: | SW3050B |
| Date Prepared: | 11/01/2024-11/05/2024 | Analytical Method: | SW6020 |
| Project: | 024141.200; Living Shoreline | Unit: | mg/Kg |

CAM / CCR 17 Metals

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-------------------|----------|
| LSU-02 | 2410N54-002A | Soil | 10/29/2024 18:00 | ICP-MS5 143SMPL.d | 305301 |

| Analytes | Result | Qualifiers | MDL | RL | DF | Date Analyzed |
|------------|--------|------------|-------|-------|----|------------------|
| Antimony | 0.14 | J | 0.10 | 0.50 | 1 | 11/06/2024 12:16 |
| Arsenic | 4.8 | | 0.084 | 0.50 | 1 | 11/06/2024 12:16 |
| Barium | 60 | | 0.73 | 5.0 | 1 | 11/06/2024 12:16 |
| Beryllium | 0.39 | J | 0.086 | 0.50 | 1 | 11/06/2024 12:16 |
| Cadmium | ND | | 0.080 | 0.50 | 1 | 11/06/2024 12:16 |
| Chromium | 61 | | 0.17 | 0.50 | 1 | 11/06/2024 12:16 |
| Cobalt | 8.1 | | 0.063 | 0.50 | 1 | 11/06/2024 12:16 |
| Copper | 20 | | 0.19 | 0.50 | 1 | 11/06/2024 12:16 |
| Lead | 6.6 | | 0.089 | 0.50 | 1 | 11/06/2024 12:16 |
| Mercury | 0.065 | | 0.039 | 0.050 | 1 | 11/06/2024 12:16 |
| Molybdenum | 2.0 | | 0.093 | 0.50 | 1 | 11/06/2024 12:16 |
| Nickel | 68 | | 0.28 | 0.50 | 1 | 11/06/2024 12:16 |
| Selenium | ND | | 0.21 | 0.50 | 1 | 11/06/2024 12:16 |
| Silver | ND | | 0.084 | 0.50 | 1 | 11/06/2024 12:16 |
| Thallium | 0.080 | J | 0.073 | 0.50 | 1 | 11/06/2024 12:16 |
| Vanadium | 44 | | 0.097 | 0.50 | 1 | 11/06/2024 12:16 |
| Zinc | 51 | | 1.8 | 5.0 | 1 | 11/06/2024 12:16 |

| Surrogates | REC (%) | Limits | Date Analyzed |
|------------|---------|--------|------------------|
| Terbium | 107 | 70-130 | 11/06/2024 12:16 |

Analyst(s): AL

(Cont.)



Analytical Report

| | | | |
|-----------------------|---|---------------------------|---------|
| Client: | SHN Consulting Engineers & Geologists, Inc. | WorkOrder: | 2410N54 |
| Date Received: | 10/31/2024 9:30 | Extraction Method: | SW3050B |
| Date Prepared: | 11/01/2024-11/05/2024 | Analytical Method: | SW6020 |
| Project: | 024141.200; Living Shoreline | Unit: | mg/Kg |

CAM / CCR 17 Metals

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|-------------------|----------|
| LSU-03 | 2410N54-003A | Soil | 10/29/2024 18:15 | ICP-MS4 187SMPL.d | 305140 |

| Analytes | Result | Qualifiers | MDL | RL | DF | Date Analyzed |
|------------|--------|------------|-------|-------|----|------------------|
| Antimony | 0.17 | J | 0.10 | 0.50 | 1 | 11/01/2024 16:13 |
| Arsenic | 4.9 | | 0.084 | 0.50 | 1 | 11/01/2024 16:13 |
| Barium | 39 | | 0.73 | 5.0 | 1 | 11/01/2024 16:13 |
| Beryllium | 0.35 | J | 0.086 | 0.50 | 1 | 11/01/2024 16:13 |
| Cadmium | 0.097 | J | 0.080 | 0.50 | 1 | 11/01/2024 16:13 |
| Chromium | 59 | | 0.17 | 0.50 | 1 | 11/01/2024 16:13 |
| Cobalt | 8.1 | | 0.063 | 0.50 | 1 | 11/01/2024 16:13 |
| Copper | 21 | | 0.19 | 0.50 | 1 | 11/01/2024 16:13 |
| Lead | 6.3 | | 0.089 | 0.50 | 1 | 11/01/2024 16:13 |
| Mercury | 0.064 | | 0.039 | 0.050 | 1 | 11/01/2024 16:13 |
| Molybdenum | 2.1 | | 0.093 | 0.50 | 1 | 11/01/2024 16:13 |
| Nickel | 71 | | 0.28 | 0.50 | 1 | 11/01/2024 16:13 |
| Selenium | ND | | 0.21 | 0.50 | 1 | 11/01/2024 16:13 |
| Silver | ND | | 0.084 | 0.50 | 1 | 11/01/2024 16:13 |
| Thallium | 0.075 | J | 0.073 | 0.50 | 1 | 11/01/2024 16:13 |
| Vanadium | 40 | | 0.097 | 0.50 | 1 | 11/01/2024 16:13 |
| Zinc | 55 | | 1.8 | 5.0 | 1 | 11/01/2024 16:13 |

| Surrogates | REC (%) | Limits | Date Analyzed |
|------------|---------|--------|------------------|
| Terbium | 109 | 70-130 | 11/01/2024 16:13 |

Analyst(s): AL



Analytical Report

| | | | |
|-----------------------|---|---------------------------|---------------|
| Client: | SHN Consulting Engineers & Geologists, Inc. | WorkOrder: | 2410N54 |
| Date Received: | 10/31/2024 9:30 | Extraction Method: | SW3550B/3630C |
| Date Prepared: | 10/31/2024 | Analytical Method: | SW8015B |
| Project: | 024141.200; Living Shoreline | Unit: | mg/Kg |

Total Extractable Petroleum Hydrocarbons with Silica Gel Clean-Up

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-------------------------|----------------|--------|--------------------------------|-----------------|------------------|
| LSU-01 | 2410N54-001A | Soil | 10/29/2024 17:45 | GC6A 11052424.D | 305139 |
| <u>Analytes</u> | | | | | |
| | <u>Result</u> | | <u>MDL</u> | <u>RL</u> | <u>DF</u> |
| TPH-Diesel (C10-C23) | ND | | 1.7 | 2.0 | 1 |
| TPH-Motor Oil (C18-C36) | ND | | 4.3 | 10 | 1 |
| <u>Surrogates</u> | | | | | |
| | <u>REC (%)</u> | | <u>Limits</u> | | |
| C9 | 130 | | 70-130 | | 11/05/2024 15:53 |
| <u>Analyst(s):</u> JNG | | | <u>Analytical Comments:</u> h2 | | |

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-------------------------|----------------|--------|--------------------------------|-----------------|------------------|
| LSU-02 | 2410N54-002A | Soil | 10/29/2024 18:00 | GC6A 11052420.D | 305139 |
| <u>Analytes</u> | | | | | |
| | <u>Result</u> | | <u>MDL</u> | <u>RL</u> | <u>DF</u> |
| TPH-Diesel (C10-C23) | ND | | 1.7 | 2.0 | 1 |
| TPH-Motor Oil (C18-C36) | ND | | 4.3 | 10 | 1 |
| <u>Surrogates</u> | | | | | |
| | <u>REC (%)</u> | | <u>Limits</u> | | |
| C26 | 118 | | 70-130 | | 11/05/2024 14:35 |
| <u>Analyst(s):</u> JNG | | | <u>Analytical Comments:</u> h2 | | |

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-------------------------|----------------|--------|--------------------------------|-----------------|------------------|
| LSU-03 | 2410N54-003A | Soil | 10/29/2024 18:15 | GC6B 11052417.D | 305139 |
| <u>Analytes</u> | | | | | |
| | <u>Result</u> | | <u>MDL</u> | <u>RL</u> | <u>DF</u> |
| TPH-Diesel (C10-C23) | ND | | 1.7 | 2.0 | 1 |
| TPH-Motor Oil (C18-C36) | ND | | 4.3 | 10 | 1 |
| <u>Surrogates</u> | | | | | |
| | <u>REC (%)</u> | | <u>Limits</u> | | |
| C26 | 128 | | 70-130 | | 11/05/2024 13:56 |
| <u>Analyst(s):</u> JNG | | | <u>Analytical Comments:</u> h2 | | |



Analytical Report

| | | | |
|-----------------------|---|---------------------------|---------|
| Client: | SHN Consulting Engineers & Geologists, Inc. | WorkOrder: | 2410N54 |
| Date Received: | 10/31/2024 9:30 | Extraction Method: | SW9060A |
| Date Prepared: | 11/05/2024 | Analytical Method: | SW9060A |
| Project: | 024141.200; Living Shoreline | Unit: | mg/kg |

Total Organic Carbon (TOC)

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|--------------------------|----------|
| LSU-01 | 2410N54-001A | Soil | 10/29/2024 17:45 | WC_CNS F110524-1_241106_ | 305358 |

| <u>Analytes</u> | <u>Result</u> | <u>MDL</u> | <u>RL</u> | <u>DF</u> | <u>Date Analyzed</u> |
|----------------------|---------------|------------|-----------|-----------|----------------------|
| Total Organic Carbon | 12,000 | 370 | 500 | 1 | 11/05/2024 20:17 |

Analyst(s): CBI

Analytical Comments: a14

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|--------------------------|----------|
| LSU-02 | 2410N54-002A | Soil | 10/29/2024 18:00 | WC_CNS F110524-1_241106_ | 305358 |

| <u>Analytes</u> | <u>Result</u> | <u>MDL</u> | <u>RL</u> | <u>DF</u> | <u>Date Analyzed</u> |
|----------------------|---------------|------------|-----------|-----------|----------------------|
| Total Organic Carbon | 12,000 | 320 | 430 | 1 | 11/05/2024 20:34 |

Analyst(s): CBI

Analytical Comments: a14

| Client ID | Lab ID | Matrix | Date Collected | Instrument | Batch ID |
|-----------|--------------|--------|------------------|--------------------------|----------|
| LSU-03 | 2410N54-003A | Soil | 10/29/2024 18:15 | WC_CNS F110524-1_241106_ | 305358 |

| <u>Analytes</u> | <u>Result</u> | <u>MDL</u> | <u>RL</u> | <u>DF</u> | <u>Date Analyzed</u> |
|----------------------|---------------|------------|-----------|-----------|----------------------|
| Total Organic Carbon | 11,000 | 280 | 370 | 1 | 11/05/2024 20:50 |

Analyst(s): CBI

Analytical Comments: a14

CLIENT: SHN Consulting Engineers & Geologists, Inc.

ANALYTICAL QC SUMMARY REPORT

Work Order: 2410N54

Project: 024141.200; Living Shoreline

BatchID:

305688

| | | | |
|----------------------------|------------------------------|-----------------------------|----------------------------------|
| SampleID: MB-305688 | TestCode: 1613_FULL_S | Units: pg/g-dry | Prep Date: 11/11/2024 |
| Batch ID: 305688 | TestNo: E1613B | Run ID: GC36_241115A | Analysis Date: 11/14/2024 |

| Analyte | Result | MDL | ML | SPKValue | SPKRefVal | %REC | Limits | RPDRefVal | %RPD | RPDLimit | Qual |
|---------------------|--------|-------|------|----------|-----------|------|--------|-----------|------|----------|------|
| 2,3,7,8-TCDD | ND | 0.190 | 1.00 | | | | - | | | | |
| 1,2,3,7,8-PeCDD | ND | 0.540 | 5.00 | | | | - | | | | |
| 1,2,3,4,7,8-HxCDD | ND | 0.620 | 5.00 | | | | - | | | | |
| 1,2,3,6,7,8-HxCDD | ND | 0.750 | 5.00 | | | | - | | | | |
| 1,2,3,7,8,9-HxCDD | ND | 0.880 | 5.00 | | | | - | | | | |
| 1,2,3,4,6,7,8-HpCDD | ND | 0.900 | 5.00 | | | | - | | | | |
| OCDD | ND | 1.90 | 10.0 | | | | - | | | | |
| 2,3,7,8-TCDF | ND | 0.240 | 1.00 | | | | - | | | | |
| 1,2,3,7,8-PeCDF | ND | 0.600 | 5.00 | | | | - | | | | |
| 2,3,4,7,8-PeCDF | ND | 0.610 | 5.00 | | | | - | | | | |
| 1,2,3,4,7,8-HxCDF | ND | 0.750 | 5.00 | | | | - | | | | |
| 1,2,3,6,7,8-HxCDF | ND | 0.730 | 5.00 | | | | - | | | | |
| 1,2,3,7,8,9-HxCDF | ND | 0.860 | 5.00 | | | | - | | | | |
| 2,3,4,6,7,8-HxCDF | ND | 0.790 | 5.00 | | | | - | | | | |
| 1,2,3,4,6,7,8-HpCDF | ND | 0.880 | 5.00 | | | | - | | | | |
| 1,2,3,4,7,8,9-HpCDF | ND | 0.880 | 5.00 | | | | - | | | | |
| OCDF | ND | 1.90 | 10.0 | | | | - | | | | |
| Total-Tetradoxins | ND | 0.190 | 1.00 | | | | - | | | | |
| Total-Pentadoxins | ND | 0.540 | 5.00 | | | | - | | | | |
| Total-Hexadoxins | ND | 0.880 | 5.00 | | | | - | | | | |
| Total-Heptadoxins | ND | 0.900 | 5.00 | | | | - | | | | |
| Total-Tetrafurans | ND | 0.240 | 1.00 | | | | - | | | | |
| Total-Pentafurans | ND | 0.610 | 5.00 | | | | - | | | | |
| Total-Hexafurans | ND | 0.860 | 5.00 | | | | - | | | | |
| Total-Heptafurans | ND | 0.880 | 5.00 | | | | - | | | | |
| Total PCDD+PCDF | ND | 0 | 1.00 | | | | - | | | | |

Cleanup Standard

| | | | | | | |
|-------------------|------|--|----|--|----|----------|
| 37Cl-2,3,7,8-TCDD | 6.58 | | 10 | | 66 | 35 - 197 |
|-------------------|------|--|----|--|----|----------|

Labeled Compound Recovery

| | | | | | | |
|-------------------------|------|--|-----|--|-----|----------|
| 13C-2,3,7,8-TCDD | 78.9 | | 100 | | 79 | 25 - 164 |
| 13C-1,2,3,7,8-PeCDD | 89.0 | | 100 | | 89 | 25 - 181 |
| 13C-1,2,3,4,7,8-HxCDD | 68.7 | | 100 | | 69 | 32 - 141 |
| 13C-1,2,3,6,7,8-HxCDD | 90.3 | | 100 | | 90 | 28 - 130 |
| 13C-1,2,3,4,6,7,8-HpCDD | 72.4 | | 100 | | 72 | 23 - 140 |
| 13C-OCDD | 132 | | 200 | | 66 | 17 - 157 |
| 13C-2,3,7,8-TCDF | 91.9 | | 100 | | 92 | 24 - 169 |
| 13C-1,2,3,7,8-PeCDF | 100 | | 100 | | 100 | 24 - 185 |
| 13C-2,3,4,7,8-PeCDF | 97.8 | | 100 | | 98 | 21 - 178 |
| 13C-1,2,3,4,7,8-HxCDF | 74.4 | | 100 | | 74 | 26 - 152 |
| 13C-1,2,3,6,7,8-HxCDF | 97.1 | | 100 | | 97 | 26 - 123 |
| 13C-2,3,4,6,7,8-HxCDF | 90.1 | | 100 | | 90 | 28 - 136 |
| 13C-1,2,3,7,8,9-HxCDF | 76.7 | | 100 | | 77 | 29 - 147 |
| 13C-1,2,3,4,6,7,8-HpCDF | 81.9 | | 100 | | 82 | 28 - 143 |
| 13C-1,2,3,4,7,8,9-HpCDF | 71.9 | | 100 | | 72 | 26 - 138 |

CLIENT: SHN Consulting Engineers & Geologists, Inc.
Work Order: 2410N54
Project: 024141.200; Living Shoreline

ANALYTICAL QC SUMMARY REPORT

BatchID: 305688

| | | | |
|-----------------------------|------------------------------|-----------------------------|----------------------------------|
| SampleID: LCS-305688 | TestCode: 1613_FULL_S | Units: pg/g-dry | Prep Date: 11/11/2024 |
| Batch ID: 305688 | TestNo: E1613B | Run ID: GC36_241115A | Analysis Date: 11/14/2024 |

| Analyte | Result | MDL | ML | SPKValue | SPKRefVal | %REC | Limits | RPDRefVal | %RPD | RPDLimit | Qual |
|---------------------|--------|-------|------|----------|-----------|------|----------|-----------|------|----------|------|
| 2,3,7,8-TCDD | 10.1 | 0.190 | 1.00 | 10 | 0 | 101 | 67 - 158 | | | | |
| 1,2,3,7,8-PeCDD | 52.1 | 0.540 | 5.00 | 50 | 0 | 104 | 70 - 142 | | | | |
| 1,2,3,4,7,8-HxCDD | 50.8 | 0.620 | 5.00 | 50 | 0 | 102 | 70 - 164 | | | | |
| 1,2,3,6,7,8-HxCDD | 50.8 | 0.750 | 5.00 | 50 | 0 | 102 | 76 - 134 | | | | |
| 1,2,3,7,8,9-HxCDD | 53.0 | 0.880 | 5.00 | 50 | 0 | 106 | 64 - 162 | | | | |
| 1,2,3,4,6,7,8-HpCDD | 49.4 | 0.900 | 5.00 | 50 | 0 | 99 | 70 - 140 | | | | |
| OCDD | 106 | 1.90 | 10.0 | 100 | 0 | 105 | 78 - 144 | | | | |
| 2,3,7,8-TCDF | 10.1 | 0.240 | 1.00 | 10 | 0 | 101 | 75 - 158 | | | | |
| 1,2,3,7,8-PeCDF | 50.0 | 0.600 | 5.00 | 50 | 0 | 100 | 80 - 134 | | | | |
| 2,3,4,7,8-PeCDF | 50.4 | 0.610 | 5.00 | 50 | 0 | 101 | 68 - 160 | | | | |
| 1,2,3,4,7,8-HxCDF | 48.1 | 0.750 | 5.00 | 50 | 0 | 96 | 72 - 134 | | | | |
| 1,2,3,6,7,8-HxCDF | 51.0 | 0.730 | 5.00 | 50 | 0 | 102 | 84 - 130 | | | | |
| 1,2,3,7,8,9-HxCDF | 50.0 | 0.860 | 5.00 | 50 | 0 | 100 | 78 - 130 | | | | |
| 2,3,4,6,7,8-HxCDF | 48.9 | 0.790 | 5.00 | 50 | 0 | 98 | 70 - 156 | | | | |
| 1,2,3,4,6,7,8-HpCDF | 48.2 | 0.880 | 5.00 | 50 | 0 | 96 | 82 - 122 | | | | |
| 1,2,3,4,7,8,9-HpCDF | 52.2 | 0.880 | 5.00 | 50 | 0 | 104 | 78 - 138 | | | | |
| OCDF | 104 | 1.90 | 10.0 | 100 | 0 | 104 | 63 - 170 | | | | |

Cleanup Standard

| | | | | | | | | | | | |
|-------------------|------|--|--|----|--|----|----------|--|--|--|--|
| 37Cl-2,3,7,8-TCDD | 7.58 | | | 10 | | 76 | 31 - 191 | | | | |
|-------------------|------|--|--|----|--|----|----------|--|--|--|--|

Labeled Compound Recovery

| | | | | | | | | | | | |
|-------------------------|------|--|--|-----|--|-----|----------|--|--|--|--|
| 13C-2,3,7,8-TCDD | 87.9 | | | 100 | | 88 | 20 - 175 | | | | |
| 13C-1,2,3,7,8-PeCDD | 107 | | | 100 | | 107 | 21 - 227 | | | | |
| 13C-1,2,3,4,7,8-HxCDD | 72.1 | | | 100 | | 72 | 21 - 193 | | | | |
| 13C-1,2,3,6,7,8-HxCDD | 96.1 | | | 100 | | 96 | 25 - 163 | | | | |
| 13C-1,2,3,4,6,7,8-HpCDD | 81.3 | | | 100 | | 81 | 26 - 166 | | | | |
| 13C-OCDD | 142 | | | 200 | | 71 | 13 - 199 | | | | |
| 13C-2,3,7,8-TCDF | 97.2 | | | 100 | | 97 | 22 - 152 | | | | |
| 13C-1,2,3,7,8-PeCDF | 111 | | | 100 | | 111 | 21 - 192 | | | | |
| 13C-2,3,4,7,8-PeCDF | 116 | | | 100 | | 116 | 13 - 328 | | | | |
| 13C-1,2,3,4,7,8-HxCDF | 75.6 | | | 100 | | 76 | 19 - 202 | | | | |
| 13C-1,2,3,6,7,8-HxCDF | 91.6 | | | 100 | | 92 | 21 - 159 | | | | |
| 13C-2,3,4,6,7,8-HxCDF | 94.8 | | | 100 | | 95 | 22 - 176 | | | | |
| 13C-1,2,3,7,8,9-HxCDF | 79.7 | | | 100 | | 80 | 17 - 205 | | | | |
| 13C-1,2,3,4,6,7,8-HpCDF | 87.0 | | | 100 | | 87 | 21 - 158 | | | | |
| 13C-1,2,3,4,7,8,9-HpCDF | 77.5 | | | 100 | | 77 | 20 - 186 | | | | |

CLIENT: SHN Consulting Engineers & Geologists, Inc.
Work Order: 2410N54
Project: 024141.200; Living Shoreline

ANALYTICAL QC SUMMARY REPORT

BatchID: 305688

| SampleID: LCSD-305688 | TestCode: 1613_FULL_S | | | Units: pg/g-dry | | | Prep Date: 11/11/2024 | | | | |
|------------------------------|------------------------------|-------|------|-----------------------------|-----------|------|----------------------------------|-----------|-------|----------|------|
| Batch ID: 305688 | TestNo: E1613B | | | Run ID: GC36_241115A | | | Analysis Date: 11/12/2024 | | | | |
| Analyte | Result | MDL | ML | SPKValue | SPKRefVal | %REC | Limits | RPDRefVal | %RPD | RPDLimit | Qual |
| 2,3,7,8-TCDD | 10.4 | 0.190 | 1.00 | 10 | 0 | 104 | 67 - 158 | 10.08 | 3.32 | 20 | |
| 1,2,3,7,8-PeCDD | 53.2 | 0.540 | 5.00 | 50 | 0 | 106 | 70 - 142 | 52.1 | 2.09 | 20 | |
| 1,2,3,4,7,8-HxCDD | 52.1 | 0.620 | 5.00 | 50 | 0 | 104 | 70 - 164 | 50.84 | 2.37 | 20 | |
| 1,2,3,6,7,8-HxCDD | 53.2 | 0.750 | 5.00 | 50 | 0 | 106 | 76 - 134 | 50.76 | 4.66 | 20 | |
| 1,2,3,7,8,9-HxCDD | 54.1 | 0.880 | 5.00 | 50 | 0 | 108 | 64 - 162 | 52.98 | 2.05 | 20 | |
| 1,2,3,4,6,7,8-HpCDD | 50.4 | 0.900 | 5.00 | 50 | 0 | 101 | 70 - 140 | 49.36 | 2.01 | 20 | |
| OCDD | 107 | 1.90 | 10.0 | 100 | 0 | 107 | 78 - 144 | 105.46 | 1.75 | 20 | |
| 2,3,7,8-TCDF | 10.4 | 0.240 | 1.00 | 10 | 0 | 104 | 75 - 158 | 10.1 | 2.93 | 20 | |
| 1,2,3,7,8-PeCDF | 49.6 | 0.600 | 5.00 | 50 | 0 | 99 | 80 - 134 | 49.96 | 0.804 | 20 | |
| 2,3,4,7,8-PeCDF | 49.3 | 0.610 | 5.00 | 50 | 0 | 99 | 68 - 160 | 50.44 | 2.29 | 20 | |
| 1,2,3,4,7,8-HxCDF | 50.1 | 0.750 | 5.00 | 50 | 0 | 100 | 72 - 134 | 48.12 | 4.07 | 20 | |
| 1,2,3,6,7,8-HxCDF | 52.4 | 0.730 | 5.00 | 50 | 0 | 105 | 84 - 130 | 51 | 2.63 | 20 | |
| 1,2,3,7,8,9-HxCDF | 49.0 | 0.860 | 5.00 | 50 | 0 | 98 | 78 - 130 | 49.98 | 1.94 | 20 | |
| 2,3,4,6,7,8-HxCDF | 50.4 | 0.790 | 5.00 | 50 | 0 | 101 | 70 - 156 | 48.92 | 2.94 | 20 | |
| 1,2,3,4,6,7,8-HpCDF | 48.6 | 0.880 | 5.00 | 50 | 0 | 97 | 82 - 122 | 48.18 | 0.950 | 20 | |
| 1,2,3,4,7,8,9-HpCDF | 52.9 | 0.880 | 5.00 | 50 | 0 | 106 | 78 - 138 | 52.16 | 1.48 | 20 | |
| OCDF | 109 | 1.90 | 10.0 | 100 | 0 | 109 | 63 - 170 | 104.36 | 3.96 | 20 | |

Cleanup Standard

| | | | | | | | | | | | |
|-------------------|------|--|--|----|--|----|----------|--|--|--|--|
| 37Cl-2,3,7,8-TCDD | 7.78 | | | 10 | | 78 | 31 - 191 | | | | |
|-------------------|------|--|--|----|--|----|----------|--|--|--|--|

Labeled Compound Recovery

| | | | | | | | | | | | |
|-------------------------|------|--|--|-----|--|-----|----------|--|--|--|--|
| 13C-2,3,7,8-TCDD | 87.1 | | | 100 | | 87 | 20 - 175 | | | | |
| 13C-1,2,3,7,8-PeCDD | 108 | | | 100 | | 108 | 21 - 227 | | | | |
| 13C-1,2,3,4,7,8-HxCDD | 76.5 | | | 100 | | 76 | 21 - 193 | | | | |
| 13C-1,2,3,6,7,8-HxCDD | 101 | | | 100 | | 101 | 25 - 163 | | | | |
| 13C-1,2,3,4,6,7,8-HpCDD | 86.4 | | | 100 | | 86 | 26 - 166 | | | | |
| 13C-OCDD | 134 | | | 200 | | 67 | 13 - 199 | | | | |
| 13C-2,3,7,8-TCDF | 97.1 | | | 100 | | 97 | 22 - 152 | | | | |
| 13C-1,2,3,7,8-PeCDF | 114 | | | 100 | | 113 | 21 - 192 | | | | |
| 13C-2,3,4,7,8-PeCDF | 122 | | | 100 | | 122 | 13 - 328 | | | | |
| 13C-1,2,3,4,7,8-HxCDF | 82.1 | | | 100 | | 82 | 19 - 202 | | | | |
| 13C-1,2,3,6,7,8-HxCDF | 99.6 | | | 100 | | 100 | 21 - 159 | | | | |
| 13C-2,3,4,6,7,8-HxCDF | 99.5 | | | 100 | | 100 | 22 - 176 | | | | |
| 13C-1,2,3,7,8,9-HxCDF | 84.2 | | | 100 | | 84 | 17 - 205 | | | | |
| 13C-1,2,3,4,6,7,8-HpCDF | 91.4 | | | 100 | | 91 | 21 - 158 | | | | |
| 13C-1,2,3,4,7,8,9-HpCDF | 78.2 | | | 100 | | 78 | 20 - 186 | | | | |



Quality Control Report

| | |
|--|---|
| Client: SHN Consulting Engineers & Geologists, Inc. | WorkOrder: 2410N54 |
| Date Prepared: 10/31/2024 | BatchID: 305132 |
| Date Analyzed: 11/04/2024 - 11/05/2024 | Extraction Method: SW3546 |
| Instrument: GC20 | Analytical Method: SW8081B/8082A |
| Matrix: Soil | Unit: mg/kg |
| Project: 024141.200; Living Shoreline | Sample ID: MB/LCS/LCSD-305132 |

QC Summary Report for SW8081B/8082A

| Analyte | MB Result | MDL | RL | SPK Val | MB IS/SS %REC | MB IS/SS Limits |
|---------------------------|-----------|---------|--------|---------|---------------|-----------------|
| Aldrin | ND | 0.00042 | 0.0010 | - | - | - |
| a-BHC | ND | 0.00045 | 0.0010 | - | - | - |
| b-BHC | ND | 0.00038 | 0.0010 | - | - | - |
| d-BHC | ND | 0.00036 | 0.0010 | - | - | - |
| g-BHC | ND | 0.00036 | 0.0010 | - | - | - |
| Chlordane (Technical) | ND | 0.010 | 0.025 | - | - | - |
| a-Chlordane | ND | 0.00035 | 0.0010 | - | - | - |
| g-Chlordane | ND | 0.00067 | 0.0010 | - | - | - |
| p,p-DDD | ND | 0.00057 | 0.0010 | - | - | - |
| p,p-DDE | ND | 0.00034 | 0.0010 | - | - | - |
| p,p-DDT | ND | 0.00043 | 0.0010 | - | - | - |
| Dieldrin | ND | 0.00041 | 0.0010 | - | - | - |
| Endosulfan I | ND | 0.00040 | 0.0010 | - | - | - |
| Endosulfan II | ND | 0.00051 | 0.0010 | - | - | - |
| Endosulfan sulfate | ND | 0.00040 | 0.0010 | - | - | - |
| Endrin | ND | 0.00045 | 0.0010 | - | - | - |
| Endrin aldehyde | ND | 0.00045 | 0.0010 | - | - | - |
| Endrin ketone | ND | 0.00042 | 0.0010 | - | - | - |
| Heptachlor | ND | 0.00067 | 0.0010 | - | - | - |
| Heptachlor epoxide | ND | 0.00041 | 0.0010 | - | - | - |
| Hexachlorobenzene | ND | 0.00038 | 0.010 | - | - | - |
| Hexachlorocyclopentadiene | ND | 0.00064 | 0.020 | - | - | - |
| Methoxychlor | ND | 0.00063 | 0.0010 | - | - | - |
| Toxaphene | ND | 0.064 | 0.20 | - | - | - |
| Aroclor1016 | ND | 0.037 | 0.050 | - | - | - |
| Aroclor1221 | ND | 0.037 | 0.050 | - | - | - |
| Aroclor1232 | ND | 0.037 | 0.050 | - | - | - |
| Aroclor1242 | ND | 0.037 | 0.050 | - | - | - |
| Aroclor1248 | ND | 0.037 | 0.050 | - | - | - |
| Aroclor1254 | ND | 0.037 | 0.050 | - | - | - |
| Aroclor1260 | ND | 0.037 | 0.050 | - | - | - |
| Surrogate Recovery | | | | | | |
| Decachlorobiphenyl | 0.052 | | | 0.05 | 104 | 70-130 |

(Cont.)



Quality Control Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Prepared: 10/31/2024
Date Analyzed: 11/04/2024 - 11/05/2024
Instrument: GC20
Matrix: Soil
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
BatchID: 305132
Extraction Method: SW3546
Analytical Method: SW8081B/8082A
Unit: mg/kg
Sample ID: MB/LCS/LCSD-305132

QC Summary Report for SW8081B/8082A

| Analyte | LCS Result | LCSD Result | SPK Val | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Limit |
|---------------------------|------------|-------------|---------|----------|-----------|-----------------|-------|-----------|
| Aldrin | 0.044 | 0.043 | 0.050 | 88 | 86 | 70-130 | 2.44 | 20 |
| a-BHC | 0.037 | 0.037 | 0.050 | 74 | 74 | 70-130 | 0.245 | 20 |
| b-BHC | 0.040 | 0.040 | 0.050 | 81 | 79 | 70-130 | 1.94 | 20 |
| d-BHC | 0.038 | 0.037 | 0.050 | 75 | 74 | 70-130 | 1.97 | 20 |
| g-BHC | 0.044 | 0.045 | 0.050 | 89 | 89 | 70-130 | 0.481 | 20 |
| a-Chlordane | 0.044 | 0.043 | 0.050 | 87 | 85 | 70-130 | 2.49 | 20 |
| g-Chlordane | 0.039 | 0.038 | 0.050 | 78 | 76 | 70-130 | 2.70 | 20 |
| p,p-DDD | 0.044 | 0.044 | 0.050 | 89 | 88 | 70-130 | 0.784 | 20 |
| p,p-DDE | 0.049 | 0.047 | 0.050 | 97 | 95 | 70-130 | 2.64 | 20 |
| p,p-DDT | 0.044 | 0.049 | 0.050 | 87 | 97 | 70-130 | 10.4 | 20 |
| Dieldrin | 0.045 | 0.045 | 0.050 | 91 | 91 | 70-130 | 0.374 | 20 |
| Endosulfan I | 0.042 | 0.042 | 0.050 | 84 | 84 | 70-130 | 0.147 | 20 |
| Endosulfan II | 0.039 | 0.038 | 0.050 | 79 | 76 | 70-130 | 4.04 | 20 |
| Endosulfan sulfate | 0.043 | 0.041 | 0.050 | 86 | 82 | 70-130 | 4.81 | 20 |
| Endrin | 0.048 | 0.048 | 0.050 | 96 | 95 | 70-130 | 0.607 | 20 |
| Endrin aldehyde | 0.036 | 0.033 | 0.050 | 71 | 67,F2 | 70-130 | 6.38 | 20 |
| Endrin ketone | 0.046 | 0.044 | 0.050 | 92 | 88 | 70-130 | 4.50 | 20 |
| Heptachlor | 0.050 | 0.050 | 0.050 | 100 | 100 | 70-130 | 0.132 | 20 |
| Heptachlor epoxide | 0.044 | 0.043 | 0.050 | 87 | 85 | 70-130 | 2.54 | 20 |
| Hexachlorobenzene | 0.042 | 0.041 | 0.050 | 84 | 83 | 70-130 | 1.73 | 20 |
| Hexachlorocyclopentadiene | 0.047 | 0.046 | 0.050 | 94 | 91 | 50-130 | 3.32 | 20 |
| Methoxychlor | 0.045 | 0.044 | 0.050 | 90 | 87 | 70-130 | 3.07 | 20 |
| Aroclor1016 | 0.16 | 0.15 | 0.15 | 104 | 101 | 70-130 | 2.19 | 20 |
| Aroclor1260 | 0.17 | 0.17 | 0.15 | 114 | 110 | 70-130 | 3.20 | 20 |
| Surrogate Recovery | | | | | | | | |
| Decachlorobiphenyl | 0.051 | 0.052 | 0.050 | 103 | 105 | 70-130 | 1.89 | 20 |



Quality Control Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Prepared: 11/05/2024
Date Analyzed: 11/05/2024
Instrument: GC21, GC47
Matrix: Soil
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
BatchID: 305325
Extraction Method: SW3550B
Analytical Method: SW8270E
Unit: mg/Kg
Sample ID: MB/LCS/LCSD-305325

QC Summary Report for SW8270E

| Analyte | MB Result | MDL | RL | SPK Val | MB IS/SS %REC | MB IS/SS Limits |
|---------------------------|-----------|---------|--------|---------|---------------|-----------------|
| Acenaphthene | ND | 0.00035 | 0.0013 | - | - | - |
| Acenaphthylene | ND | 0.00028 | 0.0013 | - | - | - |
| Anthracene | ND | 0.00057 | 0.0013 | - | - | - |
| Benzo (a) anthracene | ND | 0.0036 | 0.012 | - | - | - |
| Benzo (a) pyrene | ND | 0.00070 | 0.0013 | - | - | - |
| Benzo (b) fluoranthene | ND | 0.0011 | 0.0025 | - | - | - |
| Benzo (g,h,i) perylene | ND | 0.00089 | 0.0025 | - | - | - |
| Benzo (k) fluoranthene | ND | 0.0010 | 0.0025 | - | - | - |
| Chrysene | ND | 0.00067 | 0.0013 | - | - | - |
| Dibenzo (a,h) anthracene | ND | 0.0011 | 0.0025 | - | - | - |
| Fluoranthene | ND | 0.00079 | 0.0025 | - | - | - |
| Fluorene | ND | 0.0010 | 0.0025 | - | - | - |
| Indeno (1,2,3-cd) pyrene | ND | 0.0016 | 0.0025 | - | - | - |
| 1-Methylnaphthalene | ND | 0.00033 | 0.0013 | - | - | - |
| 2-Methylnaphthalene | ND | 0.00048 | 0.0013 | - | - | - |
| Naphthalene | ND | 0.00042 | 0.0025 | - | - | - |
| Phenanthrene | ND | 0.00068 | 0.0013 | - | - | - |
| Pyrene | ND | 0.00063 | 0.0013 | - | - | - |
| Surrogate Recovery | | | | | | |
| 2-Fluorophenol | 1.4 | | | 1.25 | 111 | 60-130 |
| 2-Fluorobiphenyl | 1.1 | | | 1.25 | 89 | 60-130 |

(Cont.)



Quality Control Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Prepared: 11/05/2024
Date Analyzed: 11/05/2024
Instrument: GC21, GC47
Matrix: Soil
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
BatchID: 305325
Extraction Method: SW3550B
Analytical Method: SW8270E
Unit: mg/Kg
Sample ID: MB/LCS/LCSD-305325

QC Summary Report for SW8270E

| Analyte | LCS Result | LCSD Result | SPK Val | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Limit |
|---------------------------|------------|-------------|---------|----------|-----------|-----------------|------|-----------|
| Acenaphthene | 0.061 | 0.066 | 0.062 | 98 | 106 | 60-130 | 7.72 | 30 |
| Acenaphthylene | 0.053 | 0.058 | 0.062 | 85 | 93 | 60-130 | 9.34 | 30 |
| Anthracene | 0.055 | 0.056 | 0.062 | 88 | 90 | 60-130 | 1.53 | 30 |
| Benzo (a) anthracene | 0.058 | 0.060 | 0.062 | 92 | 97 | 70-130 | 5.04 | 30 |
| Benzo (a) pyrene | 0.060 | 0.065 | 0.062 | 96 | 104 | 70-130 | 7.41 | 30 |
| Benzo (b) fluoranthene | 0.053 | 0.054 | 0.062 | 84 | 87 | 60-130 | 3.33 | 30 |
| Benzo (g,h,i) perylene | 0.060 | 0.062 | 0.062 | 95 | 99 | 70-130 | 3.72 | 30 |
| Benzo (k) fluoranthene | 0.060 | 0.064 | 0.062 | 96 | 103 | 70-130 | 6.24 | 30 |
| Chrysene | 0.057 | 0.060 | 0.062 | 91 | 96 | 70-130 | 5.06 | 30 |
| Dibenzo (a,h) anthracene | 0.056 | 0.061 | 0.062 | 89 | 98 | 70-130 | 9.34 | 30 |
| Fluoranthene | 0.057 | 0.064 | 0.062 | 91 | 102 | 70-130 | 12.1 | 30 |
| Fluorene | 0.071 | 0.080 | 0.062 | 113 | 127 | 60-130 | 11.6 | 30 |
| Indeno (1,2,3-cd) pyrene | 0.058 | 0.061 | 0.062 | 92 | 97 | 70-130 | 5.20 | 30 |
| 1-Methylnaphthalene | 0.052 | 0.056 | 0.062 | 84 | 90 | 70-130 | 7.09 | 30 |
| 2-Methylnaphthalene | 0.057 | 0.059 | 0.062 | 91 | 95 | 70-130 | 4.56 | 30 |
| Naphthalene | 0.051 | 0.054 | 0.062 | 82 | 87 | 70-130 | 5.16 | 30 |
| Phenanthrene | 0.056 | 0.058 | 0.062 | 89 | 93 | 60-130 | 4.67 | 30 |
| Pyrene | 0.054 | 0.052 | 0.062 | 87 | 83 | 70-130 | 4.95 | 30 |
| Surrogate Recovery | | | | | | | | |
| 2-Fluorophenol | 1.3 | 1.3 | 1.25 | 106 | 104 | 70-130 | 1.47 | 30 |
| 2-Fluorobiphenyl | 1.1 | 1.1 | 1.25 | 89 | 90 | 60-130 | 1.25 | 30 |



Quality Control Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Prepared: 11/05/2024
Date Analyzed: 11/05/2024
Instrument: GC21, GC47
Matrix: Soil
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
BatchID: 305325
Extraction Method: SW3550B
Analytical Method: SW8270E
Unit: mg/Kg
Sample ID: MB/LCS/LCSD-305325

QC Summary Report for SW8270E

| Analyte | MB Result | MDL | RL | SPK Val | MB IS/SS %REC | MB IS/SS Limits |
|-------------------------------|-----------|----------|--------|---------|---------------|-----------------|
| Acenaphthene | ND | 0.00035 | 0.0013 | - | - | - |
| Acenaphthylene | ND | 0.00028 | 0.0013 | - | - | - |
| Acetochlor | ND | 0.044 | 0.25 | - | - | - |
| Anthracene | ND | 0.00057 | 0.0013 | - | - | - |
| Benzidine | ND | 0.36 | 1.2 | - | - | - |
| Benzo (a) anthracene | ND | 0.0036 | 0.012 | - | - | - |
| Benzo (a) pyrene | ND | 0.00070 | 0.0013 | - | - | - |
| Benzo (b) fluoranthene | ND | 0.0011 | 0.0025 | - | - | - |
| Benzo (g,h,i) perylene | ND | 0.00089 | 0.0025 | - | - | - |
| Benzo (k) fluoranthene | ND | 0.0010 | 0.0025 | - | - | - |
| Benzoic Acid | ND | 0.32 | 1.2 | - | - | - |
| Benzyl Alcohol | ND | 0.55 | 1.2 | - | - | - |
| 1,1-Biphenyl | ND | 0.0029 | 0.012 | - | - | - |
| Bis (2-chloroethoxy) Methane | ND | 0.030 | 0.25 | - | - | - |
| Bis (2-chloroethyl) Ether | ND | 0.00036 | 0.0013 | - | - | - |
| Bis (2-chloroisopropyl) Ether | ND | 0.0012 | 0.0025 | - | - | - |
| Bis (2-ethylhexyl) Adipate | ND | 0.085 | 0.25 | - | - | - |
| Bis (2-ethylhexyl) Phthalate | ND | 0.0047 | 0.062 | - | - | - |
| 4-Bromophenyl Phenyl Ether | ND | 0.040 | 0.25 | - | - | - |
| Butylbenzyl Phthalate | ND | 0.0036 | 0.062 | - | - | - |
| 4-Chloro-3-methylphenol | ND | 0.062 | 0.25 | - | - | - |
| 4-Chloroaniline | ND | 0.00092 | 0.0013 | - | - | - |
| 2-Chloronaphthalene | ND | 0.041 | 0.25 | - | - | - |
| 2-Chlorophenol | ND | 0.0024 | 0.012 | - | - | - |
| 4-Chlorophenyl Phenyl Ether | ND | 0.066 | 0.25 | - | - | - |
| Chrysene | ND | 0.00067 | 0.0013 | - | - | - |
| Dibenzo (a,h) anthracene | ND | 0.0011 | 0.0025 | - | - | - |
| Dibenzofuran | ND | 0.000093 | 0.0013 | - | - | - |
| Di-n-butyl Phthalate | ND | 0.0044 | 0.062 | - | - | - |
| 1,2-Dichlorobenzene | ND | 0.053 | 0.25 | - | - | - |
| 1,3-Dichlorobenzene | ND | 0.042 | 0.25 | - | - | - |
| 1,4-Dichlorobenzene | ND | 0.049 | 0.25 | - | - | - |
| 3,3-Dichlorobenzidine | ND | 0.00089 | 0.0013 | - | - | - |
| 2,4-Dichlorophenol | ND | 0.0012 | 0.0025 | - | - | - |
| Diethyl Phthalate | ND | 0.0040 | 0.012 | - | - | - |
| 2,4-Dimethylphenol | ND | 0.044 | 0.25 | - | - | - |
| Dimethyl Phthalate | ND | 0.0019 | 0.0025 | - | - | - |
| 4,6-Dinitro-2-methylphenol | ND | 0.41 | 1.2 | - | - | - |

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Quality Control Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Prepared: 11/05/2024
Date Analyzed: 11/05/2024
Instrument: GC21, GC47
Matrix: Soil
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
BatchID: 305325
Extraction Method: SW3550B
Analytical Method: SW8270E
Unit: mg/Kg
Sample ID: MB/LCS/LCSD-305325

QC Summary Report for SW8270E

| Analyte | MB Result | MDL | RL | SPK Val | MB IS/SS %REC | MB IS/SS Limits |
|---------------------------------|-----------|---------|--------|---------|---------------|-----------------|
| 2,4-Dinitrophenol | ND | 0.11 | 0.25 | - | - | - |
| 2,4-Dinitrotoluene | ND | 0.0036 | 0.012 | - | - | - |
| 2,6-Dichlorophenol | ND | 0.0032 | 0.012 | - | - | - |
| 2,6-Dinitrotoluene | ND | 0.0078 | 0.012 | - | - | - |
| Di-n-octyl Phthalate | ND | 0.20 | 0.62 | - | - | - |
| 1,2-Diphenylhydrazine | ND | 0.038 | 0.25 | - | - | - |
| Fluoranthene | ND | 0.00079 | 0.0025 | - | - | - |
| Fluorene | ND | 0.0010 | 0.0025 | - | - | - |
| Hexachlorobenzene | ND | 0.0012 | 0.0013 | - | - | - |
| Hexachlorobutadiene | ND | 0.00019 | 0.0013 | - | - | - |
| Hexachlorocyclopentadiene | ND | 0.52 | 1.2 | - | - | - |
| Hexachloroethane | ND | 0.00062 | 0.0025 | - | - | - |
| Indeno (1,2,3-cd) pyrene | ND | 0.0016 | 0.0025 | - | - | - |
| Isophorone | ND | 0.069 | 0.25 | - | - | - |
| 1-Methylnaphthalene | ND | 0.00033 | 0.0013 | - | - | - |
| 2-Methylnaphthalene | ND | 0.00048 | 0.0013 | - | - | - |
| 2-Methylphenol (o-Cresol) | ND | 0.060 | 0.25 | - | - | - |
| 3 & 4-Methylphenol (m,p-Cresol) | ND | 0.046 | 0.25 | - | - | - |
| Naphthalene | ND | 0.00042 | 0.0025 | - | - | - |
| 2-Nitroaniline | ND | 0.31 | 1.2 | - | - | - |
| 3-Nitroaniline | ND | 0.24 | 1.2 | - | - | - |
| 4-Nitroaniline | ND | 0.28 | 1.2 | - | - | - |
| Nitrobenzene | ND | 0.055 | 0.25 | - | - | - |
| 2-Nitrophenol | ND | 0.31 | 1.2 | - | - | - |
| 4-Nitrophenol | ND | 0.35 | 1.2 | - | - | - |
| N-Nitrosodimethylamine | ND | 0.22 | 1.2 | - | - | - |
| N-Nitrosodi-n-propylamine | ND | 0.079 | 0.25 | - | - | - |
| N-Nitrosodiphenylamine | ND | 0.029 | 0.25 | - | - | - |
| Pentachlorophenol | ND | 0.029 | 0.062 | - | - | - |
| Phenanthrene | ND | 0.00068 | 0.0013 | - | - | - |
| Phenol | ND | 0.0018 | 0.010 | - | - | - |
| Pyrene | ND | 0.00063 | 0.0013 | - | - | - |
| Pyridine | ND | 0.046 | 0.25 | - | - | - |
| 2,3,4,6-Tetrachlorophenol | ND | 0.079 | 0.25 | - | - | - |
| 1,2,4-Trichlorobenzene | ND | 0.046 | 0.25 | - | - | - |
| 2,4,5-Trichlorophenol | ND | 0.00059 | 0.0025 | - | - | - |
| 2,4,6-Trichlorophenol | ND | 0.00057 | 0.0025 | - | - | - |

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Quality Control Report

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|--|--------------------------------------|
| Client: SHN Consulting Engineers & Geologists, Inc. | WorkOrder: 2410N54 |
| Date Prepared: 11/05/2024 | BatchID: 305325 |
| Date Analyzed: 11/05/2024 | Extraction Method: SW3550B |
| Instrument: GC21, GC47 | Analytical Method: SW8270E |
| Matrix: Soil | Unit: mg/Kg |
| Project: 024141.200; Living Shoreline | Sample ID: MB/LCS/LCSD-305325 |

QC Summary Report for SW8270E

| Analyte | MB Result | MDL | RL | SPK Val | MB IS/SS %REC | MB IS/SS Limits |
|---------------------------|--------------|-----|----|------------|------------------|--------------------|
| Surrogate Recovery | | | | | | |
| 2-Fluorophenol | 1.4 | | | 1.25 | 111 | 60-130 |
| Phenol-d5 | 1.2 | | | 1.25 | 97 | 50-130 |
| Nitrobenzene-d5 | 1.1 | | | 1.25 | 86 | 60-130 |
| 2-Fluorobiphenyl | 1.1 | | | 1.25 | 89 | 60-130 |
| 2,4,6-Tribromophenol | 0.96 | | | 1.25 | 77 | 50-130 |
| 4-Terphenyl-d14 | 1.1 | | | 1.25 | 87 | 50-130 |

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Quality Control Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Prepared: 11/05/2024
Date Analyzed: 11/05/2024
Instrument: GC21, GC47
Matrix: Soil
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
BatchID: 305325
Extraction Method: SW3550B
Analytical Method: SW8270E
Unit: mg/Kg
Sample ID: MB/LCS/LCSD-305325

QC Summary Report for SW8270E

| Analyte | LCS Result | LCSD Result | SPK Val | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Limit |
|-------------------------------|------------|-------------|---------|----------|-----------|-----------------|------|-----------|
| Acenaphthene | 0.061 | 0.066 | 0.062 | 98 | 106 | 60-130 | 7.72 | 30 |
| Acenaphthylene | 0.053 | 0.058 | 0.062 | 85 | 93 | 60-130 | 9.34 | 30 |
| Acetochlor | 1.1 | 1.2 | 1.25 | 91 | 92 | 60-130 | 1.85 | 30 |
| Anthracene | 0.055 | 0.056 | 0.062 | 88 | 90 | 60-130 | 1.53 | 30 |
| Benzidine | 1.3 | 1.2 | 6.25 | 20 | 20 | 20-130 | 1.40 | 30 |
| Benzo (a) anthracene | 0.058 | 0.060 | 0.062 | 92 | 97 | 70-130 | 5.04 | 30 |
| Benzo (a) pyrene | 0.060 | 0.065 | 0.062 | 96 | 104 | 70-130 | 7.41 | 30 |
| Benzo (b) fluoranthene | 0.053 | 0.054 | 0.062 | 84 | 87 | 60-130 | 3.33 | 30 |
| Benzo (g,h,i) perylene | 0.060 | 0.062 | 0.062 | 95 | 99 | 70-130 | 3.72 | 30 |
| Benzo (k) fluoranthene | 0.060 | 0.064 | 0.062 | 96 | 103 | 70-130 | 6.24 | 30 |
| Benzoic Acid | 5.0 | 5.6 | 6.25 | 80 | 89 | 15-130 | 10.5 | 30 |
| Benzyl Alcohol | 4.9 | 5.1 | 6.25 | 78 | 81 | 70-130 | 3.64 | 30 |
| 1,1-Biphenyl | 0.058 | 0.063 | 0.062 | 92 | 100 | 60-130 | 8.44 | 30 |
| Bis (2-chloroethoxy) Methane | 1.0 | 1.1 | 1.25 | 83 | 89 | 70-130 | 7.01 | 30 |
| Bis (2-chloroethyl) Ether | 0.049 | 0.049 | 0.062 | 78 | 79 | 60-130 | 1.29 | 30 |
| Bis (2-chloroisopropyl) Ether | 0.064 | 0.072 | 0.062 | 102 | 115 | 60-130 | 12.2 | 30 |
| Bis (2-ethylhexyl) Adipate | 1.1 | 0.98 | 1.25 | 86 | 79 | 60-130 | 9.34 | 30 |
| Bis (2-ethylhexyl) Phthalate | 0.047 | 0.048 | 0.062 | 76 | 77 | 60-130 | 2.44 | 30 |
| 4-Bromophenyl Phenyl Ether | 1.1 | 1.1 | 1.25 | 89 | 86 | 60-130 | 3.63 | 30 |
| Butylbenzyl Phthalate | 0.054 | 0.055 | 0.062 | 86 | 89 | 60-130 | 3.19 | 30 |
| 4-Chloro-3-methylphenol | 1.0 | 1.1 | 1.25 | 83 | 90 | 70-130 | 7.75 | 30 |
| 4-Chloroaniline | 0.028 | 0.030 | 0.062 | 45 | 47 | 40-130 | 5.30 | 30 |
| 2-Chloronaphthalene | 1.1 | 1.4 | 1.25 | 90 | 109 | 60-130 | 18.6 | 30 |
| 2-Chlorophenol | 0.060 | 0.064 | 0.062 | 96 | 102 | 60-130 | 5.83 | 30 |
| 4-Chlorophenyl Phenyl Ether | 1.1 | 1.2 | 1.25 | 87 | 96 | 70-130 | 9.66 | 30 |
| Chrysene | 0.057 | 0.060 | 0.062 | 91 | 96 | 70-130 | 5.06 | 30 |
| Dibenzo (a,h) anthracene | 0.056 | 0.061 | 0.062 | 89 | 98 | 70-130 | 9.34 | 30 |
| Dibenzofuran | 0.056 | 0.062 | 0.062 | 90 | 99 | 60-130 | 9.40 | 30 |
| Di-n-butyl Phthalate | 0.051 | 0.054 | 0.062 | 82 | 86 | 60-130 | 4.64 | 30 |
| 1,2-Dichlorobenzene | 1.2 | 1.3 | 1.25 | 94 | 102 | 60-130 | 8.00 | 30 |
| 1,3-Dichlorobenzene | 1.0 | 1.1 | 1.25 | 83 | 86 | 60-130 | 4.62 | 30 |
| 1,4-Dichlorobenzene | 1.1 | 1.1 | 1.25 | 85 | 88 | 60-130 | 3.31 | 30 |
| 3,3-Dichlorobenzidine | 0.040 | 0.047 | 0.062 | 63 | 76 | 40-130 | 17.7 | 30 |
| 2,4-Dichlorophenol | 0.058 | 0.061 | 0.062 | 92 | 97 | 60-130 | 4.91 | 30 |
| Diethyl Phthalate | 0.063 | 0.067 | 0.062 | 100 | 107 | 70-130 | 6.18 | 30 |
| 2,4-Dimethylphenol | 1.1 | 1.2 | 1.25 | 90 | 96 | 70-130 | 6.95 | 30 |
| Dimethyl Phthalate | 0.060 | 0.064 | 0.062 | 95 | 103 | 70-130 | 7.38 | 30 |
| 4,6-Dinitro-2-methylphenol | 5.5 | 5.7 | 6.25 | 88 | 91 | 20-130 | 4.30 | 30 |

(Cont.)



Quality Control Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Prepared: 11/05/2024
Date Analyzed: 11/05/2024
Instrument: GC21, GC47
Matrix: Soil
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
BatchID: 305325
Extraction Method: SW3550B
Analytical Method: SW8270E
Unit: mg/Kg
Sample ID: MB/LCS/LCSD-305325

QC Summary Report for SW8270E

| Analyte | LCS Result | LCSD Result | SPK Val | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Limit |
|---------------------------------|------------|-------------|---------|----------|-----------|-----------------|-------|-----------|
| 2,4-Dinitrophenol | 0.85 | 0.98 | 1.25 | 68 | 79 | 15-130 | 14.7 | 30 |
| 2,4-Dinitrotoluene | 0.063 | 0.071 | 0.062 | 102 | 114 | 70-130 | 11.4 | 30 |
| 2,6-Dichlorophenol | 0.054 | 0.057 | 0.062 | 87 | 91 | 60-130 | 4.64 | 30 |
| 2,6-Dinitrotoluene | 0.056 | 0.061 | 0.062 | 89 | 97 | 60-130 | 8.74 | 30 |
| Di-n-octyl Phthalate | 1.2 | 1.1 | 1.25 | 92 | 91 | 60-130 | 0.898 | 30 |
| 1,2-Diphenylhydrazine | 1.2 | 1.1 | 1.25 | 92 | 92 | 60-130 | 0.349 | 30 |
| Fluoranthene | 0.057 | 0.064 | 0.062 | 91 | 102 | 70-130 | 12.1 | 30 |
| Fluorene | 0.071 | 0.080 | 0.062 | 113 | 127 | 60-130 | 11.6 | 30 |
| Hexachlorobenzene | 0.057 | 0.057 | 0.062 | 92 | 91 | 70-130 | 0.630 | 30 |
| Hexachlorobutadiene | 0.058 | 0.063 | 0.062 | 93 | 100 | 70-130 | 7.41 | 30 |
| Hexachlorocyclopentadiene | 5.1 | 5.7 | 6.25 | 82 | 92 | 60-130 | 11.3 | 30 |
| Hexachloroethane | 0.052 | 0.054 | 0.062 | 83 | 87 | 70-130 | 4.46 | 30 |
| Indeno (1,2,3-cd) pyrene | 0.058 | 0.061 | 0.062 | 92 | 97 | 70-130 | 5.20 | 30 |
| Isophorone | 0.90 | 0.94 | 1.25 | 72 | 76 | 60-130 | 4.78 | 30 |
| 1-Methylnaphthalene | 0.052 | 0.056 | 0.062 | 84 | 90 | 70-130 | 7.09 | 30 |
| 2-Methylnaphthalene | 0.057 | 0.059 | 0.062 | 91 | 95 | 70-130 | 4.56 | 30 |
| 2-Methylphenol (o-Cresol) | 1.3 | 1.3 | 1.25 | 102 | 104 | 60-130 | 1.94 | 30 |
| 3 & 4-Methylphenol (m,p-Cresol) | 1.1 | 1.1 | 1.25 | 84 | 91 | 60-130 | 7.82 | 30 |
| Naphthalene | 0.051 | 0.054 | 0.062 | 82 | 87 | 70-130 | 5.16 | 30 |
| 2-Nitroaniline | 6.3 | 7.2 | 6.25 | 102 | 116 | 70-130 | 12.9 | 30 |
| 3-Nitroaniline | 3.5 | 3.9 | 6.25 | 55 | 63 | 50-130 | 13.0 | 30 |
| 4-Nitroaniline | 5.5 | 6.6 | 6.25 | 88 | 105 | 60-130 | 18.0 | 30 |
| Nitrobenzene | 1.1 | 1.2 | 1.25 | 89 | 98 | 60-130 | 9.97 | 30 |
| 2-Nitrophenol | 6.2 | 6.6 | 6.25 | 98 | 106 | 70-130 | 7.43 | 30 |
| 4-Nitrophenol | 5.7 | 6.9 | 6.25 | 90 | 110 | 60-130 | 19.5 | 30 |
| N-Nitrosodimethylamine | 5.4 | 6.1 | 6.25 | 87 | 98 | 70-130 | 11.9 | 30 |
| N-Nitrosodi-n-propylamine | 1.0 | 1.0 | 1.25 | 80 | 81 | 60-130 | 0.880 | 30 |
| N-Nitrosodiphenylamine | 1.1 | 1.1 | 1.25 | 89 | 92 | 70-130 | 3.27 | 30 |
| Pentachlorophenol | 0.27 | 0.28 | 0.31 | 86 | 90 | 50-130 | 4.04 | 30 |
| Phenanthrene | 0.056 | 0.058 | 0.062 | 89 | 93 | 60-130 | 4.67 | 30 |
| Phenol | 0.23 | 0.24 | 0.25 | 92 | 96 | 60-130 | 3.70 | 30 |
| Pyrene | 0.054 | 0.052 | 0.062 | 87 | 83 | 70-130 | 4.95 | 30 |
| Pyridine | 0.73 | 0.93 | 1.25 | 58,F5 | 75 | 60-130 | 24.5 | 30 |
| 2,3,4,6-Tetrachlorophenol | 1.1 | 1.3 | 1.25 | 92 | 102 | 60-130 | 10.3 | 30 |
| 1,2,4-Trichlorobenzene | 1.1 | 1.2 | 1.25 | 88 | 94 | 60-130 | 6.45 | 30 |
| 2,4,5-Trichlorophenol | 0.061 | 0.068 | 0.062 | 98 | 108 | 60-130 | 10.4 | 30 |
| 2,4,6-Trichlorophenol | 0.055 | 0.062 | 0.062 | 89 | 99 | 60-130 | 11.3 | 30 |

(Cont.)



Quality Control Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Prepared: 11/05/2024
Date Analyzed: 11/05/2024
Instrument: GC21, GC47
Matrix: Soil
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
BatchID: 305325
Extraction Method: SW3550B
Analytical Method: SW8270E
Unit: mg/Kg
Sample ID: MB/LCS/LCSD-305325

QC Summary Report for SW8270E

| Analyte | LCS Result | LCSD Result | SPK Val | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Limit |
|---------------------------|------------|-------------|---------|----------|-----------|-----------------|-------|-----------|
| Surrogate Recovery | | | | | | | | |
| 2-Fluorophenol | 1.3 | 1.3 | 1.25 | 106 | 104 | 70-130 | 1.47 | 30 |
| Phenol-d5 | 1.2 | 1.2 | 1.25 | 98 | 96 | 70-130 | 1.49 | 30 |
| Nitrobenzene-d5 | 1.2 | 1.2 | 1.25 | 93 | 93 | 60-130 | 0.473 | 30 |
| 2-Fluorobiphenyl | 1.1 | 1.1 | 1.25 | 89 | 90 | 60-130 | 1.25 | 30 |
| 2,4,6-Tribromophenol | 1.2 | 1.1 | 1.25 | 96 | 90 | 30-130 | 6.27 | 30 |
| 4-Terphenyl-d14 | 1.1 | 0.96 | 1.25 | 90 | 77 | 40-130 | 15.4 | 30 |



Quality Control Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Prepared: 11/01/2024
Date Analyzed: 11/01/2024
Instrument: ICP-MS4
Matrix: Soil
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
BatchID: 305140
Extraction Method: SW3050B
Analytical Method: SW6020
Unit: mg/kg
Sample ID: MB/LCS/LCSD-305140
 2410N54-003AMS/MSD
 2410N54-003APDS

QC Summary Report for Metals

| Analyte | MB Result | MDL | RL | SPK Val | MB IS/SS %REC | MB IS/SS Limits |
|---------------------------|-----------|-------|-------|---------|---------------|-----------------|
| Antimony | ND | 0.10 | 0.50 | - | - | - |
| Arsenic | ND | 0.084 | 0.50 | - | - | - |
| Barium | ND | 0.73 | 5.0 | - | - | - |
| Beryllium | ND | 0.086 | 0.50 | - | - | - |
| Cadmium | ND | 0.080 | 0.50 | - | - | - |
| Chromium | ND | 0.17 | 0.50 | - | - | - |
| Cobalt | ND | 0.063 | 0.50 | - | - | - |
| Copper | ND | 0.19 | 0.50 | - | - | - |
| Lead | ND | 0.089 | 0.50 | - | - | - |
| Mercury | ND | 0.039 | 0.050 | - | - | - |
| Molybdenum | ND | 0.093 | 0.50 | - | - | - |
| Nickel | ND | 0.28 | 0.50 | - | - | - |
| Selenium | ND | 0.21 | 0.50 | - | - | - |
| Silver | ND | 0.084 | 0.50 | - | - | - |
| Thallium | ND | 0.073 | 0.50 | - | - | - |
| Vanadium | ND | 0.097 | 0.50 | - | - | - |
| Zinc | ND | 1.8 | 5.0 | - | - | - |
| Surrogate Recovery | | | | | | |
| Terbium | 550 | | | 500 | 110 | 70-130 |



Quality Control Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Prepared: 11/01/2024
Date Analyzed: 11/01/2024
Instrument: ICP-MS4
Matrix: Soil
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
BatchID: 305140
Extraction Method: SW3050B
Analytical Method: SW6020
Unit: mg/kg
Sample ID: MB/LCS/LCSD-305140
 2410N54-003AMS/MSD
 2410N54-003APDS

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 | 98 | 75-125 | 0.238 | 20 |
| Arsenic | 52 | 53 | 50 | 104 | 106 | 75-125 | 2.33 | 20 |
| Barium | 500 | 500 | 500 | 100 | 101 | 75-125 | 0.543 | 20 |
| Beryllium | 52 | 53 | 50 | 105 | 107 | 75-125 | 1.68 | 20 |
| Cadmium | 53 | 52 | 50 | 106 | 104 | 75-125 | 1.90 | 20 |
| Chromium | 51 | 52 | 50 | 103 | 104 | 75-125 | 1.55 | 20 |
| Cobalt | 50 | 50 | 50 | 100 | 100 | 75-125 | 0.134 | 20 |
| Copper | 54 | 54 | 50 | 107 | 107 | 75-125 | 0.106 | 20 |
| Lead | 51 | 50 | 50 | 101 | 101 | 75-125 | 0.461 | 20 |
| Mercury | 1.3 | 1.3 | 1.25 | 104 | 102 | 75-125 | 1.86 | 20 |
| Molybdenum | 50 | 50 | 50 | 101 | 101 | 75-125 | 0.0634 | 20 |
| Nickel | 54 | 54 | 50 | 107 | 107 | 75-125 | 0.408 | 20 |
| Selenium | 53 | 53 | 50 | 106 | 106 | 75-125 | 0.486 | 20 |
| Silver | 49 | 49 | 50 | 98 | 99 | 75-125 | 0.456 | 20 |
| Thallium | 51 | 50 | 50 | 102 | 101 | 75-125 | 1.18 | 20 |
| Vanadium | 52 | 52 | 50 | 103 | 105 | 75-125 | 1.21 | 20 |
| Zinc | 540 | 540 | 500 | 107 | 107 | 75-125 | 0.0684 | 20 |

Surrogate Recovery

| | | | | | | | | |
|---------|-----|-----|-----|-----|-----|--------|-------|----|
| Terbium | 550 | 550 | 500 | 109 | 110 | 70-130 | 0.583 | 20 |
|---------|-----|-----|-----|-----|-----|--------|-------|----|

| Analyte | MS DF | MS Result | MSD Result | SPK Val | SPKRef Val | MS %REC | MSD %REC | MS/MSD Limits | RPD | RPD Limit |
|------------|-------|-----------|------------|---------|------------|---------|----------|---------------|----------|-----------|
| Antimony | 1 | 50 | 50 | 50 | ND | 100 | 100 | 75-125 | 0.194 | 20 |
| Arsenic | 1 | 57 | 57 | 50 | 4.895 | 104 | 103 | 75-125 | 1.09 | 20 |
| Barium | 1 | 570 | 580 | 500 | 38.76 | 107 | 108 | 75-125 | 1.33 | 20 |
| Beryllium | 1 | 52 | 52 | 50 | ND | 103 | 103 | 75-125 | 0.465 | 20 |
| Cadmium | 1 | 53 | 27 | 50 | ND | 105 | 55,F10 | 75-125 | 63.3,F10 | 20 |
| Chromium | 1 | 120 | 110 | 50 | 58.91 | 112 | 104 | 75-125 | 3.54 | 20 |
| Cobalt | 1 | 56 | 55 | 50 | 8.072 | 95 | 94 | 75-125 | 0.525 | 20 |
| Copper | 1 | 73 | 72 | 50 | 21.04 | 105 | 102 | 75-125 | 1.86 | 20 |
| Lead | 1 | 58 | 57 | 50 | 6.276 | 103 | 101 | 75-125 | 2.19 | 20 |
| Mercury | 1 | 1.4 | 9.3 | 1.25 | 0.06400 | 106 | 742,F10 | 75-125 | 148,F10 | 20 |
| Molybdenum | 1 | 54 | 54 | 50 | 2.149 | 104 | 104 | 75-125 | 0.0778 | 20 |
| Nickel | 1 | 120 | 120 | 50 | 71.08 | 106 | 102 | 75-125 | 1.89 | 20 |
| Selenium | 1 | 51 | 52 | 50 | ND | 101 | 104 | 75-125 | 3.09 | 20 |
| Silver | 1 | 50 | 51 | 50 | ND | 100 | 101 | 75-125 | 1.86 | 20 |

(Cont.)



Quality Control Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Prepared: 11/01/2024
Date Analyzed: 11/01/2024
Instrument: ICP-MS4
Matrix: Soil
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
BatchID: 305140
Extraction Method: SW3050B
Analytical Method: SW6020
Unit: mg/kg
Sample ID: MB/LCS/LCSD-305140
 2410N54-003AMS/MSD
 2410N54-003APDS

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 | 52 | 49 | 50 | ND | 103 | 98 | 75-125 | 5.30 | 20 |
| Vanadium | 1 | 97 | 94 | 50 | 39.81 | 115 | 109 | 75-125 | 2.96 | 20 |
| Zinc | 1 | 590 | 570 | 500 | 55.22 | 106 | 103 | 75-125 | 2.60 | 20 |
| Surrogate Recovery | | | | | | | | | | |
| Terbium | 1 | 550 | 540 | 500 | | 110 | 108 | 70-130 | 1.65 | 20 |

| Analyte | PDS Result | SPK Val | SPKRef Val | PDS %REC | PDS Limits |
|---------|------------|---------|------------|----------|------------|
| Cadmium | 54 | 50 | ND | 108 | 75-125 |
| Mercury | 1.4 | 1.25 | 0.06400 | 111 | 75-125 |

| Analyte | DLT Result | DLTRef Val | %D | %D Limit |
|------------|------------|------------|-------|----------|
| Antimony | ND | ND | 100 | - |
| Arsenic | 4.5 | 4.9 | 7.35 | - |
| Barium | 37 | 39 | 4.91 | - |
| Beryllium | ND | ND | 100 | - |
| Cadmium | ND | ND | 100 | - |
| Chromium | 60 | 59 | 1.61 | 20 |
| Cobalt | 8.3 | 8.1 | 2.95 | - |
| Copper | 21 | 21 | 0.927 | 20 |
| Lead | 6.3 | 6.3 | 0.255 | - |
| Mercury | 0.27 | 0.064 | 322 | - |
| Molybdenum | ND | 2.1 | 0.651 | - |
| Nickel | 69 | 71 | 2.31 | 20 |
| Selenium | ND | ND | | - |
| Silver | ND | ND | | - |
| Thallium | ND | ND | 100 | - |
| Vanadium | 40 | 40 | 0.487 | 20 |
| Zinc | 57 | 55 | 2.53 | - |

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

(Cont.)



Quality Control Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Prepared: 11/05/2024
Date Analyzed: 11/06/2024
Instrument: ICP-MS5
Matrix: Soil
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
BatchID: 305301
Extraction Method: SW3050B
Analytical Method: SW6020
Unit: mg/kg
Sample ID: MB/LCS/LCSD-305301

QC Summary Report for Metals

| Analyte | MB Result | MDL | RL | SPK Val | MB IS/SS %REC | MB IS/SS Limits |
|---------------------------|-----------|-------|-------|---------|---------------|-----------------|
| Antimony | ND | 0.10 | 0.50 | - | - | - |
| Arsenic | ND | 0.084 | 0.50 | - | - | - |
| Barium | ND | 0.73 | 5.0 | - | - | - |
| Beryllium | ND | 0.086 | 0.50 | - | - | - |
| Cadmium | ND | 0.080 | 0.50 | - | - | - |
| Chromium | ND | 0.17 | 0.50 | - | - | - |
| Cobalt | ND | 0.063 | 0.50 | - | - | - |
| Copper | ND | 0.19 | 0.50 | - | - | - |
| Lead | ND | 0.089 | 0.50 | - | - | - |
| Mercury | ND | 0.039 | 0.050 | - | - | - |
| Molybdenum | ND | 0.093 | 0.50 | - | - | - |
| Nickel | ND | 0.28 | 0.50 | - | - | - |
| Selenium | ND | 0.21 | 0.50 | - | - | - |
| Silver | ND | 0.084 | 0.50 | - | - | - |
| Thallium | ND | 0.073 | 0.50 | - | - | - |
| Vanadium | ND | 0.097 | 0.50 | - | - | - |
| Zinc | ND | 1.8 | 5.0 | - | - | - |
| Surrogate Recovery | | | | | | |
| Terbium | 570 | | | 500 | 114 | 70-130 |



Quality Control Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Prepared: 11/05/2024
Date Analyzed: 11/06/2024
Instrument: ICP-MS5
Matrix: Soil
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
BatchID: 305301
Extraction Method: SW3050B
Analytical Method: SW6020
Unit: mg/kg
Sample ID: MB/LCS/LCSD-305301

QC Summary Report for Metals

| Analyte | LCS Result | LCSD Result | SPK Val | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Limit |
|---------------------------|------------|-------------|---------|----------|-----------|-----------------|-------|-----------|
| Antimony | 52 | 51 | 50 | 104 | 102 | 75-125 | 1.91 | 20 |
| Arsenic | 54 | 53 | 50 | 108 | 106 | 75-125 | 1.56 | 20 |
| Barium | 530 | 520 | 500 | 107 | 104 | 75-125 | 2.66 | 20 |
| Beryllium | 53 | 52 | 50 | 107 | 105 | 75-125 | 1.58 | 20 |
| Cadmium | 52 | 51 | 50 | 103 | 102 | 75-125 | 0.987 | 20 |
| Chromium | 53 | 52 | 50 | 107 | 105 | 75-125 | 1.61 | 20 |
| Cobalt | 54 | 53 | 50 | 108 | 106 | 75-125 | 2.01 | 20 |
| Copper | 55 | 53 | 50 | 109 | 107 | 75-125 | 2.22 | 20 |
| Lead | 53 | 53 | 50 | 106 | 106 | 75-125 | 0.189 | 20 |
| Mercury | 1.4 | 1.3 | 1.25 | 108 | 106 | 75-125 | 2.61 | 20 |
| Molybdenum | 53 | 52 | 50 | 105 | 104 | 75-125 | 1.39 | 20 |
| Nickel | 55 | 54 | 50 | 109 | 108 | 75-125 | 0.759 | 20 |
| Selenium | 53 | 53 | 50 | 106 | 106 | 75-125 | 0.250 | 20 |
| Silver | 53 | 51 | 50 | 105 | 103 | 75-125 | 2.46 | 20 |
| Thallium | 53 | 53 | 50 | 106 | 107 | 75-125 | 0.570 | 20 |
| Vanadium | 53 | 52 | 50 | 105 | 103 | 75-125 | 2.20 | 20 |
| Zinc | 540 | 530 | 500 | 107 | 106 | 75-125 | 1.36 | 20 |
| Surrogate Recovery | | | | | | | | |
| Terbium | 560 | 560 | 500 | 111 | 111 | 70-130 | 0.118 | 20 |



Quality Control Report

Client: SHN Consulting Engineers & Geologists, Inc.
Date Prepared: 10/31/2024
Date Analyzed: 11/05/2024
Instrument: GC39A, GC6A
Matrix: Soil
Project: 024141.200; Living Shoreline

WorkOrder: 2410N54
BatchID: 305139
Extraction Method: SW3550B/3630C
Analytical Method: SW8015B
Unit: mg/Kg
Sample ID: MB/LCS/LCSD-305139
 2410N54-001AMS/MSD

QC Report for SW8015B w/ Silica Gel Clean-Up

| Analyte | MB Result | MDL | RL | SPK Val | MB IS/SS %REC | MB IS/SS Limits |
|---------------------------|-----------|-----|-----|---------|---------------|-----------------|
| TPH-Diesel (C10-C23) | ND | 1.7 | 2.0 | - | - | - |
| TPH-Motor Oil (C18-C36) | ND | 4.3 | 10 | - | - | - |
| Surrogate Recovery | | | | | | |
| C9 | 26 | | | 25 | 103 | 70-130 |

| Analyte | LCS Result | LCSD Result | SPK Val | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Limit |
|---------------------------|------------|-------------|---------|----------|-----------|-----------------|-------|-----------|
| TPH-Diesel (C10-C23) | 37 | 37 | 40 | 93 | 94 | 70-130 | 0.205 | 20 |
| Surrogate Recovery | | | | | | | | |
| C9 | 27 | 26 | 25 | 107 | 105 | 70-130 | 2.22 | 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 | 43 | 43 | 40 | ND | 107 | 108 | 70-130 | 1.21 | 20 |
| Surrogate Recovery | | | | | | | | | | |
| C9 | 1 | 34 | 34 | 25 | | 138,F3 | 138,F3 | 70-130 | 0.254 | 20 |



Quality Control Report

| | | | |
|-----------------------|---|---------------------------|--------------------|
| Client: | SHN Consulting Engineers & Geologists, Inc. | WorkOrder: | 2410N54 |
| Date Prepared: | 11/05/2024 | BatchID: | 305358 |
| Date Analyzed: | 11/05/2024 | Extraction Method: | SW9060A |
| Instrument: | WC_CNS | Analytical Method: | SW9060A |
| Matrix: | Soil | Unit: | mg/kg |
| Project: | 024141.200; Living Shoreline | Sample ID: | MB/LCS/LCSD-305358 |

QC Summary Report for SW9060A

| Analyte | MB Result | MDL | RL | | | |
|----------------------|--------------|-----|-----|---|---|---|
| Total Organic Carbon | ND | 150 | 200 | - | - | - |

| Analyte | LCS Result | LCSD Result | SPK Val | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Limit |
|----------------------|---------------|----------------|------------|-------------|--------------|--------------------|------|--------------|
| Total Organic Carbon | 8100 | 8200 | 8200 | 99 | 100 | 80-120 | 1.04 | 20 |



1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

WaterTrax CLIP EDF

CHAIN-OF-CUSTODY RECORD

WorkOrder: 2410N54

ClientCode: SHNE

EQuIS Dry-Weight Email HardCopy ThirdParty J-flag
 Detection Summary Excel

Report to:

Erik Nielsen
SHN Consulting Engineers & Geologists
812 W. Wabash Ave.
Eureka, CA 95501
(707) 441-8855 FAX:

Email: enielsen@shn-engr.com
cc/3rd Party: jaguilera@shn-engr.com;
PO:
Project: 024141.200; Living Shoreline

Bill to:

Shannon Holler
SHN Consulting Engineers & Geologists
812 W. Wabash Ave.
Eureka, CA 95501
sholler@shn-engr.com

**Requested TATs: 15 days;
5 days;**

Date Received: 10/31/2024
Date Logged: 10/31/2024

| Lab ID | ClientSampID | Matrix | Collection Date | Hold | Requested Tests (See legend below) | | | | | | | | | | | | |
|-------------|--------------|--------|------------------|--------------------------|------------------------------------|---|---|---|---|---|---|---|---|----|----|----|--|
| | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | |
| 2410N54-001 | LSU-01 | Soil | 10/29/2024 17:45 | <input type="checkbox"/> | A | A | A | A | A | A | A | A | | | | | |
| 2410N54-002 | LSU-02 | Soil | 10/29/2024 18:00 | <input type="checkbox"/> | A | A | A | A | A | A | A | A | | | | | |
| 2410N54-003 | LSU-03 | Soil | 10/29/2024 18:15 | <input type="checkbox"/> | A | A | A | A | A | A | A | A | | | | | |

Test Legend:

| | | | | | | | |
|---|-------------|----|----------------|----|---------------|----|----------------|
| 1 | 1613_FULL_S | 2 | 8081PCB_S | 3 | 8270_PNA_S | 4 | CAM17MS_TTLC_S |
| 5 | cnsTOC_S | 6 | PRDisposal Fee | 7 | TPH(DMO)WSG_S | 8 | |
| 9 | | 10 | | 11 | | 12 | |

Prepared by: Agustina Venegas

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: SHN CONSULTING ENGINEERS & GEOLOGISTS, I **Project:** 024141.200; Living Shoreline

Work Order: 2410N54

Client Contact: Erik Nielsen

QC Level: LEVEL 2

Contact's Email: enielsen@shn-engr.com

Comments:

Date Logged: 10/31/2024

WaterTrax CLIP EDF Excel EQUIS Email HardCopy ThirdParty J-flag

| LabID | ClientSampID | Matrix | Test Name | Cont./Comp. | Bottle & Preservative | U** | Head Space | Dry-Weight | Collection Date & Time | TAT | Test Due Date | Sediment Content | Hold | Sub Out |
|-------|--------------|--------|-------------------------------------|-------------|-----------------------|--------------------------|--------------------------|--------------------------|------------------------|---------|---------------|------------------|--------------------------|--------------------------|
| 001A | LSU-01 | Soil | SW8015B (TPH-d,mo w/ S.G. Clean-Up) | 2 | 8OZ aG Jar, Unpres | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10/29/2024 17:45 | 5 days | 11/7/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | SW9060A (TOC) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 5 days | 11/8/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | SW6020 (CAM 17) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 5 days | 11/7/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | SW8270E (PAHs/PNAs) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 5 days | 11/7/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | SW8081B/8082A (OC Pesticides+PCBs) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 5 days | 11/7/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | E1613B (PCDDs & PCDFs) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 15 days | 11/21/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| 002A | LSU-02 | Soil | SW8015B (TPH-d,mo w/ S.G. Clean-Up) | 2 | 8OZ aG Jar, Unpres | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10/29/2024 18:00 | 5 days | 11/7/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | SW9060A (TOC) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 5 days | 11/8/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | SW6020 (CAM 17) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 5 days | 11/7/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | SW8270E (PAHs/PNAs) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 5 days | 11/7/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | SW8081B/8082A (OC Pesticides+PCBs) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 5 days | 11/7/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | E1613B (PCDDs & PCDFs) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 15 days | 11/21/2024 | | <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).

- ISM prep requires 5 to 10 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 6 to 11 days from sample submission). Due date listed on WO summary will not accurately reflect the time needed for sample preparation.

- Organic extracts are held for 40 days before disposal; Inorganic extract are held for 30 days.

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

U** = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.



WORK ORDER SUMMARY

Client Name: SHN CONSULTING ENGINEERS & GEOLOGISTS, I **Project:** 024141.200; Living Shoreline

Work Order: 2410N54

Client Contact: Erik Nielsen

QC Level: LEVEL 2

Contact's Email: enielsen@shn-engr.com

Comments:

Date Logged: 10/31/2024

WaterTrax CLIP EDF Excel EQUIS Email HardCopy ThirdParty J-flag

| LabID | ClientSampID | Matrix | Test Name | Cont./Comp. | Bottle & Preservative | U** | Head Space | Dry-Weight | Collection Date & Time | TAT | Test Due Date | Sediment Content | Hold | Sub Out |
|-------|--------------|--------|-------------------------------------|-------------|-----------------------|--------------------------|--------------------------|--------------------------|------------------------|---------|---------------|------------------|--------------------------|--------------------------|
| 003A | LSU-03 | Soil | SW8015B (TPH-d,mo w/ S.G. Clean-Up) | 2 | 8OZ aG Jar, Unpres | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 10/29/2024 18:15 | 5 days | 11/7/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | SW9060A (TOC) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 5 days | 11/8/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | SW6020 (CAM 17) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 5 days | 11/7/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | SW8270E (PAHs/PNAs) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 5 days | 11/7/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | SW8081B/8082A (OC Pesticides+PCBs) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 5 days | 11/7/2024 | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | | E1613B (PCDDs & PCDFs) | | | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 15 days | 11/21/2024 | | <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).

- ISM prep requires 5 to 10 days to complete; therefore, all TATs begin after the extraction is completed (i.e., One-day TAT yields results in 6 to 11 days from sample submission). Due date listed on WO summary will not accurately reflect the time needed for sample preparation.

- Organic extracts are held for 40 days before disposal; Inorganic extract are held for 30 days.

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

U** = An unpreserved container was received for a method that suggests a preservation in order to extend hold time for analysis.



Sample Receipt Checklist

Client Name: SHN Consulting Engineers & Geologists, Inc.
 Project: 024141.200; Living Shoreline
 WorkOrder No: 2410N54 Matrix: Soil
 Carrier: FedEx

Date and Time Received: 10/31/2024 09:30
 Date Logged: 10/31/2024
 Received by: Agustina Venegas
 Logged by: Agustina Venegas

Chain of Custody (COC) Information

| | | | |
|---|---|-----------------------------|--|
| Chain of custody present? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Chain of custody signed when relinquished and received? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Chain of custody agrees with sample labels? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Sample IDs noted by Client on COC? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Date and Time of collection noted by Client on COC? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Sampler's name noted on COC? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| COC agrees with Quote? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/> |

Sample Receipt Information

| | | | |
|--|---|-----------------------------|--|
| Custody seals intact on shipping container/cooler? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/> |
| Custody seals intact on sample bottles? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/> |
| Shipping container/cooler in good condition? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Samples in proper containers/bottles? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Sample containers intact? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| Sufficient sample volume for indicated test? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |

Sample Preservation and Hold Time (HT) Information

| | | | |
|---|---|-----------------------------|-----------------------------|
| All samples received within holding time? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | NA <input type="checkbox"/> |
| Samples Received on Ice? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |

(Ice Type: WET ICE)

| | | | |
|--|---|-----------------------------|--|
| Sample/Temp Blank temperature | | Temp: 0.1°C | NA <input type="checkbox"/> |
| ZHS conditional analyses: VOA meets zero headspace requirement (VOCs, TPHg/BTEX, RSK)? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/> |
| Sample labels checked for correct preservation? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> | |
| pH acceptable upon receipt (Metal: <2)? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/> |

UCMR Samples:

| | | | |
|--|------------------------------|-----------------------------|--|
| pH tested and acceptable upon receipt (200.7: ≤2; 533: 6 - 8; 537.1: 6 - 8)? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/> |
| Free Chlorine tested and acceptable upon receipt (<0.1mg/L) [not applicable to 200.7]? | Yes <input type="checkbox"/> | No <input type="checkbox"/> | NA <input checked="" type="checkbox"/> |

 Comments:

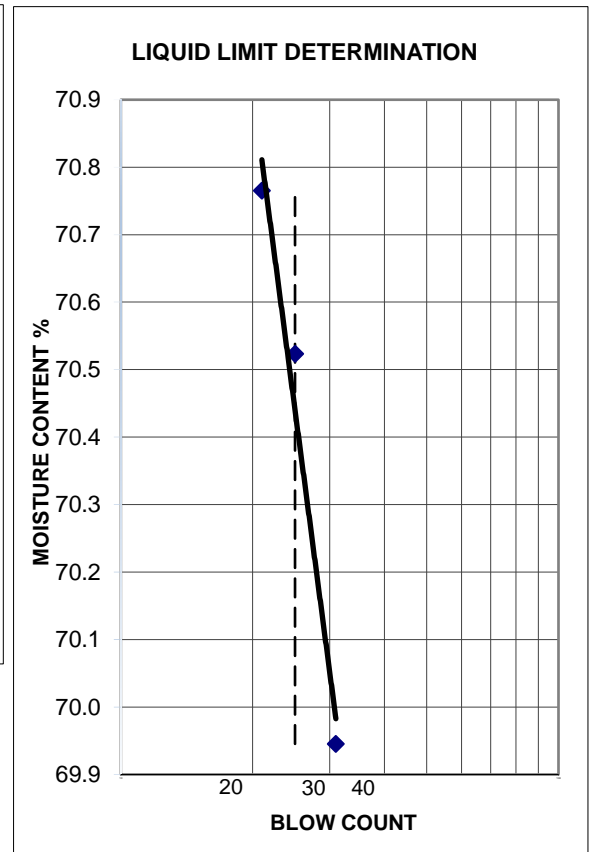
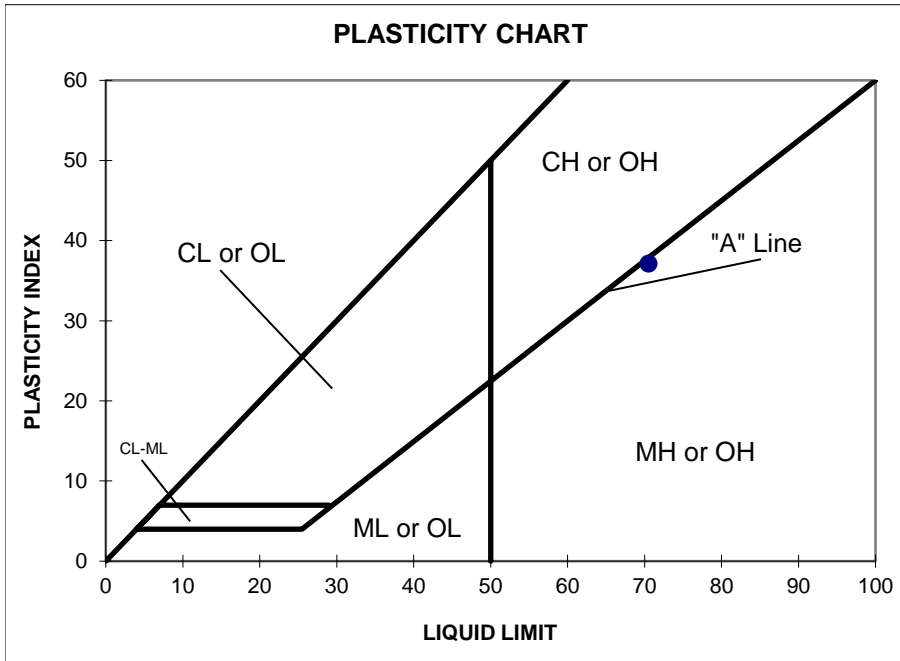


LIQUID LIMIT, PLASTIC LIMIT, and PLASTICITY INDEX (ASTM D4318)

| | | | | | |
|------------------|-------------------------|-----------------|-------------------|----------------|-------------------|
| PROJECT NAME: | Living Shoreline | PROJECT NUMBER: | 024141.200 | LAB SAMPLE ID: | 24-1220 |
| SAMPLE ID: | LSU-01 | PERFORMED BY: | JMA | DATE: | 11/13/2024 |
| PROJECT MANAGER: | EJN | CHECKED BY: | KEW | DATE: | 11/19/2024 |

| LINE NO. | | TRIAL NO. 1 | TRIAL NO. 2 | TRIAL NO. 1 | TRIAL NO. 2 | TRIAL NO. 3 |
|----------|----------------------------|-------------|-------------|-------------|-------------|-------------|
| A | PAN # | 19 | 20 | 10 | 11 | 12 |
| B | PAN WT. (g) | 16.86 | 17.11 | 29.51 | 28.62 | 29.29 |
| C | WT. WET SOIL & PAN (g) | 23.27 | 23.37 | 35.73 | 34.81 | 35.54 |
| D | WT. DRY SOIL & PAN (g) | 21.66 | 21.81 | 33.17 | 32.25 | 32.95 |
| E | WT. WATER (C-D) | 1.61 | 1.56 | 2.560 | 2.56 | 2.59 |
| F | WT. DRY SOIL (D-B) | 4.80 | 4.70 | 3.66 | 3.63 | 3.66 |
| G | BLOW COUNT | -- | -- | 31 | 25 | 21 |
| H | MOISTURE CONTENT (E/F*100) | 33.5 | 33.2 | 69.9 | 70.5 | 70.8 |

| | | |
|--------------|----------------------|---------------|
| LIQUID LIMIT | PLASTIC INDEX | PLASTIC LIMIT |
| 71 | 37 | 33 |



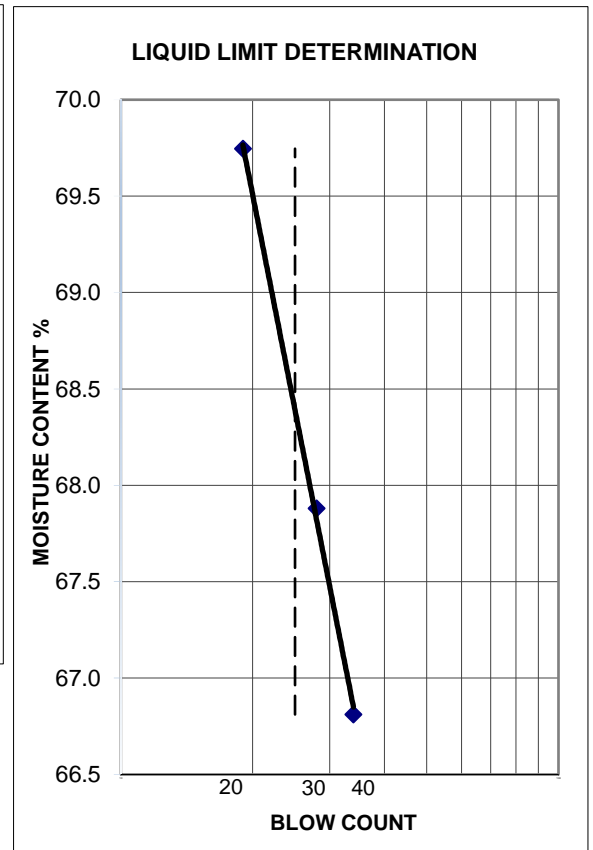
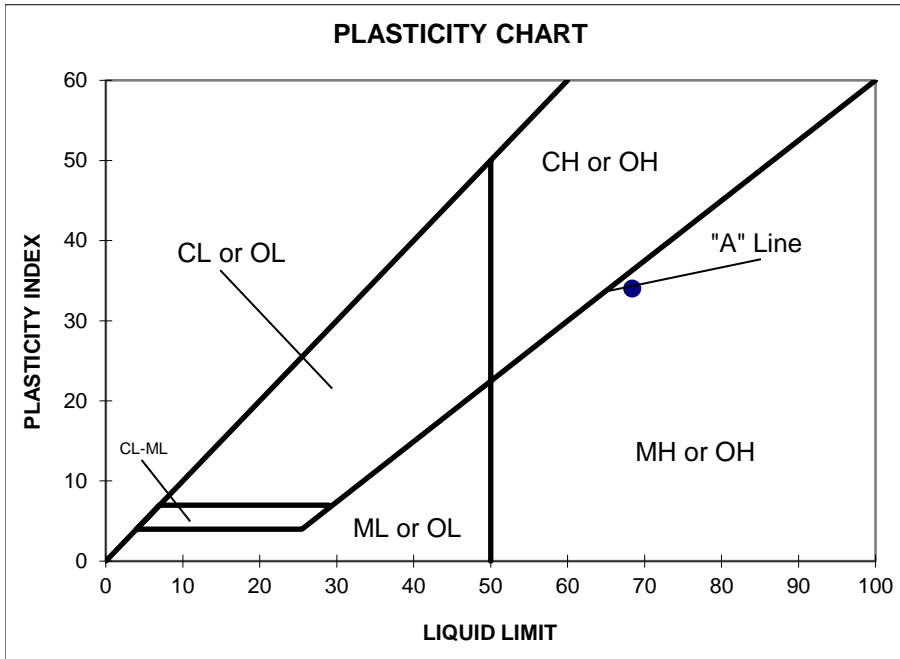


LIQUID LIMIT, PLASTIC LIMIT, and PLASTICITY INDEX (ASTM D4318)

| | | | | | |
|------------------|-------------------------|-----------------|-------------------|----------------|-------------------|
| PROJECT NAME: | Living Shoreline | PROJECT NUMBER: | 024141.200 | LAB SAMPLE ID: | 24-1221 |
| SAMPLE ID: | LSU-02 | PERFORMED BY: | JMA | DATE: | 11/13/2024 |
| PROJECT MANAGER: | EJN | CHECKED BY: | KEW | DATE: | 11/19/2024 |

| LINE NO. | | TRIAL NO. 1 | TRIAL NO. 2 | TRIAL NO. 1 | TRIAL NO. 2 | TRIAL NO. 3 |
|----------|----------------------------|-------------|-------------|-------------|-------------|-------------|
| A | PAN # | 15 | 16 | 4 | 5 | 6 |
| B | PAN WT. (g) | 21.09 | 20.31 | 29.18 | 28.76 | 29.53 |
| C | WT. WET SOIL & PAN (g) | 27.96 | 26.49 | 36.87 | 36.60 | 36.88 |
| D | WT. DRY SOIL & PAN (g) | 26.25 | 24.92 | 33.79 | 33.43 | 33.86 |
| E | WT. WATER (C-D) | 1.71 | 1.57 | 3.080 | 3.17 | 3.02 |
| F | WT. DRY SOIL (D-B) | 5.16 | 4.61 | 4.61 | 4.67 | 4.33 |
| G | BLOW COUNT | -- | -- | 34 | 28 | 19 |
| H | MOISTURE CONTENT (E/F*100) | 33.1 | 34.1 | 66.8 | 67.9 | 69.7 |

| | | |
|--------------|----------------------|---------------|
| LIQUID LIMIT | PLASTIC INDEX | PLASTIC LIMIT |
| 68 | 34 | 34 |



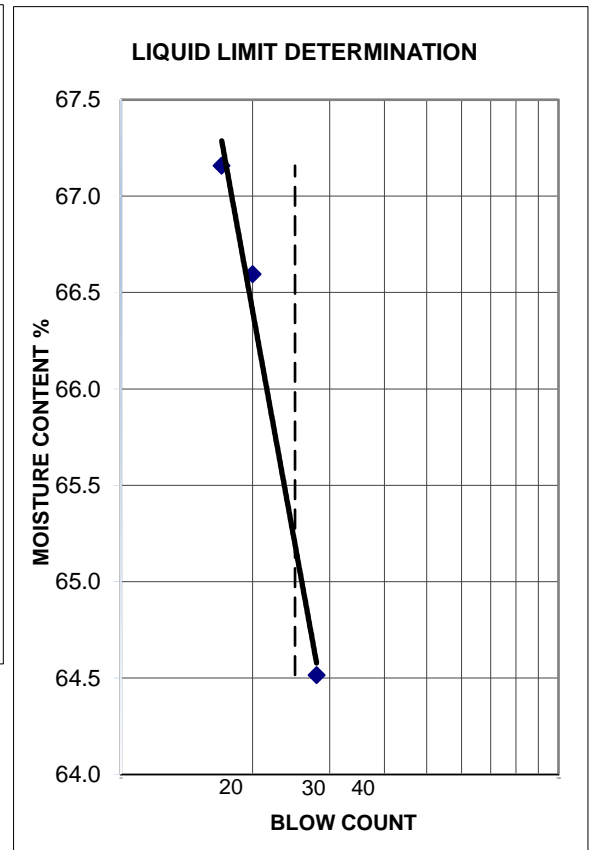
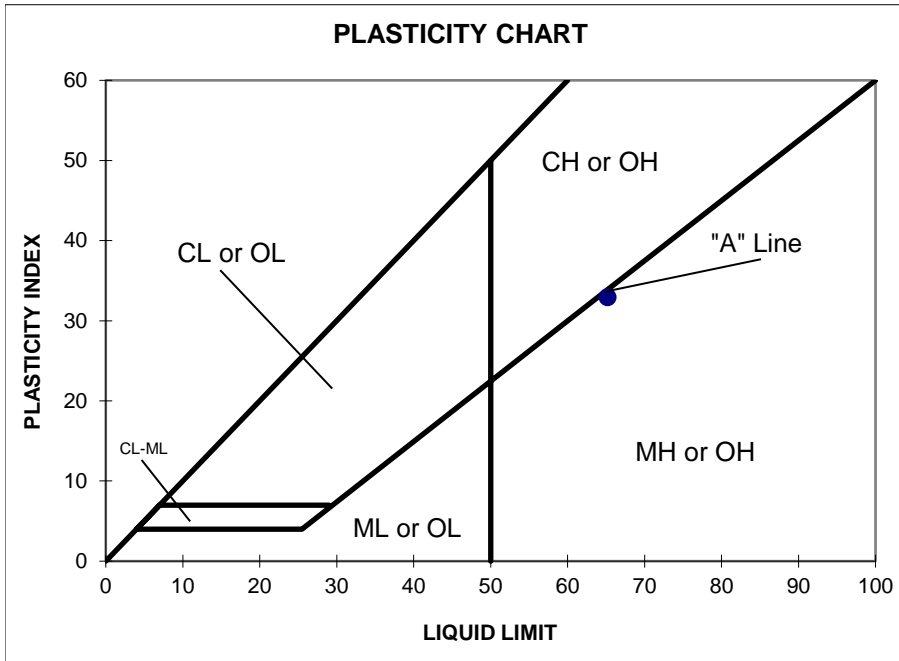


LIQUID LIMIT, PLASTIC LIMIT, and PLASTICITY INDEX (ASTM D4318)

| | | | | | |
|------------------|-------------------------|-----------------|-------------------|----------------|-------------------|
| PROJECT NAME: | Living Shoreline | PROJECT NUMBER: | 024141.200 | LAB SAMPLE ID: | 24-1222 |
| SAMPLE ID: | LSU-03 | PERFORMED BY: | JMA | DATE: | 11/14/2024 |
| PROJECT MANAGER: | EJN | CHECKED BY: | KEW | DATE: | 11/19/2024 |

| LINE NO. | | TRIAL NO. 1 | TRIAL NO. 2 | TRIAL NO. 1 | TRIAL NO. 2 | TRIAL NO. 3 |
|----------|----------------------------|-------------|-------------|-------------|-------------|-------------|
| A | PAN # | 7 | 8 | 9 | 10 | 11 |
| B | PAN WT. (g) | 15.52 | 15.52 | 15.81 | 15.47 | 15.47 |
| C | WT. WET SOIL & PAN (g) | 21.90 | 21.65 | 23.97 | 23.25 | 23.41 |
| D | WT. DRY SOIL & PAN (g) | 20.36 | 20.14 | 20.77 | 20.14 | 20.22 |
| E | WT. WATER (C-D) | 1.54 | 1.51 | 3.200 | 3.11 | 3.19 |
| F | WT. DRY SOIL (D-B) | 4.84 | 4.62 | 4.96 | 4.67 | 4.75 |
| G | BLOW COUNT | -- | -- | 28 | 20 | 17 |
| H | MOISTURE CONTENT (E/F*100) | 31.8 | 32.7 | 64.5 | 66.6 | 67.2 |

| | | |
|--------------|----------------------|---------------|
| LIQUID LIMIT | PLASTIC INDEX | PLASTIC LIMIT |
| 65 | 33 | 32 |





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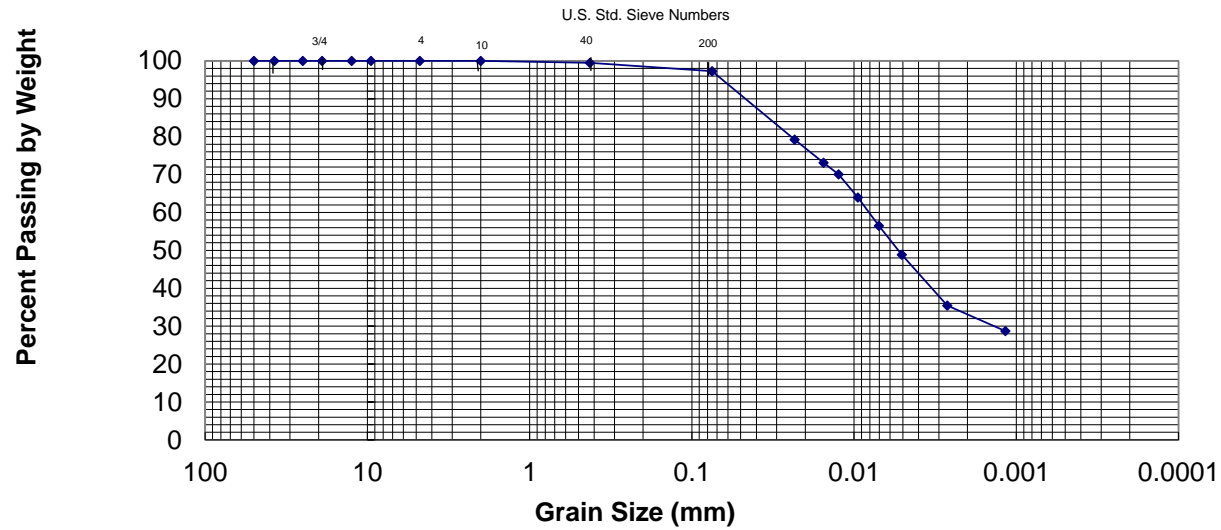
Particle Size Analysis ASTM D422

Project Name: **Living Shoreline**
 Boring ID: **LSU-01**
 Sample Depth: **--**

Project Number: **024141.200**
 Lab #: **24-1220**
 Checked By: **KEW** Date: **11/19/24**
 Performed By: **JMA** Date: **11/11/24**

| | | | | | | | | | | | | | | | | | | |
|-----------------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| SIEVE | 2" | 1.5" | 1" | 0.75" | 0.5" | 0.375" | #4 | #10 | #40 | #200 | | | | | | | | |
| SIEVE SIZE (mm) | 50 | 37.50 | 25 | 19.00 | 12.5 | 9.5 | 4.75 | 2.00 | 0.425 | 0.075 | 0.0233 | 0.0154 | 0.0125 | 0.0095 | 0.0070 | 0.0051 | 0.0027 | 0.0012 |
| PERCENT PASSING | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.5 | 97.3 | 79.2 | 73.1 | 70.1 | 64.0 | 56.5 | 48.9 | 35.4 | 28.7 |

Gradation Test Results



| | | | | | | |
|--------|------|--------|--------|------|------|------|
| GRAVEL | | SAND | | | SILT | CLAY |
| Coarse | Fine | Coarse | Medium | Fine | | |

% Gravel **0.0** % Sand **2.7** % Silt **64.3** % Clay **33.0**



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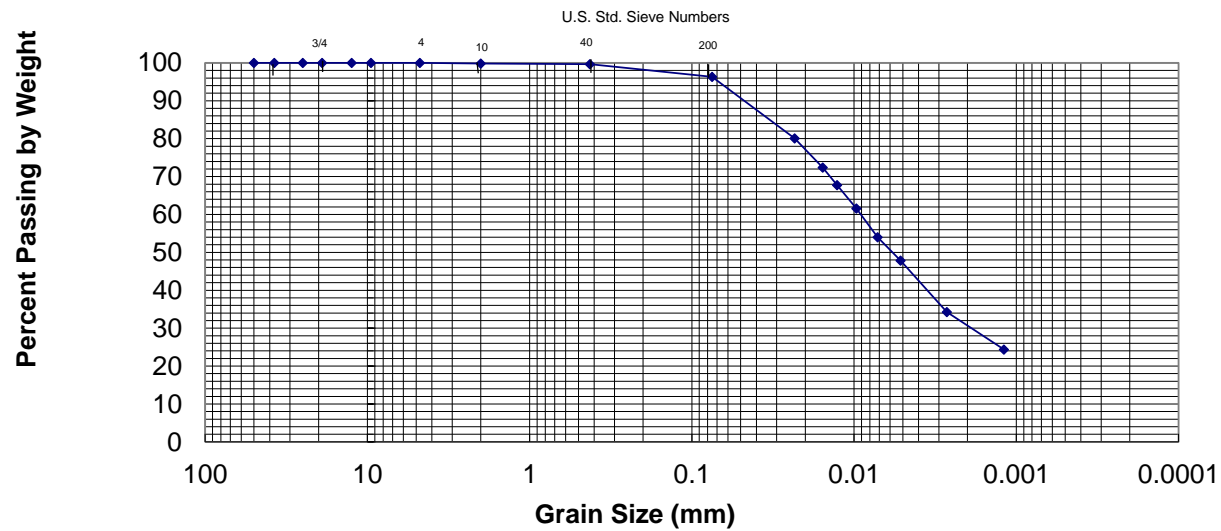
Particle Size Analysis ASTM D422

Project Name: **Living Shoreline**
 Boring ID: **LSU-02**
 Sample Depth: **--**

Project Number: **024141.200**
 Lab #: **24-1221**
 Checked By: **KEW** Date: **11/19/24**
 Performed By: **JMA** Date: **11/11/24**

| | | | | | | | | | | | | | | | | | | |
|-----------------|-------|-------|-------|-------|-------|--------|-------|------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| SIEVE | 2" | 1.5" | 1" | 0.75" | 0.5" | 0.375" | #4 | #10 | #40 | #200 | | | | | | | | |
| SIEVE SIZE (mm) | 50 | 37.50 | 25 | 19.00 | 12.5 | 9.5 | 4.75 | 2.00 | 0.425 | 0.075 | 0.0233 | 0.0156 | 0.0127 | 0.0097 | 0.0072 | 0.0052 | 0.0027 | 0.0012 |
| PERCENT PASSING | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.8 | 99.7 | 96.3 | 80.1 | 72.4 | 67.8 | 61.6 | 54.0 | 47.8 | 34.3 | 24.4 |

Gradation Test Results



| | | | | | | |
|--------|------|--------|--------|------|------|------|
| GRAVEL | | SAND | | | SILT | CLAY |
| Coarse | Fine | Coarse | Medium | Fine | | |

% Gravel **0.0**

% Sand **3.7**

% Silt **65.3**

% Clay **31.0**



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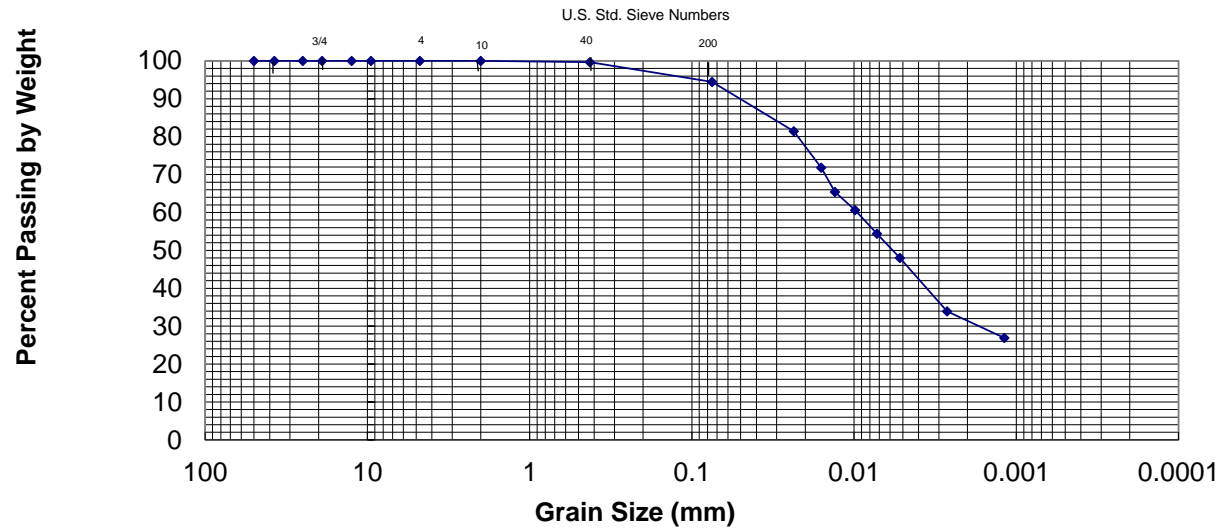
Particle Size Analysis ASTM D422

Project Name: **Living Shoreline**
 Boring ID: **LSU-03**
 Sample Depth: **--**

Project Number: **024141.200**
 Lab #: **24-1222**
 Checked By: **KEW** Date: **11/19/24**
 Performed By: **JMA** Date: **11/11/24**

| | | | | | | | | | | | | | | | | | | |
|-----------------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|--------|--------|
| SIEVE | 2" | 1.5" | 1" | 0.75" | 0.5" | 0.375" | #4 | #10 | #40 | #200 | | | | | | | | |
| SIEVE SIZE (mm) | 50 | 37.50 | 25 | 19.00 | 12.5 | 9.5 | 4.75 | 2.00 | 0.425 | 0.075 | 0.0235 | 0.0159 | 0.0131 | 0.0099 | 0.0072 | 0.0052 | 0.0027 | 0.0012 |
| PERCENT PASSING | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 99.6 | 94.5 | 81.5 | 71.8 | 65.4 | 60.6 | 54.4 | 48.0 | 33.9 | 26.9 |

Gradation Test Results



| | | | | | | |
|--------|------|--------|--------|------|------|------|
| GRAVEL | | SAND | | | SILT | CLAY |
| Coarse | Fine | Coarse | Medium | Fine | | |

% Gravel **0.0** % Sand **5.5** % Silt **63.0** % Clay **31.5**