APPENDIX A

SUBSURFACE INFORMATION

APPENDIX A-1

MWTP BORING LOGS
AND HAND AUGER LOG

METROPOLITAN WATER TUNNEL PROGRAM

SOIL CLASSIFICATION KEY

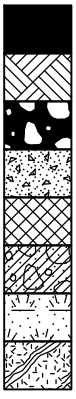
SOIL CLASSIFICATION LEGEND (USCS)

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS (More than half is larger than No. 200 sieve)	GRAVELS (More than half coarse fraction is larger than #4 sieve size)	Clean gravels with less than or equal to 5% fines	GW	Well graded gravels, gravel-sand mixtures
			GP	Poorly graded gravels, gravel-sand mixtures
		Gravel with approximately 10% fines	GW-GM	Well-graded gravel with silt
			GW-GC	Well-graded gravel with clay
			GP-GM	Poorly graded gravel with silt
			GP-GC	Poorly graded gravel with clay
		Gravel with greater than or equal to 15% fines	GM	Silty gravels, gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS (More than half coarse fraction is smaller than #4 sieve size)	Clean sands with less than or equal to 5% fines	SW	Well graded sands
			SP	Poorly graded sands
		Sand with approximately 10% fines	SW-SM	Well-graded sand with silt
			SW-SC	Well-graded sand with clay
			SP-SM	Poorly graded sand with silt
			SP-SC	Poorly graded sand with clay
		Sands with greater than or equal to 15% fines	SM	Silty sand, sand-silt mixtures
			SC	Clayey sand, sand-clay mixtures
FINE GRAINED SOILS (More than half is smaller than No. 200 sieve)	SILTS AND CLAYS (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			CL-ML	Silty clay
			OL	Organic clays and organic silty clays of low plasticity
	SILTS AND CLAYS (Liquid limit greater than 50)		MH	Inorganic silt of high plasticity, elastic silt
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays and organic silts of medium to high plasticity
	HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

Note: In accordance with ASTM D2488, visual-manual procedures for identifying soils based on estimating amounts to the closest 5%.

OTHER SYMBOLS

- ASPHALT
- BEDROCK
- COBBLES AND BOULDERS
- CONCRETE
- FILL
- GLACIAL TILL
- TOPSOIL
- WEATHERED ROCK



- GROUNDWATER LEVEL FIRST ENCOUNTERED
- GROUNDWATER LEVEL MEASURED WHEN EXPLORATION REACHES TOP OF BEDROCK
- GROUNDWATER LEVEL UPON BORING COMPLETION



METROPOLITAN WATER TUNNEL PROGRAM

SOIL CLASSIFICATION KEY

SOIL COMPONENTS GRAIN SIZE LIMITS		
SOIL COMPONENT TERM	**GRAIN SIZE/SIEVE SIZE**	**GRAIN SIZE (mm)**
Boulders	> 12 inch	> 300
Cobbles	3 to < 12 inch	75 to < 300
Course Gravel	0.75 to < 3 inch	19 to < 75
Fine Gravel	No. 4 to < 0.75 inch	4.75 to < 19
Coarse Sand	No. 10 to < No. 4	2.0 to < 4.75
Medium Sand	No. 60 to < No. 10	0.425 to < 2.0
Fine Sand	No. 200 to < No. 60	0.075 to < 0.425
Fines (Silt, Clay)	< No. 200	< 0.075

Reference: "ASTM International D2488 - Standard Practice for Description and Identification of Soils (Visual-Manual Procedures)." 2017.

DENSITY OR CONSISTENCY vs. BLOWCOUNT/FOOT

COARSE GRAINED		FINE GRAINED	
Density	Blowcount/Foot	Consistency	Blowcount/Foot
Very Loose	0 - 4	Very Soft	0 - 2
Loose	5 - 10	Soft	2 - 4
Medium Dense	11 - 30	Medium Stiff	5 - 8
Dense	31 - 50	Stiff	9 - 15
Very Dense	> 50	Very Stiff	16 - 30
		Hard	> 30

SAMPLE TYPE SYMBOLS

AS = AUGER/GRAB SAMPLE

DP = DIRECT PUSH/SONIC TUBE

SS = SPLIT SPOON

ST = SHELBY TUBE

ABBREVIATION FOR FIELD TESTING

FV = FIELD VANE SHEAR

PP = POCKET PENETROMETER

TV = FIELD TORVANE

ABBREVIATION FOR TEST DATA

CONSOL = CONSOLIDATION

CORR = CORROSIVITY

DS = DIRECT SHEAR

MV = LAB MINI VANE

OC = ORGANIC CONTENT (%)

PERM = PERMEABILITY

TXCD = CONSOLIDATED DRAINED TRIAXIAL

TXCU = CONSOLIDATED UNDRAINED TRIAXIAL

UCS = UNCONFINED COMPRESSIVE STRENGTH

UU = UNCONSOLIDATED UNDRAINED TRIAXIAL

ORGANIC CONTENT

0%: INORGANIC

0 - 5%: SLIGHTLY ORGANIC

5 - 30%: ORGANIC

DRILLING METHOD

DW = DRIVE AND WASH

HSA = HOLLOW STEM AUGER

HA = HAND AUGER

P = PROBE

VACEX = VACUUM EXCAVATION

CONTACT BETWEEN UNITS

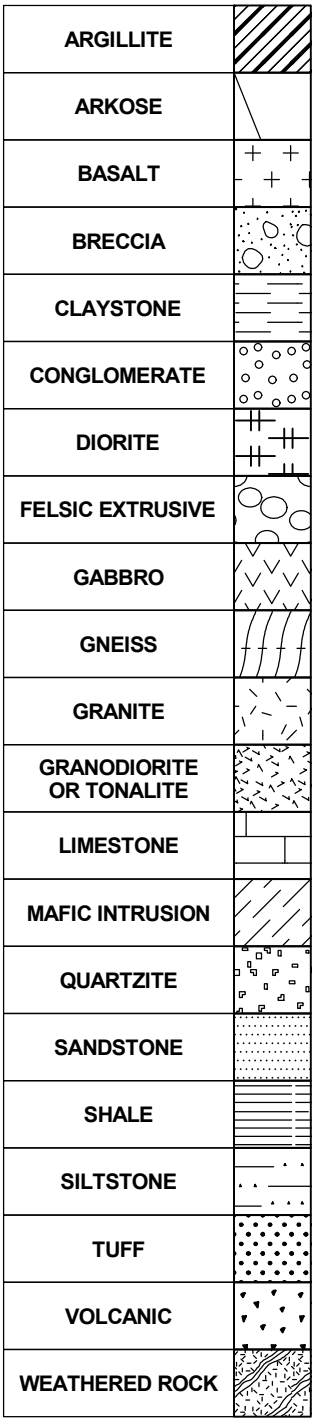
_____ CHANGE IN GEOLOGIC UNIT

_ _ _ _ CHANGE IN MATERIAL WITHIN A STRATUM

METROPOLITAN WATER TUNNEL PROGRAM

ROCK CLASSIFICATION KEY

ROCK COMPONENT



DISCONTINUITY ANGLE

Term	Dip Angle or Inclination
Horizontal	0 - 5°
Low Angle or Shallow Dipping	5 - 20°
Moderately Dipping	20 - 45°
Steeply Dipping	45 - 85°
Vertical	85 - 90°

FIELD HARDNESS

Extremely Hard (H1)	Core, fragment or exposure cannot be scratched with knife or sharp pick; can only be chipped with repeated heavy hammer blows.
Very Hard (H2)	Cannot be scratched with knife or sharp pick. Core or fragment breaks only with repeated heavy hammer blows.
Hard (H3)	Can be scratched with knife or sharp pick with difficulty (heavy pressure). Heavy hammer blow required to break specimen.
Moderately Hard (H4)	Can be scratched with knife or sharp pick with light or moderate pressure. Core or fragment breaks with moderate hammer blow.
Moderately Soft (H5)	Can be grooved 1/16 inch deep by knife or sharp pick with (moderate to heavy) pressure. Core or fragment breaks with light hammer blow or heavy manual pressure.
Soft (H6)	Can be grooved or gouged easily by knife or sharp pick with light pressure, can be scratched with fingernail. Breaks with light to moderate manual pressure.
Very Soft (H7)	Can be readily indented, grooved or gouged with fingernail, or carved with a knife. Breaks with light manual pressure.

Reference: U.S. Department of Interior, Bureau of Reclamation, Geologic Field Manual, 2001 (USBR 2001)

STRENGTH

Extremely Strong (S1)	Specimen can only be chipped with hard blows using a geological hammer (> 36,260 psi / > 250 MPa).
Very Strong (S2)	Specimen requires many blows of geological hammer to fracture it (14,500 - 36,260 psi / 100 - 250 MPa).
Strong (S3)	Specimen requires more than one blow of geological hammer to fracture it (7,250 - 14,500 psi / 50 - 100 MPa).
Medium Strong (S4)	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with a single firm blow of geological hammer (3,625 - 7,250 psi / 25 - 50 MPa).
Weak (S5)	Can be peeled by a pocket knife with difficulty, shallow indentation made by firm blow with point of geological hammer (725 - 3,625 psi / 5 - 25 MPa).
Very Weak (S6)	Crumbles under firm blows with a point of geological hammer, can be peeled by a pocket knife (145 - 725 psi / 1 - 5 MPa).
Extremely Weak (S7)	Easily indented by thumbnail (36 - 145 psi / 0.25 - 1 MPa).

Reference: International Society for Rock Mechanics, The Complete ISRM Suggested Methods for Rock Characterization, Testing and Monitoring: 1974-2006, 2007 (ISRM 2007)

WEATHERING DESCRIPTION

Fresh (W1)	No visible sign of rock material weathering; perhaps slight to no discoloration on major discontinuity surfaces.
Slightly Weathered (W2)	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in its fresh condition.
Moderately Weathered (W3)	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
Highly Weathered (W4)	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
Completely Weathered (W5)	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact. Relict rock fabric may be discernable.
Residual Soil (W6)	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

Reference: ISRM 2007

CONTACT BETWEEN UNITS

————	Change in geologic unit
—— ——	Change in material within a unit

METROPOLITAN WATER TUNNEL PROGRAM

ROCK CLASSIFICATION KEY

TEXTURE OF IGNEOUS OR METAMORPHIC ROCKS

Aphanitic	Less than or equal to 1/250 inch (< 0.1 mm) (Individual grains not visible to the naked eye)
Fine-grained	1/250 - 1/32 inch (0.1 - 1 mm) (Individual grains barely visible to the naked eye)
Medium-grained	1/32 - 3/16 inch (1 - 5 mm)
Coarse-grained	3/16 - 3/8 inch (5 - 10 mm)
Very Coarse-grained	Greater than or equal to 3/8 inch (> 10 mm)

Reference: USBR, 2001

BEDDING OR LAYER THICKNESS

Laminated	Less than 3/8 inch
Very Thinly Bedded	3/8 inch - 0.1 feet
Thinly Bedded	0.1 - 0.3 feet
Moderately Bedded	0.3 - 1 feet
Thickly Bedded	1 - 3 feet
Very Thickly Bedded	3 - 10 feet
Massive	Greater than 10 feet

Reference: USBR, 2001

DISCONTINUITY SPACING

Extremely Close Spacing	Less than 3/4 inch (< 20 mm)
Very Close Spacing	3/4 - 2.5 inch (20 - 60 mm)
Close Spacing	2.5 - 8 inch (60 - 200mm)
Moderate Spacing	8 - 24 inch (200 - 600 mm)
Wide Spacing	24 - 80 inch (600 - 2000 mm)
Very Wide Spacing	80 - 240 inch (2 - 6 m)
Extremely Wide Spacing	Greater than 20 feet (> 6 m)

Reference: ISRM, 2007

DISCONTINUITY APERTURE

Very Tight (A1)	No visible separation (< 0.1 mm)
Tight (A2)	1/250 - 1/100 inch (0.1 - 0.25 mm)
Partly Open (A3)	1/100 - 1/25 inch (0.25 - 1 mm)
Open (A4)	1/25 - 1/10 inch (1 - 2.5 mm)
Moderately Wide (A5)	1/10 - 1/5 inch (2.5 - 5 mm)
Wide (A6)	1/5 - 3/8 inch (5 - 10 mm)
Very Wide (A7)	3/8 - 4 inch (1 - 10 cm)
Extremely Wide (A8)	4 - 40 inch (10 - 100 cm)
Cavernous (A9)	Greater than 40 inch (> 1 m)

Reference: ISRM, 2007 (Modified)

TEXTURE OF SEDIMENTARY OR PYROCLASTIC ROCKS

Sedimentary (Epiclastic) Rock	Volcanic (Pyroclastic) Rock		Particle or Clast Size Range in inches (mm)
Particle, Clast or Fragment Term	**Fragment Term**	**Lithified Product**	
Boulder	Block	Volcanic Breccia	> 10 inch (> 256 mm)
Cobble	Bomb	Agglomerate Breccia	2.5 - 10 inch (64 - 256 mm)
Pebble	Lapilli	Lapilli Tuff or Lapillistone	1/16 - 2.5 inch (2 - 64 mm)
Granule			
Very Coarse Sand	Coarse Ash	Coarse Tuff	1/32 - 1/16 inch (1 - 2 mm)
Coarse Sand			1/64 - 1/32 inch (0.5 - 1 mm)
Medium Sand			1/128 - 1/64 inch (0.25 - 0.50 mm)
Fine Sand			< 1/120 - 1/128 inch (0.125 - 0.25 mm)
Very Fine Sand			0.0625 - 0.125 mm
Silt	Fine Ash	Fine Tuff	< 0.004 - 0.0625 mm
Clay			

1. Use of descriptive terms for degree of rounding of sedimentary rock clasts (rounded, subrounded, subangular, etc.) are appropriate for epiclastic rocks.

2. Pyroclastic rock "block" is a term applied to large angular to subangular fragments mechanically separated from preexisting material.

Reference: USBR, 2001, Fisher & Schmincke (1984), and the American Geosciences Institiute AGI Handbook (2019)

DISCONTINUITY TYPE

Joint (J)	A relatively planar fracture along which there has been little or no obvious displacement parallel to the plane, or visible discernable movement.
Shear (S)	A structural break where differential movement has taken place along a surface or zone of failure by shear. Often characterized by polished surfaces, striations, slickensides, gouge, breccia, mylonite, or any combination of these. Often direction, amount of displacement, and continuity (persistence) may not be known because of limited exposures or limited observations, particularly in rock core.
Foliation (F)	A planar separation along foliation planes where little or no shearing displacement or visible movement has occurred.
Bedding Plane Separation (B)	A separation along bedding planes after exposure due to stress relief or slaking.
Mechanical Break (MB)	An artificial break in rock core that has been created by the drilling, core handling or core transport process.

Reference: USBR, 2001 (Modified)

SURFACE WEATHERING OF DISCONTINUITY (WEATH.)

Fresh (DI)	No visible sign of weathering of the rock material on discontinuity face.
Discolored (D2)	The color of the original fresh rock material is changed. The degree of change from the original color shall be indicated. If the color change is confined to particular mineral constituents this shall be mentioned.
Decomposed (D3)	The rock is weathered to the condition of a soil in which the original material fabric is still intact, but some or all of the mineral grains are decomposed.
Disintegrated (D4)	The rock is weathered to the condition of a soil in which the original fabric is still intact. The rock is friable, but the mineral grains are not decomposed.

Reference: ISRM, 2007

JOINT ALTERATION NUMBER (Ja) VALUES

Joint Alteration Number and Description		ϕ (deg)	Ja Value (Approx)
a) Rock wall contact			
A	Tightly healed, hard, non-softening, impermeable filling i.e. quartz or epidote.	**-**	**0.75**
B	Unaltered joint walls, surface staining only.	**25-35**	**1**
C	Slightly altered joint walls. Non-softening mineral coatings, sandy particles, clay-free disintegrated rock, etc.	**25-30**	**2**
D	Silty clay or sandy clay coatings, small clay fraction (non-softening).	**20-25**	**3**
E	Softening or low friction clay mineral coatings, i.e., kaolinite or mica. Also chlorite, talc gypsum, graphite, etc. and small quantities of swelling clays.	**8-16**	**4**
b) Rock wall contact before 10 cm of shear movement			
F	Sandy particles, clay-free disintegrated rock, etc.	**25-30**	**4**
G	Strongly over-consolidated, non-softening, clay mineral fillings (continuous, but < 5 mm thickness).	**16-24**	**6**
H	Medium or low over-consolidated, non-softening clay mineral fillings (continuous, but < 5 mm thickness).	**12-16**	**8**
J	Swelling-clay fillings, i.e., montmorillonite (continuous, < 5 mm thickness). Value of Ja depends on percent of swelling clay-size particles, and access to water, etc.	**6-12**	**8-12**
c) No rock wall contact when sheared			
K, L, M	Zones or bands of disintegrated or crushed rock and clay (see G, H, J (above) for description of clay conditions).	**6-24**	**6, 8 or 8-12**
N	Zones or bands of silty or sandy-clay, small clay fraction (non-softening).	**-**	**5**
L	Thick, continuous zones or bands of clay (see G, H, J (above) for description of clay conditions).	**6-24**	**10, 13 or 13-20**

Reference: Barton, N., "Rock Mass Classification and Tunnel Reinforcement Selection Using the Q-System," Rock Classification for Engineering Purposes, 1988. (Barton 1988)

JOINT ROUGHNESS NUMBER (Jr) VALUES

Joint Roughness Description		Jr Value
a) Rock-wall contact, and **b) Rock-wall contact before 10 cm of shear movement**		
A	Discontinuous joints	**4**
B	Rough or irregular, undulating	**3**
C	Smooth, undulating	**2**
D	Slickensided, undulating	**1.5**
E	Rough, irregular, planar	**1.5**
F	Smooth, planar	**1.0**
G	Slickensided, planar	**0.5**
Notes:	i. Descriptions above refer to small scale features and intermediate scale features, in that order.	
c) No rock-wall contact when sheared		
H	Zone containing clay minerals thick enough to prevent rock wall contact	**1.0**
J	Sandy, gravelly or crushed zone thick enough to prevent rock wall contact	**1.0**
Notes:	ii. Add 1.0 if the mean spacing of the relevant joint set is greater than 3 m. iii. Jr = 0.5 can be used for planar slickensided joints having lineations, provided the lineations are oriented for minimum strength.	

Reference: Barton 1988

JOINT SET NUMBER (Jn) RATING

Joint Set Description		Jn Rating Number
A	Massive, none, or few joints	**0.5 to 1.0**
B	One joint set	**2**
C	One joint set, plus random joints	**3**
D	Two joint sets	**4**
E	Two joint sets, plus random joints	**6**
F	Three joint sets	**9**
G	Three joint sets, plus random joints	**12**
H	Four or more joint sets, random joints, heavily jointed rock, "sugar cubes," etc.	**15**
J	Crushed rock, earthlike	**20**
Notes:	i. For tunnel intersections, use (3.0 x Jn) ii. For portals, use (2.0 x Jn)	

Reference: Barton 1988

METROPOLITAN WATER TUNNEL PROGRAM

ROCK CLASSIFICATION KEY

EXAMPLE ROCK CLASSIFICATIONS

Argillite:
215.0 - 230.0 ft: ARGILLITE, purple, fine-gr, mod hard, med strong, sl wx, lam to very thin bedded, shallow dip, J parallel to bedding. [CAMBRIDGE FORMATION, Argillite Member]

Weathered Argillite:
158.5 - 170.0 ft: ARGILLITE, light greenish gray, very fine gr, very soft, ext weak, mod to highly wx, lam bedding, st dip bedding, grayish orange discol on J, st dip to vertical quartz veining, non-magnetic black flecks and reddish brown equant grains <0.05 mm. [CAMBRIDGE FORMATION, Argillite Member]

Conglomerate:
200.0 - 220.0 ft: CONGLOMERATE, red-green, silt to fine sand sized matrix with subangular to rounded granules, pebbles and cobble clasts to 4.0 inches, hard, strong, fresh, massive, cleavage dipping at 40 degrees. Clasts mainly pale red and gray yellow felsite and quartzite, ext hard, ext strong, fresh. [ROXBURY CONGLOMERATE, BROOKLINE MEMBER]

Granite:
300.0 - 305.0 ft: GRANITE, pink to white, med to coarse gr, very hard, very strong, fresh, very thick, quartz-rich, foliated with alternating pegmatitic and gneissic zones. [DEDHAM GRANITE]

Diorite/Gabbro Undifferentiated:
110.0 - 115.0 ft: QUARTZ DIORITE, greenish gray, fine gr, hard, strong, sl wx, massive with flow banding, cut by network of dull white quartz veins. [DIORITE-GABBRO UNDIFFERENTIATED]

Westboro Formation:
289.0 - 294.4 ft: QUARTZITE, banded light and dark gray, fine gr, very hard, very strong, sl wx, lam, rehealed tectonized/frac rock crossed by frequent calcite-filled veins. [WESTBORO FORMATION]

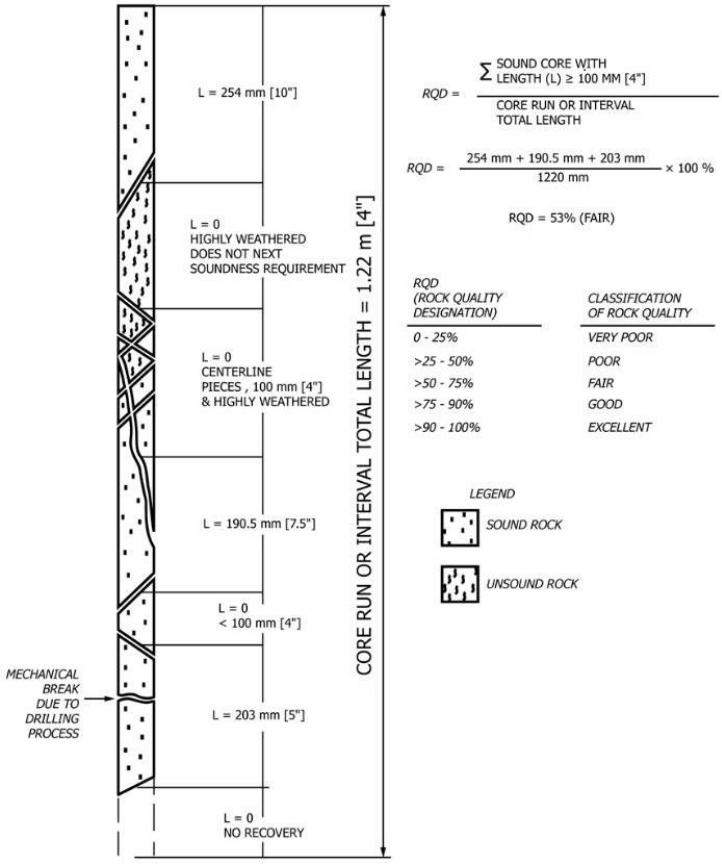
Lynn-Mattapan Volcanic Complex:
52.4 - 62.4 ft: INTERMEDIATE VOLCANIC ROCK (possibly DACITE), gray blue to gray green, aphanitic to fine gr, ext hard, very strong, sl wx, faint flow banding visible occasionally, otherwise massive, yellow to yellow orange oxide discoloration on major J surfaces. [LYNN-MATTAPAN VOLCANIC COMPLEX]

COMMON ABBREVIATIONS*

B - bedding plane separation	**dis** - disintegrated	**frac** - fractured	**lam** - laminated	**sep** - separation	**unk** - unknown
cl - close or closely	**discol** - discoloration or discolored	**gr** - grained	**MB** - mechanical break	**S** - shear	**wx** - weathered
comp - completely	**ext** - extremely	**hor** - horizontal	**med** - medium	**sl** - slightly	
dip - dipping	**F** - foliation	**J** - joint	**mod** - moderate or moderately	**st** - steeply	

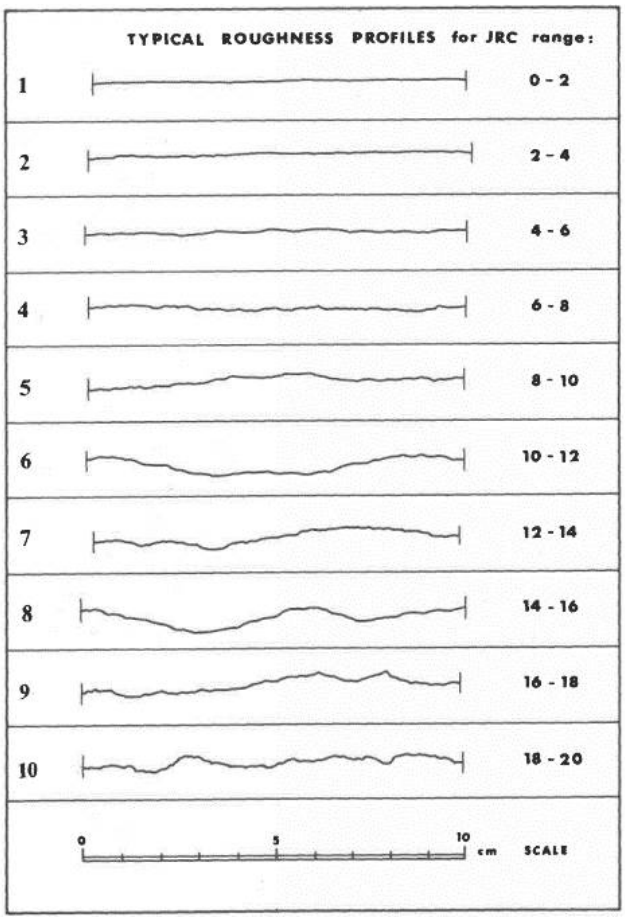
* Use of abbreviations in rock core descriptions is optional to save space on rock coring logs, but not mandatory.

ROCK QUALITY DESIGNATION



Reference: ASTM International Standard Test Method for Determining Rock Quality Designation (RQD) of Rock Core D6032 Figure 1.

JOINT ROUGHNESS COEFFICIENT (JRC)



1. Profile numbers for JRC ranges to be included on the rock coring logs.
Reference: ISRM, 2007

METROPOLITAN WATER TUNNEL PROGRAM

ROCK CLASSIFICATION KEY

INFILLING TYPE

Bi - Biotite	Mi - Mica
Br - Breccia	Mn - Manganese
Ca - Calcite	My - Mylonite
Ch - Chlorite	No - None
Cl - Clay	Py - Pyrite
Ep - Epidote	Plag - Plagioclase
Fe - Iron Oxide	Qtz - Quartz
Gy - Gypsum	Sd - Sand
H - Healed	Sid - Siderite
Ho - Hornblende	Si - Silt
Kspar - Potassium Feldspar	Unk - Unknown

INFILLING AMOUNT

Term	Description
Clean (No)	No Staining/Infilling (None).
Stained (Su)	Discolorded on surface, but no infilling.
Partially Filled (Pa)	Patches of recognizable material.
Filled (Fi)	Filled with recognizable material; may term as crust, if through rock alteration.
Healed (H)	Healed. Fracture sealed with infilling material
Cemented (Cm)	Cemented. Fracture sealed with cementing material

DEGREE OF HEALING

TH - Totally Healed

MH - Moderately Healed (greater than 50% is healed or recemented)

PH - Partially Healed (less than 50% is healed or recemented)

NH - Not Healed

METROPOLITAN WATER TUNNEL PROGRAM

SOIL BORING LOG

BORING NUMBER: B-GSS-410

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 5/29/2024 **END DATE:** 7/25/2024
ADDRESS: I95 Cloverleaf NE, Needham, MA
COORDINATES: N: 2935878.75 **E:** 730806.36 [NAD83]
GROUND SURFACE ELEVATION: 109.7 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 32.0 ft. / -90° (-90° is vertical downward)
LOGGED BY: N. Cholewinski (GEI Consultants, Inc.)

DRILLING CONTRACTOR: 7NT Engineering
DRILLER/DRILL RIG: D. Shope / CME-75
DRILLING METHOD/FLUID: DW / Water
BOREHOLE DIAMETER/CASING SIZE: 4.5 in. / 4 in.
SPOON SIZE: 2 in.
HAMMER TYPE/WEIGHT/DROP: Auto / 140 lb / 30 in.
BOREHOLE BACKFILL: Borehole grouted to ground surface with cement bentonite grout.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
109.7 / 0											FILL	Unpaved FILL at ground surface 0.0 - 2.0 ft: Unknown USCS, unknown moisture, unknown density, unknown color, cobbles and gravel within a sandy matrix, unknown gradation, contains fragments of asphalt [FILL] 2.0 - 7.0 ft: SILTY SAND (SM), dry to moist, unknown density, yellowish brown, unknown gradation [FILL]	Vacuum excavation performed from 0.0 to 6.5 ft. No utilities encountered. 0.0 - 2.0 ft: Difficult to excavate, compacted fill
105.0 / 5													
	SS	1	63/24	8, 8, 7, 6	15				5.8 - 27		GLACIOFLUVIAL DEPOSITS	7.0 - 8.3 ft: POORLY GRADED SAND WITH SILT (SP-SM), dry to moist, medium dense, yellowish brown, ~90% fine sand, ~10% non-plastic fines, trace roots, slightly micaceous [GLACIOFLUVIAL DEPOSITS]	
												8.3 - 9.0 ft: WELL GRADED SAND WITH SILT (SW-SM), moist, medium dense, brownish yellow, ~85% fine to coarse sand, ~10% non-plastic fines, ~5% subrounded to subangular gravel, trace asphalt, iron oxide staining [GLACIOFLUVIAL DEPOSITS]	
100.0 / 10	SS	2	75/24	4, 6, 7, 8	13	21.9 / --			2.0 - 4.8			9.0 - 10.3 ft: SILTY SAND (SM), moist, medium dense, light brownish gray, ~85% fine sand, ~15% non-plastic fines, trace coarse sand and fine subrounded gravel, iron oxide staining, slightly micaceous [GLACIOFLUVIAL DEPOSITS]	
	SS	3	75/24	4, 5, 5, 7	10				0.5 - 1.0			10.3 - 11.0 ft: SILTY SAND (SM), moist, medium dense, strong brown, ~75% fine sand, ~25% non-plastic fines, trace subrounded coarse sand/fine gravel, abundant iron oxide staining, slightly micaceous [GLACIOFLUVIAL DEPOSITS] 11.0 - 12.0 ft: SILTY SAND (SM), similar to SS-2 (10.3-11.0 ft) [GLACIOFLUVIAL DEPOSITS]	
	SS	4	58/24	6, 7, 7, 8	14				0.5			12.0 - 13.0 ft: SILTY SAND (SM), wet, medium dense, pale olive, ~70% fine sand, ~30% non-plastic to low plasticity fines, trace angular coarse sand and fine gravel, micaceous, trace iron oxide staining, discernible laminations [GLACIOFLUVIAL DEPOSITS] 13.0 - 13.9 ft: SILTY SAND (SM), similar to SS-3 (12.0-13.0 ft) [GLACIOFLUVIAL DEPOSITS]	
95.0													

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽	6/3/2024	0900	8.6	25.0	24.6
▼					
▼					

GENERAL NOTES

B-GSS-410A (PZ) was drilled ~4.5 ft north of B-GSS-410 after 4 in casing broke and got stuck in B-GSS-410 at ~32 ft. B-GSS-410 and stuck casing (~25 to 32 ft) were abandoned and grouted.
Log header start and end dates respectively refer to vacuum excavation at B-GSS-410 and completion of grouting at B-GSS-410A. Drilling took place between 05/31/2024 and 07/01/2024.
The boring site was fully demobilized 08/23/2024.
4-inch casing advanced to 32 ft at B-GSS-410 and 41.0 ft at B-GSS-410A.
NR - Not recorded.

REVIEWED BY: M. Wong/D. Van Roosendaal | **REV. DATE:** 02/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-410

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 5/29/2024 **END DATE:** 7/25/2024
ADDRESS: I95 Cloverleaf NE, Needham, MA
COORDINATES: **N:** 2935878.75 **E:** 730806.36 [NAD83]

LOGGED BY: N. Cholewinski (GEI Consultants, Inc.)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 32.0 ft. / -90° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 109.7 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
15	SS	5	0/24	10 11 10 12	21				NR			13.9 - 15.0 ft: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), wet, medium dense, grayish brown, ~55% fine to coarse sand, ~35% fine to coarse subrounded to subangular gravel up to 1.5 in, ~10% non-plastic fines, trace iron oxide staining [GLACIOFLUVIAL DEPOSITS] 15.0 - 17.0 ft: No recovery	15.0 - 18.4 ft: Rig chatter/grinding
	SS	6	50/24	10 8 8 10	16				0.6			17.0 - 18.4 ft: WELL GRADED GRAVEL (GW), wet, medium dense, grayish brown, greenish black, black yellow, yellowish red, ~85% fine to coarse angular to subangular gravel, ~10% fine to coarse sand, ~5% non-plastic fines, gravel consists of granite, diorite, and mafics [GLACIOFLUVIAL DEPOSITS]	3-in split spoon sampler was used on SS-6, SS-8, SS-9, SS-10, and SS-17 after SPT, to obtain larger recovery in gravelly/cobbly soil layer
	SS	7	60/10	27 50/4"	50/4"				0.3			18.4 - 19.0 ft: WELL GRADED SAND WITH SILT (SW-SM), wet, medium dense, light yellowish brown, ~85% fine to coarse sand, ~10% non-plastic fines, ~5% fine to coarse subrounded to subangular gravel up to 1 in, trace iron oxide staining [GLACIAL TILL]	
90.0													
20	SS	8	17/24	8 28 23 30	51				0.8			19.0 - 19.5 ft: WELL GRADED SAND WITH SILT (SW-SM), similar to SS-6 except very dense (18.4-19.0 ft) [GLACIAL TILL] 19.5 - 19.8 ft: WELL GRADED GRAVEL (GW), wet, very dense, yellowish red, black, pale brown, dark gray, ~90% fine to coarse subrounded to angular gravel up to 2 in, ~5% non-plastic fines, ~5% fine to coarse sand, gravel consists of quartz, granite, and mafics, most of sandy matrix washed out [GLACIAL TILL]	19.5 - 22.5 ft: Heavy rig chatter, generally sandy cuttings
	SS	9	92/24	29 48 51 72	99				0.7 - 0.9			20.0 - 22.0 ft: WELL GRADED GRAVEL (GW), similar to SS-7 (19.5-19.8 ft) [GLACIAL TILL] 22.0 - 22.5 ft: WELL GRADED GRAVEL (GW), similar to SS-7 (19.5-19.8 ft) [GLACIAL TILL]	
	SS	10	100/7	59 100/1"	100/1"				1.1		GLACIAL TILL	22.5 - 24.0 ft: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), moist, dense, grayish brown to yellowish brown, ~50% fine to coarse subrounded to subangular sand, ~40% fine to coarse subrounded to subangular gravel up to 1.5 in, ~10% non-plastic to low plasticity fines, iron oxide staining throughout [GLACIAL TILL]	
85.0													
25	SS	11	80/10	38 56/4"	56/4"				0.7			24.0 - 24.6 ft: WELL GRADED GRAVEL (GW), wet, very dense, dark gray, pale yellow, yellowish red, ~90% fine to coarse subangular to subrounded gravel up to 2 in, ~10% fine to coarse subrounded to subangular sand, gravel consists of quartz, granite, gabbro-diorite, and mafics [GLACIAL TILL]	
	SS	12	80/10	28 50/4"	50/4"				0.4			25.0 - 25.8 ft: WELL GRADED GRAVEL WITH SAND (GW), wet, very dense, olive gray, ~80% fine to coarse subangular to subrounded gravel up to 1.5 in, ~20% fine to coarse subangular to subrounded sand, trace non-plastic fines, gravel consists of quartzite, granite, gabbro-diorite and mafics [GLACIAL TILL]	
	SS	13	46/13	29 56	106/7"				0.3			26.0 - 26.8 ft: WELL GRADED GRAVEL WITH SAND (GW), similar to SS-11 [GLACIAL TILL]	
	SS	14	100/8	50/1" 29	50/2"				0.4			27.0 - 28.1 ft: WELL GRADED GRAVEL WITH SAND (GW), similar to SS-11 [GLACIAL TILL]	Advanced 4 in casing to 32 ft. During advancement the transmission sheared several bolts. Swapped out CME-75 to the CME550X Casing advancer and bottom piece of casing sheared off and stuck in the hole (25 to 32 ft). 7NT decided to abandon the hole after unsuccessful attempts to retrieve the casing 30.4 - 31.8 ft: Heavy rig chatter
				50/2"									
80.0	SS	15	57/21	28 10 12	22				0.3			28.1 - 28.8 ft: WELL GRADED GRAVEL WITH SAND (GW), similar to SS-11 [GLACIAL TILL] 29.0 - 29.7 ft: WELL GRADED GRAVEL WITH SAND (GW), similar to SS-11 except medium dense	
30	SS	16	0/4	50/3"	50/4"				NR			29.7 - 30.4 ft: WELL GRADED SAND WITH SILT (SW-SM), wet, medium dense, yellowish brown, ~90% fine to coarse subrounded to subangular sand, ~10% non-plastic to low plasticity fines [GLACIAL TILL]	
	SS	17	100/5	50/4" 100/5"	100/5"				0.2			30.4 - 30.7 ft: WELL GRADED GRAVEL WITH SAND (GW), wet, medium dense, dark gray and pale yellow, ~85% fine to coarse subangular gravel, ~15% fine to coarse subangular sand, gravel consists of mafics and quartz [GLACIAL TILL] 31.0 - 31.8 ft: WELL GRADED GRAVEL WITH SAND (GW); similar to SS-15 (30.4-30.7 ft)[GLACIAL TILL]	
75.0												Boring terminated at ~32 ft (El. 77.7 ft BCB) due to lost casing in the hole (~25 to 32 ft). Offset ~4.5 ft to the north and drilled new borehole B-GSS-410A. Blind drilled through the soil and started coring at 28.4 ft (El. 81.3 ft BCB). See rock coring log.	

SOIL BORING LOG - 2/27/25 21:25 - MWTP - CONTRACT NO. 7557

REVIEWED BY: M. Wong/D. Van Roosendaal | **REV. DATE:** 02/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-410

METROPOLITAN WATER TUNNEL PROGRAM

ROCK CORING LOG

BORING NUMBER: B-GSS-410A (PZ)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 5/29/2024 **END DATE:** 7/25/2024
ADDRESS: I95 Cloverleaf NE, Needham, MA
COORDINATES: N: 2935882.94 **E:** 730802.04 [NAD83]
GROUND SURFACE ELEVATION: 109.6 ft. [Boston City Base]
TOP OF BEDROCK ELEVATION: 77.1 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 415.4 ft. / -90° (-90° is vertical downward)

LOGGED BY: N. Cholewinski (GEI Consultants, Inc.)
DRILLING CONTRACTOR: 7NT Engineering
DRILLER/DRILL RIG: D. Shope/J. Villalobos / CME-75/CME 550X
DRILLING METHOD/FLUID: DW / Water
BOREHOLE DIAMETER/CASING SIZE: 4.5 in. / 4 in.
CORE BARREL TYPE/DIAMETER: HQ / 3.78 in.
BOREHOLE BACKFILL: Vibrating wire piezometers were installed, and borehole grouted with cement bentonite grout.

Elevation (ft) / Depth (ft)	Run No./Box No./ Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infilling Type	Infilling Amount	Deg. of Healing	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
81.2 / 0																			
	C-1 B-1 600	20.0	100 / 0	NA	NA													28.4 - 32.5 ft: BOULDER/COBBLES, dark gray, medium dark gray, pale brown, light brown, grayish green, pebble and cobbles up to 10 in, pebble and cobbles of subangular to subrounded quartzite, granite, gabbro/diorite and mafic rocks, trace epidote staining on some surfaces [GLACIAL TILL]	Blind drive to 28.4 ft. No SPT samples were attempted in offset boring. Brown return fluid
80.0 / 30																		30.2 - 30.5 ft: No recovery	Tagged bottom of hole at 30.2 ft
	C-2 B-1 525	3.0	81 / 33	NA	NA													31.2 - 31.4 ft: Fibrous mineral within fine grained aphanitic mafic pebble. 31.4 - 32.0 ft: Medium-grained granite pebble with jointed upper contact with mafic rock [GLACIAL TILL]	Greenish gray return fluid
		3.0																TOP OF BEDROCK AT 32.5 ft (El. 77.1 ft BCB)	
		3.0		S3	W2	MB	--	--	--	--	--	--	--	--	--	32.7		32.5 - 35.3 ft: CONGLOMERATE, greenish gray, fine sand matrix with grayish red, purple, dark gray, pale red, medium bluish gray, subrounded granite and pebble clasts up to 2.5 in, hard, strong, slightly weathered, clast-supported, abundant epidote throughout, clasts consist of granite and quartzite, fabric generally dipping 20° to 30° with elongate clasts from ~33.3 ft [ROXBURY CONGLOMERATE, BROOKLINE MEMBER]	
						J	70	--	A2	Qtz	H	TH	--	--	A	33.1			
						J	25	D4	A3	Cl, Ep, Si	Pa	NH	5	E	D	33.5			
		2.0		NR	NR	MB	--	--	--	--	--	--	--	--	--	34.1			
75.0		1.0																34.2 - 35.0 ft: No recovery	
35				S3	W2	MB	--	--	--	--	--	--	--	--	--	35.2			Tagged bottom of hole at 35.0 ft
		4.0		S2	W2	J	30	D2	A3	Mn	Su	NH	3	C	B	35.3		35.3 - 36.2 ft: SANDSTONE, light olive gray, fine to medium sand, very hard, very strong, slightly weathered, massive [ROXBURY CONGLOMERATE, BROOKLINE MEMBER]	Light green return fluid
						MB	--	--	--	--	--	--	--	--	--	36.2		36.2 - 40.1 ft: CONGLOMERATE, greenish gray, fine to medium sand matrix with grayish red purple , medium dark gray, pale reddish brown and moderate orange pink subrounded granule and pebble clasts up to 2.5 in, hard to very hard, strong to very strong, slightly weathered, massive, clast supported, abundant epidote throughout, clasts consist of quartzite, granite, diorite, and porphyritic volcanics [ROXBURY CONGLOMERATE, BROOKLINE MEMBER]	
		4.0				MB	--	--	--	--	--	--	--	--	--	36.9			
	C-3 B-1 500		100 / 97			J	50	D2	A3	Ep, Fe*	Su	NH	3	C	B	37.0			*Hematite
		4.0		S2-S3	W2	J	30	D2	A3	Ep	Su	NH	4	B	B	37.3			
		4.0				J	30	D4	A3	Si	Su	NH	4	B	B	38.7			4 gas reading: H2S = 0 PPM; CO = 0 PPM; O2 = 20.9%; LEL = 0%
						MB	--	--	--	--	--	--	--	--	--	38.9			
70.0		5.0																	
40						MB	--	--	--	--	--	--	--	--	--	39.8			
		3.0																40.1 - 80.4 ft: CONGLOMERATE, greenish gray, fine to very coarse sand matrix with grayish red purple, medium dark gray, pale reddish brown and moderate orange pink subrounded granule to cobble clasts up to 3.5 in, hard to very hard, strong to very strong, slightly to moderately weathered, clast supported, abundant epidote throughout, clasts consist of quartzite, granite, diorite, felsite, welded clasts and porphyritic volcanics, fabric generally dipping 20° to 30° with some elongate clasts, trace subvertical quartz veins up to 0.2 in thick [ROXBURY CONGLOMERATE, BROOKLINE MEMBER]	
						MB	--	--	--	--	--	--	--	--	--	40.9			
	C-4 B-2 500	3.0	100 / 100	S2-S3	W2	J	45	D2	A3	Ep, Fe*, Mn	Su	NH	3	F	B	41.2			*Hematite
		3.0				MB	--	--	--	--	--	--	--	--	--	42.2			
						MB	--	--	--	--	--	--	--	--	--	43.0			

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽	06/12/2024	0750	9.0	30.5	40.1
▼	06/13/2024	0800	8.6	30.5	130.3
▼	07/02/2024	0800	8.0	41.0	415.4

GENERAL NOTES

B-GSS-410A (PZ) was drilled ~4.5 ft north of B-GSS-410 after 4 in casing broke and got stuck in B-GSS-410 at ~32 ft. B-GSS-410 and stuck casing (~25 to 32 ft) were abandoned and grouted.
Log header start and end dates respectively refer to vacuum excavation at B-GSS-410 and completion of grouting at B-GSS-410A. Drilling took place between 05/31/2024 and 07/01/2024.
The boring site was fully demobilized 08/23/2024.
4-inch casing advanced to 32 ft at B-GSS-410 and 41.0 ft at B-GSS-410A.
NR: Not recorded.

REVIEWED BY: M. Wong/D. Van Roosendaal | **REV. DATE:** 02/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-410A (PZ)

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

COORDINATES: N: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. / Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
66.2		3.0																	
	C-4 B-2 500	3.0	100/100	S2-S3	W2														
65.0																			
45		2.0																	
		2.0				J	30	D2	A4	Si, Ep	Su	NH	4	B	B	46.4		40.1 - 80.4 ft: CONGLOMERATE, greenish gray, fine to very coarse sand matrix with grayish red purple, medium dark gray, pale reddish brown and moderate orange pink subrounded granule to cobble clasts up to 3.5 in, hard to very hard, strong to very strong, slightly to moderately weathered, clast supported, abundant epidote throughout, clasts consist of quartzite, granite, diorite, felsite, welded clasts and porphyritic volcanics, fabric generally dipping 20° to 30° with some elongate clasts, trace subvertical quartz veins up to 0.2 in thick [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)*	
		2.0				J	60	--	A1	Fe*	H	TH	--	--	A	47.6			*Hematite
						J	35	D2	A3	Fe*, Mn	Su	NH	5	B	B	47.7			
						J	40	D4	A4	Ep, Fe*, Si	Su	NH	5	B	B	48.0			
		2.0				MB	--	--	--	--	--	--	--	--	--	48.3			
						MB	--	--	--	--	--	--	--	--	--	48.6			
				S2-S3	W2	J	30	D2	A3	Ep	Su	NH	4	B	B	48.8			
		1.0																	
60.0	C-5 B-2 625					J	20	D2	A4	Ep, Fe*	Su	NH	4	B	B	49.7			*Including hematite
50			100/90*			J	40	D2	A3	Ep, Mn	Su	NH	5	B	B	49.9			
		1.0				MB	--	--	--	--	--	--	--	--	--	50.2			
						J	10	D2	A2	Ep, Mn	Su	NH	5	B	B	50.6			
		1.0				MB	--	--	--	--	--	--	--	--	--	51.2			
						MB	--	--	--	--	--	--	--	--	--	51.7			
		2.0				MB	--	--	--	--	--	--	--	--	--	52.2			
		2.0		S3	W2-W3	J	25	D4	A3	Ep	Su	NH	3	B	B	53.1		53.0 - 55.2 ft: Epidote staining throughout matrix, becomes more weathered	4 gas reading: H2S = 0 PPM; CO = 0 PPM; O2 = 20.9%; LEL = 0%
						MB	--	--	--	--	--	--	--	--	--	53.3			
		2.0		S4-S5	W3	MB	--	--	--	--	--	--	--	--	--	54.1		54.1 - 55.0 ft: Highly fractured and crushed zone, moderately hard to soft, medium strong to weak, highly sheared fabric, thinly to thickly foliated, fabric partially disintegrated at fractures, chlorite coated surfaces	*RQD qualifier for moderately weathered rock (W3)
55.0				S3	W2-W3														
55						MB	--	--	--	--	--	--	--	--	--	55.0			Tagged bottom of hole at 55.2 ft
		2.0				MB	--	--	--	--	--	--	--	--	--	55.4			Light green to white return fluid
						MB	--	--	--	--	--	--	--	--	--	55.9			
						MB	--	--	--	--	--	--	--	--	--	56.2			
		2.0				J	45	D2	A3	Ep, Qtz	Pa	NH	4	C	B	56.4			
						MB	--	--	--	--	--	--	--	--	--	56.6			
	C-6 B-3 500					MB	--	--	--	--	--	--	--	--	--	57.1			
		2.0	100/97	S2-S3	W2	MB	--	--	--	--	--	--	--	--	--	57.3			
						MB	--	--	--	--	--	--	--	--	--	57.7			
						J	20	D2	A2	Ep, Fe*	Su	NH	4	B	B	58.1			*Hematite
		2.0																	
						MB	--	--	--	--	--	--	--	--	--	58.7			
						J	20	D2	A3	Ep, Mn	Su	NH	4	B	B	59.1			
		2.0				J	20	D2	A2	Ca, Ep	Pa	PH	4	E	B	59.2			
50.0						MB	--	--	--	--	--	--	--	--	--	59.6			
60						MB	--	--	--	--	--	--	--	--	--	59.9			
						MB	--	--	--	--	--	--	--	--	--	60.1			Tagged bottom of hole at 60.2 ft
		4.0				J	30	D2	A4	Ep	Su	NH	3	E	B	60.4			
						MB	--	--	--	--	--	--	--	--	--	60.6			
						J	25	D2	A4	Ep, Fe*	Su	NH	5	B	B	60.8			*Hematite
						MB	--	--	--	--	--	--	--	--	--	61.0			
	C-7 B-3 400	4.0	100/87*	S2-S3	W2-W3	MB	--	--	--	--	--	--	--	--	--	61.8			
						J	20	D2	A3	Ep, Mn	Su	NH	7	B	B	61.9			
						MB	--	--	--	--	--	--	--	--	--	62.1			
		4.0				J	30	D2	A3	Ca, Fe*	Su	NH	7	B	B	62.3			*Including hematite
						J	80	--	A1	Fe*	H	TH	--	--	A	62.4			
						J	20	D2	A4	Mn, Fe	Su	NH	6	B	B	62.6			
						MB	--	--	--	--	--	--	--	--	--	62.9			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

COORDINATES: N: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
46.2 / 0		4.0				MB	--	--	--	--	--	--	--	--	--	63.2			
	C-7 B-3 400		100 / 87*	S2-S3	W2-W3	J	20	D2	A4	Ep	Su	NH	5	B	B	63.3		40.1 - 80.4 ft: CONGLOMERATE, greenish gray, fine to very coarse sand matrix with grayish red purple, medium dark gray, pale reddish brown and moderate orange pink subrounded granule to cobble clasts up to 3.5 in, hard to very hard, strong to very strong, slightly to moderately weathered, clast supported, abundant epidote throughout, clasts consist of quartzite, granite, diorite, felsite, welded clasts and porphyritic volcanics, fabric generally dipping 20° to 30° with some elongate clasts, trace subvertical quartz veins up to 0.2 in thick [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)*	*RQD qualifier for moderately weathered rock (W3)
						J	25	D2	A3	Ep, Mn	Su	NH	4	B	B	63.8			
		4.0				J	30	--	A1	--	H	TH	--	--	A	63.9			
45.0 / 15						J	20	D4	A5	Ep, Fe	Su	NH	6	B	B	64.0			
						J	30	D2	A4	Fe, Mn	Fi	NH	6	B	B	64.2			
						J	40	D2	A2	Fe, Ep, Mn	Su	NH	5	B	B	64.3			
65						J	25	D4	A5	Cl, Sd	Fi	NH	--	--	E	64.5			
						MB	--	--	--	--	--	--	--	--	--	64.7			
						MB	--	--	--	--	--	--	--	--	--	65.1			
		4.0				J	20	D2	A4	Ep, Mn	Pa	NH	3	E	B	65.4			
						J	30	D2	A4	Ep, Mn	Pa	NH	3	B	B	65.8			
						J	25	D2	A2	Ca, Ep, Mn, Fe*	Su	NH	5	E	B	66.3		63.9 - 64.2 ft: Vugs/cavities up to 1.2 in, infilled with quartz crystals	*Hematite
		4.0				J	25	D2	A3	Ep, Mn	Su	NH	4	B	B	66.9			
	C-8 B-3 425	4.0	100 / 100	S2-S3	W2	MB	--	--	--	--	--	--	--	--	--	67.9			
		4.0																	
						MB	--	--	--	--	--	--	--	--	--	69.2			
40.0 / 70		4.0				MB	--	--	--	--	--	--	--	--	--	69.8			
						MB	--	--	--	--	--	--	--	--	--	70.3			
		3.0																	
						MB	--	--	--	--	--	--	--	--	--	71.2			
		3.0				J	20	D2	A2	Ep, Fe*	Su	NH	3	F	B	71.8		72.0 - 77.0 ft: Highly sheared foliation dipping 30° to 40°, subrounded to subangular elongate clasts	*Hematite
		2.0				MB	--	--	--	--	--	--	--	--	--	72.6			
		2.0																	
						MB	--	--	--	--	--	--	--	--	--	73.9			
		2.0				J	20	D2	A3	Fe*, Mn	Su	NH	5	B	B	74.2			*Hematite
35.0 / 75	C-9 B-4 500		100 / 100	S2-S3	W2	MB	--	--	--	--	--	--	--	--	--	74.3		74.4 - 78.0 ft: Trace hematite veining in matrix	
		2.0				MB	--	--	--	--	--	--	--	--	--	75.4			
		2.0																	
						J	55	D2	A3	Ep, Mn	Su	NH	4	B	B	76.5			
						J	20	D2	A2	Ep, Mn	Su	NH	5	B	B	77.1			
		2.0				J	60	--	A1	He	H	TH	--	--	A	77.3			
						MB	--	--	--	--	--	--	--	--	--	77.5			
		2.0																78.0 - 82.8 ft: Highly sheared foliation dipping 60° to 70°, subrounded elongate clasts, trace hematite veining in matrix	
		1.0				J	40	D2	A2	Ca, Ep, Mn	Su	NH	5	E	B	79.3			
30.0 / 80				S2-S3	W2														
		1.0		S4	W3-W4	S	60	D4	A4	Ep, Fe*, Mn, Sd	Fi	PH	3	E	C	80.4		80.4 - 81.6 ft: Highly sheared and fractured zone with very closely spaced veins of quartz and manganese up to 0.2 in thick, foliation dipping 60° to 70°, fabric sheared into coarse sand fragments and mixed with crystals of manganese stained quartz	Light green to light brown return fluid *Hematite
						S	60	D4	A6	Ep, Mn*	Fi	MH	5	B	C	81.0			*Qtz, Sd
	C-10 B-4, 5 500	2.0	100 / 88*			MB	--	--	--	--	--	--	--	--	--	81.6			
						MB	--	--	--	--	--	--	--	--	--	81.9			
				S2-S3	W2	J	50	D2	A3	Ep, Fe*, Mn	Su	NH	5	B	B	82.0			*Hematite
		2.0				MB	--	--	--	--	--	--	--	--	--	82.3			
						MB	--	--	--	--	--	--	--	--	--	83.0			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

COORDINATES: N: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
26.2		2.0				MB	--	--	--	--	--	--	--	--	--	83.3		81.6 - 90.2 ft: CONGLOMERATE, greenish gray and dusky red, fine to very coarse sand matrix with dark greenish gray, medium gray, pale reddish brown and very dark red subrounded to subangular granite to cobble clasts up to 3 in, hard to very hard, strong to very strong, slightly weathered, clast supported, clasts consist of quartzite, felsite and granite, hematite and epidote throughout, thinly to thickly foliated, sheared fabric dipping 10° to 30° with some elongate clasts [ROXBURY CONGLOMERATE, BROOKLINE MEMBER]	
		2.0				MB	--	--	--	--	--	--	--	--	--	84.3			
25.0																			
	85	2.0				MB	--	--	--	--	--	--	--	--	--	85.2			
		2.0																	
	C-10 B-4, 5		100 / 88*	S2-S3	W2														
	500	2.0																	
						J	30	D2	A2	Fe*, Mn	Su	NH	5	E	B	87.6			*Hematite
		2.0				J	30	D2	A2	Fe*, Mn	Su	NH	5	B	B	88.1		88.0 - 89.4 ft: ~1 in thick, subvertical quartz and calcite vein	4 gas reading: H2S = 0 PPM; CO = 0 PPM; O2 = 20.9%; LEL = 0% *Hematite
						J	20	D2	A2	Ep, Mn	Su	NH	4	B	B	88.7			
		2.0				MB	--	--	--	--	--	--	--	--	--	89.0			
						S	40	D2	A3	Ca, Ep, Mn	Pa	NH	5	B	B	89.3			
20.0						MB	--	--	--	--	--	--	--	--	--	89.5			
	90					MB	--	--	--	--	--	--	--	--	--	89.9			
						MB	--	--	--	--	--	--	--	--	--	90.1			
						J	30	D2	A4	Ep, Fe	Su	NH	6	B	B	90.2		90.2 - 93.0 ft: Brecciated, highly intruded by subvertical quartz veins up to 3 in thick with vugs/cavities up to 2 in wide, filled with iron oxide stained quartz crystals	*RQD qualifier for moderately weathered rock (W3) *Qtz Tagged bottom of hole at 90.3 ft
		2.0				J	30	D2	A4	Fe, Mn*	Pa	NH	4	B	B	90.3			
						MB	--	--	--	--	--	--	--	--	--	90.5			
						S	50	D2	A6	Fe, Qtz	Fi	NH	6	E	B	90.6			
						J	30	D2	A3	Fe, Qtz, Mn	Pa	MH	5	E	B	91.0			
		2.0				J	35	D2	A4	Fe, Qtz	Pa	NH	4	E	B	91.4			
						J	20	--	A1	Fe, Qtz	Fi	TH	--	--	A	91.5			
						MB	--	--	--	--	--	--	--	--	--	91.6			
						J	35	D2	A3	Fe, Mn, Qtz	Su	NH	4	E	B	91.8			
		2.0				J	20	D2	A3	Ep, Fe, Qtz	Su	NH	4	E	B	91.9			
						J	55	D2	A3	Fe, Mn	Pa	NH	4	E	B	92.0			
						MB	--	--	--	--	--	--	--	--	--	92.3			
						J	20	D2	A3	Fe, Qtz	Pa	NH	5	B	B	92.5		93.0 - 97.3 ft: CONGLOMERATE, as above, greenish gray, iron oxide and manganese staining common along fracture surfaces, friable matrix, epidote throughout [ROXBURY CONGLOMERATE, BROOKLINE MEMBER]	
						J	40	D2	A4	Fe, Mn	Pa	NH	5	B	B	92.8			
		2.0		S2-S3	W2-W3	J	30	D4	A3	Fe, Mn, Si	Su	NH	5	B	C	93.1			
						J	25	D2	A4	Fe, Mn	Su	NH	4	B	B	93.4			
						J	20	D2	A3	Fe, Ep, Mn	Pa	NH	4	C	B	93.8			
						MB	--	--	--	--	--	--	--	--	--	93.9			
		2.0				MB	--	--	--	--	--	--	--	--	--	94.4			
15.0						J	30	D2	A3	Ep, Fe, Mn	Pa	NH	5	B	B	94.6			
	95					J	70	D2	A2	Fe, Mn	Pa	MH	5	B	B	94.7			
	C-11 B-5		100 / 75*			S	20	D2	A2	Ep, Fe, Mn	Pa	NH	3	G	C	95.1			
	575	1.0																	
						J	15	D2	A2	Fe, Mn	Su	NH	5	B	C	95.6			
						J	20	D2	A2	Fe, Mn	Pa	NH	5	B	C	95.9			
		2.0				J	70	D2	A2	Fe, Mn	Pa	NH	5	B	C	96.4			
						J	10	D2	A2	Fe, Mn	Pa	NH	4	E	B	96.5			
						J	10	D2	A3	Fe, Mn	Su	NH	6	F	B	96.9			
						J	30	D2	A3	Fe, Mn, Si	Pa	NH	4	B	B	97.1			
		1.0				J	10	D2	A3	Fe, Mn	Pa	NH	4	B	B	97.3			
						J	60	--	A1	Fe, H	H	TH	--	--	A	98.0		97.3 - 122.0 ft: CONGLOMERATE, greenish gray, very fine to medium sand matrix with medium light gray, grayish red purple and grayish black subrounded granule to cobble clasts up to 3 in, hard to very hard, strong to very strong, slightly to moderately weathered, clast supported, locally matrix supported, clasts consist of quartzite, felsite, porphyritic volcanics, welded ash and mafic rocks, iron oxide and manganese staining along fracture surfaces, epidote rich matrix, thinly to thickly foliated with sheared fabric dipping 35° to 50° with elongate clasts [ROXBURY CONGLOMERATE, BROOKLINE MEMBER]	
		1.0				J	10	D2	A4	Fe, Mn, Sd	Fi	PH	6	E	C	98.2			
				S2-S3	W2	J	60	D2	A2	Fe, Mn	Su	NH	3	F	B	98.3			
						J	10	D2	A3	Fe, Mn	Su	NH	4	C	B	98.4			
						J	20	D2	A3	Fe, Mn	Su	NH	6	B	B	99.0			
		1.0																	
10.0						J	80	--	A1	H, Mn	Su	TH	--	--	A	99.8			
	100																		
						MB	--	--	--	--	--	--	--	--	--	100.2			
		1.0																	
						MB	--	--	--	--	--	--	--	--	--	100.7			
						J	10	D2	A4	Fe, Mn	Pa	NH	5	B	B	100.9			
	C-12 B-6					J	20	D2	A4	Fe	Su	NH	6	B	B	101.0		101.0 - 106.2 ft: Sheared fabric and elongate clasts dipping ~40° to 60°	
		1.0	100 / 83*	S2-S3	W2	MB	--	--	--	--	--	--	--	--	--	101.2			
	600					MB	--	--	--	--	--	--	--	--	--	101.7			
						J	65	D2	A3	Fe, Mn	Su	NH	7	E	B	101.8			
		2.0																	
						J	30	D2	A2	Fe, Mn	Su	NH	5	B	B	103.0			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

COORDINATES: N: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. / Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
6.2		2.0				J	20	D2	A3	Fe, Mn	Su	NH	4	E	B	103.2		97.3 - 122.0 ft: CONGLOMERATE, greenish gray, very fine to medium sand matrix with medium light gray, grayish red purple and grayish black subrounded granule to cobble clasts up to 3 in, hard to very hard, strong to very strong, slightly to moderately weathered, clast supported, locally matrix supported, clasts consist of quartzite, felsite, porphyritic volcanics, welded ash and mafic rocks, iron oxide and manganese staining along fracture surfaces, epidote rich matrix, thinly to thickly foliated with sheared fabric dipping 35° to 50° with elongate clasts [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)*	
						J	60	D2	A3	Fe, Mn	Su	NH	5	B	B	103.5			
						J	65	D2	A3	Fe, Mn	Su	NH	5	B	E	103.6			
						J	60	D2	A3	Fe, Mn	Su	NH	5	B	B	103.7			
		2.0																	
5.0				S2-S3	W2														
	105																		
		2.0																	
						J	15	D2	A3	Fe, Mn	Su	NH	5	B	B	105.5			
						J	40	D2	A3	Fe, Mn	Su	NH	4	B	B	105.6			
						J	30	D2	A2	Fe, Mn	Pa	NH	5	B	B	105.8			
	C-12 B-6	2.0				J	10	D2	A3	Fe, Mn	Pa	NH	5	E	B	105.9			
			100/83*			J	80	D2	A1	Fe, Mn	Fi	TH	7	B	A	106.4			
	600					MB	--	--	--	--	--	--	--	--	--	106.6		106.2 - 116.2 ft: Iron oxide, hematite and manganese surface staining adjacent to vugs and joints, multiple subvertical fractures filled with iron oxide and manganese	*RQD qualifier for moderately weathered rock (W3) Subvertical healed joint mechanically broken
		2.0																	
						J	10	D2	A3	Fe, Mn	Su	NH	5	E	B	107.5			
				S3	W3														
		2.0				J	85	D2	A4	Fe, Mn, Qtz	Su	NH	5	B	B	108.1			
						MB	--	--	--	--	--	--	--	--	--	108.3			
						MB	--	--	--	--	--	--	--	--	--	108.5			
						MB	--	--	--	--	--	--	--	--	--	108.9			
		2.0				J	10	D2	A5	Fe, Mn	Su	NH	6	B	B	109.1			
						MB	--	--	--	--	--	--	--	--	--	109.4			
0.0						MB	--	--	--	--	--	--	--	--	--	109.7			
	110					MB	--	--	--	--	--	--	--	--	--	109.9			
						MB	--	--	--	--	--	--	--	--	--	110.1			Tagged bottom of hole at 110.2 ft
		2.0																	
						MB	--	--	--	--	--	--	--	--	--	110.6			
						MB	--	--	--	--	--	--	--	--	--	110.9			
						J	85	D2	A2	Fe, Mn, Qtz	Fi	MH	5	B	B	111.0			
		2.0				MB	--	--	--	--	--	--	--	--	--	111.4			
						J	20	D2	A3	Fe, Mn	Su	NH	4	B	B	111.6			
						MB	--	--	--	--	--	--	--	--	--	111.9			
						MB	--	--	--	--	--	--	--	--	--	112.1			
		2.0				J	25	D2	A3	Fe, Mn	Pa	NH	5	B	B	112.4			
						J	10	D2	A4	Fe, Mn	Pa	NH	5	B	B	112.7			
						J	85	--	A4	Fe, H	H	TH	--	--	A	112.7			
		2.0																	
						J	20	D2	A3	Fe, Mn	Su	NH	5	B	B	113.8		113.8 - 114.3 ft: Highly fractured and crushed zone, angular to subangular pieces 0.5 to 2.5 in	
		2.0				MB	--	--	--	--	--	--	--	--	--	114.3			
-5.0	C-13 B-6, 7																		
			100/92*	S3	W2-W3	J	80	--	A1	Fe, H, Mn	H	TH	--	--	A	114.7			Healed subvertical joint partially mechanically broken
	115																		
	550	2.0				MB	--	--	--	--	--	--	--	--	--	115.3			
						J	20	D2	A2	Fe, Mn	Pa	NH	5	B	B	115.5			
						J	20	D2	A2	Fe, Mn	Pa	NH	6	E	B	115.9			
		2.0																	
						J	50	D2	A4	Fe, Mn	Su	NH	8	B	B	116.6			
		2.0																	
						J	10	D2	A3	Fe, Mn	Su	NH	7	B	B	117.5			
		2.0																	
						J	15	D2	A6	Fe, Mn	Su	NH	7	B	B	118.4			
						MB	--	--	--	--	--	--	--	--	--	118.7			
						MB	--	--	--	--	--	--	--	--	--	118.8			
		2.0				MB	--	--	--	--	--	--	--	--	--	119.0			
-10.0						MB	--	--	--	--	--	--	--	--	--	119.1			
						MB	--	--	--	--	--	--	--	--	--	119.7			
	120					MB	--	--	--	--	--	--	--	--	--	119.8			Light green fluid return
		2.0				MB	--	--	--	--	--	--	--	--	--	120.1			
						MB	--	--	--	--	--	--	--	--	--	120.3			
						J	30	D2	A5	Fe	Pa	NH	6	B	B	120.8			
	C-14 B-7	3.0				J	15	D2	A3	Fe, Mn	Su	NH	5	E	B	121.1			
			100/88*	S2-S3	W2-W3	J	40	D2	A3	Fe, Mn	Su	NH	4	B	B	121.1			
						MB	--	--	--	--	--	--	--	--	--	121.5			
	550					J	20	D2	A4	Fe	Su	NH	5	B	B	121.6			
		2.0				MB	--	--	--	--	--	--	--	--	--	121.7			
						MB	--	--	--	--	--	--	--	--	--	121.8			
						MB	--	--	--	--	--	--	--	--	--	121.9			
						J	20	D2	A3	Fe, Mn	Su	NH	6	B	B	122.1			
						MB	--	--	--	--	--	--	--	--	--	122.2			
		2.0				J	20	D2	A3	Fe, Mn	Su	NH	5	B	B	122.4			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

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Elevation (ft) / Depth (ft)	Run/Box No. / Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
-13.8		2.0				J	10	D2	A3	Fe	Su	NH	5	B	B	122.5		122.0 - 165.5 ft: CONGLOMERATE, greenish gray and pale red purple, very fine-grained to coarse grained sand matrix with medium dark gray, grayish red purple and moderate red subrounded granule to cobble clasts up to 3 in, hard to very hard, strong to very strong, slightly to moderately weathered, massive, clast supported, clasts consist of quartzite, porphyritic volcanics, and granite, iron oxide, manganese, and hematite staining along fracture surfaces, epidote rich matrix, sheared fabric dipping 30° to 40° with elongate clasts, trace calcite veins up to 0.5 in thick [ROXBURY CONGLOMERATE, BROOKLINE MEMBER]	*RQD qualifier for moderately weathered rock (W3)
						J	20	D2	A2	Fe, Mn	Su	NH	6	B	B	122.6			
						MB	--	--	--	--	--	--	--	--	--	123.1			
		2.0				MB	--	--	--	--	--	--	--	--	--	124.3			
-15.0																			
	125																		
		2.0				MB	--	--	--	--	--	--	--	--	--	125.3			
						J	10	D2	A4	Fe	Su	NH	5	B	B	125.7			
						J	75	D2	A3	Fe, Mn, Qtz	Fi	NH	5	B	B	126.1			
	C-14 B-7	2.0				MB	--	--	--	--	--	--	--	--	--	126.4			
			100/88*	S2-S3	W2-W3	J	15	D2	A3	Fe, Mn, Qtz	Su	NH	7	B	B	126.7			
	550					MB	--	--	--	--	--	--	--	--	--	127.0			
		2.0				MB	--	--	--	--	--	--	--	--	--	127.1			
						MB	--	--	--	--	--	--	--	--	--	127.6			
						MB	--	--	--	--	--	--	--	--	--	127.9			
		2.0				MB	--	--	--	--	--	--	--	--	--	128.3			
						J	60	D2	--	Fe	Su	NH	4	E	B	128.5			
						J	10	D2	A5	Fe, Mn	Su	NH	4	E	B	128.6			4 gas reading: H2S = 0 PPM; CO = 0 PPM; O2 = 20.9%; LEL = 0%
						MB	--	--	--	--	--	--	--	--	--	129.4			
-20.0						J	20	D2	A3	Fe, Mn	Su	NH	5	E	B	129.5			
	130																		Tagged bottom of hole at 130.3 ft
		2.0				J	10	D2	A3	Fe, Mn	Su	NH	5	E	B	130.9			
						MB	--	--	--	--	--	--	--	--	--	131.8			
		2.0				MB	--	--	--	--	--	--	--	--	--	132.2			
						J	50	D2	A2	Fe, Mn	Su	NH	5	B	B	133.4			
		2.0		S2-S3	W2	MB	--	--	--	--	--	--	--	--	--	133.8			
-25.0																			
	135	2.0				MB	--	--	--	--	--	--	--	--	--	134.8			
	C-15 B-8		100/84*			J	40	D2	A2	Fe, Mn	Su	NH	4	E	B	135.4			
	450	3.0				J	20	D2	A2	Fe, Mn	Su	NH	6	B	B	135.9		135.9 - 136.4 ft: Highly fractured, iron oxide and manganese staining throughout	
						J	20	D2	A2	Fe, Mn	Su	NH	5	B	B	136.4			
						MB	--	--	--	--	--	--	--	--	--	136.6			
						J	30	D2	A3	Fe, Mn	Su	NH	4	E	B	136.7			
						J	40	D2	A2	Fe, Mn	Su	NH	3	F	B	136.8			
		3.0				J	40	--	A1	Fe, Mn	H	TH	--	--	A	136.9		137.2 - 137.4 ft: Highly fractured into angular pieces from 0.1 to 2 in, sheared fabric dipping 30°, iron oxide staining	
						J	85	--	A2	Fe, Mn, Qtz	H	TH	--	--	A	137.5			
						MB	--	--	--	--	--	--	--	--	--	138.0			
		3.0		S3	W2-W3	J	70	D2	A2	Fe	Su	NH	4	E	B	138.1			
						J	70	D2	A7	Fe, Mn, Qtz	Fi	MH	6	E	C	138.3		138.4 - 139.6 ft: Vugs/cavities up to 2 in wide along subvertical joints, filled with quartz crystals and stained with iron oxide and manganese	
		3.0				J	65	--	A1	--	H	TH	--	--	A	139.4			
-30.0						MB	--	--	--	--	--	--	--	--	--	139.5			
	140																		
		2.0				J	20	D2	A3	Fe, Mn	Su	NH	4	B	B	140.6			
						J	30	D2	A4	Fe, Mn	Su	NH	7	B	B	140.7			
						J	25	D2	A4	Fe	Su	NH	4	E	B	141.0			
	C-16 B-8, 9					MB	--	--	--	--	--	--	--	--	--	141.3			
		2.0	100/96*	S3	W2-W3	MB	--	--	--	--	--	--	--	--	--	141.5			
	625					J	20	D4	A5	Cl, Ep, Si	Fi	NH	4	E	C	141.7			
						MB	--	--	--	--	--	--	--	--	--	141.9			
		2.0				MB	--	--	--	--	--	--	--	--	--	142.5			
						MB	--	--	--	--	--	--	--	--	--	142.8			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

COORDINATES: **N**: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
-33.8		2.0				J	75	D2	A3	Fe, Qtz	Pa	NH	6	F	B	143.3		122.0 - 165.5 ft: CONGLOMERATE, greenish gray and pale red purple, very fine-grained to coarse grained sand matrix with medium dark gray, grayish red purple and moderate red subrounded granule to cobble clasts up to 3 in, hard to very hard, strong to very strong, slightly to moderately weathered, massive, clast supported, clasts consist of quartzite, porphyritic volcanics, and granite, iron oxide, manganese, and hematite staining along fracture surfaces, epidote rich matrix, sheared fabric dipping 30° to 40° with elongate clasts, trace calcite veins up to 0.5 in thick [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)*	
						MB	--	--	--	--	--	--	--	--	--	143.4			
						MB	--	--	--	--	--	--	--	--	--	143.9			
		2.0																	
-35.0						MB	--	--	--	--	--	--	--	--	--	144.6			
	145					MB	--	--	--	--	--	--	--	--	--	145.0			
		2.0				J	85	D2	A2	Fe, Mn	Fi	MH	5	B	B	145.5			
				S3	W2-W3	MB	--	--	--	--	--	--	--	--	--	145.7			
	C-16 B-8, 9 625	2.0	100/96*			J	10	D2	A3	Fe, Mn	Su	NH	5	B	B	146.2			
						J	85	D2	A3	Fe, Mn, Qtz	Fi	MH	5	B	B	146.6		145.5 - 148.8 ft: Multiple subvertical joints with iron oxide, manganese, and quartz infilling, increased weathering along joints	*RQD qualifier for moderately weathered rock
		2.0				MB	--	--	--	--	--	--	--	--	--	147.2			
						MB	--	--	--	--	--	--	--	--	--	147.5			
		2.0				MB	--	--	--	--	--	--	--	--	--	148.3			
						MB	--	--	--	--	--	--	--	--	--	148.4			
						MB	--	--	--	--	--	--	--	--	--	148.6			
		2.0		S2-S3	W2														
-40.0																			
	150																		
		2.0				MB	--	--	--	--	--	--	--	--	--	150.8			
		2.0																	
		2.0				MB	--	--	--	--	--	--	--	--	--	152.4			
						MB	--	--	--	--	--	--	--	--	--	153.2			
		2.0				MB	--	--	--	--	--	--	--	--	--	153.7			
						J	5	D2	A4	Fe, Mn	Su	NH	5	B	B	154.2			
-45.0		2.0																	
	155	C-17 B-9	100/100	S2-S3	W2	MB	--	--	--	--	--	--	--	--	--	155.2			
		625	2.0			J	5	D2	A3	Fe, Mn	Su	NH	5	B	B	155.5		155.5 - 156.0 ft: Subrounded clasts up to 4.5 in	
						J	5	D2	A3	Fe, Mn	Su	NH	6	B	B	156.0			
		2.0				J	5	D2	A3	Fe	Su	NH	5	B	B	156.7			
						J	20	D2	A2	Fe, Mn	Su	NH	6	B	B	157.1			
		2.0																	
		3.0				J	70	D2	A4	Fe, Mn, Qtz	Fi	MH	7	B	B	158.4			
						MB	--	--	--	--	--	--	--	--	--	158.8			
		2.0																	
-50.0						MB	--	--	--	--	--	--	--	--	--	159.7			
	160																		
		2.0				MB	--	--	--	--	--	--	--	--	--	160.5			Light brown fluid return
	C-18 B-10 650	2.0	100/95	S2-S3	W2	MB	--	--	--	--	--	--	--	--	--	161.5			
						MB	--	--	--	--	--	--	--	--	--	161.8			
						MB	--	--	--	--	--	--	--	--	--	162.0			
		2.0				MB	--	--	--	--	--	--	--	--	--	162.6			
						MB	--	--	--	--	--	--	--	--	--	162.9			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

COORDINATES: **N**: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. / Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
-53.8	900	2.0				MB	--	--	--	--	--	--	--	--	--	163.7		122.0 - 165.5 ft: CONGLOMERATE, greenish gray and pale red purple, very fine-grained to coarse grained sand matrix with medium dark gray, grayish red purple and moderate red subrounded granule to cobble clasts up to 3 in, hard to very hard, strong to very strong, slightly to moderately weathered, massive, clast supported, clasts consist of quartzite, porphyritic volcanics, and granite, iron oxide, manganese, and hematite staining along fracture surfaces, epidote rich matrix, sheared fabric dipping 30° to 40° with elongate clasts, trace calcite veins up to 0.5 in thick [ROXBURY CONGLOMERATE, BROOKLINE MEMBER]	
	C-18 B-10					J	20	D2	A3	Fe, Mn	Su	NH	6	B	B	164.0			4 gas reading: H2S = 0 PPM; CO = 0 PPM; O2 = 20.9%; LEL = 0%
-55.0	650	2.0	100/95	S2-S3	W2	J	30	D2	A4	Fe, Mn	Su	NH	6	B	B	164.3			
	165	5.0				MB	--	--	--	--	--	--	--	--	--	165.1			
						MB	--	--	--	--	--	--	--	--	--	165.3			
	C-19 B-10	9.0	0/0	NR	NR													165.5 - 175.2 ft: No recovery	Tagged bottom of hole at 165.5 ft. Difficulty tripping in HQ3 rods past bottom of casing (30.5 ft). Advanced 4 in casing to ~33.0 ft. Attempted to ream down the hole using H8 core bit, but unable to advance past casing. Tripped out HQ3 casing and tripped out 4 in casing. Bit and bottom of casing were worn out. 7NT replaced the bit and casing. Casing was advanced to 39.0 ft. Driller indicated soft rock advancement from 34.5 to 35.0 ft. Resumed coring at 165.5 ft.
	800																		
		2.0																	
		2.0																	
	C-20 B-10	2.0	0/0	NR	NR														165.5 - 167 ft: No Recovery, likely due to debris downhole, caused by reaming the hole, clogged barrel likely pulverizing recovery (mechanical)
-60.0	800																		165.5 - 180.0 ft: Light brownish green fluid return
	170	3.0																	167 - 171.7 ft: No Recovery, likely due to debris downhole, caused by reaming the hole, clogged barrel likely pulverizing recovery (mechanical)
		3.0																	Tagged bottom of hole at 167.0 ft
		2.0																	Tagged bottom of hole at 171.7 ft
		2.0																	Replaced core bit
		2.0		NR	NR														Trip out HQ3 rods to remove debris in the rods and replace core bit with Hole Products #7 bit. Attempted to lower HQ3 rods, however it got caught in the bottom of the casing. Driller removed casing and replaced the shoe
	C-21 B-10	2.0	30/30																
-65.0	800																		
	175	3.0				MB	--	--	--	--	--	--	--	--	--	175.2		175.2 - 176.9 ft: CONGLOMERATE, dark greenish gray, fine to coarse sand matrix with moderate reddish brown, dark reddish brown, dark yellowish brown and light olive gray subrounded granule to pebble clasts up to 2.5 in, very hard, very strong, slightly weathered to fresh, clast supported, clasts consist of quartzite, porphyritic volcanics, granite, and mafic rocks, trace iron oxide staining on fracture surfaces [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] 176.7 - 176.9 ft: Subvertical veins filled with epidote 176.9 - 180.0 ft: No recovery	
						MB	--	--	--	--	--	--	--	--	--	175.3			
						MB	--	--	--	--	--	--	--	--	--	175.5			
				S2	W2	MB	--	--	--	--	--	--	--	--	--	175.7			
		3.0				MB	--	--	--	--	--	--	--	--	--	176.1			
						MB	--	--	--	--	--	--	--	--	--	176.4			
				S2	W1-W2	MB	--	--	--	--	--	--	--	--	--	176.6			
		4.5				MB	--	--	--	--	--	--	--	--	--	176.9			Added new 4 in HWT bit to casing. Advanced casing to 41 ft. Replaced core bit with Hole Products #8 and reamed down to 176.7 ft
	C-22 B-10	4.5	5/0	NR	NR														
	800																		
		4.5																	
-70.0																			
	180	1.0				MB	--	--	--	--	--	--	--	--	--	180.7		180.0 - 255.2 ft: CONGLOMERATE, greenish gray and medium bluish gray, fine to coarse sand matrix with pale red purple, yellowish gray, medium light gray and medium dark gray subrounded granule to cobble clasts up to 3.5 in, very hard to hard, very strong to strong, slightly weathered to fresh, clast supported, locally matrix supported, clasts consist of quartzite, granite, porphyritic volcanics, and mafic rocks, epidote rich matrix, massive to locally bedded with bedding generally dipping ~30°, locally thinly to thickly foliated, foliation and elongate clasts dipping 40° to 50° [ROXBURY CONGLOMERATE, BROOKLINE MEMBER]	Light green return fluid Tagged bottom of hole at 180.0 ft
						MB	--	--	--	--	--	--	--	--	--	181.0			
	C-23 B-10	1.0	100/79	S2-S3	W1-W2	MB	--	--	--	--	--	--	--	--	--	181.1			
	750					J	30	D2	A2	Fe, Mn	Pa	NH	7	B	B	181.8			
		2.0				J	10	D2	A2	Fe, Mn	Pa	NH	5	B	B	181.9			
						J	20	D2	A3	Fe, Mn	Su	NH	5	E	B	182.1			
						J	20	D2	A3	Fe, Mn	Su	NH	5	B	B	182.4			
						MB	--	--	--	--	--	--	--	--	--	182.8			
						MB	--	--	--	--	--	--	--	--	--	183.0			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

COORDINATES: **N**: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. / Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
-73.8		2.0				MB	--	--	--	--	--	--	--	--	--	183.1			
	C-23 B-10 750		100/79	S2-S3	W1-W2	J	40	D2	A4	Fe, Mn, Si	Pa	NH	5	B	B	183.3		180.0 - 255.2 ft: CONGLOMERATE, greenish gray and medium bluish gray, fine to coarse sand matrix with pale red purple, yellowish gray, medium light gray and medium dark gray subrounded granule to cobble clasts up to 3.5 in, very hard to hard, very strong to strong, slightly weathered to fresh, clast supported, locally matrix supported, clasts consist of quartzite, granite, porphyritic volcanics, and mafic rocks, epidote rich matrix, massive to locally bedded with bedding generally dipping ~30°, locally thinly to thickly foliated, foliation and elongate clasts dipping 40° to 50° [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)*	
						J	30	D2	A4	Fe, Mn, Si	Pa	NH	6	B	B	183.5			
						J	20	D3	A4	Mn, Si, Sd	Fi	NH	3	F	C	183.6			
						J	20	D2	A3	Ep, Mn	Pa	PH	5	B	C	184.0			
-75.0		2.0				J	25	D4	A4	Ep, Mn	Pa	NH	4	C	C	184.3			
185		1.0				J	15	D2	A2	Fe, Mn	Su	NH	4	E	B	185.6			Tagged bottom of hole at 185.1 ft
		1.0				MB	--	--	--	--	--	--	--	--	--	186.5			
						MB	--	--	--	--	--	--	--	--	--	186.7			
	C-24 B-11 750	2.0	100/97	S2-S3	W1-W2	J	40	D2	A2	Fe, Mn	Su	NH	5	B	B	187.1			
						J	45	D2	A4	Fe, Mn, Si	Pa	NH	5	E	B	187.3			
						MB	--	--	--	--	--	--	--	--	--	187.7			
		2.0																	
		2.0				MB	--	--	--	--	--	--	--	--	--	189.2			
-80.0						MB	--	--	--	--	--	--	--	--	--	189.5			
190		1.0				MB	--	--	--	--	--	--	--	--	--	190.7			
						J	80	D2	A2	Ca, Ep, Fe*	Fi	MH	6	B	B	190.8			*Mn, Qtz
		2.0																	
		2.0				MB	--	--	--	--	--	--	--	--	--	192.6			
		2.0																	
						MB	--	--	--	--	--	--	--	--	--	193.7			
-85.0	C-25 B-11, 12 750	2.0	100/100	S2-S3	W1													194.0 - 240.0 ft: Transitions to matrix supported, locally clast supported	
195		2.0				MB	--	--	--	--	--	--	--	--	--	195.2			
						MB	--	--	--	--	--	--	--	--	--	196.0			
		3.0																	
		3.0				J	30	D2	A2	Mn	Pa	NH	6	B	B	197.4			
		3.0																	
						MB	--	--	--	--	--	--	--	--	--	198.6			
		3.0																	
-90.0						MB	--	--	--	--	--	--	--	--	--	199.6			
200		4.0				J	5	D2	A3	Fe	Su	NH	4	B	B	200.4			
	C-26 B-12 800	4.0	100/92	S2-S3	W1-W2														
						J	5	D2	A3	Fe, Mn	Su	NH	4	E	B	202.1			
		4.0				J	10	D2	A4	Fe, Mn	Su	NH	5	E	B	202.2			
						MB	--	--	--	--	--	--	--	--	--	202.8			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

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Elevation (ft) / Depth (ft)	Run/Box No. / Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
-93.8		4.0				J	25	D2	A4	Fe	Su	NH	6	B	B	203.4		180.0 - 255.2 ft: CONGLOMERATE, greenish gray and medium bluish gray, fine to coarse sand matrix with pale red purple, yellowish gray, medium light gray and medium dark gray subrounded granule to cobble clasts up to 3.5 in, very hard to hard, very strong to strong, slightly weathered to fresh, clast supported, locally matrix supported, clasts consist of quartzite, granite, porphyritic volcanics, and mafic rocks, epidote rich matrix, massive to locally bedded with bedding generally dipping ~30°, locally thinly to thickly foliated, foliation and elongate clasts dipping 40° to 50° [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)*	*Sd, Si
	C-26 B-12		100/92	S2-S3	W1-W2	J	30	D2	A4	Fe, Mn	Su	NH	5	B	B	203.5			
						J	40	D3	A5	Mn, Qtz*	Fi	NH	5	E	D	203.8			
-95.0	800	4.0				J	30	D2	A3	Ep, Fe	Su	NH	5	E	B	204.4			
205		5.0				MB	--	--	--	--	--	--	--	--	--	206.1			
		5.0																	
	C-27 B-12		100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	207.2			
	925	5.0				MB	--	--	--	--	--	--	--	--	--	208.0			
		5.0				MB	--	--	--	--	--	--	--	--	--	209.0			
-100.0						MB	--	--	--	--	--	--	--	--	--	209.6			
210		8.0				MB	--	--	--	--	--	--	--	--	--	210.9			
		8.0				MB	--	--	--	--	--	--	--	--	--	211.4			
	C-28 B-13	9.0	100/92	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	212.2			
	1200					MB	--	--	--	--	--	--	--	--	--	212.7			
						MB	--	--	--	--	--	--	--	--	--	213.0			4 gas reading: H2S = 0 PPM; CO = 0 PPM; O2 = 20.9%; LEL = 0%
	700	1.5				MB	--	--	--	--	--	--	--	--	--	213.3			
		1.5				J	40	--	A1	H	H	TH	--	--	A	214.1			
						J	60	D2	A3	Fe, Mn	Su	NH	6	B	B	214.2			
-105.0						J	75	D2	A3	Ca, Mn, Qtz	Fi	MH	8	B	B	214.4			
215		2.0																	Tagged bottom of hole at 215.1 ft. Replaced core bit
		1.0				MB	--	--	--	--	--	--	--	--	--	216.2			
		1.0																	
		1.0				MB	--	--	--	--	--	--	--	--	--	218.0			
	C-29 B-13		100/100	S2-S3	W1														
	750	2.0				MB	--	--	--	--	--	--	--	--	--	219.3			
-110.0						J	80	D2	A3	Ca, Qtz	Pa	NH	7	B	B	219.9			
220		2.0				MB	--	--	--	--	--	--	--	--	--	220.2			
						MB	--	--	--	--	--	--	--	--	--	220.6			
		2.0																	
		1.0				MB	--	--	--	--	--	--	--	--	--	221.9			
		1.0				MB	--	--	--	--	--	--	--	--	--	222.8			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

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-113.8		2.0				MB	--	--	--	--	--	--	--	--	--	223.4		180.0 - 255.2 ft: CONGLOMERATE, greenish gray and medium bluish gray, fine to coarse sand matrix with pale red purple, yellowish gray, medium light gray and medium dark gray subrounded granule to cobble clasts up to 3.5 in, very hard to hard, very strong to strong, slightly weathered to fresh, clast supported, locally matrix supported, clasts consist of quartzite, granite, porphyritic volcanics, and mafic rocks, epidote rich matrix, massive to locally bedded with bedding generally dipping ~30°, locally thinly to thickly foliated, foliation and elongate clasts dipping 40° to 50° [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)* 226.5 - 227.2 ft: Healed, discontinuous, subvertical joint, partially healed with quartz	
	C-29 B-13 750		100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	224.1			
-115.0						MB	--	--	--	--	--	--	--	--	--	224.9			
225		2.0				MB	--	--	--	--	--	--	--	--	--	226.1			
		1.0				J	80	--	A3	Qtz, H	--	TH	--	--	A	226.5			
						MB	--	--	--	--	--	--	--	--	--	227.0			
		1.0				MB	--	--	--	--	--	--	--	--	--	227.4			
						MB	--	--	--	--	--	--	--	--	--	227.9			
		1.0				J	50	D2	A3	Ep, Mn	Pa	NH	3	C	B	228.1			
						MB	--	--	--	--	--	--	--	--	--	228.2			
						J	45	D2	A4	Ep, Mi	Pa	NH	4	C	C	228.3			
						MB	--	--	--	--	--	--	--	--	--	228.7			
		1.0				MB	--	--	--	--	--	--	--	--	--	229.1			
						MB	--	--	--	--	--	--	--	--	--	229.4			
-120.0	C-30 B-14 750					J	30	D2	A3	Fe, Mn	Su	NH	4	B	B	229.7			
230			100/97	S2-S3	W1	J	80	D2	A3	Mn, Qtz	Fi	MH	5	E	A	229.8			
						MB	--	--	--	--	--	--	--	--	--	230.1			
		1.0				J	80	--	A4	Qtz	H	TH	--	--	A	230.4			
						MB	--	--	--	--	--	--	--	--	--	230.5			
		1.0				MB	--	--	--	--	--	--	--	--	--	231.3			
		2.0																	
		2.0				MB	--	--	--	--	--	--	--	--	--	233.1			4 gas reading: H2S = 0 PPM; CO = 0 PPM; O2 = 20.9%; LEL = 0%
		2.0				MB	--	--	--	--	--	--	--	--	--	234.0			
-125.0																			
235		1.0																	
		1.0				MB	--	--	--	--	--	--	--	--	--	236.8			
		1.0																	
		1.0				MB	--	--	--	--	--	--	--	--	--	238.3			
	C-31 B-14, 15 750		100/100	S2-S3	W1														
-130.0		2.0				MB	--	--	--	--	--	--	--	--	--	239.4			
240		1.0				MB	--	--	--	--	--	--	--	--	--	240.5			
		1.0																	
						MB	--	--	--	--	--	--	--	--	--	241.7			
		1.0				MB	--	--	--	--	--	--	--	--	--	242.2			

REVIEWED BY: M. Wong/D. Van Roosendaal **REV. DATE:** 02/28/2025 **REV. NO.:** R0-FINAL **BORING NO.:** B-GSS-410A (PZ)

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

COORDINATES: N: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. / Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
-133.8		2.0				MB	--	--	--	--	--	--	--	--	--	243.2		180.0 - 255.2 ft: CONGLOMERATE, greenish gray and medium bluish gray, fine to coarse sand matrix with pale red purple, yellowish gray, medium light gray and medium dark gray subrounded granule to cobble clasts up to 3.5 in, very hard to hard, very strong to strong, slightly weathered to fresh, clast supported, locally matrix supported, clasts consist of quartzite, granite, porphyritic volcanics, and mafic rocks, epidote rich matrix, massive to locally bedded with bedding generally dipping ~30°, locally thinly to thickly foliated, foliation and elongate clasts dipping 40° to 50° [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)*	
	C-31 B-14, 15		100/100	S2-S3	W1	J	40	D1	A3	No	No	NH	4	C	B	244.0			
		2.0				MB	--	--	--	--	--	--	--	--	--	244.1			
-135.0	750					MB	--	--	--	--	--	--	--	--	--	244.6			
245																			
		1.0																	
		1.0				MB	--	--	--	--	--	--	--	--	--	246.7			
		1.0																	
						MB	--	--	--	--	--	--	--	--	--	248.0			
		2.0																	
		2.0																	
-140.0	C-32 B-15					MB	--	--	--	--	--	--	--	--	--	249.6			
250			100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	250.1			
	750	1.0																	
		1.0																	
		1.0																	
						MB	--	--	--	--	--	--	--	--	--	252.6			
		1.0																	
		2.0				J	60	D1	A2	No	No	NH	3	F	B	254.0			
-145.0						MB	--	--	--	--	--	--	--	--	--	254.6			
255																			
		2.0																255.2 - 325.2 ft: CONGLOMERATE, dark greenish gray to greenish gray, fine to coarse sand matrix with pale red purple, grayish red purple, medium gray and light olive gray subrounded granule to cobble clasts up to 4 in, hard to very hard, strong to very strong, fresh to slightly weathered, clast supported, clasts consist of quartzite, granite, felsite, porphyritic volcanics, and mafic rocks, massive to locally bedded, bedding dipping 30° to 40°, foliation defined by elongate clasts [ROXBURY CONGLOMERATE, BROOKLINE MEMBER]	Light green to light pink return fluid
		1.0				MB	--	--	--	--	--	--	--	--	--	256.4			
						MB	--	--	--	--	--	--	--	--	--	257.0			
		1.0				J	30	D2	A5	Ep, Qtz	Su	NH	7	B	B	257.2			
		1.0				MB	--	--	--	--	--	--	--	--	--	258.2			
	C-33 B-16					J	40	D2	A3	Ca	Pa	PH	4	E	B	258.7			
		2.0	100/100	S2-S3	W1	J	30	D2	A3	Ca	Su	PH	6	B	B	259.3			
-150.0	750																		
260																			
		1.0				MB	--	--	--	--	--	--	--	--	--	260.2			
						MB	--	--	--	--	--	--	--	--	--	260.9			
		1.0																	
						MB	--	--	--	--	--	--	--	--	--	261.8			
						MB	--	--	--	--	--	--	--	--	--	262.0			
		2.0																	
						MB	--	--	--	--	--	--	--	--	--	262.5			
						J	50	D2	A3	Ep, Si	Su	NH	4	E	B	262.5			
						J	25	D1	A3	Ep	Su	NH	4	C	B	263.0			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

COORDINATES: N: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. / Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
-153.8		2.0																	
	C-33 B-16 750	2.0	100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	264.0		255.2 - 325.2 ft: CONGLOMERATE, dark greenish gray to greenish gray, fine to coarse sand matrix with pale red purple, grayish red purple, medium gray and light olive gray subrounded granule to cobble clasts up to 4 in, hard to very hard, strong to very strong, fresh to slightly weathered, clast supported, clasts consist of quartzite, granite, felsite, porphyritic volcanics, and mafic rocks, massive to locally bedded, bedding dipping 30° to 40°, foliation defined by elongate clasts [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)*	4 gas reading: H2S = 0 PPM; CO = 0 PPM; O2 = 20.9%; LEL = 0%
-155.0																			
265						MB	--	--	--	--	--	--	--	--	--	265.0			Tagged bottom of hole at 265.2 ft
		2.0																	
		3.0				MB	--	--	--	--	--	--	--	--	--	266.7			
						MB	--	--	--	--	--	--	--	--	--	267.0			
	850					MB	--	--	--	--	--	--	--	--	--	267.1			
	C-34 B-16 750	4.0	100/100	S2-S3	W1	J	30	D1	A2	No	No	NH	4	E	B	267.4			
		4.0				MB	--	--	--	--	--	--	--	--	--	268.9			
-160.0		4.0																	
270																			Replaced core bit Light pink return fluid
		2.0																	
		1.0				MB	--	--	--	--	--	--	--	--	--	271.7			
						MB	--	--	--	--	--	--	--	--	--	272.0			
		1.0																	
		1.0				MB	--	--	--	--	--	--	--	--	--	273.3			
		2.0				MB	--	--	--	--	--	--	--	--	--	274.3			
-165.0																			
275	C-35 B-17 850	1.0	100/98	S2-S3	W1	J	30	D1	A3	No	No	NH	4	C	B	275.2			
						J	10	D1	A3	No	No	NH	5	B	B	275.3			
		1.0				MB	--	--	--	--	--	--	--	--	--	276.3			
		2.0				MB	--	--	--	--	--	--	--	--	--	277.6			
		2.0				MB	--	--	--	--	--	--	--	--	--	278.7			
						J	50	D2	A3	Mn	Su	NH	7	B	B	278.8			
		2.0				MB	--	--	--	--	--	--	--	--	--	279.0			
-170.0																			
280						MB	--	--	--	--	--	--	--	--	--	279.7			
		1.0																	
	C-36 B-17, 18 850	1.0	100/97	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	281.3			
		2.0				MB	--	--	--	--	--	--	--	--	--	282.2			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

COORDINATES: N: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
-173.8		2.0				J	20	D2	A3	Ca, Fe, Mn	Pa	NH	6	B	B	283.2		255.2 - 325.2 ft: CONGLOMERATE, dark greenish gray to greenish gray, fine to coarse sand matrix with pale red purple, grayish red purple, medium gray and light olive gray subrounded granule to cobble clasts up to 4 in, hard to very hard, strong to very strong, fresh to slightly weathered, clast supported, clasts consist of quartzite, granite, felsite, porphyritic volcanics, and mafic rocks, massive to locally bedded, bedding dipping 30° to 40°, foliation defined by elongate clasts [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)*	
						J	50	D3	A4	Fe, Mn, Si	Fi	NH	4	E	C	283.3			
		2.0				MB	--	--	--	--	--	--	--	--	--	284.4			
-175.0																			
285						MB	--	--	--	--	--	--	--	--	--	285.0			
		1.0																	
						MB	--	--	--	--	--	--	--	--	--	285.8			
	C-36 B-17, 18	1.0	100/97	S2-S3	W1														
	850	1.0				MB	--	--	--	--	--	--	--	--	--	287.4			
		2.0																	
		2.0				MB	--	--	--	--	--	--	--	--	--	289.0			
-180.0																			
290																			
		1.0																	
		1.0				MB	--	--	--	--	--	--	--	--	--	291.6			
		2.0				MB	--	--	--	--	--	--	--	--	--	292.8			
		2.0																	
		2.0																293.8 - 294.8 ft: Matrix supported	
-185.0	C-37 B-18																		
295			100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	294.8			
	850	1.0																	
		1.0				MB	--	--	--	--	--	--	--	--	--	296.6			
						S	30	D1	A2	Si	Su	NH	2	G	B	296.8			
		1.0				MB	--	--	--	--	--	--	--	--	--	297.4			
		2.0																	
		2.0				S	60	D2	A2	Ca, Ch, Ep	Fi	NH	3	G	C	299.0			4 gas reading: H2S = 0 PPM; CO = 0 PPM; O2 = 20.9%; LEL = 0%
						MB	--	--	--	--	--	--	--	--	--	299.4			
-190.0																			
300																			
		1.0																	
	C-38 B-19	1.0	100/100	S2-S3	W1														
	850																		
		2.0				MB	--	--	--	--	--	--	--	--	--	302.4			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

COORDINATES: **N**: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. / Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
-193.8		2.0																255.2 - 325.2 ft: CONGLOMERATE, dark greenish gray to greenish gray, fine to coarse sand matrix with pale red purple, grayish red purple, medium gray and light olive gray subrounded granule to cobble clasts up to 4 in, hard to very hard, strong to very strong, fresh to slightly weathered, clast supported, clasts consist of quartzite, granite, felsite, porphyritic volcanics, and mafic rocks, massive to locally bedded, bedding dipping 30° to 40°, foliation defined by elongate clasts [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)*	
-195.0		2.0				MB	--	--	--	--	--	--	--	--	--	304.6			
305		1.0				MB	--	--	--	--	--	--	--	--	--	305.4			
	C-38 B-19 850	1.0	100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	306.5			
		2.0																	
		2.0				MB	--	--	--	--	--	--	--	--	--	307.9			
		2.0				MB	--	--	--	--	--	--	--	--	--	309.2			
-200.0																			
310		2.0				MB	--	--	--	--	--	--	--	--	--	310.4			
		2.0		S2-S3	W1														
		2.0				MB	--	--	--	--	--	--	--	--	--	312.5			
		2.0		S3	W2														
-205.0	C-39 B-19, 20 850	2.0	100/100			MB	--	--	--	--	--	--	--	--	--	314.8			
315		1.0				J	5	D2	A2	Ca, Ch	Su	NH	4	E	B	314.9		315.4 - 320.7 ft: Clasts up to ~6 in	Driller indicates partial water loss
		1.0				MB	--	--	--	--	--	--	--	--	--	316.1			
		2.0		S2-S3	W1-W2	MB	--	--	--	--	--	--	--	--	--	317.0			
		2.0																	
		2.0				MB	--	--	--	--	--	--	--	--	--	319.1			
-210.0																			
320		2.0		S2-S3	W1-W2														
	C-40 B-20 850 700	2.0	100/100	S2-S3	W2	MB	--	--	--	--	--	--	--	--	--	321.4			
		2.0				J	30	D2	A2	Ca, Ch	Su	MH	3	E	B	322.7			
						MB	--	--	--	--	--	--	--	--	--	322.9			

REVIEWED BY: M. Wong/D. Van Roosendaal **REV. DATE:** 02/28/2025 **REV. NO.:** R0-FINAL **BORING NO.:** B-GSS-410A (PZ)

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

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-213.8		2.0																	
	C-40 B-20 850	2.0	100/100	S2-S3	W2	MB	--	--	--	--	--	--	--	--	--	324.0			
-215.0 325																			
		3.0				MB	--	--	--	--	--	--	--	--	--	325.4		325.2 - 415.4 ft: CONGLOMERATE, dark greenish gray to medium gray, fine to coarse sand matrix with pale red purple, dark gray, pale reddish brown and greenish gray subangular to subrounded granule to cobble clasts up to 4 in, very hard to hard, very strong to strong, slightly weathered to fresh, clast supported, clasts consist of quartzite, granite, felsite, porphyritic volcanics and mafic rocks, bedding generally dipping 20° to 30°, massive to locally bedded, local foliation defined by elongate clasts, trace calcite veins up to 0.1 in thick dipping 30° to 50° [ROXBURY CONGLOMERATE, BROOKLINE MEMBER]	Driller indicated complete water loss
		3.0				MB	--	--	--	--	--	--	--	--	--	326.4			
	C-41 B-20 700	3.0	100/85	S2-S3	W2	J	30	D2	A4	Ca, Ch	Pa	PH	4	B	C	327.0			
						J	40	D3	A5	Ca, Ch, Ep	Fi	NH	5	B	C	327.2			
						J	30	D3	A4	Ca, Ch	Pa	NH	4	B	C	327.4			
						MB	--	--	--	--	--	--	--	--	--	327.5			
						J	40	D3	A3	Ca, Si	Pa	NH	5	B	C	327.6			
		3.0				MB	--	--	--	--	--	--	--	--	--	328.8			
						J	60	D2	A3	Ca, Fe, Mn	Pa	NH	5	B	B	328.9			4 gas reading: H2S = 0 PPM; CO = 0 PPM; O2 = 20.9%; LEL = 0%
		3.0				J	40	D2	A3	Ca, Fe	Pa	NH	5	B	B	329.0			
-220.0 330						J	60	D2	A3	Ca, Fe	Pa	PH	5	B	B	329.0			
		3.0																	
		3.0				MB	--	--	--	--	--	--	--	--	--	331.7			
	500 C-42 B-21 650	3.0	100/100	S2-S3	W2														
		3.0				MB	--	--	--	--	--	--	--	--	--	333.6			
		3.0																	
-225.0 335																			
		3.0				J	50	D2	A2	Ca, Ep	Pa	PH	5	B	B	335.2			
	300 C-43 B-21 500	4.0	100/83	S2-S3	W1	J	30	D2	A3	Ca	Pa	PH	5	E	B	335.8			
						J	50	D2	A2	Ca, Ep	Pa	NH	4	B	C	336.5			
						J	45	D4	A4	Ca, Ep, Fe	Pa	NH	5	B	C	336.8			
						J	40	D1	A3	No	No	NH	5	B	B	336.9			
						S	30	D2	A3	Ep	Su	NH	4	D	B	337.0			
		3.0				MB	--	--	--	--	--	--	--	--	--	337.3			
						MB	--	--	--	--	--	--	--	--	--	337.4			7NT replaced core bit 7NT continued drilling this hole with CME-550x drill rig *Including hematite
						J	45	D2	A3	Fe*	Pa	NH	5	B	B	338.0			
	C-44 B-21 500	NR	100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	338.3			
		NR				MB	--	--	--	--	--	--	--	--	--	339.1			
-230.0 340																			
		NR				MB	--	--	--	--	--	--	--	--	--	340.3			
	C-45 B-21 800	2.0	100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	341.5			
		2.0																	

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COORDINATES: **N**: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. / Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
-233.8		2.0				MB	--	--	--	--	--	--	--	--	--	343.2		325.2 - 415.4 ft: CONGLOMERATE, dark greenish gray to medium gray, fine to coarse sand matrix with pale red purple, dark gray, pale reddish brown and greenish gray subangular to subrounded granule to cobble clasts up to 4 in, very hard to hard, very strong to strong, slightly weathered to fresh, clast supported, clasts consist of quartzite, granite, felsite, porphyritic volcanics and mafic rocks, bedding generally dipping 20° to 30°, massive to locally bedded, local foliation defined by elongate clasts, trace calcite veins up to 0.1 in thick dipping 30° to 50° [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)*	
	C-45 B-21 800	2.0	100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	344.3			
-235.0																			
345		2.0																	
		3.0				MB	--	--	--	--	--	--	--	--	--	346.0			
	C-46 B-22 550	3.0	100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	347.2			
		3.0				MB	--	--	--	--	--	--	--	--	--	348.5			
		3.0																	
-240.0						MB	--	--	--	--	--	--	--	--	--	349.5			
350		2.0																	
		2.0				MB	--	--	--	--	--	--	--	--	--	350.8			
		2.0				MB	--	--	--	--	--	--	--	--	--	351.6			
		2.0				MB	--	--	--	--	--	--	--	--	--	352.6			
		2.0																	
		2.0																	
-245.0	C-47 B-22 550					MB	--	--	--	--	--	--	--	--	--	354.5			
355		2.0	100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	355.3			
	600	3.0				MB	--	--	--	--	--	--	--	--	--	355.7			
						MB	--	--	--	--	--	--	--	--	--	356.4			
		2.0																	
		2.0				MB	--	--	--	--	--	--	--	--	--	358.1			
		2.0																	
-250.0		2.0				MB	--	--	--	--	--	--	--	--	--	359.7			
360																		360.2 - 363.7 ft: Matrix supported with occasional granule and pebble clasts up to 2.5 in	
		2.0																	
	C-48 B-23 600	2.0	100/100	S2-S3	W1														
		2.0				MB	--	--	--	--	--	--	--	--	--	363.0			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

COORDINATES: **N**: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. / Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
-253.8		2.0																325.2 - 415.4 ft: CONGLOMERATE, dark greenish gray to medium gray, fine to coarse sand matrix with pale red purple, dark gray, pale reddish brown and greenish gray subangular to subrounded granule to cobble clasts up to 4 in, very hard to hard, very strong to strong, slightly weathered to fresh, clast supported, clasts consist of quartzite, granite, felsite, porphyritic volcanics and mafic rocks, bedding generally dipping 20° to 30°, massive to locally bedded, local foliation defined by elongate clasts, trace calcite veins up to 0.1 in thick dipping 30° to 50° [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)*	
		2.0				MB	--	--	--	--	--	--	--	--	--	364.5			
-255.0																			
365		2.0				MB	--	--	--	--	--	--	--	--	--	365.4			
						MB	--	--	--	--	--	--	--	--	--	365.7			
						MB	--	--	--	--	--	--	--	--	--	366.0			
	C-48 B-23 600	2.0	100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	366.4			
		2.0																	
		2.0				MB	--	--	--	--	--	--	--	--	--	368.2			
		2.0																	
-260.0																			
370						MB	--	--	--	--	--	--	--	--	--	369.9			
		2.0																	
		2.0				MB	--	--	--	--	--	--	--	--	--	371.6			
		2.0																	
						MB	--	--	--	--	--	--	--	--	--	373.0			
		2.0																	
						MB	--	--	--	--	--	--	--	--	--	373.9			
		2.0				MB	--	--	--	--	--	--	--	--	--	374.4			
-265.0	C-49 B-24 600																		
375			100/100	S2-S3	W1														
		2.0				MB	--	--	--	--	--	--	--	--	--	375.5			
		2.0																	
		2.0				MB	--	--	--	--	--	--	--	--	--	377.1			
		2.0				MB	--	--	--	--	--	--	--	--	--	377.9			
		2.0																	
		2.0				J	30	D2	A2	Ch, Ep	Su	NH	4	B	C	379.0			
-270.0																			
380						MB	--	--	--	--	--	--	--	--	--	379.8			
		2.0																	
						MB	--	--	--	--	--	--	--	--	--	381.1			
	C-50 B-24 600	2.0	100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	381.9			
		2.0																	
						MB	--	--	--	--	--	--	--	--	--	382.6			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

COORDINATES: **N**: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
-273.8		2.0				MB	--	--	--	--	--	--	--	--	--	383.4		325.2 - 415.4 ft: CONGLOMERATE, dark greenish gray to medium gray, fine to coarse sand matrix with pale red purple, dark gray, pale reddish brown and greenish gray subangular to subrounded granule to cobble clasts up to 4 in, very hard to hard, very strong to strong, slightly weathered to fresh, clast supported, clasts consist of quartzite, granite, felsite, porphyritic volcanics and mafic rocks, bedding generally dipping 20° to 30°, massive to locally bedded, local foliation defined by elongate clasts, trace calcite veins up to 0.1 in thick dipping 30° to 50° [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)*	
						MB	--	--	--	--	--	--	--	--	--	383.7			
		2.0																	
-275.0						MB	--	--	--	--	--	--	--	--	--	384.7			
385																			
		2.0				MB	--	--	--	--	--	--	--	--	--	385.3			
	C-50 B-24 600		100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	385.8			
		2.0																	
		2.0				MB	--	--	--	--	--	--	--	--	--	387.2			
						MB	--	--	--	--	--	--	--	--	--	387.8			
						MB	--	--	--	--	--	--	--	--	--	388.1			
						MB	--	--	--	--	--	--	--	--	--	388.4			
	C-51 B-24 600	2.0	100/100	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	388.5			
-280.0																			
390		2.0				MB	--	--	--	--	--	--	--	--	--	389.9			Greenish pink fluid return
		2.0																	
		2.0				MB	--	--	--	--	--	--	--	--	--	391.6			
		2.0				MB	--	--	--	--	--	--	--	--	--	392.8			
		2.0				MB	--	--	--	--	--	--	--	--	--	393.6			
-285.0						MB	--	--	--	--	--	--	--	--	--	394.6			
395	C-52 B-25 600	2.0	100/97	S2-S3	W1	MB	--	--	--	--	--	--	--	--	--	395.2			
		2.0				MB	--	--	--	--	--	--	--	--	--	395.8			
						J	50	D4	A3	Fe*	Pa	NH	5	E	B	395.9			*Hematite
						J	30	D4	A5	No	No	NH	6	E	B	396.0			
		2.0				MB	--	--	--	--	--	--	--	--	--	396.4			
		2.0				MB	--	--	--	--	--	--	--	--	--	397.4			
						MB	--	--	--	--	--	--	--	--	--	398.1			
		3.0				MB	--	--	--	--	--	--	--	--	--	398.5			
						MB	--	--	--	--	--	--	--	--	--	399.2			4 gas reading: H2S = 0 PPM; CO = 0 PPM; O2 = 20.9%; LEL = 0%
-290.0		3.0				MB	--	--	--	--	--	--	--	--	--	399.8			
400																			Tagged bottom of hole at 400.4 ft
		2.0				MB	--	--	--	--	--	--	--	--	--	400.9			
	C-53 B-25, 26 600	2.0	100/100	S2-S3	W1-W2	MB	--	--	--	--	--	--	--	--	--	401.7			
						J	30	D2	A4	No	No	NH	5	B	B	402.4			
		2.0				MB	--	--	--	--	--	--	--	--	--	402.9			

MWRA CONTRACT NUMBER: 7557 **LOGGED BY:** N. Cholewinski (GEI Consultants, Inc.)

MWRA CONTRACT NAME: MWRA Geotechnical Support Services **DRILLING CONTRACTOR:** 7NT Engineering

START DATE: 5/29/2024 **END DATE:** 7/25/2024 **TOTAL DEPTH/PLUNGE:** 415.4 ft. / -90° (-90° is vertical downward)

ADDRESS: I95 Cloverleaf NE, Needham, MA **GROUND SURFACE ELEVATION:** 109.6 ft. [Boston City Base]

COORDINATES: **N**: 2935882.94 **E:** 730802.04 [NAD83] **TOP OF BEDROCK ELEVATION:** 77.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Run/Box No. Drill Press (psi)	Drill Rate (min/ft)	Recovery (%)/ RQD (%)	Strength	Weathering	Discontinuity Data: Type	Angle (°)	Weath.	Aperture	Infil. Type	Infil. Amount	Deg. of Heal.	JRC	Jr	Ja	Depth (ft)	Graphic Log	Material Description	Remarks and Other Tests
-293.8		2.0				MB	--	--	--	--	--	--	--	--	--	403.3		325.2 - 415.4 ft: CONGLOMERATE, dark greenish gray to medium gray, fine to coarse sand matrix with pale red purple, dark gray, pale reddish brown and greenish gray subangular to subrounded granule to cobble clasts up to 4 in, very hard to hard, very strong to strong, slightly weathered to fresh, clast supported, clasts consist of quartzite, granite, felsite, porphyritic volcanics and mafic rocks, bedding generally dipping 20° to 30°, massive to locally bedded, local foliation defined by elongate clasts, trace calcite veins up to 0.1 in thick dipping 30° to 50° [ROXBURY CONGLOMERATE, BROOKLINE MEMBER] *(continued from previous)*	
						MB	--	--	--	--	--	--	--	--	--	403.7			
		2.0				MB	--	--	--	--	--	--	--	--	--	404.2			
-295.0						MB	--	--	--	--	--	--	--	--	--	404.5			
405						MB	--	--	--	--	--	--	--	--	--	404.9			
		2.0				MB	--	--	--	--	--	--	--	--	--	405.3			
						MB	--	--	--	--	--	--	--	--	--	405.6			
						J	30	D1	A3	No	No	NH	5	B	B	405.7			
	C-53 B-25, 26	2.0				J	65	D2	A1	Qtz	H	TH	--	--	A	406.2			
			100/100	S2-S3	W1-W2	J	35	D1	A3	No	No	NH	4	E	B	406.9			
	600	2.0				MB	--	--	--	--	--	--	--	--	--	407.4			
						MB	--	--	--	--	--	--	--	--	--	407.6			
						J	65	D1	A2	No	No	NH	5	B	B	407.9			
		2.0				MB	--	--	--	--	--	--	--	--	--	408.1			
						MB	--	--	--	--	--	--	--	--	--	408.6			
						MB	--	--	--	--	--	--	--	--	--	408.8			
		2.0				MB	--	--	--	--	--	--	--	--	--	409.2			
-300.0																			
410						J	25	D1	A6	No	No	NH	6	B	B	409.8			
						MB	--	--	--	--	--	--	--	--	--	410.2			
		4.0				J	40	D1	A4	No	No	NH	5	B	B	410.8			
						MB	--	--	--	--	--	--	--	--	--	411.4			
		4.0				MB	--	--	--	--	--	--	--	--	--	411.9			
						MB	--	--	--	--	--	--	--	--	--	412.2			
	C-54 B-26	4.0	100/100	S2-S3	W1-W2	MB	--	--	--	--	--	--	--	--	--	412.6			
						MB	--	--	--	--	--	--	--	--	--	413.0			
	275					J	35	D2	A3	Qtz	Su	NH	5	B	B	413.4			
		4.0				MB	--	--	--	--	--	--	--	--	--	413.6			
						MB	--	--	--	--	--	--	--	--	--	414.0			
						MB	--	--	--	--	--	--	--	--	--	414.3			
-305.0		4.0				MB	--	--	--	--	--	--	--	--	--	414.6			
415						MB	--	--	--	--	--	--	--	--	--	414.8			
						MB	--	--	--	--	--	--	--	--	--	415.1			
																		Bottom of boring at 415.4 ft below ground surface (El. -305.8 ft BCB). Borehole grouted to ground surface with cementitious bentonite grout. Two vibrating wire piezometers were installed. See vibrating wire installation logs. Borehole geophysical testing performed 41.0 to 413.5 ft.	Tagged bottom of hole at 415.4 ft
-310.0																			
420																			

METROPOLITAN WATER TUNNEL PROGRAM

SOIL BORING LOG

BORING NUMBER: B-GSS-411 (MW)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 5/29/2024 **END DATE:** 6/27/2024
ADDRESS: Highland Ave Int NE Cloverleaf, Needham, MA
COORDINATES: N: 2935928.43 **E:** 730931.82 [NAD83]
GROUND SURFACE ELEVATION: 111.5 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 40.0 ft. / -90° (-90° is vertical downward)
LOGGED BY: R. Oulal (GEI Consultants, Inc.)

DRILLING CONTRACTOR: 7NT Engineering
DRILLER/DRILL RIG: D. Shope / CME-75 Truck
DRILLING METHOD/FLUID: HSA / None
BOREHOLE DIAMETER/CASING SIZE: 8 in. / 4.25 in.
SPOON SIZE: 2 in.
HAMMER TYPE/WEIGHT/DROP: Auto / 140 lb / 30 in.
BOREHOLE BACKFILL: Monitoring well installed.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
111.5 / 0												Topsoil at ground surface 0.0 - 6.0 ft: Unknown USCS, unknown moisture, unknown density, unknown color, unknown proportion coarse grained, unknown proportion fine grained [FILL]	Vacuum excavation performed from 0 to 6.0 ft. Encountered a vacuum excavation refusal on a cobble at ~3.0 ft. Offset the boring ~2.0 ft and vacuum excavated to ~6.0 ft
110.0 / 5													
105.0	SS	1	54/24	14, 20, 24, 20	44				1.1		FILL	6.0 - 8.0 ft: WELL GRADED GRAVEL WITH SAND (GW), dry, dense, brown to light brown, ~70% fine to coarse, subangular to subrounded gravel, ~30% fine to coarse sand [FILL]	
	SS	2	75/24	18, 18, 13, 13	31				2.5			8.0 - 10.0 ft: WELL GRADED GRAVEL WITH SAND (GW), dry, dense, brown to light brown, ~70% fine to coarse, subangular to subrounded gravel, ~30% fine to coarse sand [FILL]	
▽ 10	SS	3	54/24	15, 20, 18, 15	38	10.4 / --			0.3			10.0 - 12.0 ft: WELL GRADED GRAVEL WITH SAND (GW), wet, dense, brown, ~60% fine to coarse, subangular to subrounded gravel, ~35% fine to coarse sand, mostly coarse, ~5% non-plastic fines [FILL]	
100.0	SS	4	54/24	20, 18, 20, 18	38				1			12.0 - 14.0 ft: WELL GRADED GRAVEL WITH SAND (GW), wet, dense, grayish brown, ~70% fine to coarse, angular to subrounded gravel, ~30% fine to coarse sand, trace non-plastic fines [FILL] 14.0 - 16.0 ft: WELL GRADED SAND WITH GRAVEL (SW), wet, dense, gray, ~55% fine to coarse sand, ~45% fine to coarse, subangular gravel, trace non-plastic fines [FILL]	
	SS	5	71/24	15, 25	39				0.3				

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽	06/26/2024	0800	10.3	40.0	40.0
▼					
▼					

GENERAL NOTES

Log header start and end dates respectively refer to vacuum excavation and completion of backfilling. Drilling took place on 06/25/2024. Vacuum excavation performed approximately four weeks before the drilling. The boring site was fully demobilized 06/28/2024.
NR: Not recorded.

REVIEWED BY: M. Wong/D. Van Roosendaal | **REV. DATE:** 02/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-411 (MW)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 5/29/2024 **END DATE:** 6/27/2024
ADDRESS: Highland Ave Int NE Cloverleaf, Needham, MA
COORDINATES: **N:** 2935928.43 **E:** 730931.82 [NAD83]

LOGGED BY: R. Oulal (GEI Consultants, Inc.)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 40.0 ft. / -90° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 111.5 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
15	SS	5	71/24	14, 7	39	10.4 / --			0.3		FILL		
95.0	SS	6	96/24	1, 4, 3, 3	7	19.1 / --		9.7	1.6		GLACIOFLUVIAL DEPOSITS	16.0 - 18.0 ft: WELL GRADED SAND WITH SILT (SW-SM), wet, loose, light olive brown and yellowish brown, 77.8% fine to coarse sand, 12.5% fine subrounded gravel, 9.7% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
	SS	7	71/24	2, 1, 1, 2	2				0			18.0 - 20.0 ft: WELL GRADED SAND (SW), wet, very loose, light olive brown and yellowish brown, ~90% fine to coarse sand, ~5% fine gravel, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
20	SS	8	100/24	3, 2, 2, 6	4				0.2			20.0 - 22.0 ft: WELL GRADED SAND (SW), wet, very loose, yellowish brown, ~95% fine to coarse sand, ~5% fine, subangular gravel, trace non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
90.0	SS	9	79/24	5, 4, 5, 4	9				0			22.0 - 24.0 ft: POORLY GRADED SAND (SP), wet, loose, yellowish brown and grayish brown, ~90% fine to medium sand, ~5% fine to coarse, subrounded gravel, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
25	SS	10	88/24	2, 5, 2, 14	7				0			24.0 - 26.0 ft: WELL GRADED SAND (SW), wet, loose, olive brown and light olive brown, ~95% fine to coarse sand, ~5% fine, subrounded gravel [GLACIOFLUVIAL DEPOSITS]	
85.0	SS	11	100/24	10, 16, 13, 22	29	18.1 / --		17.6	0			26.0 - 27.3 ft: SILTY SAND (SM), wet, medium dense, light olive brown, 82.1% fine to medium sand, 17.6% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
	SS	12	63/24	22, 10, 5, 5	15				0			27.3 - 28.0 ft: WELL GRADED SAND WITH GRAVEL (SW), wet, medium dense, light olive brown, ~75% fine to coarse sand, ~25% fine to coarse, subrounded gravel, trace non-plastic fines [GLACIOFLUVIAL DEPOSITS] 28.0 - 30.0 ft: WELL GRADED SAND WITH GRAVEL (SW), similar to 27.3-28.0 ft [GLACIOFLUVIAL DEPOSITS]	
30	SS	13	100/24	34, 12, 6, 6	18				0			30.0 - 31.6 ft: WELL GRADED SAND WITH GRAVEL (SW), wet, medium dense, light olive brown, ~70% fine to coarse sand, ~30% fine to coarse, subrounded gravel [GLACIOFLUVIAL DEPOSITS]	
80.0	SS	14	63/24	43, 13, 6, 6	19	15.9 / --			0			31.6 - 32.0 ft: WELL GRADED SAND (SW), wet, medium dense, light olive brown, ~100% fine to coarse sand, trace coarse sand [GLACIOFLUVIAL DEPOSITS] 32.0 - 34.0 ft: WELL GRADED SAND (SW), wet, medium dense, brown, ~90% fine to coarse sand, ~10% fine, subrounded gravel, trace non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
	SS	15	83/24	16, 7	20				0.1			34.0 - 36.0 ft: WELL GRADED SAND (SW), wet, medium dense, light olive brown with dark reddish brown staining, ~100% fine to coarse subrounded sand [GLACIOFLUVIAL DEPOSITS]	

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 5/29/2024 **END DATE:** 6/27/2024
ADDRESS: Highland Ave Int NE Cloverleaf, Needham, MA
COORDINATES: **N:** 2935928.43 **E:** 730931.82 [NAD83]

LOGGED BY: R. Oulal (GEI Consultants, Inc.)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 40.0 ft. / -90° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 111.5 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
35	SS	15	83/24	13, 6	20				0.1		GLACIOFLUVIAL DEPOSITS		
75.0	SS	16	54/24	12, 8, 12, 13	20				0			36.0 - 38.0 ft: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), wet, medium dense, brown, ~75% fine to coarse sand, ~15% fine, subrounded gravel, ~10% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
	SS	17	58/24	37, 11, 13, 19	24	11.3 --		16.1	0			38.0 - 40.0 ft: SILTY SAND WITH GRAVEL (SM), wet, medium dense, light olive brown, 47.1% fine to coarse sand, 36.8% fine to coarse subangular to rounded gravel, 16.1% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
40												Bottom of boring at 40 ft below ground surface (El. 71.5 ft BCB). 2-in PVC monitoring well was installed. See monitoring well installation log.	
70.0													
45													
65.0													
50													
60.0													

SOIL BORING LOG - 2/27/25 21:25 - MWTP - CONTRACT NO. 7557

REVIEWED BY: M. Wong/D. Van Roosendaal | **REV. DATE:** 02/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-411 (MW)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 5/29/2024 **END DATE:** 7/16/2024
ADDRESS: Highland Ave Ramp/Brooks Road, Needham, MA
COORDINATES: N: 2935999.78 **E:** 731070.03 [NAD83]
GROUND SURFACE ELEVATION: 111.8 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 40.0 ft. / -90° (-90° is vertical downward)
LOGGED BY: M. Guay (GEI Consultants, Inc.)

DRILLING CONTRACTOR: 7NT Engineering
DRILLER/DRILL RIG: D. Shope/J. Gilbert / CME 550X
DRILLING METHOD/FLUID: HSA / None
BOREHOLE DIAMETER/CASING SIZE: 8 in. / 4.25 in.
SPOON SIZE: 2 in.
HAMMER TYPE/WEIGHT/DROP: Auto / 140 lb / 30 in.
BOREHOLE BACKFILL: Monitoring well installed.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
111.8 / 0											FILL	Topsoil at ground surface 0.0 - 8.0 ft: Unknown USCS, unknown moisture, unknown density, unknown color, unknown proportion coarse grained, unknown proportion fine grained [FILL]	Vacuum excavation performed from 0 to 6.4 ft. Encountered fiber optic lines at ~3 ft. Offset the boring 5 ft and vacuum excavated to 6.4 ft.
110.0 / 5													
105.0 / 10	SS	1	75/24	8, 11, 10, 9	21				NM			8.0 - 10.0 ft: WELL GRADED SAND WITH GRAVEL (SW), moist, medium dense, yellowish brown, ~60% fine to coarse sand, ~35% fine to coarse, subangular gravel up to 1 in, ~5% non-plastic fines [FILL]	
	SS	2	63/24	4, 12, 13, 13	25				NM			10.0 - 11.5 ft: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), moist, medium dense, yellowish brown, ~55% fine to coarse sand, ~35% fine to coarse, subangular gravel up to 1.5 in, ~10% non-plastic fines [FILL]	
100.0	SS	3	50/24	7, 10, 5, 1	15				NM			11.5 - 12.0 ft: WELL GRADED GRAVEL WITH SAND (GW), wet, medium dense, grayish brown, ~60% fine to coarse, subrounded to subangular gravel up to 1.5 in, ~35% fine to coarse sand, ~5% non-plastic fines [FILL] 12.0 - 14.0 ft: WELL GRADED GRAVEL WITH SAND (GW), similar to above [FILL]	
	SS	4	75/24	2, 2	5				NM			14.0 - 16.0 ft: WELL GRADED GRAVEL WITH SAND (GW), wet, loose, grayish brown, ~60% fine to coarse, rounded to subangular gravel up to 2 in, ~35% fine to coarse sand, ~5% non-plastic fines, slight organic-like odor [FILL]	

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽	7/16/2024	1545	18.0	38.0	40.0
▼					
▼					

GENERAL NOTES

Log header start and end dates respectively refer to vacuum excavation and completion of backfilling. Drilling took place on 07/16/2024. Vacuum excavation performed approximately seven weeks before the drilling. The boring site was fully demobilized 07/19/2024.
NR: Not measured.

REVIEWED BY: E. Fazlic/D. Van Roosendaal | **REV. DATE:** 02/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-412 (MW)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 5/29/2024 **END DATE:** 7/16/2024
ADDRESS: Highland Ave Ramp/Brooks Road, Needham, MA
COORDINATES: **N:** 2935999.78 **E:** 731070.03 [NAD83]

LOGGED BY: M. Guay (GEI Consultants, Inc.)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 40.0 ft. / -90° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 111.8 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
15	SS	4	75/24	3 3	5				NM		FILL	16.0 - 18.0 ft: WELL GRADED SAND WITH GRAVEL (SW), wet, loose, grayish brown, ~55% fine to coarse sand, ~40% fine to coarse, subrounded to subangular gravel up to 1.5 in, ~5% non-plastic fines [FILL]	
95.0	SS	5	58/24	2 3 5 8	8				NM			18.0 - 20.0 ft: WELL GRADED SAND WITH GRAVEL (SW), wet, loose, grayish brown, 69.6% fine to coarse sand, 25.7% fine to coarse subrounded to subangular gravel up to 1.5 in, 4.7% non-plastic fines [FILL]	
▽	SS	6	100/24	4 5 5 4	10	12.6 --		4.7	NM			20.0 - 22.0 ft: WELL GRADED SAND WITH GRAVEL (SW), wet, loose, grayish brown, ~55% fine to coarse sand, ~40% fine to coarse, subrounded to subangular gravel up to 1.5 in, ~5% non-plastic fines [FILL]	
20	SS	7	83/24	4 4 6 3	10				NM			22.0 - 24.0 ft: WELL GRADED SAND WITH GRAVEL (SW), wet, very loose, grayish brown, ~70% fine to coarse sand, ~25% fine to coarse, angular to subangular gravel up to 1.5 in, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
90.0	SS	8	88/24	3 2 2 3	4				NM		GLACIOFLUVIAL DEPOSITS	24.0 - 26.0 ft: WELL GRADED SAND WITH GRAVEL (SW), wet, loose, brownish gray, ~80% fine to coarse sand, ~15% fine to coarse, subangular gravel up to 1.5 in, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
25	SS	9	88/24	3 3 3 2	6				NM			26.0 - 28.0 ft: WELL GRADED SAND (SW), wet, loose, brownish gray, ~85% fine to coarse sand, ~10% fine to coarse, subangular gravel up to 1 in, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
85.0	SS	10	100/24	2 2 4 4	6				NM			28.0 - 30.0 ft: WELL GRADED GRAVEL WITH SAND (GW), wet, loose, gray, ~70% fine to coarse, subangular gravel up to 1.5 in, ~25% fine to coarse sand, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
	SS	11	58/24	4 4 4 4	8				NM			30.0 - 32.0 ft: WELL GRADED SAND WITH GRAVEL (SW), wet, loose, brownish gray, ~75% fine to coarse sand, ~20% fine to coarse, subangular gravel up to 1 in, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
30	SS	12	100/24	4 4 3 3	7				NM			32.0 - 33.0 ft: WELL GRADED SAND (SW), wet, very loose, grayish brown, 87.7% fine to coarse sand, 6.2% non-plastic fines, 6.1% fine subrounded to subangular gravel up to 0.75 in [GLACIOFLUVIAL DEPOSITS]	
80.0	SS	13	100/24	2 2 1 1	3	13.0 --		6.2	NM			33.0 - 34.0 ft: SILTY SAND (SM), wet, very loose, brownish gray, ~65% fine to coarse sand, ~35% non-plastic to low plasticity fines, rapid dilatancy, medium toughness [GLACIOFLUVIAL DEPOSITS]	
	SS	14	88/24	3 3	17				NM				Top 9 in of SS-14 recovery was wash material

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 5/29/2024 **END DATE:** 7/16/2024
ADDRESS: Highland Ave Ramp/Brooks Road, Needham, MA
COORDINATES: **N:** 2935999.78 **E:** 731070.03 [NAD83]

LOGGED BY: M. Guay (GEI Consultants, Inc.)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 40.0 ft. / -90° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 111.8 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
35	SS	14	88/24	14 10	17				NM			34.0 - 36.0 ft: SILTY SAND WITH GRAVEL (SM), moist, medium dense, yellowish brown, ~50% fine to coarse sand, ~35% subangular gravel up to 1.25 in, ~15% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
75.0	SS	15	33/24	42 21 18 15	39	0.6 --			NM		GLACIAL TILL	36.0 - 38.0 ft: SILTY GRAVEL WITH SAND (GM), moist, dense, grayish brown, ~55% fine to coarse, subrounded to subangular gravel up to 1.5 in, ~30% fine to coarse sand, ~15% non-plastic fines, some gravel friable [GLACIAL TILL]	
	SS	16	83/24	32 51 62 68	113	8.3 --		23.2	NM			38.0 - 40.0 ft: SILTY SAND WITH GRAVEL (SM), moist, very dense, brownish gray and dark gray, 58.9% fine to coarse sand, 23.2% non-plastic fines, 17.9% fine to coarse subangular gravel up to 1.5 in, some gravel friable and disintegrated to sand [GLACIAL TILL]	
40												Bottom of boring at 40.0 ft below ground surface (El. 71.8 ft BCB). 2-inch PVC monitoring well was installed. See monitoring well installation log.	
70.0													
45													
65.0													
50													
60.0													

SOIL BORING LOG - 2/27/25 21:26 - MWTP - CONTRACT NO. 7557

REVIEWED BY: E. Fazlic/D. Van Roosendaal | **REV. DATE:** 02/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-412 (MW)

METROPOLITAN WATER TUNNEL PROGRAM

SOIL BORING LOG

BORING NUMBER: B-GSS-460

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/9/2024 **END DATE:** 12/13/2024
ADDRESS: 78 Fremont St, Needham, MA
COORDINATES: N: 2936975.71 **E:** 730851.17 [NAD83]
GROUND SURFACE ELEVATION: 101.1 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 34.0 ft. / -90° (-90° is vertical downward)
LOGGED BY: E. Winter (GEI Consultants, Inc.)

DRILLING CONTRACTOR: Northern Drill Service
DRILLER/DRILL RIG: T. Kennedy / Mobile Drill B-46
DRILLING METHOD/FLUID: DW / Water
BOREHOLE DIAMETER/CASING SIZE: 4.5 in. / 4 in.
SPOON SIZE: 2 in.
HAMMER TYPE/WEIGHT/DROP: Auto / 140 lb / 30 in.
BOREHOLE BACKFILL: Backfilled with cuttings and ~1/4 bag of gravel, patched with asphalt.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
101.1 / 0											FILL	0.0 - 0.3 ft: Asphalt	Vacuum excavation at initial boring location B-GSS-460-VAC (offset 2.9 ft east-northeast from B-GSS-460) advanced through ASPHALT 0-0.3 ft and SAND 0.3-5.5 ft before encountering hard obstruction at ~5.5 ft. Unable to penetrate obstruction. Boring restarted at new location B-GSS-460. Vacuum excavation was performed from 0.0 to 7.3 ft. Material descriptions based on vacuum excavation cuttings and grab sample AS-1 collected at ~2 ft.
												0.3 - 1.3 ft: SAND (unknown USCS), unknown moisture, unknown color, unknown gradation [FILL]	
100.0												1.3 - 1.5 ft: Asphalt	
	AS	1										1.5 - 5.0 ft: SILTY SAND (SM), grab sample material is moist, unknown density, olive brown, ~75% mostly fine to medium sand, ~15% non-plastic fines, ~10% fine subrounded gravel [FILL]	
5													
95.0												5.0 - 8.0 ft: COBBLES with little SAND (unknown USCS), unknown moisture, unknown density, unknown color, unknown gradation [FILL]	
	SS	1	46/24	15, 18, 17, 20	35			9.1	0.1		GLACIOFLUVIAL DEPOSITS	8.0 - 10.0 ft: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), moist, dense, brown, 63.5% fine to coarse sand, 27.4% fine to coarse angular gravel, 9.1% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	SS-1 description based on laboratory grain size test results
10													
	SS	2	38/24	15, 13, 13, 9	26				0.0			10.0 - 12.0 ft: WELL GRADED SAND WITH GRAVEL (SW), wet, medium dense, brown, ~80% fine to coarse sand, ~15% fine angular to subrounded gravel, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
90.0 ▽													
	SS	3	46/24	8, 8, 9, 11	17				NR			12.0 - 14.0 ft: WELL GRADED SAND WITH GRAVEL (SW), wet, medium dense, olive brown, ~70% fine to coarse sand, ~25% fine subrounded gravel, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
	SS	4	0/24	7, 14	28				NR			14.0 - 16.0 ft: No recovery 14.0 - 14.7 ft: (Redrive), WELL GRADED SAND WITH GRAVEL (SW), moist, medium dense, brown, ~65% fine to	Redrove SS-4 with 3-inch spoon

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽	12/13/2024	12:20	11.9	28.5	34.0
▼					
▼					

GENERAL NOTES

Log header start and end dates respectively refer to vacuum excavation and completion of backfill. Drilling took place on 12/13/2024.
Environmental samples were collected at 2.0 ft and 14-16 ft.
NR: Not recorded

REVIEWED BY: C. Sitar/D. Van Roosendaal | **REV. DATE:** 03/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-460

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/9/2024 **END DATE:** 12/13/2024
ADDRESS: 78 Fremont St, Needham, MA
COORDINATES: **N:** 2936975.71 **E:** 730851.17 [NAD83]

LOGGED BY: E. Winter (GEI Consultants, Inc.)
DRILLING CONTRACTOR: Northern Drill Service
TOTAL DEPTH/PLUNGE: 34.0 ft. / -90° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 101.1 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
15	SS	4	0/24	14 12	28				NR		GLACIOFLUVIAL DEPOSITS	coarse sand, ~30% fine to coarse subrounded gravel, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	Variably finer grained and/or varved soil below ~14.7 ft possibly associated with periods of lower velocity flow or ponding within GLACIOFLUVIAL regime
85.0	SS	5	21/24	10 8 7 15	15				0.0			14.7 - 16.0 ft: (Redrive), SILTY SAND (SM), moist, medium dense, grayish brown, ~60% mostly fine sand, ~40% non-plastic to low plasticity fines, varved with several <0.2 in-thick clayey layers subordinate to sand and silt [GLACIOFLUVIAL DEPOSITS]	
												16.0 - 18.0 ft: POORLY GRADED SAND (SP), moist, medium dense, light brown, ~90% mostly fine to medium sand, ~5% non-plastic fines, ~5% fine subrounded gravel, top 1 inch is oxidized [GLACIOFLUVIAL DEPOSITS]	
	SS	6	46/24	3 5 5 11	10			22	0.0			18.0 - 20.0 ft: SILTY SAND (SM), moist, loose, light brown, 76.7% mostly fine sand, 22.2% non-plastic fines, 1.1% fine angular gravel, stratified/varved [GLACIOFLUVIAL DEPOSITS]	SS-6 description based on laboratory grain size test results
20	SS	7	25/24	7 10 10 20	20				0.0			20.0 - 22.0 ft: SANDY LEAN CLAY (CL), moist, very stiff, light brown, ~70% low to medium plasticity fines, ~20% fine sand, ~10% fine subrounded to subangular gravel, slow dilatancy, high toughness, varved [GLACIOFLUVIAL DEPOSITS]	
80.0	SS	8	60/20	17 16 34 50/2"	50				0.0			22.0 - 22.7 ft: POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), moist, very dense, dark brown, ~60% mostly fine to medium sand, ~30% fine subrounded to angular gravel, ~10% non-plastic fines, stratified [GLACIOFLUVIAL DEPOSITS]	
	SS	9	0	50/0"	>50				NR		GLACIAL TILL	22.7 - 23.0 ft: CLAYEY GRAVEL WITH SAND (GC), moist to dry, very dense, bluish gray, ~70% fine to coarse angular gravel, ~15% low plasticity fines, ~15% fine to coarse sand, some gravel likely chipped from cobble or boulder in TILL [GLACIAL TILL] 24.0 ft: Encountered split spoon refusal; no penetration or recovery	24.8 ft: Driller indicated popped through a boulder
25 75.0													
	SS	10	0	50/0"	>50				NR		POSSIBLE BEDROCK	Possible top of bedrock at 28.5 ft (El. 72.6 ft BCB) 29.0 ft: Encountered split spoon refusal; no penetration or recovery	Driller indicated top of possible bedrock at 28.5 ft Swapped to 4-inch button bit at 29.0 ft
30 70.0													
	SS	11	0	50/0"	>50				NR			34.0 ft: Encountered split spoon refusal; no penetration or recovery Bottom of boring at 34 ft below ground surface (El. 67.1 ft BCB). Boring backfilled with cuttings and ~1/4 bag of gravel, topped with asphalt.	

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/9/2024 **END DATE:** 12/19/2024
ADDRESS: 9 Charles St, Needham, MA
COORDINATES: N: 2936851.20 **E:** 730904.44 [NAD83]
GROUND SURFACE ELEVATION: 108.4 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 34.9 ft. / -90° (-90° is vertical downward)
LOGGED BY: E. Winter (GEI Consultants, Inc.)

DRILLING CONTRACTOR: Northern Drill Service
DRILLER/DRILL RIG: T. Kennedy / Mobile Drill B-46
DRILLING METHOD/FLUID: DW / Water
BOREHOLE DIAMETER/CASING SIZE: 4.5 in. / 4 in.
SPOON SIZE: 2 in.
HAMMER TYPE/WEIGHT/DROP: Auto / 140 lb / 30 in.
BOREHOLE BACKFILL: Backfilled with cuttings and 1 bag of gravel, patched with asphalt.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
108.4 / 0											FILL	0.0 - 0.4 ft: Asphalt.	Vacuum excavation at initial location B-GSS-461-VAC (offset 5.7 ft southwest from B-GSS-461) advanced through through dark brown gravel to 2.2 ft before encountering orange communications utility tape at 2.2 ft. Restarted boring at new location B-GSS-461 Vacuum excavation at new location performed 0.0 - 6.25 ft. Material description based on vacuum excavation cuttings and grab sample AS-1 collected at ~3.0 ft.
												0.4 - 1.2 ft: WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM), dark brown, moist, unknown density, ~65% fine to coarse gravel, ~25% fine to coarse sand, ~10% non-plastic fines [FILL]	
												1.2 - 6.0 ft: POORLY GRADED SAND WITH SILT (SP-SM), moist, unknown density, grayish brown, ~85% mostly fine to medium sand, ~10% non-plastic fines, ~5% fine subrounded gravel [FILL]	
	AS	1											
105.0													
5													
	SS	1	50/24	5, 8, 10, 17	18			86	0.0			6.0 - 8.0 ft: SILT WITH SAND (ML), moist, very stiff, light brown, 85.8% non-plastic fines, 14% fine to medium sand, 0.2% fine subangular to angular gravel, rapid dilatancy, tip contained additional dry angular to subangular gravel fragments [GLACIOFLUVIAL DEPOSITS]	SS-1 blow counts disturbed due to overlap with backfilled vacuum excavation SS-1 description based on laboratory grain size test results
100.0	SS	2	33/24	9, 9, 11, 9	20	16.3/0.4			0.0		GLACIOFLUVIAL DEPOSITS	8.0 - 10.0 ft: SILTY GRAVEL WITH SAND (GM), wet to moist, medium dense, brown to olive brown, ~55% fine to coarse gravel, ~25% low plasticity to non-plastic fines, ~20% fine to coarse sand [GLACIOFLUVIAL DEPOSITS]	Moisture and organic contents from corrosion series laboratory testing on aggregated material from 5 jars (SS-2, SS-3 (2 jars), SS-5, SS-5 REDRIVE)
10	SS	3	63/19	6, 10, 69, 75/1"	79	16.3/0.4			0.0			10.0 - 10.6 ft: SILTY SAND (SM), wet to moist, very dense, olive, ~65% fine sand, ~35% non-plastic fines, locally with apparent stratification	SS-3 blow counts slowed down around 11.4 ft Swapped to 4-inch button bit at 11.6 ft
												10.6 - 11.6 ft: SILTY SAND WITH GRAVEL (SM), moist, very dense, olive, ~50% fine to coarse sand, ~30% fine to coarse rounded gravel, ~20% non-plastic to low plasticity fines, angular gray gravel in tip [GLACIOFLUVIAL DEPOSITS]	
												11.6 - 12.5 ft: Possible boulder	Advanced through possible boulder with button bit 11.6 to 12.5 ft Used 250 gallons of water from 0.0 ft to 12.0 ft Driller indicated popped through boulder at 12.5 ft
	SS	4	28/18	15, 22, 15	37				0.0			12.5 - 14.0 ft: SILTY GRAVEL WITH SAND (GM), moist, dense, gray, ~60% fine to coarse subangular to angular gravel, ~25% fine to coarse sand, ~15% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
95.0	SS	5	38/24	14, 12	22	16.3/0.4			0.0				

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽	12/19/2024	~13:00	17.6	34.0	34.9
▼					
▼					

GENERAL NOTES

Log header start and end dates respectively refer to vacuum excavation and completion of backfill.
Drilling took place on 12/19/2024.
Environmental samples were collected at 2.0 ft and 16-18 ft.
SS-1 blow counts disturbed due to overlap with vacuum excavation.
NR: Not recorded

REVIEWED BY: C. Sitar/D. Van Roosendaal | **REV. DATE:** 03/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-461

SOIL BORING LOG - 3/27/25 12:37 - MWTP - CONTRACT NO. 7557

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/9/2024 **END DATE:** 12/19/2024
ADDRESS: 9 Charles St, Needham, MA
COORDINATES: **N:** 2936851.20 **E:** 730904.44 [NAD83]

LOGGED BY: E. Winter (GEI Consultants, Inc.)
DRILLING CONTRACTOR: Northern Drill Service
TOTAL DEPTH/PLUNGE: 34.9 ft. / -90° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 108.4 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
15	SS	5	38/24	10, 8	22	16.3 / 0.4			0.0		GLACIOFLUVIAL DEPOSITS	14.0 - 16.0 ft: SILTY SAND WITH GRAVEL (SM), moist, medium dense, olive brown, ~45% fine to coarse sand, ~35% fine to coarse subrounded to subangular gravel, ~15% non-plastic to low plasticity fines 14.0 - 16.0 ft: (Redrive), SILTY GRAVEL WITH SAND (GM), moist, medium dense, olive brown with some oxidation, ~55% fine to coarse subrounded to subangular gravel up to 2", ~30% fine to coarse sand, ~15% non-plastic to low plasticity fines [GLACIOFLUVIAL DEPOSITS] *(continued from previous)*	Redrove SS-5 with 3-inch spoon for more recovery for environmental sample, spoon contained too much gravel to collect sample Swapped back to 4-inch soil bit after SS-5 Redrove SS-6 with 3-inch spoon for environmental sample
	SS	6	50/24	9, 5, 9, 11	14				0.0				
90.0	SS	7	29/24	13, 14, 13, 13	27				0.0			16.0 - 18.0 ft: SILTY SAND WITH GRAVEL (SM), similar to SS-5, locally with stratified sand and fines 16.0 - 18.0 ft: (redrive), SILTY SAND WITH GRAVEL (SM), similar to SS-5 [GLACIOFLUVIAL DEPOSITS] 18.0 - 20.0 ft: SILTY SAND WITH GRAVEL (SM), similar to SS-5 [GLACIOFLUVIAL DEPOSITS]	
20	SS	8	29/24	12, 10, 12, 15	22				0.0			20.0 - 22.0 ft: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), moist, medium dense, brown and slightly oxidized, ~60% fine to coarse sand, ~30% fine subangular gravel, ~10% non-plastic fines, one piece of coarse gravel recovered [GLACIOFLUVIAL DEPOSITS]	
85.0	SS	9	42/24	13, 15, 26, 52	41				0.0			22.0 - 24.0 ft: WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM), moist, dense, dark grayish brown, ~65% fine to coarse angular to subrounded gravel, ~25% fine to coarse sand, ~10% non-plastic fines, some apparent layering of sand and fines [GLACIOFLUVIAL DEPOSITS]	
25	SS	10	54/24	15, 30, 47, 49	77			21	0.0		GLACIAL TILL	24.0 - 26.0 ft: SILTY SAND WITH GRAVEL (SM), moist, very dense, light gray, 47.7% fine to coarse sand, 31.4% fine to coarse angular gravel, 20.9% non-plastic fines [GLACIAL TILL]	Swapped to 4-inch button bit after SS-9 SS-10 description based on laboratory grain size test results
80.0													
30	SS	11	54/24	39, 44, 54, 51	98				0.0			29.0 - 31.0 ft: WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM), moist, very dense, olive gray, ~60% fine to coarse subrounded to subangular gravel, ~30% fine to coarse sand, 10% non-plastic fines [GLACIAL TILL]	Washed ahead of casing, then advanced 4-inch casing and washed down to 34.0 ft Possible boulder from 32.0 - 33.5 ft, very hard drilling
75.0	SS	12	64/11	31, 100/5"	>100				NR			34.0 - 34.9 ft: CLAYEY SAND WITH GRAVEL (SC), moist, very dense, light gray, ~40% fine to coarse sand, ~35% fine angular to subrounded gravel, ~25% low plasticity fines	

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/9/2024 **END DATE:** 12/19/2024
ADDRESS: 9 Charles St, Needham, MA
COORDINATES: **N:** 2936851.20 **E:** 730904.44 [NAD83]

LOGGED BY: E. Winter (GEI Consultants, Inc.)
DRILLING CONTRACTOR: Northern Drill Service
TOTAL DEPTH/PLUNGE: 34.9 ft. / -90° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 108.4 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
35												[GLACIAL TILL]	
												Bottom of boring at 34.9 ft below ground surface (El. 73.5 ft BCB).	
												Backfilled boring with cuttings and 1 bag of gravel, topped with asphalt	
70.0													
40													
65.0													
45													
60.0													
50													
55.0													

SOIL BORING LOG - 3/27/25 12:37 - MWTP - CONTRACT NO. 7557

REVIEWED BY: C. Sitar/D. Van Roosendaal | **REV. DATE:** 03/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-461

METROPOLITAN WATER TUNNEL PROGRAM

SOIL BORING LOG

BORING NUMBER: B-GSS-462

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/9/2024 **END DATE:** 12/12/2024
ADDRESS: 42 Fremont St, Needham, MA
COORDINATES: N: 2936751.82 **E:** 730626.81 [NAD83]
GROUND SURFACE ELEVATION: 113.0 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 36.0 ft. / -90° (-90° is vertical downward)
LOGGED BY: E. Winter (GEI Consultants, Inc.)

DRILLING CONTRACTOR: Northern Drill Service
DRILLER/DRILL RIG: T. Kennedy / Mobile Drill B-46
DRILLING METHOD/FLUID: DW / Water
BOREHOLE DIAMETER/CASING SIZE: 4.5 in. / 4 in.
SPOON SIZE: 2 in.
HAMMER TYPE/WEIGHT/DROP: Auto / 140 lb / 30 in.
BOREHOLE BACKFILL: Backfilled with cuttings and ~1/4 bag of gravel, patched with asphalt.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
113.0 / 0	PC	1									FILL	0.0 - 0.2 ft: Asphalt	Pavement core sample collected at B-GSS-462-PC (offset 1.9 ft southeast from B-GSS-462). Vacuum excavation performed 0.0 - 6.3 ft. Material descriptions are from vacuum excavation cuttings and grab sample AS-1 collected at ~2.5 ft.
												0.2 - 6.0 ft: WELL GRADED SAND WITH GRAVEL (SW), moist, unknown density, light brown, ~50% fine to coarse sand, ~45% fine to coarse subrounded gravel, ~5% non-plastic fines [FILL]	
	AS	1											
110.0													
5													
	SS	1	0/24	5, 8, 12, 12	20				NR			6.0 - 8.0 ft: No recovery 6.0 - 8.0 ft: (Redrive), WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), moist, medium dense, brown, ~60% fine to coarse sand, ~30% fine to coarse subrounded to subangular gravel up to 0.5 in, ~10% non-plastic fines, clump of silt observed at ~6.7 ft [FILL]	SS-1 blow counts disturbed due to vacuum excavation Redrove SS-1 with 3-inch spoon
105.0	SS	2	46/24	8, 7, 7, 9	14			80	0.0		GLACIOFLUVIAL DEPOSITS	8.0 - 10.0 ft: SILT WITH SAND (ML), moist, stiff, brown, 80.4% non-plastic fines, 19.6% fine sand, low plasticity, rapid dilatancy, high toughness, sand and silt are layered up to 2 in apart [GLACIOFLUVIAL DEPOSITS]	SS-2 description based on laboratory grain size test results
10	SS	3	38/24	7, 7, 7, 14	14	12/0.2			0.1			10.0 - 12.0 ft: POORLY GRADED SAND WITH SILT (SP-SM), dry, medium dense, light brown, ~95% mostly fine to medium sand, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	Moisture and organic contents from corrosion series laboratory testing of aggregated material from 5 jars (SS-3, SS-4, SS-5, SS-5 REDRIVE, SS-7)
100.0	SS	4	42/24	14, 17, 17, 19	34	12/0.2			0.1			12.0 - 14.0 ft: POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), dry, dense, light brown, ~65% mostly fine to medium sand, ~25% fine to coarse subangular to rounded gravel, ~10% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
	SS	5	46/24	17, 18	38	12/0.2			0.1			14.0 - 16.0 ft: WELL GRADED SAND WITH GRAVEL (SW), moist, dense, brown, ~65% fine to coarse sand, ~30% subangular gravel, ~5% non-plastic fines	Redrove SS-5 with 3-inch spoon for environmental sample

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽	12/12/2024	11:40	20.0	34.0	36.0
▼					
▼					

GENERAL NOTES

Log header start and end dates respectively refer to vacuum excavation and completion of backfill. Drilling took place on 12/12/2024.
Environmental samples were collected at 2.0 ft and 14-16 ft.
SS-1 blow counts disturbed due to overlap with vacuum excavation.
NR: Not recorded

REVIEWED BY: C. Sitar/D. Van Roosendaal | **REV. DATE:** 03/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-462

SOIL BORING LOG - 3/27/25 12:37 - MWTP - CONTRACT NO. 7557

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/9/2024 **END DATE:** 12/12/2024
ADDRESS: 42 Fremont St, Needham, MA
COORDINATES: **N:** 2936751.82 **E:** 730626.81 [NAD83]

LOGGED BY: E. Winter (GEI Consultants, Inc.)
DRILLING CONTRACTOR: Northern Drill Service
TOTAL DEPTH/PLUNGE: 36.0 ft. / -90° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 113.0 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
15	SS	5	46/24	20 19	38	12 0.2			0.1		GLACIOFLUVIAL DEPOSITS	14.0 - 16.0 ft: (Redrive), WELL GRADED SAND WITH GRAVEL (SW), ~55% fine to coarse sand, ~40% fine to coarse subrounded gravel, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
	SS	6	17/24	NR 14 9 NR	23				0.0			16.0 - 18.0 ft: POORLY GRADED GRAVEL WITH SAND (GP), wet, medium dense, brown, ~65% coarse subangular to subrounded gravel up to 1 in, ~30% fine to coarse sand, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
95.0	SS	7	29/24	7 8 5 10	13	12 0.2			0.0			18.0 - 20.0 ft: POORLY GRADED SAND WITH GRAVEL (SP), moist, medium dense, brown, ~60% fine to coarse sand, ~35% coarse subrounded gravel up to 1.25 in, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
20	SS	8	21/24	11 10 9 9	19				0.0			20.0 - 22.0 ft: WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM), wet, medium dense, brown, ~65% fine to coarse subrounded gravel, ~25% fine to coarse sand, ~10% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
90.0	SS	9	75/24	5 3 2 3	5			80	0.0			22.0 - 24.0 ft: SILT WITH SAND (ML), wet, medium stiff, light brown, 80.1% non-plastic fines, 19.9% fine sand, rapid dilatancy [GLACIOFLUVIAL DEPOSITS]	SS-9 description based on laboratory grain size test results
25	SS	10	46/24	6 4 3 3	7				0.0			24.0 - 26.0 ft: SILTY SAND (SM), wet, loose, light brown, ~65% fine sand, ~35% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
85.0													
30	SS	11	46/24	21 23 31 40	54				NR		GLACIAL TILL	29.0 - 31.0 ft: SILTY GRAVEL WITH SAND (GM), moist, very dense, brown, ~55% fine to coarse angular to subrounded gravel, ~30% fine to coarse sand, ~15% non-plastic to low plasticity fines [GLACIAL TILL]	
80.0													
	SS	12	29/24	19 11	20				NR			34.0 - 36.0 ft: POORLY GRADED GRAVEL WITH SILT AND SAND (GP-GM), wet, medium dense, brown, ~50% fine to coarse subangular to subrounded gravel, ~40% fine	

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/9/2024 **END DATE:** 12/12/2024
ADDRESS: 42 Fremont St, Needham, MA
COORDINATES: **N:** 2936751.82 **E:** 730626.81 [NAD83]

LOGGED BY: E. Winter (GEI Consultants, Inc.)
DRILLING CONTRACTOR: Northern Drill Service
TOTAL DEPTH/PLUNGE: 36.0 ft. / -90° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 113.0 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
35	SS	12	29/24	9 9	20				NR			to coarse sand, ~10% non-plastic to low plasticity fines, gravel is mostly fine [GLACIAL TILL]	
												Bottom of boring at 36 ft below ground surface (El. 77.0 ft BCB). Backfilled with cuttings and 1/4 bag of gravel, topped with cold patch asphalt.	
75.0													
40													
70.0													
45													
65.0													
50													
60.0													

SOIL BORING LOG - 3/27/25 12:37 - MWTP - CONTRACT NO. 7557

REVIEWED BY: C. Sitar/D. Van Roosendaal | **REV. DATE:** 03/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-462

METROPOLITAN WATER TUNNEL PROGRAM

SOIL BORING LOG

BORING NUMBER: B-GSS-463 (MW)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/10/2024 **END DATE:** 12/16/2024
ADDRESS: 29 Charles St, Needham, MA
COORDINATES: N: 2936718.08 **E:** 731103.58 [NAD83]
GROUND SURFACE ELEVATION: 106.8 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 31.0 ft. / -90° (-90° is vertical downward)
LOGGED BY: E. Winter (GEI Consultants, Inc.)

DRILLING CONTRACTOR: Northern Drill Service
DRILLER/DRILL RIG: T. Kennedy / Mobile Drill B-46
DRILLING METHOD/FLUID: DW / Water
BOREHOLE DIAMETER/CASING SIZE: 4.5 in. / 4 in.
SPOON SIZE: 2 in.
HAMMER TYPE/WEIGHT/DROP: Auto / 140 lb / 30 in.
BOREHOLE BACKFILL: Installed monitoring well; refer to MW Installation Log.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
106.8 / 0	PC	1									FILL	0.0 - 0.3 ft: Asphalt (extends to 0.4 ft at B-GSS-463-PC) 0.3 - 6.0 ft: GRAVEL WITH SAND AND COBBLES (unknown USCS), moist, unknown density, brown, unknown proportion cobbles up to 8 in, grab sample contains ~70% fine to coarse subrounded gravel, ~25% fine to coarse sand, ~5% non-plastic fines [FILL]	Pavement core sample collected at B-GSS-463-PC (offset 3.4 ft west-southwest from B-GSS-463). Vacuum excavation performed 0.0 - 6.0 ft. Material description based on vacuum excavation cuttings and grab sample AS-1 collected at ~3.0 ft
105.0	AS	1											
5													
100.0	SS	1	29/24	16, 12, 13, 14	25	10/0.4			0.0			6.0 - 8.0 ft: WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM), moist, medium dense, brown, ~60% fine to coarse subangular gravel, ~30% fine to coarse sand, ~10% non-plastic fines [FILL]	Moisture and organic contents from corrosion series laboratory testing of aggregated material from 5 jars (SS-1, SS-2, SS-3, SS-5, SS-5 REDRIVE)
	SS	2	29/24	14, 19, 13, 15	32	10/0.4			0.0			8.0 - 10.0 ft: WELL GRADED GRAVEL WITH SAND (GW), moist, dense, brown, ~65% fine to coarse angular to subangular gravel, ~30% fine to coarse sand, ~5% non-plastic fines [FILL]	
10													
▽▼	SS	3	33/24	15, 16, 15, 13	31	10/0.4			0.0			10.0 - 12.0 ft: WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM), similar to 8.0 - 10.0 ft, except reddish brown [FILL]	
95.0	SS	4	33/24	10, 8, 7, 5	15			8	0.0			12.0 - 14.0 ft: WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM), wet to moist, medium dense, orangish brown, 61.9% fine to coarse angular to subangular gravel, 30% fine to coarse sand, 8.1% non-plastic to low plasticity fines, heavy iron oxide staining [FILL]	SS-4 and SS-5 descriptions based on laboratory grain size test results (jars combined for adequate sample)
	SS	5	17/24	6, 7	19	10/0.4		8	NR			14.0 - 16.0 ft: WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM), similar to 12.0 - 14.0 ft except with more fine gravel	SS-5 popped through apparent gravel at ~15.7 ft Redrove SS-5 with 3-inch spoon

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽	12/16/2024	12:05	10.7	29.0	31.0
▼					
▼	01/14/2025	0813	10.9	7.0	17.0

GENERAL NOTES

Log header start and end dates respectively refer to vacuum excavation and completion of MW installation. Drilling took place on 12/16/2024.
Environmental samples were collected at 1.8 ft and 18-20 ft.
NR: Not recorded
Final ground water level reading on this log is first MW reading after completion. Tabulated casing and boring depth for this reading respectively indicate top and bottom depth for screened interval in MW.

REVIEWED BY: C. Sitar/D. Van Roosendaal | **REV. DATE:** 03/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-463 (MW)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/10/2024 **END DATE:** 12/16/2024
ADDRESS: 29 Charles St, Needham, MA
COORDINATES: **N:** 2936718.08 **E:** 731103.58 [NAD83]

LOGGED BY: E. Winter (GEI Consultants, Inc.)
DRILLING CONTRACTOR: Northern Drill Service
TOTAL DEPTH/PLUNGE: 31.0 ft. / -90° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 106.8 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
15	SS	5	17/24	12 35	19	10 0.4		8	NR		FILL	14.0 - 16.0 ft: (Redrive), WELL GRADED GRAVEL WITH SAND (GP), Similar to 14.0 - 16.0 ft, gravel up to 2.5 in [FILL]	
	SS	6	0/6	100/6"	>100				NR		ALLUVIAL DEPOSITS	16.0 - 16.5 ft: No recovery	Swapped to 4 in button bit after SS-6
90.0													
	SS	7	54/24	22 38 38 41	76				0.0			18.0 - 20.0 ft: SILTY GRAVEL WITH SAND WITH ORGANIC FINES (GM), moist, very dense, black to reddish brown, ~45% fine to coarse subrounded gravel, ~35% fine to coarse sand, ~20% non-plastic to low plasticity slightly organic to organic fines, trace woody matter, faint earthy odor [ALLUVIAL DEPOSITS]	
20	SS	8	33/24	32 36 26 30	62				0.0		GLACIOFLUVIAL DEPOSITS	20.0 - 22.0 ft: POORLY GRADED GRAVEL WITH SAND (GP), moist, very dense, orangish brown, ~75% fine to coarse angular to subrounded gravel, ~20% fine to coarse sand, ~5% non-plastic fines, oxidized [GLACIOFLUVIAL DEPOSITS]	
85.0	SS	9	4/24	12 9 11 9	20				0.0			22.0 - 24.0 ft: 1 piece of subrounded gravel in tip 22.0 - 24.0 ft: (Redrive), WELL GRADED GRAVEL WITH SAND (GW), moist, medium dense, orangish brown, ~85% fine to coarse subrounded to subangular gravel, ~15% fine to coarse sand, trace non-plastic fines [GLACIOFLUVIAL DEPOSITS]	Redrove SS-9 with 3-inch spoon
25	SS	10	29/24	8 10 12 13	22				0.0			24.0 - 24.4 ft: WELL GRADED GRAVEL WITH SAND (GW), moist, medium dense, orange, ~75% fine to coarse subangular to subrounded gravel, ~20% fine to coarse sand, ~5% non-plastic to low plasticity fines [GLACIOFLUVIAL DEPOSITS] 24.4 - 26.0 ft: GRAVELLY LEAN CLAY WITH SAND (CL), wet, very stiff, gray and light brown, ~65% low plasticity fines, ~20% coarse gravel, ~15% fine sand, varved clay and silt [GLACIOFLUVIAL DEPOSITS]	
80.0													
30	SS	11	75/24	5 4 9 13	13	39 --	43 20		0.0			29.0 - 29.8 ft: SANDY LEAN CLAY (CL), moist, stiff, light brown, ~70% low plasticity fines, ~30% fine sand, slow dilatancy, low toughness, very high dry strength, varved clay, silt, and fine sand layers [GLACIOFLUVIAL DEPOSITS] 29.8 - 31.0 ft: SILTY GRAVEL WITH SAND (GM), wet to moist, medium dense, light brown with oxidation, ~40% fine to coarse subangular to subrounded gravel, ~30% fine to coarse sand, ~30% non-plastic to low plasticity fines [GLACIOFLUVIAL DEPOSITS] Bottom of boring at 31 ft below ground surface (El. 75.8 ft BCB). 2-in PVC monitoring well was installed. See monitoring well installation log.	SS-11 description 29 to 29.8 ft based on laboratory index test results
75.0													

REVIEWED BY: C. Sitar/D. Van Roosendaal | **REV. DATE:** 03/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-463 (MW)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/9/2024 **END DATE:** 12/18/2024
ADDRESS: 76 Wexford St, Needham, MA
COORDINATES: **N:** 2936490.90 **E:** 730938.21 [NAD83]
GROUND SURFACE ELEVATION: 106.0 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 36.0 ft. / -90° (-90° is vertical downward)
LOGGED BY: E. Winter (GEI Consultants, Inc.)

DRILLING CONTRACTOR: Northern Drill Service
DRILLER/DRILL RIG: T. Kennedy / Mobile Drill B-46
DRILLING METHOD/FLUID: DW / Water
BOREHOLE DIAMETER/CASING SIZE: 4.5 in. / 4 in.
SPOON SIZE: 2 in.
HAMMER TYPE/WEIGHT/DROP: Auto / 140 lb / 30 in.
BOREHOLE BACKFILL: Backfilled with cuttings and patched with asphalt.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
106.0 / 0	PC	1									FILL	0.0 - 0.5 ft: Asphalt	Pavement core sample collected at B-GSS-464-PC (offset 2.5 ft southeast from B-GSS-464). Vacuum excavation performed from 0.0 to 6.0 ft. Material description based on vacuum excavation cuttings and grab sample AS-1 collected at ~3.5 ft
105.0												0.5 - 6.0 ft: WELL GRADED SAND WITH GRAVEL (SW), moist, unknown density, dark grayish brown, ~80% fine to coarse sand, ~15% fine subrounded gravel, ~5% non-plastic fines [FILL]	
	AS	1											
5													
100.0	SS	1	21/24	4, 4, 5, 4	9	13/1.3			0.0			6.0 - 8.0 ft: SLIGHTLY ORGANIC SILTY SAND WITH GRAVEL (SM), wet, loose, dark brown to black, ~45% fine to coarse sand, ~35% fine subrounded gravel, ~20% low plasticity organic fines, rapid dilatancy, faint organic odor, organic material is likely disturbed [FILL]	SS-1 and SS-2 descriptions based on laboratory test results
▽	SS	2	17/24	5, 2, 7, 5	9			17	0.1			8.0 - 10.0 ft: SILTY SAND WITH GRAVEL (SM), wet, loose, dark brown, 48.1% fine to coarse sand, 35.4% fine to coarse subrounded to subangular gravel, 16.5% low plasticity fines, rapid dilatancy [FILL]	
10	SS	3	29/24	7, 10, 8, 5	18				0.0		ALLUVIAL DEPOSITS	10.0 - 12.0 ft: SILTY SAND WITH GRAVEL (SM), moist, medium dense, very dark grayish brown, ~50% mostly fine sand, ~30% non-plastic to low plasticity fines, ~20% fine angular gravel, rapid dilatancy, trace woody matter up to 0.2 in [ALLUVIAL DEPOSITS]	
95.0	SS	4	13/24	8, 8, 11, 13	19				0.1			12.0 - 14.0 ft: SILTY SAND WITH GRAVEL (SM), moist, medium dense, brownish gray, ~55% mostly fine sand, ~25% fine to coarse subrounded to angular gravel, ~20% non-plastic to low plasticity fines [ALLUVIAL DEPOSITS]	
	SS	5	38/24	11, 8	15				0.1			14.0 - 14.5 ft: POORLY GRADED SAND WITH SILT (SP-SM), moist, medium dense, gray, ~90% fine to medium fine sand, ~10% non-plastic fines [ALLUVIAL DEPOSITS]	Trace gravel in SS-5 wash Redrove SS-5 with 3-inch spoon

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽	12/18/2024	12:45	8.8	34.0	36.0
▼					
▼					

GENERAL NOTES

Log header start and end dates respectively refer to vacuum excavation and completion of backfill.
Drilling took place on 12/18/2024.
Environmental samples were collected at 2.0 ft and 14-16 ft.
NR: Not recorded

REVIEWED BY: C. Sitar/D. Van Roosendaal | **REV. DATE:** 03/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-464

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/9/2024 **END DATE:** 12/18/2024
ADDRESS: 76 Wexford St, Needham, MA
COORDINATES: **N:** 2936490.90 **E:** 730938.21 [NAD83]

LOGGED BY: E. Winter (GEI Consultants, Inc.)
DRILLING CONTRACTOR: Northern Drill Service
TOTAL DEPTH/PLUNGE: 36.0 ft. / -90° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 106.0 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
15	SS	5	38/24	7 11	15				0.1		GLACIOFLUVIAL DEPOSITS	14.5 - 14.8 ft: WELL GRADED SAND WITH SILT (SW-SM), moist, medium dense, brown with yellowish brown oxidation, ~85% fine to coarse sand, ~10% non-plastic fines, ~5% fine subrounded gravel [GLACIOFLUVIAL DEPOSITS]	Material in SS-5 REDRIVE jar not representative of full spoon; most material removed into environmental test sample
90.0	SS	6	13/24	11 11 13 13	24				0.0			14.0 - 16.0 ft: (Redrive), SILTY SAND (SM), wet to moist, medium dense, gray with occasional oxidation, ~80-85% fine to medium sand, ~20-25% non-plastic fines, 2 pieces of coarse gravel observed 16.0 - 18.0 ft: WELL GRADED GRAVEL WITH SAND (GW), wet, medium dense, brown, ~65% fine to coarse gravel, ~30% fine to coarse sand, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	Redrove SS-6 with 3-inch spoon
	SS	7	21/24	12 11 15 14	26				0.1			18.0 - 20.0 ft: WELL GRADED SAND WITH GRAVEL (SW), moist, medium dense, brown, ~55% fine to coarse sand, ~40% fine to coarse subrounded to subangular gravel, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
20	SS	8	29/24	15 14 15 14	29			17	0.5			20.0 - 22.0 ft: SILTY SAND WITH GRAVEL (SM), moist, medium dense, gray, 44.5% fine to coarse sand, 38.1% fine to coarse subrounded to angular gravel, 17.4% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	SS-8 description based on laboratory grain size test results
85.0	SS	9	21/24	12 20 49 69	69				0.5		GLACIAL TILL	22.0 - 24.0 ft: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), moist, very dense, brown with oxidation, ~60% fine to coarse sand, ~30% fine to coarse subrounded to angular gravel, ~10% non-plastic fines [GLACIAL TILL]	
25	SS	10	29/24	37 30 40 33	70				0.7			24.0 - 26.0 ft: CLAYEY SAND WITH GRAVEL (SC), moist, very dense, brown with some oxidation, ~50% fine to coarse sand, ~30% fine subangular gravel, ~20% low plasticity fines [GLACIAL TILL]	
80.0													rig chatter from 26.0 - 29.0 ft
30	SS	11	25/24	80 31 25 22	56				0.6			29.0 -31.0 ft: WELL GRADED GRAVEL WITH CLAY AND SAND (GW-GC), moist, very dense, brown, ~60% fine to coarse angular to subrounded gravel, ~30% fine to coarse sand, ~10% low plasticity fines [GLACIAL TILL]	
75.0													
	SS	12	33/24	38 38	70				0.3			34.0 - 36.0 ft: WELL GRADED GRAVEL WITH SILT AND SAND (GW-GM), moist, very dense, gray, ~55% fine to coarse subrounded to subangular gravel, ~35% fine to	

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/9/2024 **END DATE:** 12/18/2024
ADDRESS: 76 Wexford St, Needham, MA
COORDINATES: **N:** 2936490.90 **E:** 730938.21 [NAD83]

LOGGED BY: E. Winter (GEI Consultants, Inc.)
DRILLING CONTRACTOR: Northern Drill Service
TOTAL DEPTH/PLUNGE: 36.0 ft. / -90° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 106.0 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
35	SS	12	33/24	32 40	70				0.3			coarse sand, ~10% non-plastic fines [GLACIAL TILL]	
70.0												Bottom of boring at 36 ft below ground surface (El. 70.0 ft BCB). Backfilled with cuttings and topped with asphalt	
40													
65.0													
45													
60.0													
50													
55.0													

SOIL BORING LOG - 3/27/25 12:37 - MWTP - CONTRACT NO. 7557

REVIEWED BY: C. Sitar/D. Van Roosendaal | **REV. DATE:** 03/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-464

METROPOLITAN WATER TUNNEL PROGRAM

SOIL BORING LOG

BORING NUMBER: B-GSS-465 (MW)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/10/2024 **END DATE:** 12/17/2024
ADDRESS: 59 Wexford St, Needham, MA
COORDINATES: N: 2936376.88 **E:** 731219.72 [NAD83]
GROUND SURFACE ELEVATION: 105.7 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 26.0 ft. / -90° (-90° is vertical downward)
LOGGED BY: E. Winter (GEI Consultants, Inc.)

DRILLING CONTRACTOR: Northern Drill Service
DRILLER/DRILL RIG: T. Kennedy / Mobile Drill B-46
DRILLING METHOD/FLUID: DW / Water
BOREHOLE DIAMETER/CASING SIZE: 4.5 in. / 4 in.
SPOON SIZE: 2 in.
HAMMER TYPE/WEIGHT/DROP: Auto / 140 lb / 30 in.
BOREHOLE BACKFILL: Installed monitoring well; refer to MW Installation Log.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
105.7 / 0												0.0 - 0.8 ft: Asphalt	Vacuum excavation performed from 0.0 to 6.3 ft. Material description based on vacuum excavation cuttings and grab sample AS-1 collected at ~3.5 ft
105.0											FILL	0.0 - 6.0 ft: WELL GRADED SAND WITH GRAVEL (SW), dry, unknown density, brown, ~60% fine to coarse sand, ~35% fine angular gravel, ~5% non-plastic fines [FILL]	
	AS	1											
5													
100.0 ▼ ▽	SS	1	33/24	5 4 5 5	9				0.0			6.0 - 8.0 ft: POORLY GRADED SAND (SP), wet, medium dense, dark yellowish brown, ~95% fine to medium sand, ~5% non-plastic fines, trace coarse sand size fragments of glass [FILL]	SS-1 blow counts disturbed due to vacuum excavation Water observed infiltrating at 6.3 ft during vacuum excavation
	SS	2	50/24	3 3 4 5	7			9.4	0.0		GLACIOFLUVIAL DEPOSITS	8.0 - 10.0 ft: POORLY GRADED SAND WITH SILT (SP-SM), moist to wet, loose, olive, 90.6% fine to medium sand, 9.4% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	SS-2 description based on laboratory grain size test results
10	SS	3	46/24	3 4 6 6	10				0.0			10.0 - 12.0 ft: POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), wet, loose, brown with occasional oxidation, ~75% mostly fine to medium sand, ~15% fine gravel, ~10% non-plastic fines, gravel and coarse sand mainly in bottom 2 in of spoon (tip) [GLACIOFLUVIAL DEPOSITS]	
95.0	SS	4	46/24	4 4 5 5	9				NR			12.0 - 14.0 ft: WELL GRADED SAND WITH SILT (SW-SM), wet, loose, grayish brown, ~80% fine to coarse sand, ~10% fine subrounded gravel, ~10% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
	SS	5	50/24	3 5	12				0.0			14.0 - 16.0 ft: WELL GRADED SAND WITH SILT (SW-SM), similar to 12.0 - 14.0 ft, oxidized between 14.3 and 14.4 ft [GLACIOFLUVIAL DEPOSITS]	Redrove SS-5 with 3-inch spoon for environmental sample

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽	12/17/2024	10:30	6.3	24.0	26.0
▼					
▼	01/14/2025	0729	6.0	4.0	14.0

GENERAL NOTES

Log header start and end dates respectively refer to vacuum excavation and completion of MW installation. Drilling took place on 12/17/2024.
Environmental samples were collected at 2.0 ft and 14-16 ft.
NR: Not recorded
Final ground water level reading on this log is first MW reading after completion. Tabulated casing and boring depth for this reading respectively indicate top and bottom depth for screened interval in MW.

REVIEWED BY: C. Sitar/D. Van Roosendaal | **REV. DATE:** 03/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-465 (MW)

SOIL BORING LOG - 3/27/25 12:37 - MWTP - CONTRACT NO. 7557

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
START DATE: 12/10/2024 **END DATE:** 12/17/2024
ADDRESS: 59 Wexford St, Needham, MA
COORDINATES: **N:** 2936376.88 **E:** 731219.72 [NAD83]

LOGGED BY: E. Winter (GEI Consultants, Inc.)
DRILLING CONTRACTOR: Northern Drill Service
TOTAL DEPTH/PLUNGE: 26.0 ft. / -90° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 105.7 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
15	SS	5	50/24	7, 8	12				0.0		GLACIOFLUVIAL DEPOSITS	14.0 - 16.0 ft: (Redrive), WELL GRADED SAND WITH SILT (SW-SM), similar to 12.0 - 14.0 ft, except one piece of coarse gravel observed [GLACIOFLUVIAL DEPOSITS]	
90.0													
	SS	6	46/24	7, 6, 6, 9	12			7	NR			16.0 - 18.0 ft: WELL GRADED SAND WITH SILT AND GRAVEL (SW-SM), wet, medium dense, brown with local strong brown oxidation, 74.5% fine to coarse sand, 18.5% fine to coarse subangular to subrounded gravel, 7% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	SS-6 description based on laboratory grain size test results
	SS	7	21/24	8, 9, 5, 7	14				NR			18.0 - 20.0 ft: WELL GRADED SAND WITH GRAVEL (SW), moist, medium dense, brown, ~80% fine to coarse sand, ~15% fine to coarse subrounded to subangular gravel, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
20													
85.0	SS	8	17/24	6, 5, 6, 7	11				NR			20.0 - 22.0 ft: SILTY SAND WITH GRAVEL (SM), moist to wet, medium dense, light olive brown, ~70% fine to coarse sand, ~15% fine subrounded gravel, ~15% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
	SS	9	38/24	6, 6, 7, 7	13				NR			22.0 - 24.0 ft: POORLY GRADED SAND WITH SILT (SP-SM), moist to wet, medium dense, olive brown, ~85% mostly fine to medium sand trace of coarse sand, ~10% non-plastic fines, ~5% fine subrounded gravel [GLACIOFLUVIAL DEPOSITS]	
25	SS	10	29/24	3, 6, 6, 8	12				NR			24.0 - 26.0 ft: WELL GRADED SAND WITH SILT (SW-SM), moist, medium dense, olive brown, ~85% fine to coarse sand, ~10% non-plastic fines, ~5% fine subangular gravel [GLACIOFLUVIAL DEPOSITS]	
80.0												Bottom of boring at 26 ft below ground surface (El. 79.7 ft BCB). 2-in PVC monitoring well was installed. See monitoring well installation log.	
30													
75.0													

METROPOLITAN WATER TUNNEL PROGRAM

SOIL BORING LOG

BORING NUMBER: SB-FD-541

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-10-22 **END DATE:** 2025-10-24
ADDRESS: 163 Highland Avenue, Needham, MA
COORDINATES: N: 2936729.00 **E:** 731643.00 [NAD83]
GROUND SURFACE ELEVATION: 109.0 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 18.0 ft. / ° (-90° is vertical downward)
LOGGED BY: R. Nagle (WSP)

DRILLING CONTRACTOR: 7NT Engineering
DRILLER/DRILL RIG: C. Pierce / CME-75 Truck (SN: 284887)
DRILLING METHOD/FLUID: HSA / None
BOREHOLE DIAMETER/CASING SIZE: 8 in. / 4.25 in.
SPOON SIZE: 2 in.
HAMMER TYPE/WEIGHT/DROP: Auto / 140 lb / 30 in.
BOREHOLE BACKFILL: Borehole excavated to repair damage with replacement pipe, placed crushed stone around pipe, and native excavation material placed to surface.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
109.0 / 0											TOPSOIL	0.0 - 2.0 ft: Topsoil	Vacuum excavation performed from 0.0 to 5.0 ft.
105.0	AS	1									FILL	2.0 - 8.0 ft: POORLY GRADED SAND WITH GRAVEL (SP), dry, unknown density, brown, ~70% fine to medium sand, ~20% coarse subrounded gravel, ~5% fine subrounded gravel, ~5% non-plastic fines, contains fragments and pieces of brick debris [FILL]	Environmental samples taken from 2.0 to 3.0 ft. AS-1 classifications based on grab samples collected during vaccuum excavation (disturbed).
5													
100.0	SS	1	92/24	8, 17, 16, 19	33				1.3			8.0 - 10.0 ft: WELL-GRADED SAND WITH SILT (SW-SM), dry, dense, brown to dark brown, ~80% fine to coarse sand, ~10% non-plastic fines, ~10% fine to coarse subangular gravel, trace asphalt fragments [FILL]	
10	SS	2	79/24	8, 14, 18, 17	32				0.9			10.0 - 12.0 ft: WELL-GRADED SAND WITH SILT AND GRAVEL (SW-SM), dry, dense, brown, ~60% fine to coarse sand, ~30% fine to coarse subangular gravel, ~10% non-plastic fines [FILL]	
	SS	3	75/24	4, 3, 4, 2	7	15.4 / --		18.0	0.5			12.0 - 14.0 ft: SILTY SAND (SM), dry to moist, loose, dark yellowish brown, 76.6% fine to medium sand, 5.4% fine subangular to anguar gravel, 18.0% non-plastic fines [FILL]	Clean fill noted between 12.6 to 14.0 ft.
95.0	SS	4	4/24	6, 3	5				1.3			14.0 - 16.0 ft: POORLY GRADED SAND WITH SILT (SP-SM), wet, loose, brown, ~80% fine sand, ~10% fine subrounded gravel, ~10% non-plastic fines [FILL]	Due to poor recovery in SS-4, a 3-inch split-spoon was driven. Driller noted last ~6 inches of SS-4 dropped.

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽	10/23/2025	1330	15.5	16.0	18.0
▼					
▼					

GENERAL NOTES

The as-completed location marking was destroyed during the sewer line repair. The as-staked location was used for the as-completed location, which was judged accurate to +/- 1 foot for both vertical and horizontal.
Vacuum excavation performed by Badger Infrastructure Solutions Ltd.
SS-4 and SS-5 were likely wet due to sewage from broken utility and not groundwater table.
Sewer line punctured approximately between 15.5 and 16.9 ft bgs.
NA = Not Applicable; NR = Not Recorded

REVIEWED BY: N. Strater and S. Consolvo | **REV. DATE:** 2026-06-19 | **REV. NO.:** R0 Final | **BORING NO.:** SB-FD-541

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-10-22 **END DATE:** 2025-10-24
ADDRESS: 163 Highland Avenue, Needham, MA
COORDINATES: **N:** 2936729.00 **E:** 731643.00 [NAD83]

LOGGED BY: R. Nagle (WSP)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 18.0 ft. / ° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 109.0 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
15	SS	4	4/24	2 2	5				1.3		FILL	14.0 - 16.0 ft: POORLY GRADED SAND WITH SILT (SP-SM), wet, loose, brown, ~80% fine sand, ~10% fine subrounded gravel, ~10% non-plastic fines [FILL] *(continued from previous)*	Due to poor recovery in SS-4, a 3-inch split-spoon was driven. Driller noted last ~6 inches of SS-4 dropped.
	SS	5	54/24	3 6 18 16	24				NR		FILL	16.0 - 18.0 ft: SILTY SAND WITH GRAVEL (SM), wet, medium dense, brown to light brown, ~70% fine to coarse sand, ~15% fine to coarse subrounded gravel, ~15% non-plastic fines [FILL]	Driller noted toilet paper on outside of the split-spoon of SS-5. 12-in. vitreous clay sewer line struck between 15.5 and 16 ft.
90.0												BOTTOM OF EXPLORATION AT 18.0 FT BELOW GROUND SURFACE [EL. 91 FT BCB] Due to damaged utility, borehole backfilled in repair excavation.	Boring terminated due to sewer line encounter approximately between 15.5 and 16.9 ft. Refer to the incident report. Boring offset to SB-FD-541-C.
20													
85.0													
25													
80.0													
30													
75.0													

METROPOLITAN WATER TUNNEL PROGRAM

SOIL BORING LOG

BORING NUMBER: SB-FD-541-A

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-10-22 **END DATE:** 2025-10-22
ADDRESS: 163 Highland Avenue, Needham, MA
COORDINATES: N: 2936726.00 **E:** 731641.00 [NAD83]
GROUND SURFACE ELEVATION: 109.3 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 2.6 ft. / ° (-90° is vertical downward)
LOGGED BY: R. Nagle (WSP)

DRILLING CONTRACTOR: 7NT Engineering
DRILLER/DRILL RIG: C. Pierce / VacEx Truck
DRILLING METHOD/FLUID: VACEX / Water
BOREHOLE DIAMETER/CASING SIZE: 12 in. / in.
SPOON SIZE: NA in.
HAMMER TYPE/WEIGHT/DROP: NA / lb / in.
BOREHOLE BACKFILL: Borehole backfilled with Quikrete play sand.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
109.3 / 0											TOPSOIL	0.0 - 2.0 ft: Topsoil	Vacuum excavation performed from 0.0 to 2.6 ft. Grab sample obtained from 2.5 to 2.6 ft.
	AS	1							1.1		FILL	2.5 - 2.6 ft: WELL-GRADED SAND (SW), dry, unknown density, brown, ~80% fine to coarse sand, ~10% fine to coarse subrounded gravel, ~5% non-plastic fines, ~5% cobble [FILL]	Asphalt obstruction encountered at 2.6 ft. Offset to SB-FD-541-B. No groundwater observed. Sample AS-1 collected during vaccuum excavation (disturbed).
												BOTTOM OF EXPLORATION AT 2.6 FT BELOW GROUND SURFACE [EL. 106.7 FT BCB] Borehole backfilled with Quikrete play sand.	
105.0 / 5													
100.0 / 10													
95.0													

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽					
▼					
▼					

GENERAL NOTES

To avoid tree limbs, this location was offset 3.0 ft at 210° SW of the SB-FD-541.
The as-completed location marking was destroyed during the sewer line repair. The as-staked location was used for the as-completed location, which was judged accurate to +/- 1 foot for both vertical and horizontal.
Vacuum excavation performed by Badger Infrastructure Solutions Ltd.
No groundwater encountered.
NA = Not Applicable; NR = Not Recorded

REVIEWED BY: N. Strater | **REV. DATE:** 2026-02-02 | **REV. NO.:** R0 Draft | **BORING NO.:** SB-FD-541-A

SOIL BORING LOG - 26-2-2 16:01 - MWTP - CONTRACT NO. 7556

METROPOLITAN WATER TUNNEL PROGRAM

SOIL BORING LOG

BORING NUMBER: SB-FD-541-B

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-10-22 **END DATE:** 2025-10-22
ADDRESS: 163 Highland Avenue, Needham, MA
COORDINATES: N: 2936724.00 **E:** 731640.00 [NAD83]
GROUND SURFACE ELEVATION: 109.7 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 2.3 ft. / ° (-90° is vertical downward)
LOGGED BY: R. Nagle (WSP)

DRILLING CONTRACTOR: 7NT Engineering
DRILLER/DRILL RIG: C. Pierce / VacEx Truck
DRILLING METHOD/FLUID: VACEX / Water
BOREHOLE DIAMETER/CASING SIZE: 12 in. / in.
SPOON SIZE: NA in.
HAMMER TYPE/WEIGHT/DROP: NA / lb / in.
BOREHOLE BACKFILL: Borehole backfilled with Quikrete play sand.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
109.7 / 0											FILL	0.0 - 2.3 ft: Unknown USCS, unknown moisture, unknown density, unknown color, unknown constituent proportions [FILL]	No samples were taken.
105.0 / 5												BOTTOM OF EXPLORATION AT 2.3 FT BELOW GROUND SURFACE [EL. 107.4 FT BCB] Borehole backfilled with Quikrete play sand.	Concrete debris encountered at 2.3 ft. Offset to SB-FD-541. No groundwater observed.
100.0 / 10													
95.0													

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽					
▼					
▼					

GENERAL NOTES

To avoid tree limbs, this location was offset approximately 6.0 ft at 210° SW of the SB-FD-541 stake.
The as-completed location marking was destroyed during the sewer line repair. The as-staked location was used for the as-completed location, which was judged accurate to +/- 1 foot for both vertical and horizontal.
Vacuum excavation performed by Badger Infrastructure Solutions Ltd.
No groundwater encountered.
NA = Not Applicable; NR = Not Recorded

REVIEWED BY: N. Strater | **REV. DATE:** 2026-02-02 | **REV. NO.:** R0 Draft | **BORING NO.:** SB-FD-541-B

SOIL BORING LOG - 26-2-2 16:01 - MWTP - CONTRACT NO. 7556

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-11-05 **END DATE:** 2025-11-07
ADDRESS: 163 Highland Avenue, Needham, MA
COORDINATES: N: 2936706.55 **E:** 731629.02 [NAD83]
GROUND SURFACE ELEVATION: 110.7 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 61.4 ft. / ° (-90° is vertical downward)
LOGGED BY: A. Poudel (WSP)

DRILLING CONTRACTOR: 7NT Engineering
DRILLER/DRILL RIG: C. Pierce / Diedrich D-50 Track (SN: 461)
DRILLING METHOD/FLUID: HSA / None
BOREHOLE DIAMETER/CASING SIZE: 8 in. / 4.25 in.
SPOON SIZE: 2 in.
HAMMER TYPE/WEIGHT/DROP: Auto / 140 lb / 30 in.
BOREHOLE BACKFILL: Borehole backfilled with soil cuttings and Quikrete play sand.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
110.7 / 0											TOPSOIL	0.0 - 2.0 ft: Topsoil	Vacuum excavation performed from 0.0 to 13.0 ft with water used.
110.0	AS	1									FILL	2.0 - 4.0 ft: POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), moist, unknown density, brown, ~75% coarse to fine sand, ~15% coarse to fine subrounded gravel, ~10% non-plastic fines, trace roots [FILL]	AS-1, AS-2, AS-3 classification based on grab samples collected during vaccuum excavation (disturbed).
5	AS	2										4.0 - 6.0 ft: POORLY GRADED SAND (SP), moist, unknown density, light brown, ~90% medium to fine subrounded to subangular sand, ~5% non-plastic fines, ~5% fine subrounded gravel [FILL]	
105.0	AS	3										6.0 - 13.0 ft: POORLY GRADED SAND (SP), moist, unknown density, light brown, ~90% medium to fine subrounded to subangular sand, ~5% non-plastic fines, ~5% fine subrounded gravel [FILL]	
10													
100.0	SS	1	63/24	4, 6, 18, 15	24				0.0			13.0 - 15.0 ft: SILTY SAND (SM), wet, medium dense, yellowish brown, ~75% medium to fine subrounded sand, ~20% non-plastic fines, ~5% coarse to fine subrounded gravel, stratified [GLACIOFLUVIAL DEPOST]	Contact estimated. No head of water was maintained and no HSA plug was used in this borehole.

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽	11/06/2025	1520	43.2	60.0	61.4
▼	11/07/2025	0850	20.9	60.0	61.4
▼					

GENERAL NOTES

Vacuum excavation performed by GVC Construction Inc.
NA = Not Applicable; NR = Not Recorded

REVIEWED BY: N. Strater and S. Consolvo | **REV. DATE:** 2026-06-19 | **REV. NO.:** R0 Final | **BORING NO.:** SB-FD-541-C

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-11-05 **END DATE:** 2025-11-07
ADDRESS: 163 Highland Avenue, Needham, MA
COORDINATES: **N:** 2936706.55 **E:** 731629.02 [NAD83]

LOGGED BY: A. Poudel (WSP)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 61.4 ft. / ° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 110.7 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
15													
95.0	SS	2	29/24	4, 7, 11, 9	18				0.0		GLACIOFLUVIAL DEPOSIT	15.0 - 17.0 ft: SILTY SAND (SM), wet, medium dense, yellowish brown, ~75% coarse to fine subrounded sand, ~15% non-plastic fines, ~10% coarse to fine subrounded gravel [GLACIOFLUVIAL DEPOSIT]	
	SS	3	42/24	13, 13, 14, 14	27	8.4 / --	NP / NP	26.1	0.0			17.0 - 19.0 ft: SILTY GRAVEL WITH SAND (GM), wet to moist, medium dense, brown, 39.5% fine to coarse subangular to angular gravel, 34.4% fine to medium sand, 26.1% non-plastic silt [GLACIOFLUVIAL DEPOSIT]	
20	SS	4	54/24	8, 14, 17, 26	31				0.3			19.0 - 21.0 ft: SILTY SAND WITH GRAVEL (SM), wet, dense, reddish brown, ~50% coarse to fine subrounded to subangular sand, ~35% medium to fine subrounded gravel, ~15% non-plastic fines, bonded [GLACIAL TILL]	
90.0 ▽	SS	5	63/24	15, 19, 25, 48	44				0.5			21.0 - 23.0 ft: POORLY GRADED SAND WITH SILT AND GRAVEL (SP-SM), wet, dense, reddish brown, ~50% coarse to fine subrounded to subangular sand, ~40% medium to fine subrounded gravel, ~10% non-plastic fines [GLACIAL TILL]	
	SS	6	42/24	20, 30, 48, 41	78				0.6			23.0 - 25.0 ft: SILTY SAND WITH GRAVEL (SM), wet, very dense, reddish brown, ~45% coarse to fine subrounded to subangular sand, ~40% medium to fine subrounded gravel, ~15% non-plastic fines [GLACIAL TILL]	
25													
85.0	SS	7	57/21	9, 20, 48, 50/3"	68	5.6 / --		14.2	0.6			25.0 - 26.8 ft: SILTY GRAVEL WITH SAND (GM), wet to moist, very dense, grayish brown, 43.7% fine to coarse subrounded to angular gravel, 42.1% fine to coarse sand, 14.2% non-plastic fines [GLACIAL TILL]	
	SS	8	91/23	5, 18, 33, 50/5"	51				0.6			27.0 - 28.9 ft: POORLY GRADED GRAVEL WITH SAND (GP), wet, very dense, grayish brown, ~50% medium to fine subrounded gravel, ~45% coarse to fine subrounded to subangular sand, 5% non-plastic fines, gap-graded [GLACIAL TILL]	
	SS	9	86/21	20, 43, 49, 50/3"	92				0.4			29.0 - 30.8 ft: POORLY GRADED SAND WITH GRAVEL AND SILT (SP-SM), wet to moist, very dense, grayish brown to reddish brown, ~55% coarse to medium sand, ~35% fine subrounded to subangular gravel, ~10% non-plastic fines [GLACIAL TILL]	
30													
80.0	SS	10	91/11	15, 50/5"	100				0.0			31.0 - 31.9 ft: SILTY SAND WITH GRAVEL (SM), moist to wet, very dense, gray, ~50% fine sand, ~15% subrounded coarse to medium sand, 15% medium to fine subrounded gravel, ~20% non-plastic fines [GLACIAL TILL]	
	SS	11	33/15	3, 7, 50/3"	100				0.0			33.0 - 34.3 ft: SILTY SAND (SM), moist to wet, very dense, gray, ~60% fine sand, ~10% subrounded medium sand, ~30% non-plastic fines [GLACIAL TILL]	

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-11-05 **END DATE:** 2025-11-07
ADDRESS: 163 Highland Avenue, Needham, MA
COORDINATES: **N:** 2936706.55 **E:** 731629.02 [NAD83]

LOGGED BY: A. Poudel (WSP)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 61.4 ft. / ° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 110.7 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
35													
75.0	SS	12	63/24	9, 25, 33, 42	58	13.2/--	NP/NP	32.3	0.5			35.0 - 37.0 ft: SILTY SAND (SM), wet to moist, very dense, mottled reddish brown to yellowish brown, 59.6% fine to medium sand, 8.1% fine to coarse subrounded to angular gravel, 32.3% non-plastic silt [GLACIAL TILL]	
	SS	13	78/9	27, 50/3"	100				1.0			37.0 - 37.8 ft: SILTY SAND (SM), wet, very dense, mottled light brown to grayish brown, ~60% medium to fine sand, ~10% coarse sand, ~20% non-plastic fines, ~10% fine subrounded gravel [GLACIAL TILL]	
	SS	14	78/9	28, 50/3"	100				0.5			39.0 - 39.8 ft: SILTY SAND (SM), wet, very dense, mottled light brown to grayish brown, ~60% medium to fine sand, ~10% coarse sand, ~20% non-plastic fines, ~10% fine subrounded gravel [GLACIAL TILL]	
40													
70.0	SS	15	73/5.5	50/5.5"	100				0.8			41.0 - 41.5 ft: SILTY SAND (SM), wet to moist, very dense, mottled grayish brown to light brown, ~75% coarse to fine subrounded sand, ~15% non-plastic fines, ~10% fine subrounded gravel [GLACIAL TILL]	
▽	SS	16	73/11	43, 50/5"	100				0.9			43.0 - 43.9 ft: POORLY GRADED SAND WITH GRAVEL (SP-SM), wet, very dense, grayish brown, ~50% coarse to fine subrounded sand, 40% fine subrounded to subangular gravel, ~10% non-plastic fines [GLACIAL TILL]	
45											GLACIAL TILL		
65.0	SS	17	21/24	15, 23, 17, 27	40				1.0			45.0 - 47.0 ft: SILTY SAND WITH GRAVEL (SM), wet, dense, gray, ~60% coarse to fine sand, ~25% fine subrounded gravel, ~15% non-plastic fines [GLACIAL TILL]	Possible wash-in noted for SS-17
50	SS	18	100/3	50/3"	100				1.3			50.0 - 50.3 ft: SILTY SAND WITH GRAVEL (SM), wet, very dense, gray, ~65% coarse to fine subrounded sand, ~20% non-plastic fines, ~15% fine subrounded gravel [GLACIAL TILL]	
60.0													

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-11-05 **END DATE:** 2025-11-07
ADDRESS: 163 Highland Avenue, Needham, MA
COORDINATES: **N:** 2936706.55 **E:** 731629.02 [NAD83]

LOGGED BY: A. Poudel (WSP)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 61.4 ft. / ° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 110.7 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
55													
55.0	SS	19	33/24	10 11 13 18	24				0.8		GLACIAL TILL	55.0 - 57.0 ft: POORLY GRADED SAND (SP), wet, medium dense, tan, ~95% coarse to fine subrounded sand, ~5% non-plastic fines [GLACIAL TILL]	Possible wash-in noted for SS-19 or possibly a GLACIOFLUVIAL DEPOSIT lens.
60													
50.0	SS	20	94/17	23 41 50/5"	100				2.5			60.0 - 61.4 ft: SILTY SAND (SM), wet to moist, very dense, gray, ~50% fine sand, ~25% medium to coarse sand, ~15% non-plastic fines, ~10% medium to fine subrounded gravel, gap graded, partially stratified, partially bonded [GLACIAL TILL]	
												BOTTOM OF EXPLORATION AT 61.4 FT BELOW GROUND SURFACE [EL. 49.3 FT BCB] Borehole backfilled with soil cuttings and Quikrete play sand.	
65													
45.0													
70													
40.0													

SOIL BORING LOG - 26-6-19 06:16 - MWTP - CONTRACT NO. 7556

REVIEWED BY: N. Strater and S. Consolvo | **REV. DATE:** 2026-06-19 | **REV. NO.:** R0 Final | **BORING NO.:** SB-FD-541-C

METROPOLITAN WATER TUNNEL PROGRAM

SOIL BORING LOG

BORING NUMBER: SB-FD-542

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-10-22 **END DATE:** 2025-10-22
ADDRESS: Charles Street, Needham, MA
COORDINATES: N: 2936533.16 **E:** 731528.56 [NAD83]
GROUND SURFACE ELEVATION: 108.2 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 7.0 ft. / ° (-90° is vertical downward)
LOGGED BY: R. Nagle (WSP)

DRILLING CONTRACTOR: 7NT Engineering
DRILLER/DRILL RIG: C. Pierce / VacEx Truck
DRILLING METHOD/FLUID: VACEX / Water
BOREHOLE DIAMETER/CASING SIZE: 8 in. / in.
SPOON SIZE: NA in.
HAMMER TYPE/WEIGHT/DROP: NA / lb / in.
BOREHOLE BACKFILL: Borehole backfilled with Quikrete play sand and asphalt patch.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
108.2 / 0											ASPHALT	0.0 - 0.5 ft: Asphalt	Pavement core SB-FD-542-PC-1 collected; see pavement core log. Vacuum excavation performed from 0.5 to 7.0 ft. Large cobbles below asphalt (0.5-1.5 ft.). AS-1, AS-2, AS-3 classification based on grab samples collected during vaccuum excavation (disturbed).
	AS	1							1.7		FILL	0.5 - 3.4 ft: POORLY GRADED SAND (SP), dry, unknown density, tan, 95% fine sand, 5% non-plastic fines [FILL]	
105.0												3.4 - 5.3 ft: POORLY GRADED SAND (SP), dry, unknown density, tan, ~90% fine sand, ~5% non-plastic fines, ~5% coarse gravel [FILL]	
	AS	2							NR				
5												5.3 - 6.0 ft: POORLY GRADED SAND (SP), dry, unknown density, tan, ~85% fine sand, ~10% coarse subrounded gravel, ~5% non-plastic fines [FILL]	Low recovery noted in collection of grab sample AS-3.
	AS	3							NR				
100.0												BOTTOM OF EXPLORATION AT 7.0 FT BELOW GROUND SURFACE [EL. 101.2 FT BCB] Borehole backfilled with Quikrete play sand.	Exploration terminated due to concern of potential nearby utility; however, no obstructions or utilities were observed within the vacuum excavation. Relocated to boring SB-FD-542-A (MW) Samples AS-1, AS-2, and AS-3 were collected during vaccuum excavation (disturbed).
10													
95.0													

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽					
▼					
▼					

GENERAL NOTES

No groundwater encountered.
Vacuum excavation performed by Badger Infrastructure Solutions Ltd.
NA = Not Applicable; NR = Not Recorded

REVIEWED BY: N. Strater | **REV. DATE:** 2026-02-02 | **REV. NO.:** R0 Draft | **BORING NO.:** SB-FD-542

SOIL BORING LOG - 26-2-2 16:01 - MWTP - CONTRACT NO. 7556

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-11-05 **END DATE:** 2025-11-18
ADDRESS: Charles Street, Needham, MA
COORDINATES: N: 2936531.03 **E:** 731540.06 [NAD83]
GROUND SURFACE ELEVATION: 108.4 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 53.0 ft. / ° (-90° is vertical downward)
LOGGED BY: A. Poudel & L. Pua Pita (WSP)

DRILLING CONTRACTOR: 7NT Engineering
DRILLER/DRILL RIG: C. Pierce / Diedrich D-50 Track (SN: 461)
DRILLING METHOD/FLUID: HSA / None
BOREHOLE DIAMETER/CASING SIZE: 8 in. / 4.25 in.
SPOON SIZE: 2 in.
HAMMER TYPE/WEIGHT/DROP: Auto / 140 lb / 30 in.
BOREHOLE BACKFILL: Monitoring well installed.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
108.4 / 0											ASPHALT	0.0 - 0.4 ft: Asphalt	Vacuum excavation performed from 0.0 to 10.0 ft with water used.
											FILL	0.4 - 1.0 ft: Base course gravel and cobbles mixed with coarse to fine sand [FILL]	
	AS	1										1.0 - 2.0 ft: POORLY GRADED SAND (SP), moist, unknown density, light brown, ~95% medium to fine subrounded sand, ~5% medium to fine subrounded gravel [FILL]	
	AS	2										2.0 - 4.0 ft: POORLY GRADED SAND (SP), moist, unknown density, light brown, ~95% coarse to fine subrounded sand, ~5% fine subrounded gravel [FILL]	
105.0													
5	AS	3				9.0 / --		9.3				4.0 - 10.0 ft: POORLY GRADED SAND WITH SILT (SP-SM), moist, unknown density, light brown, 89.9% fine to medium sand, 0.8% fine gravel, 9.3% non-plastic fines [FILL]	AS-1, AS-2, AS-3 classification based on grab samples collected during vaccuum excavation (disturbed).
100.0 ▽													
▼													
10	SS	1	54/24	3, 3, 5, 5	8				64			10.0 - 12.0 ft: SILTY SAND (SM), wet, loose, light brown, ~75% coarse to fine subrounded sand, ~15% non-plastic fines, ~10% medium to fine subrounded gravel [FILL]	A positive head of water was maintained and an HSA plug was used in this borehole. Environmental samples collected taken from 10.0 to 12.0 ft. Drilling paused on 11/12/2025 at 09:30 due to hammer mount breaking. Drilling resumed on 11/14/2025.
▼	SS	2	38/24	2, 1, 1, 2	2	23.7 / --			0.0			12.0 - 14.0 ft: POORLY GRADED SAND (SP), wet, very loose, light yellowish brown, ~95% fine to coarse rounded to subrounded sand, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSIT]	Environmental sample taken from 12.0 to 14.0 ft using the 2-in. and 3-in. spoons.
95.0	SS	3	100/24	2, 4	10				0.0				

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽	11/12/2025	0930	8.8	10.0	12.0
▼	11/17/2025	1153	10.8	51.0	53.0
▼	11/18/2025	0826	9.6	51.0	53.0

GENERAL NOTES

Vacuum excavation performed on 11/05/2025 by GVC Construction Inc. Drilling started from 10.0 ft bgs on 11/12/2025.
NA = Not Applicable; NR = Not Recorded

REVIEWED BY: N. Strater | **REV. DATE:** 2026-02-02 | **REV. NO.:** R0 Draft | **BORING NO.:** SB-FD-542-A (MW)

SOIL BORING LOG - 26-2-2 16:01 - MWTP - CONTRACT NO. 7556

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-11-05 **END DATE:** 2025-11-18
ADDRESS: Charles Street, Needham, MA
COORDINATES: **N:** 2936531.03 **E:** 731540.06 [NAD83]

LOGGED BY: A. Poudel & L. Pua Pita (WSP)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 53.0 ft. / ° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 108.4 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
15	SS	3	100/24	6, 7	10				0.0		GLACIOFLUVIAL DEPOSIT	14.0 - 16.0 ft: POORLY GRADED SAND (SP), wet, loose, light yellowish brown, ~90% fine to coarse rounded sand, ~5% fine gravel, 5% non-plastic fines [GLACIOFLUVIAL DEPOSITS] *(continued from previous)*	
	SS	4	54/24	3, 3, 5, 7	8	23.7 / --			0.0			16.0 - 16.6 ft: POORLY GRADED SAND (SP), wet, loose, light yellowish brown, ~90% fine to coarse rounded sand, ~5% fine gravel, 5% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
90.0	SS	5	75/24	3, 4, 5, 6	9				0.0			16.6 - 18.0 ft: SILTY SAND (SM), wet, loose, olive-yellow, ~80% medium to fine rounded sand, ~20% non-plastic fines [GLACIOFLUVIAL DEPOSITS] 18.0 - 20.0 ft: POORLY GRADED SAND WITH SILT (SP-SM), wet, loose, olive-yellow, ~90% fine to medium rounded sand, ~10% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
20	SS	6	100/24	3, 5, 5, 7	8	21.0 / --	NP / NP	23.9	0.0			20.0 - 22.0 ft: SILTY SAND (SM), wet to moist, loose, light olive-brown to gray, 76.1% fine to medium rounded sand, 23.9% non-plastic silt [GLACIOFLUVIAL DEPOSITS]	
85.0	SS	7	100/24	2, 3, 6, 7	9				0.0			22.0 - 24.0 ft: POORLY-GRADED SAND WITH SILT (SP-SM), wet, loose, light olive-brown, ~90% fine rounded sand, ~10% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
25	SS	8	75/24	3, 4, 8, 9	12			11.5	0.0			24.0 - 26.0 ft: POORLY GRADED SAND WITH SILT (SP-SM), wet to moist, medium dense, light olive-brown, 86.4% fine to medium rounded to subrounded sand, 2.1% fine gravel, 11.5% non-plastic fines, orange horizons from oxidation [GLACIOFLUVIAL DEPOSITS]	
	SS	9	100/24	3, 4, 6, 9	10				0.0			26.0 - 28.0 ft: POORLY-GRADED SAND WITH SILT (SP-SM), wet, loose, light olive-brown to light yellowish brown, ~90% fine to medium rounded to subangular sand, ~10% non-plastic fines, trace fine gravel [GLACIOFLUVIAL DEPOSITS]	
80.0													
30	SS	10	29/24	33, 28, 26, 27	54				0.0		GLACIAL TILL	31.0 - 33.0 ft: SILTY SAND WITH GRAVEL (SM), wet, very dense, light brown, ~70% fine to coarse rounded sand, ~15% gravel, ~15% non-plastic fines, gravel-size fragments could be cobble [GLACIAL TILL]	From 31.0 to 33.0 ft, a 3-inch split-spoon was advanced noted with a higher percentage of gravel.
75.0													

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-11-05 **END DATE:** 2025-11-18
ADDRESS: Charles Street, Needham, MA
COORDINATES: **N:** 2936531.03 **E:** 731540.06 [NAD83]

LOGGED BY: A. Poudel & L. Pua Pita (WSP)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 53.0 ft. / ° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 108.4 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
35													
	SS	11	100/24	4, 17, 28, 19	45	11.0 / --	NP / NP	17.9	4.2			36.0 - 38.0 ft: SILTY SAND WITH GRAVEL (SM), wet to moist, dense, yellowish brown to grayish brown, 51.1% fine to medium rounded sand, 31.0% fine to coarse angular to subangular gravel, 17.9% non-plastic silt, bottom more gravelly [GLACIAL TILL]	
70.0													
40													
	SS	12	78/9	49, 50/3"	100				6.7			41.0 - 41.8 ft: SILTY GRAVEL WITH SAND (GM), moist, very dense, greenish gray, ~70% fine to coarse angular to subangular gravel, ~15% non-plastic fines, ~15% fine to medium sand [GLACIAL TILL]	
65.0											GLACIAL TILL		
45													
	SS	13	75/24	55, 39, 33, 45	72				8.3			46.0 - 48.0 ft: SILTY GRAVEL WITH SAND (GM), moist, very dense, greenish gray, ~60% fine to coarse angular to subangular gravel, ~25% fine to medium sand, ~15% non-plastic fines [GLACIAL TILL]	
60.0													
50													
	SS	14	100/24	49, 49, 21, 27	70				5.2			51.0 - 53.0 ft: WELL-GRADED SAND WITH SILT (SW-SM), wet, very dense, greenish gray, ~50% fine to coarse sand, ~40% angular to rounded gravel, ~10% non-plastic fines [GLACIAL TILL]	
55.0												BOTTOM OF EXPLORATION AT 53.0 FT BELOW GROUND SURFACE [EL. 55.4 FT BCB] 2-in. PVC monitoring well installed. See montoring well installation log.	

SOIL BORING LOG - 26-2-2 16:01 - MWTP - CONTRACT NO. 7556

REVIEWED BY: N. Strater | **REV. DATE:** 2026-02-02 | **REV. NO.:** R0 Draft | **BORING NO.:** SB-FD-542-A (MW)

METROPOLITAN WATER TUNNEL PROGRAM

SOIL BORING LOG

BORING NUMBER: SB-FD-543

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-10-22 **END DATE:** 2025-10-22
ADDRESS: Charles Street and Arlington Road, Needham, MA
COORDINATES: N: 2936551.45 **E:** 731353.38 [NAD83]
GROUND SURFACE ELEVATION: 106.6 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 7.0 ft. / ° (-90° is vertical downward)
LOGGED BY: R. Nagle (WSP)

DRILLING CONTRACTOR: 7NT Engineering
DRILLER/DRILL RIG: C. Pierce / VacEx Truck
DRILLING METHOD/FLUID: VACEX / Water
BOREHOLE DIAMETER/CASING SIZE: 8 in. / in.
SPOON SIZE: NA in.
HAMMER TYPE/WEIGHT/DROP: NA / lb / in.
BOREHOLE BACKFILL: Borehole backfilled with Quikrete play sand and asphalt patch.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
106.6 / 0											ASPHALT	0.0 - 0.6 ft: Asphalt	Pavement core SB-FD-543-PC-1 collected; see pavement core log. Vacuum excavation performed from 0.6 to 7.0 ft. AS-1, AS-2, AS-3 classification based on grab samples collected during vaccuum excavation (disturbed).
											FILL	0.6 - 3.3 ft: POORLY GRADED SAND (SP), moist, unknown density, brown to tan, ~90% fine sand, ~5% fine subrounded gravel, ~5% non-plastic fines [FILL]	
105.0	AS	1							0.9				
												3.3 - 5.0 ft: POORLY GRADED SAND (SP), dry, unknown density, tan, ~95% fine sand, ~5% non-plastic fines [FILL]	
	AS	2							NR				
5												5.0 - 7.0 ft: POORLY GRADED SAND (SP), moist, unknown density, tan, ~90% fine sand, ~5% coarse subangular gravel, ~5% non-plastic fines [FILL]	
	AS	3							NR				
100.0												BOTTOM OF EXPLORATION AT 7.0 FT BELOW GROUND SURFACE [EL. 99.6 FT BCB] Borehole backfilled with Quikrete play sand.	Exploration terminated due to concern of potential nearby utility; however, no obstructions or utilities were observed within the vacuum excavation.
10													
95.0													

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽					
▼					
▼					

GENERAL NOTES

No groundwater encountered.
Vacuum excavation performed by Badger Infrastructure Solutions Ltd.
All samples at this location were collected during vaccuum excavation (disturbed samples).
NA = Not Applicable; NR = Not Recorded

REVIEWED BY: N. Strater | **REV. DATE:** 2026-02-02 | **REV. NO.:** R0 Draft | **BORING NO.:** SB-FD-543

SOIL BORING LOG - 26-2-2 16:01 - MWTP - CONTRACT NO. 7556

METROPOLITAN WATER TUNNEL PROGRAM

SOIL BORING LOG

BORING NUMBER: SB-FD-543-A (MW)

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-11-05 **END DATE:** 2025-12-09
ADDRESS: Charles Street and Arlington Road, Needham, MA
COORDINATES: N: 2936553.63 **E:** 731356.32 [NAD83]
GROUND SURFACE ELEVATION: 106.9 ft. [Boston City Base]
TOTAL DEPTH/PLUNGE: 49.6 ft. / ° (-90° is vertical downward)
LOGGED BY: A. Poudel & L. Pua Pita (WSP)

DRILLING CONTRACTOR: 7NT Engineering
DRILLER/DRILL RIG: C. Pierce / Diedrich D-50 (SN: 461)
DRILLING METHOD/FLUID: DW / Water
BOREHOLE DIAMETER/CASING SIZE: 4.25 in. / 4 in.
SPOON SIZE: 2 in.
HAMMER TYPE/WEIGHT/DROP: Auto / 140 lb / 30 in.
BOREHOLE BACKFILL: Monitoring well installed.

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plasticity Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
106.9 / 0											ASPHALT	0.0 - 0.4 ft: Asphalt	Vacuum excavation performed from 0.0 to 10.0 ft with water used.
											FILL	0.4 - 1.0 ft: Base course gravel and cobbles mixed with coarse to fine sand [FILL]	
	AS	1										1.0 - 2.0 ft: SILTY SAND (SM), moist, unknown density, brown, ~75% medium to fine sand, ~15% non-plastic fines, ~10% coarse to fine subroundeded gravel [FILL]	
105.0	AS	2										2.0 - 4.0 ft: POORLY GRADED SAND (SP), moist, unknown density, light brown, ~95% medium to fine sand, ~5% non-plastic fines and fine gravel [FILL]	AS-1, AS-2, AS-3 based on grab samples collected during vaccuum excavation (disturbed).
5	AS	3				8.5 / --		4.1				4.0 - 6.0 ft: POORLY GRADED SAND (SP), moist, unknown density, light yellowish brown, 95.9% medium to fine sand, 4.1% non-plastic fines [FILL]	Contact between Fill and Glaciofluvial Deposit approximated.
100.0											GLACIOFLUVIAL DEPOSIT		
10	SS	1	42/24	3, 2, 4, 5	6				110			10.0 - 12.0 ft: SILTY SAND (SM), wet, loose, brownish yellow to gray, ~60% fine sand, ~30% non-plastic fines, ~10% fine to coarse rounded to subrounded gravel [GLACIOFLUVIAL DEPOSIT]	Environmental sample taken from 10.0 to 14.0 ft using the 2-in. and 3-in. spoons.
95.0	SS	2	27/24	9, 10, 6, 6	16				218			12.0 - 14.0 ft: WELL-GRADED SAND (SW), wet, medium dense, yellowish brown, ~80% fine to medium rounded to subangular sand, ~20% fine to coarse gravel [GLACIOFLUVIAL DEPOSIT]	
	SS	3	58/24	6, 5	11				224			14.0 - 16.0 ft: POORLY GRADED SAND (SP), wet, medium dense, olive gray, ~95% fine to medium rounded sand, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSIT]	

GROUNDWATER LEVEL READINGS

Symbol	Date	Time	Water Depth (ft)	Casing Depth (ft)	Boring Depth (ft)
▽	11/05/2025	11:00	9.5	NA	10.0
▼	12/04/2025	1526	7.2	42.0	44.0
▼	12/09/2025	0930	7.3	42.0	49.6

GENERAL NOTES

Vacuum excavation performed on 11/05/2025 by GVC Construction Inc. Drilling started from 10.0 ft bgs on 12/05/2025.
NA = Not Applicable; NR = Not Recorded

REVIEWED BY: N. Strater and S. Consolvo | **REV. DATE:** 2026-06-19 | **REV. NO.:** R0 Final | **BORING NO.:** SB-FD-543-A (MW)

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-11-05 **END DATE:** 2025-12-09
ADDRESS: Charles Street and Arlington Road, Needham, MA
COORDINATES: **N:** 2936553.63 **E:** 731356.32 [NAD83]

LOGGED BY: A. Poudel & L. Pua Pita (WSP)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 49.6 ft. / ° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 106.9 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
15	SS	3	58/24	6 5	11				224		GLACIOFLUVIAL DEPOSIT	14.0 - 16.0 ft: POORLY GRADED SAND (SP), wet, medium dense, olive gray, ~95% fine to medium rounded sand, ~5% non-plastic fines [GLACIOFLUVIAL DEPOSIT] *(continued from previous)*	
90.0	SS	4	75/24	5 5 5 7	10			10.6	266			16.0 - 18.0 ft: POORLY GRADED SAND WITH SILT (SP-SM), wet to moist, loose, olive gray to grayish brown, 86.2% fine to medium sand, 3.2% fine subrounded gravel, 10.6% non-plastic fines [GLACIOFLUVIAL DEPOSIT]	
	SS	5	42/24	5 4 5 6	9				263			18.0 - 20.0 ft: POORLY GRADED SAND WITH SILT (SP-SM), wet, loose, olive gray, ~90% fine to coarse rounded sand, ~10% non-plastic fines [GLACIOFLUVIAL DEPOSIT]	
20	SS	6	67/24	5 5 5 6	10				302			20.0 - 22.0 ft: SILTY SAND (SM), wet, loose, light olive gray, ~80% fine to coarse rounded sand, ~20% non-plastic fines [GLACIOFLUVIAL DEPOSIT]	
85.0	SS	7	46/24	4 6 7 8	13	22.0 --			163			22.0 - 24.0 ft: POORLY GRADED SAND WITH SILT (SP-SM), wet, medium dense, light brownish gray, ~85% fine to medium rounded sand, ~10% non-plastic fines, ~5% rounded gravel [GLACIOFLUVIAL DEPOSIT]	
25	SS	8	50/24	4 4 5 6	9				302			24.0 - 26.0 ft: SILTY SAND (SM), wet, loose, light brownish gray, ~80% fine to coarse rounded sand, ~20% non-plastic fines [GLACIOFLUVIAL DEPOSIT]	
80.0	SS	9	71/24	3 5 5 8	10				43			26.0 - 28.0 ft: POORLY GRADED SAND WITH SILT (SP-SM), wet, loose, yellowish brown, ~90% fine to coarse rounded to subangular sand, ~10% non-plastic fines [GLACIOFLUVIAL DEPOSIT]	
30													
75.0	SS	10	67/24	6 7 7 8	14	15.0 --	NP NP	9.8	3.1			31.0 - 33.0 ft: WELL-GRADED SAND WITH SILT (SW-SM), wet to moist, medium dense, light olive brown, 82.6% fine to coarse rounded to subrounded sand, 7.6% fine subangular to angular gravel, 9.8% non-plastic silt [GLACIOFLUVIAL DEPOSIT]	

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
START DATE: 2025-11-05 **END DATE:** 2025-12-09
ADDRESS: Charles Street and Arlington Road, Needham, MA
COORDINATES: **N:** 2936553.63 **E:** 731356.32 [NAD83]

LOGGED BY: A. Poudel & L. Pua Pita (WSP)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 49.6 ft. / ° (-90° is vertical downward)
GROUND SURFACE ELEVATION: 106.9 ft. [Boston City Base]

Elevation (ft) / Depth (ft)	Sample Type	Sample Number	Recovery (%)/ Penetration (in)	Blow Counts (Blows/6 in.)	Field N-Value	Laboratory Testing: Moist. Cont./ Org. Cont. (%)	Laboratory Testing: Liquid Limit/ Plast. Index	Laboratory Testing: % Passing #200 Sieve	OVM (ppm)	Graphic Log	Strata	Material Description	Remarks and Other Field Tests
35													
70.0	SS	11	21/24	6 5 6 6	11				3.7		GLACIOFLUVIAL DEPOSIT	36.0 - 38.0 ft: POORLY GRADED SAND (SP), wet, medium dense, light yellowish brown, ~80% fine to coarse rounded to subrounded sand, ~15% coarse sand, ~5% non-plastic fines [GLACIOFLUVIAL]	
40													
65.0	SS	12	50/24	4 4 6 7	10				3.8			41.0 - 43.0 ft: POORLY GRADED SAND WITH SILT (SP-SM), wet, loose, light yellowish brown, ~90% fine to medium rounded sand, ~10% non-plastic fines, strands of orange (possibly oxides) [GLACIOFLUVIAL]	
45	SS	13	35/24	38 58 44 33	102				4.4			44.0 - 44.3 ft: POORLY GRADED SAND WITH SILT (SP-SM), wet, very dense, light yellowish brown, ~90% fine to coarse rounded sand, ~10% non-plastic fines, horizons of orange (possibly oxides) [GLACIOFLUVIAL] 44.3 - 46.0 ft: SILTY GRAVEL (GM), wet, very dense, light yellowish brown, ~70% rounded to subrounded gravel, ~20% non-plastic fines, ~10% sand [GLACIAL TILL]	
60.0	SS	14	50/24	25 23 30 30	55			21.6	3.5		GLACIAL TILL	46.0 - 48.0 ft: SILTY SAND WITH GRAVEL (SM), wet to moist, very dense, reddish to yellowish brown, 44.3% fine to coarse subrounded sand, 34.1% fine to coarse subrounded to angular gravel, 21.6% non-plastic fines [GLACIAL TILL]	
50	SS	15	100/1	50/1"	100				0			49.5 - 49.6 ft: POORLY GRADED GRAVEL (GP), wet, very dense, gray, fragments of subrounded to subangular rock [GLACIAL TILL] BOTTOM OF EXPLORATION AT 49.6 FT BELOW GROUND SURFACE [EL. 57.3 FT BCB] 2-in. PVC monitoring well installed. See montoring well installation log.	
55.0													

SOIL BORING LOG - 26-6-19 06:19 - MWTP - CONTRACT NO. 7556

REVIEWED BY: N. Strater and S. Consolvo | **REV. DATE:** 2026-06-19 | **REV. NO.:** R0 Final | **BORING NO.:** SB-FD-543-A (MW)

METROPOLITAN WATER TUNNEL PROGRAM

HAND AUGER LOG

HAND AUGER NUMBER: HA-FD-501

MWRA CONTRACT NUMBER:	7556	CONSULTANT/ CONTRACTOR:	WSP
MWRA CONTRACT NAME:	Final Design Engineering Services	FOREMAN:	S. Consolvo
LOCATION:	Needham Dewatering Drainage Line at 161 Highland Avenue, Needham, MA	HAND AUGER EQUIPMENT AND SIZE:	Kobalt 40-inch Fiberglass Handle Digging Shovel (Blade Width of 8.7 inches)
START DATE:	2025-12-15 LOGGED BY: S. Consolvo	TOTAL DEPTH:	11 in.
END DATE:	2025-12-15	HAND EXCAVATION DIMENSIONS:	10-in.-diameter (approximate)
COORDINATES:	N: 2936758.39 E: 731651.33 Datum: [NAD 83]	WEATHER:	Sunny and Clear 10-20 degrees Fahrenheit
GROUND SURFACE ELEVATION:	89.8 ft. Datum: [Boston City Base]		

Elevation (ft)	Depth (in.)	Hand Excavation Effort	Sample Type	Sample No.	Lab Testing MC/OC (%)	Lab Testing LL/PI	Lab Testing %F	Stratum	USCS Group Symbol	Material Description	Remarks
89.8	0	E	None	Not Applicable	Not Applicable	Not Applicable	Not Applicable	TOPSOIL		0 - 1 in: TOPSOIL	
	1							ALLUVIAL DEPOSIT	SM	1 - 3 in: SILTY SAND (SM), moist to wet, unknown density, black to dark bluish gray, ~60% fine to coarse sand, ~20% fine to coarse subangular gravel, ~20% non-plastic fines, root matter, earthy odor [ALLUVIAL DEPOSITS]	
89.6	2										
	3	D to VD	AS	1	NOT TESTED	NOT TESTED	3.5	GLACIO-FLUVIAL DEPOSITS	SP	3 - 11 in.: POORLY GRADED SAND (SP), wet, unknown density, tannish brown, 62% fine to coarse sand, 34% fine to coarse subangular gravel, 4% non-plastic fines [GLACIOFLUVIAL DEPOSITS]	
89.5	4										
	5										
89.3	6										
	7										
89.1	8										
	9										
89.0	10										
	11									BOTTOM OF EXPLORATION AT 0.9 FT BELOW GROUND SURFACE [EL. 88.9 FT BCB]	
88.8	12										
	13										
88.6	14										
	15										
88.5	16										

ABBREVIATIONS

%F = Percent Fines Passing #200 Sieve
D = Difficult
E = Easy
HAR = Hand Auger Refusal
LL = Liquid Limit
M = Moderate
R = Rapid
REV. = Revision
S = Slow
MC = Moisture Content
NO. = Number
OC = Organic Content
PI = Plasticity Index
VD = Very Difficult

GENERAL NOTES

Hand auger performed within 1 foot of the southern edge of the waterline in the Charles River. The hand auger was first attempted within the Charles River, but cobbles-sized stones and frozen soil were encountered at the surface riverbed and prevented penetration with the hand tools available.

Martinez Couch & Associates personnel were present to survey the hand auger location.

STANDING GROUNDWATER IN DUG HAND AUGER EXCAVATION

Elapsed Time	Water Depth (in.)	Excavation Depth (in.)	Remarks
~10 min	2.3	11.0	--

GROUNDWATER DEPTHS/ ENTRY RATES

Entry Depth (in.)	Entry rates (None, S, M, R)	Remarks
5.0	None	--
8.2	M	--
11.0	R	--

REVIEWED BY: E. Ghayyem | REV. DATE: 2026-01-27 | REV. NO.: R0 Draft | HAND AUGER NO.: HA-FD-501

Form Last Revised: 2026-01-13

HAND AUGER LOG - 2026-01-27 13:56 - MWTP - CONTRACT NO. 7556

METROPOLITAN WATER TUNNEL PROGRAM

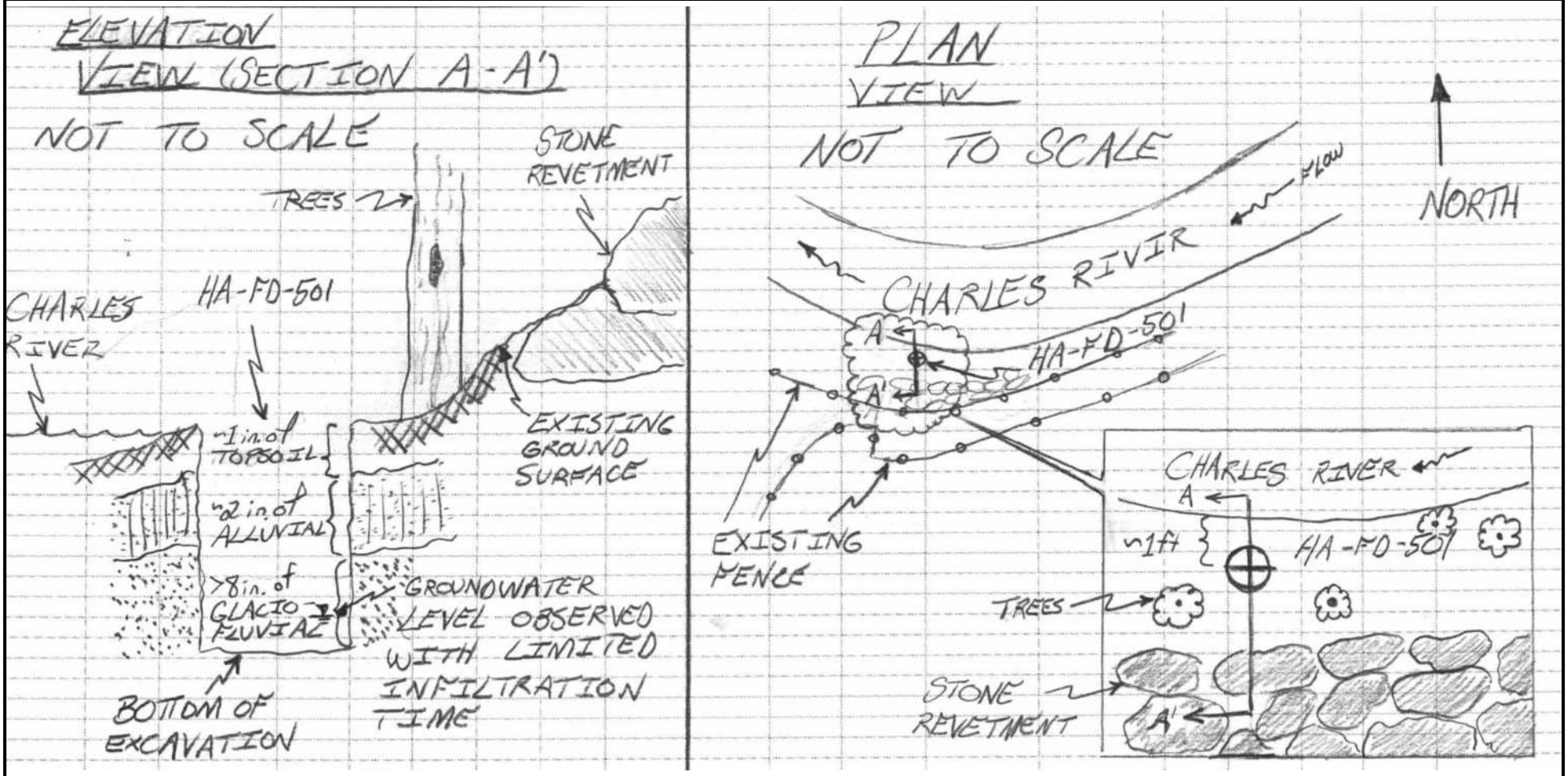
HAND AUGER LOG

HAND AUGER NUMBER: HA-FD-501

MWRA CONTRACT NUMBER:	7556	CONSULTANT/CONTRACTOR:	WSP
MWRA CONTRACT NAME:	Final Design Engineering Services	FOREMAN:	S. Consolvo
LOCATION:	Needham Dewatering Drainage Line at 161 Highland Avenue, Needham, MA	HAND AUGER EQUIPMENT AND SIZE:	Kobalt 40-inch Fiberglass Handle Digging Shovel (Blade Width of 8.7 inches)
START DATE:	2025-12-15 LOGGED BY: S. Consolvo	TOTAL DEPTH:	11 in.
END DATE:	2025-12-15	HAND EXCAVATION DIMENSIONS:	10-in.-diameter (approximate)
COORDINATES:	N: 2936758.39 E: 731651.33 Datum: [NAD 83]	WEATHER:	Sunny and Clear 10-20 degrees Fahrenheit
GROUND SURFACE ELEVATION:	89.8 ft. Datum: [Boston City Base]		

SKETCH

(Sketch the vertical profile and plan view of the hand auger, showing strata breaks and any features, including utility, obstruction and structure elements encountered in the excavation, including dimensions, locations and depths of those features)



METROPOLITAN WATER TUNNEL PROGRAM

HAND AUGER LOG

HAND AUGER NUMBER: HA-FD-501

MWRA CONTRACT NUMBER:	7556	CONSULTANT/CONTRACTOR:	WSP
MWRA CONTRACT NAME:	Final Design Engineering Services	FOREMAN:	S. Consolvo
LOCATION:	Needham Dewatering Drainage Line at 161 Highland Avenue, Needham, MA	HAND AUGER EQUIPMENT AND SIZE:	Kobalt 40-inch Fiberglass Handle Digging Shovel (Blade Width of 8.7 inches)
START DATE:	2025-12-15 LOGGED BY: S. Consolvo		
END DATE:	2025-12-15	TOTAL DEPTH:	11 in.
COORDINATES:	N: 2936758.39 E: 731651.33 Datum: [NAD 83]	HAND EXCAVATION DIMENSIONS:	10-in.-diameter (approximate)
GROUND SURFACE ELEVATION:	89.8 ft. Datum: [Boston City Base]	WEATHER:	Sunny and Clear 10-20 degrees Fahrenheit

HAND AUGER PHOTOGRAPHS



HAND AUGER PHOTOGRAPH NUMBER: HA-FD-501-P1

PHOTOGRAPH VIEWING DIRECTION: East

PHOTOGRAPH DESCRIPTION: Hand auger excavation with the Charles River to the northeast of the exploration.



HAND AUGER PHOTOGRAPH NUMBER: HA-FD-501-P2

PHOTOGRAPH VIEWING DIRECTION: Southeast

PHOTOGRAPH DESCRIPTION: Close-up view of the hand auger excavation with a scale placed at the bottom of the excavation.



HAND AUGER PHOTOGRAPH NUMBER: HA-FD-501-P3

PHOTOGRAPH VIEWING DIRECTION: Not Applicable

PHOTOGRAPH DESCRIPTION: Environmental sample containers filled with sediment from AS-1.

APPENDIX A-2

MassDOT BORING LOGS

Moving Massachusetts Forward massDOT Highway	NEW HAMPSHIRE BORING, INC. P.O. Box 165 Derry, NH 03038	Phone: (603)437-1610 Fax: (603) 437-0034 E Mail: nhb@nhboring.com	Boring # SS-118 Scale 1" = 5'

City/Town: Needham/Wellesley	Bridge Section V	Project File No: 603711	Contract No:
Project: I-95 (Route 128) Transportation Improvement Project		Date & Time Started: 6/14/11 7:15 am	Total Hours:
Groundwater Depth: 19'	Date & Time: 6/14/11 2:00 pm	Date & Time Completed: 6/14/11 1:00 pm	5:45
Coordinates: N 2,935,642.63	E 730,795.91	Driller's Name: Chris Knight	Helper's Name:
Ground Elevation:119'	Inspector's Name:	Inspector's Company: GZA GeoEnvironmental, Inc.	

Sample Number	Depth Range (Feet)	Blow Counts per 6" Coring Times Minute Per Foot				Recovery (Inches)	Field Description	Strata Changes
							TOPSOIL	8"
S-1	8" - 2'	2	2	1	2	8"		
S-2	3' - 5'	7	7	3	6	0"	No recovery	
S-3	5' - 6'4"	19	38	82/4"		7"	Wet, very dense, brown, FINE TO COARSE SAND, some fine gravel, trace inorganic silt.	8'
S-4	8' - 10'	63	16	14	9	8"	Top 3": Weathered, gray, COBBLES. Bottom 5": Moist, medium dense, brown, INORGANIC SILT, some fine gravel, some fine sand.	9'7"
								13'
S-5	13' - 15'	26	37	38	33	7"	Wet, very dense, brown, FINE TO COARSE GRAVEL AND FINE TO COARSE SAND, trace inorganic silt.	18'
S-6	18' - 20'	23	33	29	22	4"	Wet, very dense, brown, FINE TO COARSE GRAVEL, some fine to coarse sand, trace inorganic silt.	23'
S-7	23' - 24'11"	14	53	56	74/8"	8"	Moist, very dense, brown, FINE SAND, some coarse gravel. Cobble fragments in spoon tip.	
S-8	28' - 30'	21	22	21	27		Wet, dense, brown, FINE TO COARSE SAND, some fine to coarse gravel, trace inorganic silt.	
S-9	33' - 33'	33	28	14	17		Wet, dense, brown, FINE TO COARSE SAND, some fine to coarse gravel, trace inorganic silt.	35'
							Bottom of Exploration - 35'	

Notes:

Protective Device - Stand: Box:
Well Depth: Solid Pipe:
Stick Up Pipe: Screen Pipe:

Penetration Resistance (N) Guide:

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
		Hard	Over 30

N=Sum of Second and Third 6" Blow Counts

Terms Used for Second Entry of Descriptions: and = 40-50%, some = 10-40%, trace = 10% or less

Type of Drill Rig: CME-75

Casing Type: HW Size: 4"
Depth:
Hammer Weight: 300 lb Fall: 30"

Signs: Cones: Arrow-Board:

Sampler Type: S/S Size: 1 3/8"
Automatic Hammer Weight:
Safety Hammer Weight: 140 lb
Donut Hammer Weight: Fall: 30"

Core Barrel Type: Size:

Moving Massachusetts Forward massDOT Highway

NEW HAMPSHIRE BORING, INC.
P.O. Box 165
Derry, NH 03038
Phone: (603)437-1610
Fax: (603) 437-0034
E Mail: nhb@nhboring.com

Boring # BMP-58

Scale 1" = 5'

City/Town: Needham/Wellesley	Bridge Section V	Project File No: 603711	Contract No:
Project: I-95 (Route 128) Transportation Improvement Project		Date & Time Started: 5/16/11 8:30 am	Total Hours:
Groundwater Depth: 14.5' Date & Time: 5/16/11 10:30 am		Date & Time Completed: 5/16/11 10:30 am	2
Coordinates: N 2,935,857.17 E 731,099.83	Driller's Name: Jason Stokes	Helper's Name: Gary Twombly III	
Ground Elevation: 111'	Inspector's Name: Adam Michonski	Inspector's Company: GZA GeoEnvironmental, Inc.	

Sample Number	Depth Range (Feet)	Blow Counts per 6" Coring Times Minute Per Foot				Recovery (Inches)	Field Description	Strata Changes
							TOPSOIL 4"	
S-1	4" - 2'	4	4	14	19	8"	Dry, medium dense, brown, FINE SAND, trace fine gravel.	2'
S-2	2' - 4'	34	17	19	15	8"	Dry, dense, brown, FINE SAND AND FINE GRAVEL.	4'
S-3	4' - 6'	14	8	8	8	6"	Dry, medium dense, brown, FINE SAND, trace coarse sand, trace fine gravel.	
S-4	6' - 8'	9	7	9	10	8"	Dry, medium dense, brown, FINE SAND, trace fine gravel, trace inorganic silt.	
S-5	8' - 10'	14	38	31	15	14"	Dry, very dense, brown, FINE SAND AND COARSE SAND, trace fine gravel.	
S-6	10' - 12'	14	9	10	10	19"	Dry, medium dense, brown, FINE SAND, trace inorganic silt.	
S-7	12' - 14'	14	12	10	4	18"	Dry, medium dense, brown, FINE SAND, some peat, trace fine gravel.	14'
S-8	14' - 16'	13	13	19	34	2"	Wet, dense, gray, FINE GRAVEL, some coarse sand, trace inorganic silt.	
S-9	16' - 18'	33	34	38	38	16"	Wet, very dense, gray, FINE GRAVEL, some coarse sand, trace inorganic silt.	18'
							Bottom of Exploration - 18'	

Notes:

Protective Device - Stand: Box:
Well Depth: Solid Pipe:
Stick Up Pipe: Screen Pipe:

Penetration Resistance (N) Guide:

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
N=Sum of Second and Third 6" Blow Counts		Hard	Over 30

Terms Used for Second Entry of Descriptions: and = 40-50%, some = 10-40%, trace = 10% or less

Type of Drill Rig: CME-75
Casing Type: HW Size: 4"
Depth: 16'
Hammer Weight: 300 lb Fall: 30"
Signs: Cones: Arrow-Board:
Sampler Type: S/S Size: 1 3/8"
Automatic Hammer Weight:
Safety Hammer Weight: 140 lb
Donut Hammer Weight: Fall: 30"
Core Barrel Type: Size:

Moving Massachusetts Forward massDOT Highway

NEW HAMPSHIRE BORING, INC.
P.O. Box 165
Derry, NH 03038
Phone: (603)437-1610
Fax: (603) 437-0034
E Mail: nhb@nhboring.com

Boring # BMP-70

Scale 1" = 5'

City/Town: Needham/Wellesley	Bridge Section V	Project File No: 603711	Contract No:
Project: I-95 (Route 128) Transportation Improvement Project		Date & Time Started: 07-11-11 7:00 am	Total Hours:
Groundwater Depth: 15.7' Date & Time: 07-11-11 10:00am		Date & Time Completed: 07-11-11 11:00 am	4
Coordinates: N 2935884.7 E 731060.5	Driller's Name: Jason Stokes	Helper's Name: Gary Twombly Jr.	
Ground Elevation: 112±	Inspector's Name: Adam Michonski	Inspector's Company: GZA GeoEnvironmental, Inc.	

Sample Number	Depth Range (Feet)	Blow Counts per 6" Coring Times Minute Per Foot				Recovery (Inches)	Field Description	Strata Changes
							TOPSOIL 4"	
S-1	0' - 2'	7	12	16	18	14"	Dry, medium dense, FINE TO MEDIUM SAND, some gravel, trace inorganic silt.	
S-2	2' - 4'	28	20	16	21	14"	Dry, medium dense, FINE TO MEDIUM SAND, some gravel, trace inorganic silt.	
S-3	4' - 6'	10	10	10	11	16"	Moist, medium dense, brown, FINE TO MEDIUM SAND AND INORGANIC SILT, trace fine gravel.	
S-4	6' - 8'	18	15	16	16	20"	Moist, medium dense, brown, FINE TO MEDIUM SAND AND INORGANIC SILT, trace fine gravel.	
S-5	8' - 10'	5	8	68	51	8"	Moist, very dense, gray-brown, FINE TO MEDIUM SAND AND INORGANIC SILT, trace fine gravel.	
S-6	10' - 12'	28	21	15	10	16"	Moist, dense, brown, FINE TO COARSE SAND, some fine gravel, trace inorganic silt.	
S-7	12' - 14'	8	13	23	21	12"	Dry, medium dense, gray-brown, FINE TO MEDIUM SAND AND GRAVEL, some inorganic silt.	
S-8	14' - 16'	19	20	17	16	18"	Moist, dense, gray-brown, FINE TO COARSE SAND AND GRAVEL, trace inorganic silt.	
S-9	16' - 18'	15	15	16	20	7"	Wet, dense, gray-brown, FINE TO COARSE SAND AND GRAVEL, trace inorganic silt.	
S-10	18' - 20'	17	9	9	18	8"	Wet, medium dense, dark brown, PEAT.	
S-11	20' - 22'	16	11	10	8	14"	Top 6"; Wet, medium dense, dark brown, PEAT, bottom 6"; Wet, gray, FINE TO COARSE SAND AND GRAVEL, trace inorganic silt.	22'
							Bottom of Exploration = 22'	

Notes:

Protective Device - Stand: Box:
Well Depth: Solid Pipe:
Stick Up Pipe: Screen Pipe:

Penetration Resistance (N) Guide:

Cohesionless Soils (Sands, Gravels)		Cohesive Soils (Silts, Clays)	
Relative Density	Penetration Resistance	Consistency	Penetration Resistance
Very Loose	0 - 4	Very Soft	0 - 2
Loose	4 - 10	Soft	2 - 4
Medium Dense	10 - 30	Medium Stiff	4 - 8
Dense	30 - 50	Stiff	8 - 15
Very Dense	Over 50	Very Stiff	15 - 30
		Hard	Over 30

N=Sum of Second and Third 6" Blow Counts

Terms Used for Second Entry of Descriptions: and = 40-50%, some = 10-40%, trace = 10% or less

Type of Drill Rig: Deidrich D-50

Augers 2.25" HW
22'
Hammer Weight: 300 lb Fall: 30"

Signs: Cones: Arrow-Board:

Sampler Type: S/S Size: 1 3/8"
Automatic Hammer Weight:
Safety Hammer Weight: 140 lb
Donut Hammer Weight: Fall: 30"

Core Barrel Type: Size:

APPENDIX A-3

PAVEMENT CORES

Table 2: Pavement Cores

Exploration No.	Exploration Location[1]			Ground Surface Elevation[3] (ft)	Bottom of Pavement		General Pavement Core Description
	Nearest Address	Northing[2] (ft)	Easting[2] (ft)		Depth (ft)	Elevation (ft)	
B-GSS-462-PC	42 Fremont St Needham, MA	2936750.63	730628.23	113.0	0.15	112.8	0-0.25 in: Surface pavement 0.25-1.8 in: Dense-graded asphalt concrete, subangular stone aggregate
B-GSS-463-PC	29 Charles St Needham, MA	2936716.57	731100.51	106.9	0.4	106.5	0-0.25 in: Surface pavement 0.25-1.4 in: Dense-graded asphalt concrete, subangular stone aggregate 1.4-4.8 in: Gap-graded asphalt concrete, angular stone aggregate
B-GSS-464-PC	76 Wexford St Needham, MA	2936488.93	730939.77	105.9	0.5	105.4	0-0.25 in: Surface pavement 0.25-1.8 in: Dense-graded asphalt concrete, subangular stone aggregate 1.8-2.0 in: Paved-over surface pavement layer 2.0-3.0 in: Dense-graded asphalt concrete, subangular stone aggregate 3.0-4.8 in: Gap-graded asphalt concrete, angular stone aggregate, cavities up to .25 in 4.8-6.0 in: Gap-graded asphalt concrete, subangular to subrounded stone aggregate
B-GSS-466-PC	19 Brook Rd Needham, MA	2936129.78	731099.96	109.1	0.3	108.8	0-0.25 in: Surface pavement 0.25-2.4 in: Dense-graded asphalt concrete, subangular stone aggregate 2.4-3.6 in: Gap-graded asphalt concrete, subangular to subrounded stone aggregate

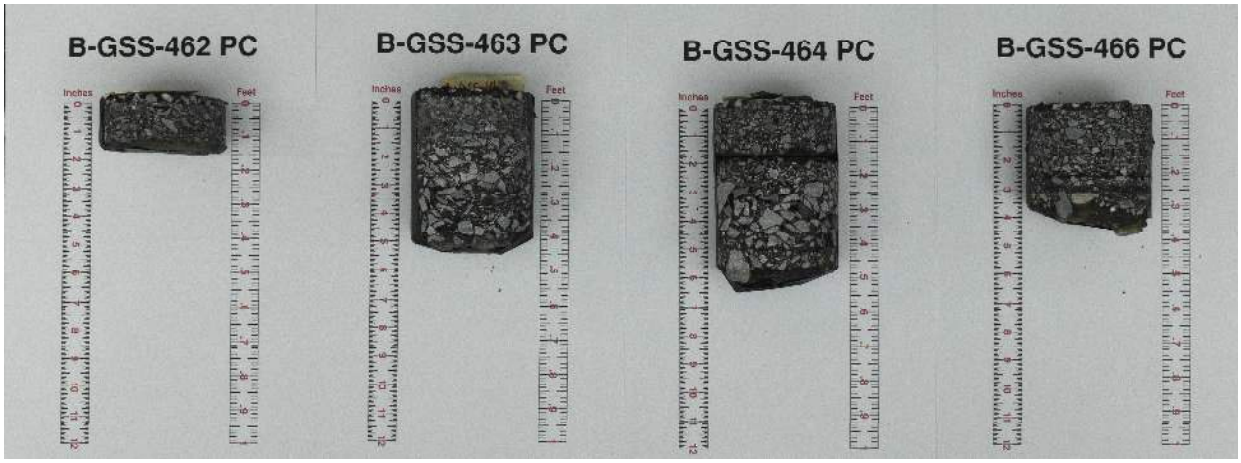
Notes:

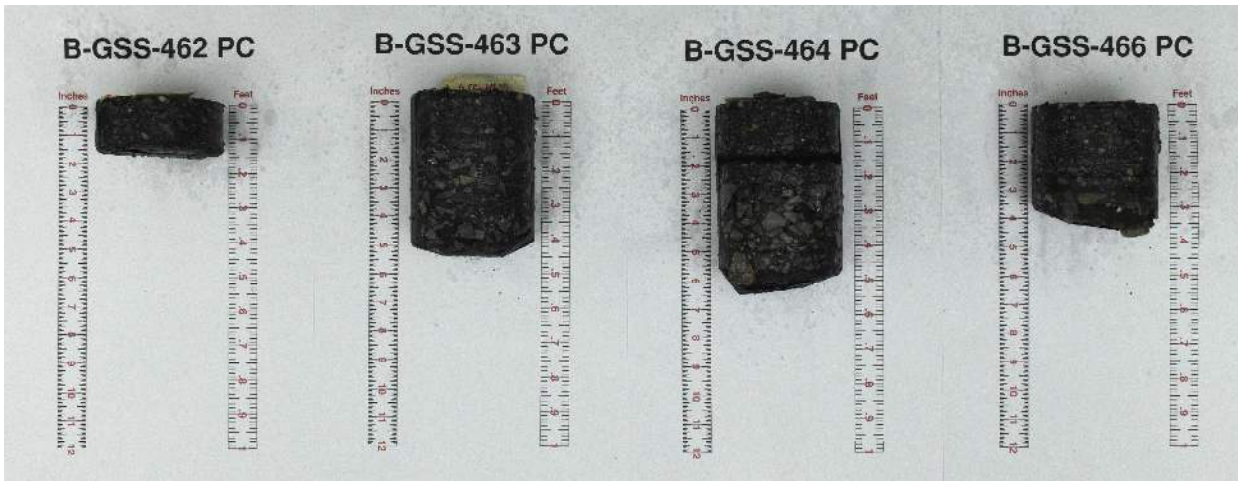
1. Locations surveyed by Nitsch Engineering with the Real Time Kinematic (RTK) survey using a Leica GS16 receiver connected to SmartNet North America RTK Network.
2. Horizontal coordinates are projected to Massachusetts State Plane Mainland Zone, North American Datum (NAD), 1983.
3. Elevations are referenced to MWRA Water Base (MWRAW) datum, which is based on Boston City Base (BCB) datum (i.e. El. 0.00 MWRAW = El. 0.00 BCB).

Abbreviations:

1. ft = feet
2. MWRA = Massachusetts Water Resources Authority
3. BCB = Boston City Base
4. in = inches

Dry (top) and Wet (bottom) Photos – B-GSS-462-PC, B-GSS-463-PC, B-GSS-464-PC, and B-GSS-466-PC





METROPOLITAN WATER TUNNEL PROGRAM

PAVEMENT CORE LOG

BORING NUMBER: SB-FD-542

MWRA CONTRACT NUMBER:	7556	CONTRACTOR:	7NT Engineering
MWRA CONTRACT NAME:	Final Design Engineering Services	FOREMAN:	C. Pierce
LOCATION:	Charles Street and Arlington Road, Needham, MA	EQUIPMENT:	8-inch Rigid Core Machine
START DATE:	2025-10-22 LOGGED BY: R. Naggle (FDE)	CORING DRILL BIT TYPE AND MODEL:	Diamond Bit
END DATE:	2025-10-22	TOTAL DEPTH:	0.5 ft
COORDINATES:	N: 2936533.16 E: 731528.56 Datum: NAD83	CORE BIT DIMENSIONS:	8-inch diameter and 18-inch length
GROUND SURFACE ELEVATION:	108.2 ft Datum: Boston City Base	WEATHER:	Intermittent Rain (50-60s degrees F)

Elevation (ft)	Depth (in.)	Photograph No.	Sample Location	Sample No.	Sample Type	Pavement Layer	Material Description	Remarks
108.2 - 108.0	0 - 2	[SEE PAGE 2]	Charles Street	1	PC	Surface Course	0.0 - 0.2 ft: Surface pavement with intact dense-graded angular to subangular aggregate, black asphalt matrix [FILL]	Core separated into two pieces.
108.0 - 107.7	2 - 6					Binder Course	0.2 - 0.5 ft: Gap-graded asphat concrete, angular to subangular aggregates, black aspalt matrix	

LEGEND

REV. = Revision
NO. = Number

GENERAL NOTES

Vacuum excavation was performed directly beneath this pavement core.

PAVEMENT CORE DIMENSIONS

Diameter (in.)	Length (in.)	Pavement Layer	Remarks
8.0	2.0	Surface Pavement	
8.0	4.0	Binder Course	

REVIEWED BY: E. Ghayyem | REV. DATE: 2026-01-27 | REV. NO.: R0 Draft | BORING NO.: SB-FD-542

Form Last Revised: 2025-11-24

PAVEMENT CORE LOG - 2026-01-28 09:34 - MWTP - CONTRACT NO. 7556

METROPOLITAN WATER TUNNEL PROGRAM

PAVEMENT CORE LOG

BORING NUMBER: SB-FD-542

MWRA CONTRACT NUMBER:	7556	CONTRACTOR:	7NT Engineering
MWRA CONTRACT NAME:	Final Design Engineering Services	FOREMAN:	C. Pierce
LOCATION:	Charles Street and Arlington Road, Needham, MA	EQUIPMENT:	8-inch Rigid Core Machine
START DATE:	2025-10-22 LOGGED BY: R. Naggle (FDE)	CORING DRILL BIT TYPE AND MODEL:	Diamond Bit
END DATE:	2025-10-22	TOTAL DEPTH:	0.5 ft
COORDINATES:	N: 2936533.16 E: 731528.56 Datum: NAD83	CORE BIT DIMENSIONS:	8-inch diameter and 18-inch length
GROUND SURFACE ELEVATION:	108.2 ft Datum: Boston City Base	WEATHER:	Intermittent Rain (50-60s degrees F)

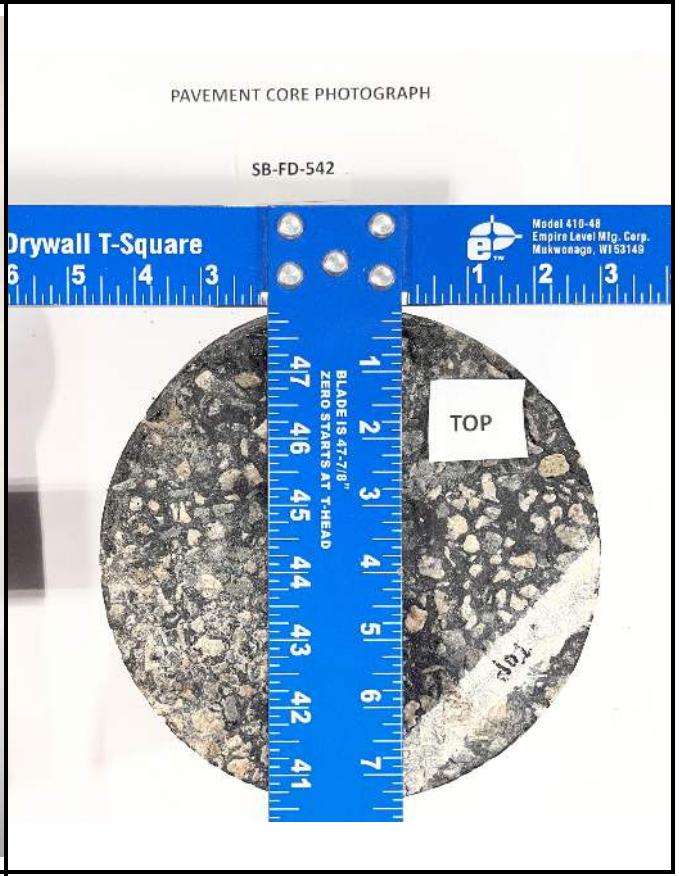
PAVEMENT CORE PHOTOGRAPHS



PAVEMENT CORE PHOTOGRAPH NO.:	Pavement Core Photo_SB-FD-542_PC-1_Side_Dry
PHOTOGRAPH DESCRIPTION:	Dry side view of pavement core.



PAVEMENT CORE PHOTOGRAPH NO.:	Pavement Core Photo_SB-FD-542_PC-1_Side_Wet
PHOTOGRAPH DESCRIPTION:	Wet side view of pavement core



PAVEMENT CORE PHOTOGRAPH NO.:	Pavement Core Photo_SB-FD-542_PC-1_TOP
PHOTOGRAPH DESCRIPTION:	Dry top-down view of pavement core

METROPOLITAN WATER TUNNEL PROGRAM

PAVEMENT CORE LOG

BORING NUMBER: SB-FD-543

MWRA CONTRACT NUMBER:	7556	CONTRACTOR:	7NT Engineering
MWRA CONTRACT NAME:	Final Design Engineering Services	FOREMAN:	C. Pierce
LOCATION:	Charles Street and Arlington Road, Needham, MA	EQUIPMENT:	8-inch Rigid Core Machine
START DATE:	2025-10-22 LOGGED BY: R. Naggle (FDE)	CORING DRILL BIT TYPE AND MODEL:	Diamond Bit
END DATE:	2025-10-22	TOTAL DEPTH:	0.6 ft
COORDINATES:	N: 2936551.45 E: 731353.38 Datum: NAD83	CORE BIT DIMENSIONS:	8-inch diameter and 18-inch length
GROUND SURFACE ELEVATION:	106.6 ft Datum: Boston City Base	WEATHER:	Intermittent Rain (50-60s degrees F)

Elevation (ft)	Depth (in.)	Photograph No.	Sample Location	Sample No.	Sample Type	Pavement Layer	Material Description	Remarks
106.6 - 106.3	0 - 3	[SEE PAGE 2]	Charles Street	1	PC	Surface Course	0.0 - 0.3 ft: Surface pavement with intact dense-graded angular to subangular aggregate, black asphalt matrix [FILL]	Core separated into two pieces.
106.3-106.0	3 - 7					Binder Course	0.3 - 0.6 ft: Gap-graded asphat concrete, angular to subangular aggregates, black aspalt matrix	Bottom part of pavement core was crumbling.

LEGEND

REV. = Revision
NO. = Number

GENERAL NOTES

Vacuum excavation was performed directly beneath this pavement core.

PAVEMENT CORE DIMENSIONS

Diameter (in.)	Length (in.)	Pavement Layer	Remarks
8.0	3.0	Surface Pavement	
8.0	4.0	Binder Course	

REVIEWED BY: E. Ghayyem REV. DATE: 2026-01-27 REV. NO.: R0 Draft BORING NO.: SB-FD-543

Form Last Revised: 2025-11-24

PAVEMENT CORE LOG - 2026-01-27 14:08 - MWTP - CONTRACT NO. 7556

METROPOLITAN WATER TUNNEL PROGRAM

PAVEMENT CORE LOG

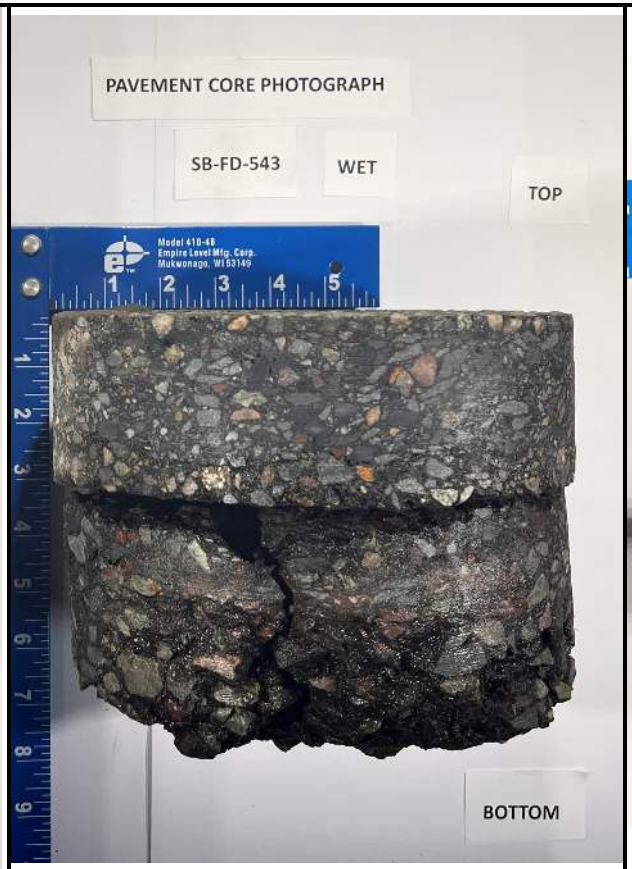
BORING NUMBER: SB-FD-543

MWRA CONTRACT NUMBER:	7556	CONTRACTOR:	7NT Engineering
MWRA CONTRACT NAME:	Final Design Engineering Services	FOREMAN:	C. Pierce
LOCATION:	Charles Street and Arlington Road, Needham, MA	EQUIPMENT:	8-inch Rigid Core Machine
START DATE:	2025-10-22 LOGGED BY: R. Naggle (FDE)	CORING DRILL BIT TYPE AND MODEL:	Diamond Bit
END DATE:	2025-10-22	TOTAL DEPTH:	0.6 ft
COORDINATES:	N: 2936551.45 E: 731353.38 Datum: NAD83	CORE BIT DIMENSIONS:	8-inch diameter and 18-inch length
GROUND SURFACE ELEVATION:	106.6 ft Datum: Boston City Base	WEATHER:	Intermittent Rain (50-60s degrees F)

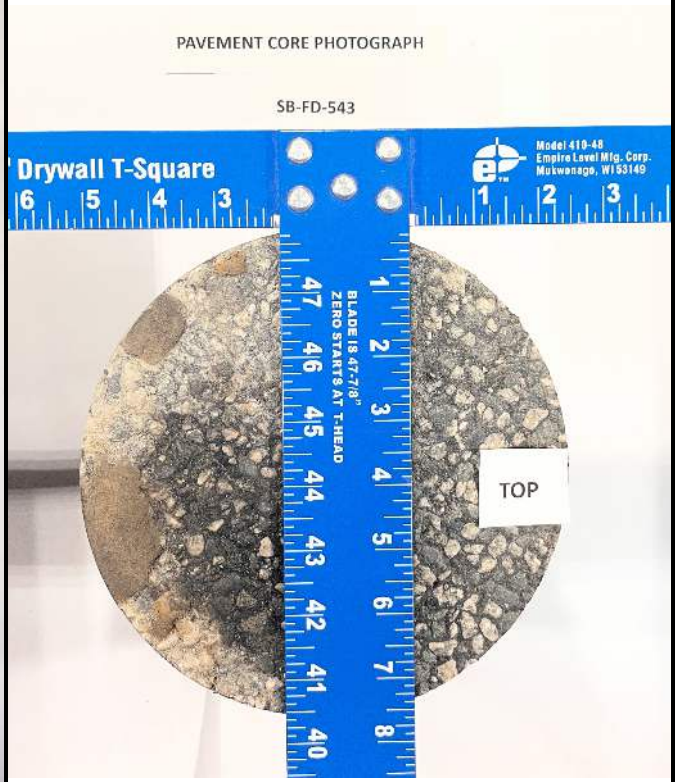
PAVEMENT CORE PHOTOGRAPHS



PAVEMENT CORE PHOTOGRAPH NO.:	Pavement Core Photo_SB-FD-543_PC-1_Side_Dry
PHOTOGRAPH DESCRIPTION:	Dry side view of pavement core.



PAVEMENT CORE PHOTOGRAPH NO.:	Pavement Core Photo_SB-FD-543_PC-1_Side_Wet
PHOTOGRAPH DESCRIPTION:	Wet side view of pavement core



PAVEMENT CORE PHOTOGRAPH NO.:	Pavement Core Photo_SB-FD-543_PC-1_TOP
PHOTOGRAPH DESCRIPTION:	Dry top-down view of pavement core

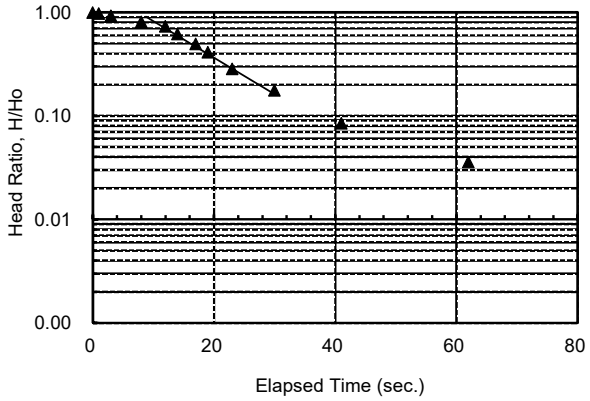
APPENDIX A-4

IN-SITU TESTING RESULTS

BOREHOLE PERMEABILITY TEST - VARIABLE HEAD

B-GSS-411

PROJECT:	Metropolitan Water Tunnel Program	BORING :	B-GSS-411
LOCATION:	I-95/Highland Ave. NE Cloverleaf	PROJ NO.:	2300422
CLIENT:	MWRA	TEST NO.:	1
PERF'D BY:	M. Urick DATE: 10/8/2024	PAGE NO.:	1
CALC'D BY:	S. Xu DATE: 10/24/2024	GROUND SURF. EL.:	111.5
CHECKED:	M. Guay DATE: 12/3/2024		



STANDPIPE/RISER DETAILS

Riser inside diameter,d,inches:	2.0
Riser length, feet:	12.0
Riser stick up above ground surface, feet:	-0.4
Groundwater depth below ground surface, feet:	10.8

TEST INTERVAL DETAILS

Depth to bottom, feet (below ground surface):	37.0
Depth to top, feet (below ground surface):	10.8
Length, L, inches:	314.4
Diameter, D, inches:	2.0

SOIL TYPE: Fill/Sand

m = SQRT (Kh/Kv) = 1

TIME (hr:min:sec)	ELAPSED TIME (sec)	DEPTH - RIM TO WATER (feet)	HEAD H (feet)	HEAD RATIO H/Ho	K (horiz.) OVER TIME INCREMENT (cm/sec)	K (horiz.) OVER TIME INCREMENT (ft/min)
11:44:56	0.00	7.14	3.21	1.00		
11:44:57	1.00	7.23	3.12	0.97	1.1E-05	2.1E-05
11:44:59	3.00	7.37	2.98	0.93	9.1E-06	1.8E-05
11:45:04	8.00	7.74	2.61	0.81	1.0E-05	2.0E-05
11:45:08	12.00	8.00	2.35	0.73	1.0E-05	2.0E-05
11:45:10	14.00	8.36	1.99	0.62	3.2E-05	6.3E-05
11:45:13	17.00	8.76	1.59	0.49	2.9E-05	5.8E-05
11:45:15	19.00	9.02	1.33	0.41	3.5E-05	6.8E-05
11:45:19	23.00	9.44	0.91	0.28	3.6E-05	7.2E-05
11:45:26	30.00	9.78	0.57	0.18	2.6E-05	5.2E-05
11:45:37	41.00	10.08	0.27	0.08	2.6E-05	5.1E-05
11:45:58	62.00	10.23	0.12	0.04	1.6E-05	3.1E-05
Straight-line portion of curve:						
t_1 and H_1	12.00	8.00	2.35	0.73		
t_2 and H_2	30.00	9.78	0.57	0.18	**1.8E-03**	**6.0E-05**

NOTES:

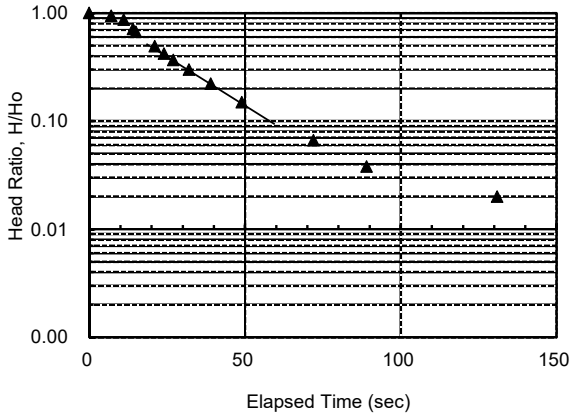
1. Test procedure: Falling head test in open borehole.
2. Hydraulic Conductivity, K =ln(H1/H2) * d²*ln(2mL/D) / [8*L*(t2-t1)] Lambe and Whitman, Soil Mechanics, 1969, pp 285, case G, isotropic conditions, mL/D greater than 4.
3. H is the difference between the static groundwater level and the water level in the riser.

GEI Consultants

BOREHOLE PERMEABILITY TEST - VARIABLE HEAD

B-GSS-411

PROJECT:	Metropolitan Water Tunnel Program			BORING :	B-GSS-411
LOCATION:	I-95/Highland Ave. NE Cloverleaf			PROJ NO.:	2300422
CLIENT:	MWRA			TEST NO.:	2
PERF'D BY:	M. Urick	DATE:	10/8/2024	PAGE NO.:	1
CALC'D BY:	S. Xu	DATE:	10/24/2024	GROUND	
CHECKED:	M. Guay	DATE:	12/3/2024	SURF. EL.:	111.5



STANDPIPE/RISER DETAILS

Riser inside diameter,d,inches:	2.0
Riser length, feet:	27.2
Riser stick up above ground surface, feet:	-0.4
Groundwater depth below ground surface, feet:	10.8

TEST INTERVAL DETAILS

Depth to bottom, feet (below ground surface):	37.0
Depth to top, feet (below ground surface):	10.8
Length, L, inches:	314.4
Diameter, D, inches:	2.0

SOIL TYPE: Fill/Sand

m = SQRT (Kh/Kv) = 1

TIME (hr:min:sec)	ELAPSED TIME (sec)	DEPTH - RIM TO WATER (feet)	HEAD H (feet)	HEAD RATIO H/Ho	K (horiz.) OVER TIME INCREMENT (cm/sec)	K (horiz.) OVER TIME INCREMENT (ft/min)
11:57:50	0.00	7.01	3.34	1.00		
11:57:57	7.00	7.20	3.15	0.94	3.3E-06	6.5E-06
11:58:01	11.00	7.44	2.91	0.87	7.7E-06	1.5E-05
11:58:04	14.00	7.97	2.38	0.71	2.6E-05	5.1E-05
11:58:05	15.00	8.12	2.23	0.67	2.5E-05	5.0E-05
11:58:11	21.00	8.71	1.64	0.49	2.0E-05	3.9E-05
11:58:14	24.00	8.94	1.41	0.42	2.0E-05	3.9E-05
11:58:17	27.00	9.12	1.23	0.37	1.7E-05	3.4E-05
11:58:22	32.00	9.35	1.00	0.30	1.6E-05	3.2E-05
11:58:29	39.00	9.61	0.74	0.22	1.7E-05	3.3E-05
11:58:39	49.00	9.85	0.50	0.15	1.5E-05	3.0E-05
11:59:02	72.00	10.13	0.22	0.07	1.4E-05	2.7E-05
11:59:19	89.00	10.22	0.13	0.04	1.3E-05	2.5E-05
12:00:01	131.00	10.28	0.07	0.02	5.9E-06	1.2E-05
Straight-line portion of curve:						
t_1 and H_1	21.00	8.71	1.64	0.49		
t_2 and H_2	49.00	9.85	0.50	0.15	**9.85E-04**	**3.2E-05**

NOTES:

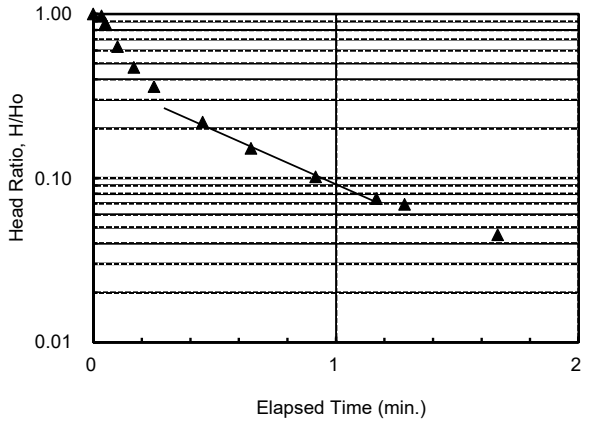
1. Test procedure: Falling head test in open borehole.
2. Hydraulic Conductivity, K =ln(H1/H2) * d²*ln(2mL/D) / [8*L*(t2-t1)] Lambe and Whitman, Soil Mechanics, 1969, pp 285, case G, isotropic conditions, mL/D greater than 4.
3. H is the difference between the static groundwater level and the water level in the riser.

GEI Consultants

BOREHOLE PERMEABILITY TEST - VARIABLE HEAD

B-GSS-412

PROJECT:	Metropolitan Water Tunnel Program			BORING :	B-GSS-412
LOCATION:	I-95/Highland Ave. NE Cloverleaf			PROJ NO.:	2300422
CLIENT:	MWRA			TEST NO.:	1
PERF'D BY:	M. Urick	DATE:	10/8/2024	PAGE NO.:	1
CALC'D BY:	S. Xu	DATE:	11/1/2024	GROUND	
CHECKED:	M. Guay	DATE:	12/3/2024	SURF. EL.:	111.8



STANDPIPE/RISER DETAILS

Riser inside diameter,d,inches:	2.0
Riser length, feet:	10.0
Riser stick up above ground surface, feet:	-0.5
Groundwater depth below ground surface, feet:	11.2

TEST INTERVAL DETAILS

Depth to bottom, feet (below ground surface):	25.0
Depth to top, feet (below ground surface):	11.2
Length, L, inches:	165.6
Diameter, D, inches:	2.0

SOIL TYPE: Fill and Sand

m = SQRT (Kh/Kv) = 1

TIME (hr:min:sec)	ELAPSED TIME (min)	DEPTH - RIM TO WATER (feet)	HEAD H (feet)	HEAD RATIO H/Ho	K (horiz.) OVER TIME INCREMENT (cm/sec)	K (horiz.) OVER TIME INCREMENT (ft/min)
12:55:02	0.00	6.00	4.74	1.00		
12:55:04	0.03	6.13	4.61	0.97	5.4E-04	1.1E-03
12:55:05	0.05	6.57	4.17	0.88	4.0E-03	7.8E-03
12:55:08	0.10	7.74	3.00	0.63	4.3E-03	8.5E-03
12:55:12	0.17	8.50	2.24	0.47	2.9E-03	5.6E-03
12:55:17	0.25	9.03	1.71	0.36	2.1E-03	4.2E-03
12:55:29	0.45	9.70	1.04	0.22	1.6E-03	3.2E-03
12:55:41	0.65	10.02	0.72	0.15	1.2E-03	2.4E-03
12:55:57	0.92	10.26	0.48	0.10	9.7E-04	1.9E-03
12:56:12	1.17	10.39	0.35	0.07	8.0E-04	1.6E-03
12:56:19	1.28	10.41	0.33	0.07	4.6E-04	9.0E-04
12:56:42	1.67	10.53	0.21	0.05	7.2E-04	1.4E-03
12:57:05	2.05	10.58	0.16	0.03	5.1E-04	1.0E-03
12:57:34	2.53	10.62	0.12	0.03	3.8E-04	7.6E-04
12:58:20	3.30	10.66	0.08	0.02	3.6E-04	7.2E-04
Straight-line portion of curve:						
t_1 and H_1	0.45	9.70	1.04	0.22		
t_2 and H_2	1.17	10.39	0.35	0.07	**9.8E-04**	**1.9E-03**

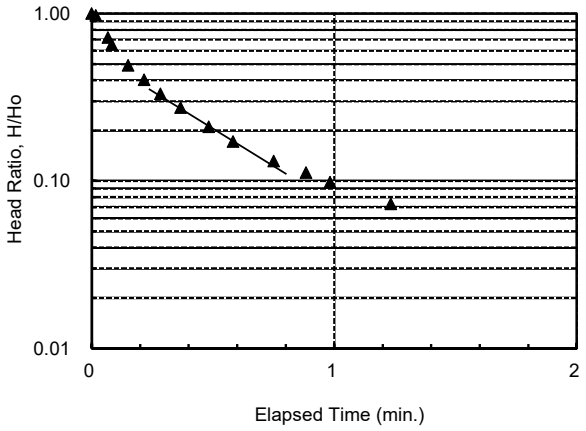
NOTES:

1. Test procedure: Falling head test in open borehole.
2. Hydraulic Conductivity, K =ln(H1/H2) * d²*ln(2mL/D) / [8*L*(t2-t1)] Lambe and Whitman, Soil Mechanics, 1969, pp 285, case G, isotropic conditions, mL/D greater than 4.
3. H is the difference between the static groundwater level and the water level in the riser.

BOREHOLE PERMEABILITY TEST - VARIABLE HEAD

B-GSS-412

PROJECT:	Metropolitan Water Tunnel Program			BORING :	B-GSS-412
LOCATION:	I-95/Highland Ave. NE Cloverleaf			PROJ NO.:	2300422
CLIENT:	MWRA			TEST NO.:	2
PERF'D BY:	M. Urick	DATE:	10/8/2024	PAGE NO.:	1
CALC'D BY:	S. Xu	DATE:	11/1/2024	GROUND	
CHECKED:	M. Guay	DATE:	12/3/2024	SURF. EL.:	111.8



STANDPIPE/RISER DETAILS

Riser inside diameter,d,inches:	2.0
Riser length, feet:	10.0
Riser stick up above ground surface, feet:	-0.5
Groundwater depth below ground surface, feet:	11.2

TEST INTERVAL DETAILS

Depth to bottom, feet (below ground surface):	25.0
Depth to top, feet (below ground surface):	11.2
Length, L, inches:	165.6
Diameter, D, inches:	2.0

SOIL TYPE: Fill and Sand

m = SQRT (Kh/Kv) = 1

TIME (hr:min:sec)	ELAPSED TIME (min)	DEPTH - RIM TO WATER (feet)	HEAD H (feet)	HEAD RATIO H/Ho	K (horiz.) OVER TIME INCREMENT (cm/sec)	K (horiz.) OVER TIME INCREMENT (ft/min)
13:07:17	0.00	6.35	4.39	1.00		
13:07:18	0.02	6.46	4.28	0.97	1.0E-03	2.0E-03
13:07:21	0.07	7.59	3.15	0.72	4.0E-03	7.9E-03
13:07:22	0.08	7.88	2.86	0.65	3.8E-03	7.5E-03
13:07:26	0.15	8.59	2.15	0.49	2.8E-03	5.5E-03
13:07:30	0.22	8.97	1.77	0.40	1.9E-03	3.8E-03
13:07:34	0.28	9.29	1.45	0.33	1.9E-03	3.8E-03
13:07:39	0.37	9.54	1.20	0.27	1.5E-03	2.9E-03
13:07:46	0.48	9.82	0.92	0.21	1.5E-03	2.9E-03
13:07:52	0.58	9.99	0.75	0.17	1.3E-03	2.6E-03
13:08:02	0.75	10.16	0.58	0.13	1.1E-03	2.1E-03
13:08:10	0.88	10.25	0.49	0.11	7.6E-04	1.5E-03
13:08:16	0.98	10.31	0.43	0.10	8.8E-04	1.7E-03
13:08:31	1.23	10.42	0.32	0.07	7.8E-04	1.5E-03
Straight-line portion of curve:						
t_1 and H_1	0.28	9.29	1.45	0.33		
t_2 and H_2	0.75	10.16	0.58	0.13	**1.3E-03**	**2.5E-03**

NOTES:

1. Test procedure: Falling head test in open borehole.
2. Hydraulic Conductivity, K =ln(H1/H2) * d²*ln(2mL/D) / [8*L*(t2-t1)] Lambe and Whitman, Soil Mechanics, 1969, pp 285, case G, isotropic conditions, mL/D greater than 4.
3. H is the difference between the static groundwater level and the water level in the riser.

APPENDIX A-5

INSTALLATION LOGS OF GROUNDWATER MONITORING WELLS AND PIEZOMETER

GROUNDWATER READINGS

METROPOLITAN WATER TUNNEL PROGRAM

PIEZOMETER INSTALLATION LOG

PIEZOMETER NO.: B-GSS-410A (PZ)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
ADDRESS: I95 Cloverleaf NE, Needham, MA
COORDINATES: N: 2935882.94 **E:** 730802.04 [NAD83]
GROUND SURFACE ELEVATION: 109.6 ft. [Boston City Base]
TOP OF BEDROCK ELEVATION: 77.1 ft. [Boston City Base]

LOGGED BY: N. Cholewinski (GEI Consultants, Inc.)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 415.4 ft. / -90° (-90° is vertical downward)
DRILLING METHOD/FLUID: DW / Water
DRILLING COMPL./INSTAL. DATE: 7/1/2024 / 7/26/2024

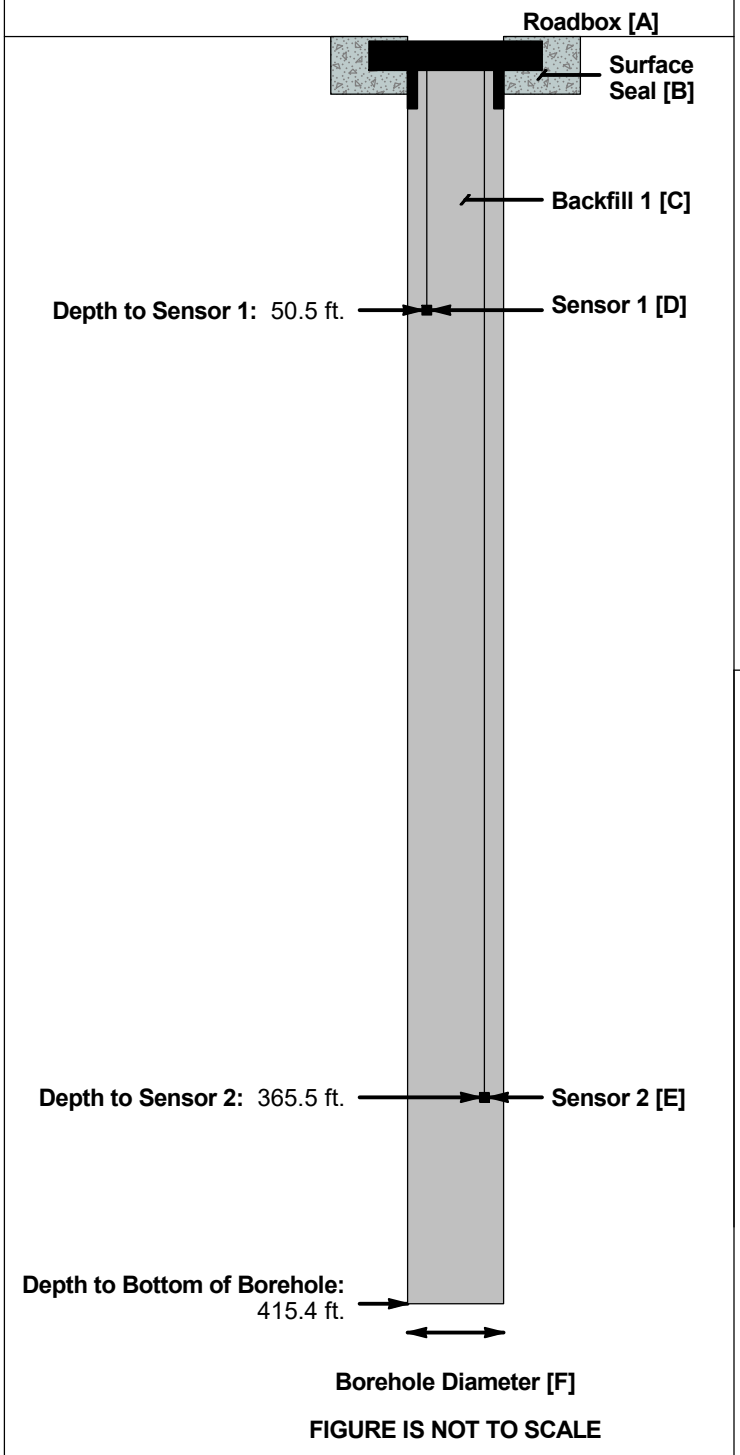


FIGURE IS NOT TO SCALE

Protective Roadbox or Guard Casing (Type/Stickup):	Roadbox / 0 in.	**[A]**
Surface Seal (Type/Thickness):	Concrete / 4 in.	**[B]**
Backfill 1 Material (Type):	Cementitious Bentonite Grout	**[C]**
Sensor 1 Model Number/Serial Number:	4500S-350kPa / 2410611	**[D]**
Sensor 2 Model Number/Serial Number:	4500S-2 MPa / 2404449	**[E]**
Borehole Diameter:	4.5 in.	**[F]**

REMARKS:

1. On 7/25/24, added about 430 gallons of grout to borehole, which settled to 27.5 ft. On 7/26/24 it was observed that the hole had collapsed to 9 ft, added about 54 gallons of grout to the top of the hole. Actual volume of grout added to the hole was about 484 gallons while theoretical volume was about 250 gallons.
2. Backfill using a mixture of bentonite chips, native soil, and grout from 9 ft to 2 ft bgs.
3. Backfill using filter sand from 2 ft to 4 in.
4. Generally the borehole diameter is 4.5 inches in soil and 3.8 inches in rock

REVIEWED BY: M. Wong/D. Van Roosendaal	**REV. DATE:** 02/28/2025	**REV. NO.:** R0-FINAL	**PIEZO. NO.:**B-GSS-410A (PZ)

PIEZOMETER INSTALLATION LOG W/ 2 SENSORS - 2/27/25 15:03 - MWTP - CONTRACT NO. 7557

METROPOLITAN WATER TUNNEL PROGRAM

GROUNDWATER LEVEL READING LOG

BORING NO.: B-GSS-410A (PZ)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
ADDRESS: I95 Cloverleaf NE, Needham, MA
COORDINATES: N: 2935882.94 **E:** 730802.04 [NAD83]
GROUND SURFACE ELEVATION: 109.6 ft. [Boston City Base]
TOP OF BEDROCK ELEVATION: 77.1 ft. [Boston City Base]

LOGGED BY: N. Cholewinski (GEI Consultants, Inc.)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 415.4 ft. / -90° (-90° is vertical downward)
DRILLING METHOD/FLUID: DW / Water
DRILLING COMPLETION DATE: 7/1/2024

Date	Time	Depth to Groundwater (ft)	Equiv. Static Groundwater El.	Casing Depth (ft)	Boring Depth (ft)	Remarks
6/12/2024	750	9.0	100.6	30.5	40.1	
6/13/2024	800	8.6	101.0	30.5	130.3	
6/17/2024	930	9.8	99.8	30.5	165.5	
6/18/2024	900	9.8	99.8	30.5	165.5	
6/19/2024	745	9.7	99.9	30.5	165.5	
6/20/2024	810	9.0	100.6	41.0	165.5	
6/21/2024	1345	9.0	100.6	41.0	176.7	
6/25/2024	750	8.1	101.5	41.0	190.1	
6/26/2024	750	7.8	101.8	41.0	265.2	
6/27/2024	830			41.0	335.2	Water level is greater than 100 ft. Waterlevel depth confirmed with 2 different water level meters
6/28/2024	745	8.3	101.3	41.0	337.7	
7/1/2024	755	7.3	102.3	41.0	390.2	
7/2/2024	800	8.0	101.6	41.0	415.4	
7/9/2024	815	8.1	101.5	41.0	415.4	
7/10/2024	800	8.1	101.5	41.0	415.4	
7/12/2024	1200	8.2	101.4	41.0	415.4	
7/17/2024	700	8.2	101.4	41.0	415.4	
7/18/2024	800	8.3	101.3	41.0	415.4	
7/19/2024	745	8.3	101.3	41.0	415.4	
7/22/2024	745	8.3	101.3	41.0	415.4	

REVIEWED BY: M. Wong/D. Van Roosendaal | **REV. DATE:** 02/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-410A (PZ)

METROPOLITAN WATER TUNNEL PROGRAM

GROUNDWATER LEVEL READING LOG

BORING NO.: B-GSS-410A (PZ)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
ADDRESS: I95 Cloverleaf NE, Needham, MA
COORDINATES: N: 2935882.94 **E:** 730802.04 [NAD83]
GROUND SURFACE ELEVATION: 109.6 ft. [Boston City Base]
TOP OF BEDROCK ELEVATION: 77.1 ft. [Boston City Base]

LOGGED BY: N. Cholewinski (GEI Consultants, Inc.)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 415.4 ft. / -90° (-90° is vertical downward)
DRILLING METHOD/FLUID: DW / Water
DRILLING COMPLETION DATE: 7/1/2024

Date	Time	Depth to Groundwater (ft)	Equiv. Static Groundwater El.	Casing Depth (ft)	Boring Depth (ft)	Remarks
7/23/2024	745	8.2	101.4	41.0	415.4	
7/24/2024	745	8.2	101.4	41.0	415.4	
7/24/3034	1100	8.3	101.3	41.0	415.4	
7/25/2024	745	8.3	101.3	41.0	415.4	

REVIEWED BY: M. Wong/D. Van Roosendaal | **REV. DATE:** 02/28/2025 | **REV. NO.:** R0-FINAL | **BORING NO.:** B-GSS-410A (PZ)

GROUNDWATER LEVEL READING LOG - 2/27/25 21:24 - MWTP - CONTRACT NO. 7557

METROPOLITAN WATER TUNNEL PROGRAM

PIEZOMETER READING LOG

PIEZOMETER NO.: B-GSS-410A (PZ)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
ADDRESS: I95 Cloverleaf NE, Needham, MA
COORDINATES: N: 2935882.94 **E:** 730802.04 [NAD83]
GROUND SURFACE ELEVATION: 109.6 ft. [Boston City Base]
TOP OF BEDROCK ELEVATION: 77.1 ft. [Boston City Base]

LOGGED BY: N. Cholewinski (GEI Consultants, Inc.)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 415.4 ft. / -90° (-90° is vertical downward)
DRILLING COMPLETION DATE: 7/1/2024
INSTALLATION DATE: 7/24/2024
SENSOR 1/2/3 ELEVATION: 59.2 / -255.8 / [Boston City Base]

Date	Time	Sensor 1 Pore Press (psi)	Sensor 1 Equiv. Static GW El (ft)	Sensor 2 Pore Press (psi)	Sensor 2 Equiv. Static GW El (ft)	Sensor 3 Pore Press (psi)	Sensor 3 Equiv. Static GW El (ft)	Remarks
8/5/2024	1221	18.32	101.5	153.35	98.1			
9/4/2024	735	18.27	101.4	153.56	98.6			
10/8/2024	1102	18.22	101.2	153.41	98.2			
11/4/2024	1230	18.12	101.0	153.04	97.4			
12/17/2024	1235	18.39	101.6	153.48	98.4			

REVIEWED BY: M. Wong/D. Van Roosendaal | **REV. DATE:** 02/28/2025 | **REV. NO.:** R0-FINAL | **PIEZO. NO.:** B-GSS-410A (PZ)

PIEZOMETER READING LOG - 2/26/25 18:20 - MWTP - CONTRACT NO. 7557

METROPOLITAN WATER TUNNEL PROGRAM

MONITORING WELL INSTALLATION LOG

WELL NO.: B-GSS-411 (MW)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
ADDRESS: Highland Ave Int NE Cloverleaf, Needham, MA
COORDINATES: **N:** 2935928.43 **E:** 730931.82 [NAD83]
GROUND SURFACE ELEVATION: 111.5 ft. [Boston City Base]
TOP OF PVC RISER ELEVATION: 111.1 ft. [Boston City Base]

LOGGED BY: R. Oulal (GEI Consultants, Inc.)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 40.0 ft. / -90° (-90° is vertical downward)
DRILLING METHOD/FLUID: HSA / None
DRILLING COMPLETION DATE: 6/25/2024
WELL INSTALLATION/DEVELOP. DATE: 6/26/2024 / 6/27/2024

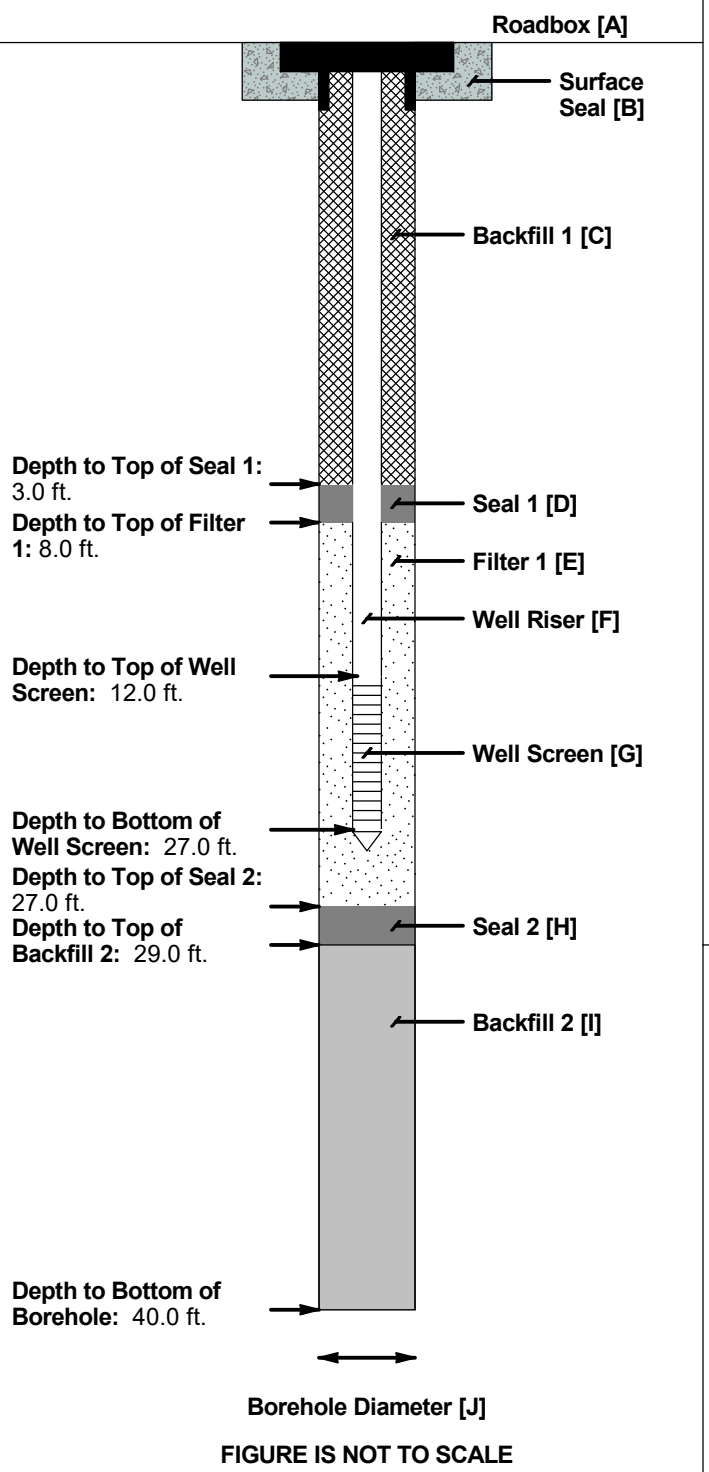


FIGURE IS NOT TO SCALE

Protective Roadbox or Guard Casing (Type/Stickup):	Roadbox / 0 in.	**[A]**
Surface Seal (Type/Thickness):	Concrete / 6 in.	**[B]**
Backfill 1 Material (Type):	Sand	**[C]**
Seal 1 Material (Type/Thickness):	Bentonite Chips / 5 ft.	**[D]**
Filter 1 Material (Type/Thickness):	Sand / 19 ft.	**[E]**
Well Riser Construction (Material/Type/Diameter):	PVC / Schedule 40 / 2 in.	**[F]**
Well Screen Construction (Material/Slot Size):	Slotted PVC / 0.04 in.	**[G]**
Seal 2 Material (Type/Thickness):	Bentonite Chips / 2 ft.	**[H]**
Backfill 2 Material (Type/Thickness):	Sand / 11 ft.	**[I]**
Borehole Diameter:	8 in.	**[J]**

REMARKS:

REVIEWED BY: M. Wong/D. Van Roosendaal	**REV. DATE:** 02/28/2025	**REV. NO.:** R0-FINAL	**WELL NO.:** B-GSS-411 (MW)

MONITORING WELL INSTALLATION LOG - 2/27/25 14:56 - MWTP - CONTRACT NO. 7557

METROPOLITAN WATER TUNNEL PROGRAM

MONITORING WELL READING LOG

WELL NO.: B-GSS-411 (MW)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
ADDRESS: Highland Ave Int NE Cloverleaf, Needham, MA
COORDINATES: N: 2935928.43 **E:** 730931.82 [NAD83]
GROUND SURFACE ELEVATION: 111.5 ft. [Boston City Base]
TOP OF PVC RISER ELEVATION: 111.1 ft. [Boston City Base]

LOGGED BY: R. Oulal (GEI Consultants, Inc.)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 40.0 ft. / -90° (-90° is vertical downward)
DRILLING METHOD/FLUID: HSA / None
DRILLING COMPLETION DATE: 6/25/2024
WELL INSTALLATION/DEVELOP. DATE: 6/26/2024 / 6/27/2024

Date	Time	Read By	Depth to Groundwater (ft)	Equiv. Groundwater El.	Remarks
8/5/2024	1201	M. Urick	10.1	101.0	
9/4/2024	745	M. Urick	10.2	100.9	
10/8/2024	1116	M. Urick	10.4	100.8	
11/4/2024	1224	M. Urick	10.5	100.6	
12/17/2024	1250	M. Urick	9.8	101.3	

REVIEWED BY: M. Wong/D. Van Roosendaal | **REV. DATE:** 02/28/2025 | **REV. NO.:** R0-FINAL | **WELL NO.:** B-GSS-411 (MW)

MONITORING WELL READING LOG - 2/26/25 18:19 - MWTP - CONTRACT NO. 7557

METROPOLITAN WATER TUNNEL PROGRAM

MONITORING WELL INSTALLATION LOG

WELL NO.: B-GSS-412 (MW)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
ADDRESS: Highland Ave Ramp/Brooks Road, Needham, MA
COORDINATES: **N:** 2935999.78 **E:** 731070.03 [NAD83]
GROUND SURFACE ELEVATION: 111.8 ft. [Boston City Base]
TOP OF PVC RISER ELEVATION: 111.4 ft. [Boston City Base]

LOGGED BY: M. Guay (GEI Consultants, Inc.)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 40.0 ft. / -90° (-90° is vertical downward)
DRILLING METHOD/FLUID: HSA / None
DRILLING COMPLETION DATE: 7/16/2024
WELL INSTALLATION/DEVELOP. DATE: 7/17/2024 / 7/18/2024

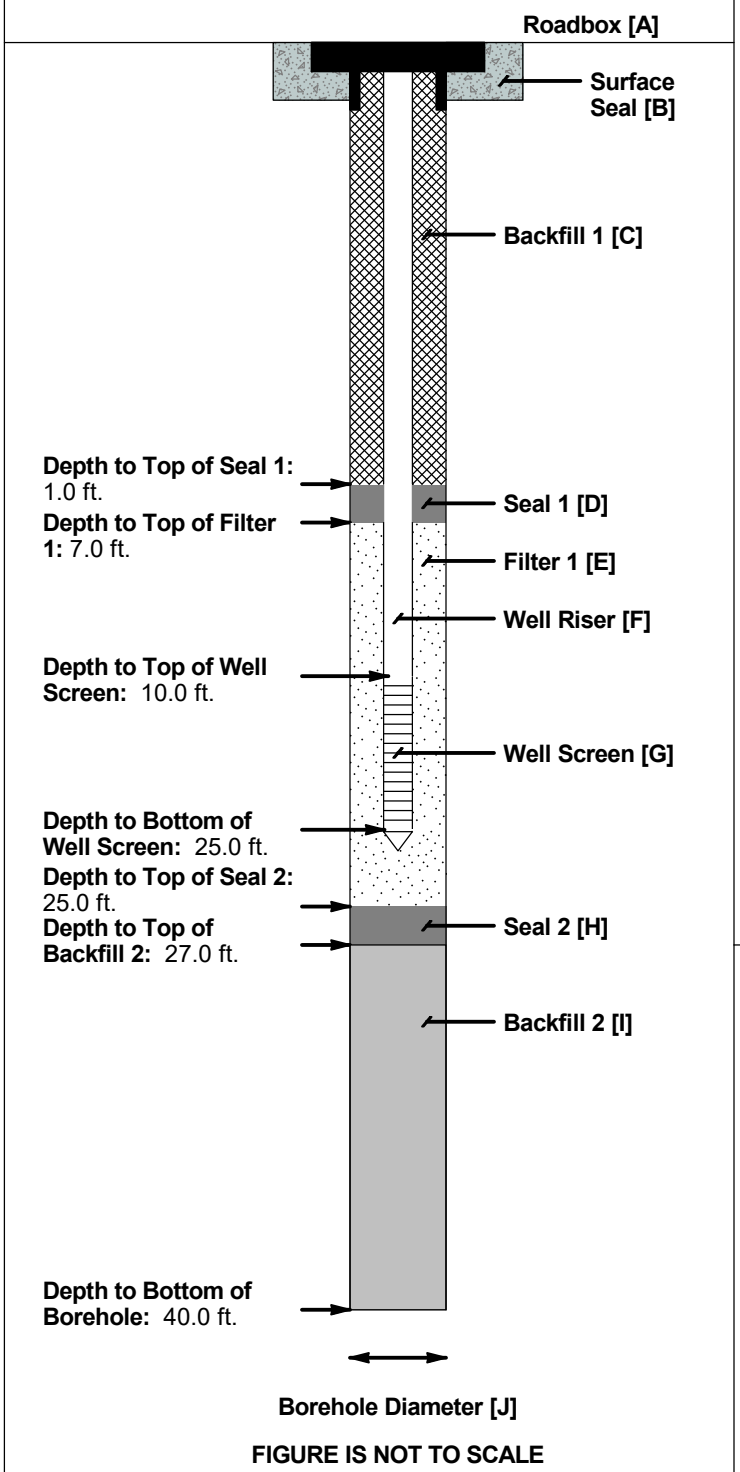


FIGURE IS NOT TO SCALE

Protective Roadbox or Guard Casing (Type/Stickup):	Roadbox / 0 in.	**[A]**
Surface Seal (Type/Thickness):	Concrete / 12 in.	**[B]**
Backfill 1 Material (Type):	Concrete	**[C]**
Seal 1 Material (Type/Thickness):	Bentonite Chips / 3 ft.	**[D]**
Filter 1 Material (Type/Thickness):	In-Situ Soil / 18 ft.	**[E]**
Well Riser Construction (Material/Type/Diameter):	PVC / Schedule 40 / 2 in.	**[F]**
Well Screen Construction (Material/Slot Size):	Slotted PVC / 0.02 in.	**[G]**
Seal 2 Material (Type/Thickness):	Bentonite Chips / 2 ft.	**[H]**
Backfill 2 Material (Type/Thickness):	In-Situ Soil / 13 ft.	**[I]**
Borehole Diameter:	8 in.	**[J]**

REMARKS:

1. Following the installation of the PVC standpipe, 7NT pre-filled the HSA with 2 ft of bentonite pellets and withdrew 5 ft of the HSA. When tagging the hole, GEI observed that the bentonite pellets swelled up inside of the tip of the auger, creating a plug. This was likely the result of using bentonite chips without a time-release coating. Since 7NT could not add well sand to the HSA due to the bentonite plug, they pulled all the casing and allowed the in-situ soils, consisting of mostly sand, to collapse around the PVC standpipe.

REVIEWED BY: E. Fazlic/D. Van Roosendaal	**REV. DATE:** 02/28/2025	**REV. NO.:** R0-FINAL	**WELL NO.:** B-GSS-412 (MW)

MONITORING WELL INSTALLATION LOG - 2/27/25 14:56 - MWTP - CONTRACT NO. 7557

METROPOLITAN WATER TUNNEL PROGRAM

MONITORING WELL READING LOG

WELL NO.: B-GSS-412 (MW)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
ADDRESS: Highland Ave Ramp/Brooks Road, Needham, MA
COORDINATES: N: 2935999.78 **E:** 731070.03 [NAD83]
GROUND SURFACE ELEVATION: 111.8 ft. [Boston City Base]
TOP OF PVC RISER ELEVATION: 111.4 ft. [Boston City Base]

LOGGED BY: M. Guay (GEI Consultants, Inc.)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 40.0 ft. / -90° (-90° is vertical downward)
DRILLING METHOD/FLUID: HSA / None
DRILLING COMPLETION DATE: 7/16/2024
WELL INSTALLATION/DEVELOP. DATE: 7/17/2024 / 7/18/2024

Date	Time	Read By	Depth to Groundwater (ft)	Equiv. Groundwater El.	Remarks
8/5/2024	1139	M. Urick	10.5	100.9	
9/4/2024	809	M. Urick	10.6	100.8	
10/7/2024	1210	M. Urick	10.7	100.7	
11/4/2024	1211	M. Urick	10.9	100.5	
12/10/2024	640	M. Urick	10.5	100.9	

REVIEWED BY: E. Fazlic/D. Van Roosendaal | **REV. DATE:** 02/28/2025 | **REV. NO.:** R0-FINAL | **WELL NO.:** B-GSS-412 (MW)

MONITORING WELL READING LOG - 2/26/25 18:19 - MWTP - CONTRACT NO. 7557

METROPOLITAN WATER TUNNEL PROGRAM

MONITORING WELL INSTALLATION LOG

WELL NO.: B-GSS-463 (MW)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
ADDRESS: 29 Charles St, Needham, MA
COORDINATES: **N:** 2936718.08 **E:** 731103.58 [NAD83]
GROUND SURFACE ELEVATION: 106.8 ft. [Boston City Base]
TOP OF PVC RISER ELEVATION: 106.5 ft. [Boston City Base]

LOGGED BY: E. Winter (GEI Consultants, Inc.)
DRILLING CONTRACTOR: Northern Drill Service
TOTAL DEPTH/PLUNGE: 31.0 ft. / -90° (-90° is vertical downward)
DRILLING METHOD/FLUID: DW / Water
DRILLING COMPLETION DATE: 12/16/2024
WELL INSTALLATION/DEVELOP. DATE: 12/16/2024 / 12/16/2024

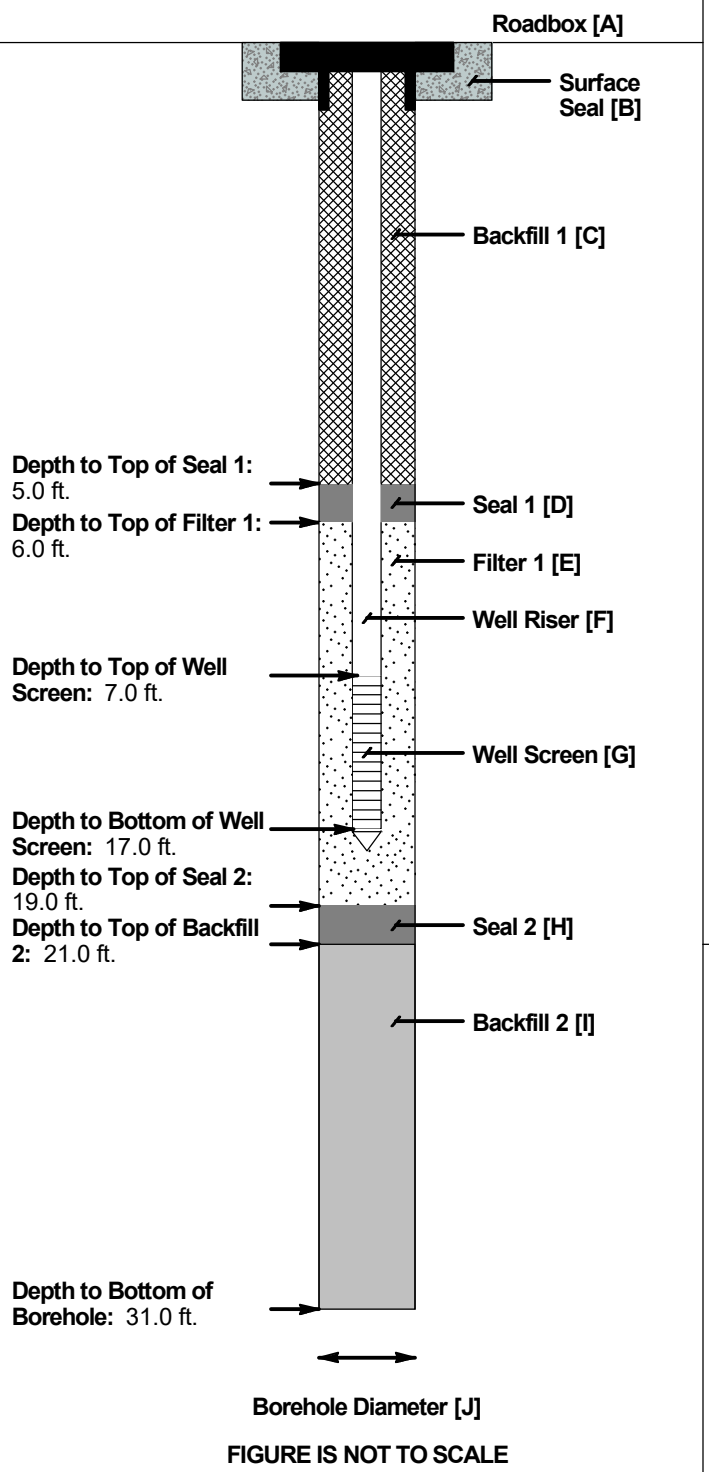


FIGURE IS NOT TO SCALE

Protective Roadbox or Guard Casing (Type/Stickup):	Roadbox / 0 in.	**[A]**
Surface Seal (Type/Thickness):	Concrete / 4 in.	**[B]**
Backfill 1 Material (Type):	Cuttings	**[C]**
Seal 1 Material (Type/Thickness):	Bentonite Chips / 1 ft.	**[D]**
Filter 1 Material (Type/Thickness):	Filter Sand / 13 ft.	**[E]**
Well Riser Construction (Material/Type/Diameter):	PVC / Schedule 40 / 2 in.	**[F]**
Well Screen Construction (Material/Slot Size):	Slotted PVC / 0.01 in.	**[G]**
Seal 2 Material (Type/Thickness):	Bentonite Chips / 2 ft.	**[H]**
Backfill 2 Material (Type/Thickness):	In-Situ Soil / 10 ft.	**[I]**
Borehole Diameter:	4.5 in.	**[J]**

REMARKS:

1. Borehole caved in, filled with in-situ soil below bottom seal at 21 ft.

REVIEWED BY: C. Sitar/J. LeFebvre	**REV. DATE:** 03/28/2025	**REV. NO.:** R0-FINAL	**WELL NO.:** B-GSS-463 (MW)

MONITORING WELL INSTALLATION LOG - 3/24/25 16:18 - MWTP - CONTRACT NO. 7557

METROPOLITAN WATER TUNNEL PROGRAM

MONITORING WELL INSTALLATION LOG

WELL NO.: B-GSS-465 (MW)

MWRA CONTRACT NUMBER: 7557
MWRA CONTRACT NAME: MWRA Geotechnical Support Services
ADDRESS: 59 Wexford St, Needham, MA
COORDINATES: **N:** 2936376.88 **E:** 731219.72 [NAD83]
GROUND SURFACE ELEVATION: 105.7 ft. [Boston City Base]
TOP OF PVC RISER ELEVATION: 105.4 ft. [Boston City Base]

LOGGED BY: E. Winter (GEI Consultants, Inc.)
DRILLING CONTRACTOR: Northern Drill Service
TOTAL DEPTH/PLUNGE: 26.0 ft. / -90° (-90° is vertical downward)
DRILLING METHOD/FLUID: DW / Water
DRILLING COMPLETION DATE: 12/17/2024
WELL INSTALLATION/DEVELOP. DATE: 12/17/2024 / 12/17/2024

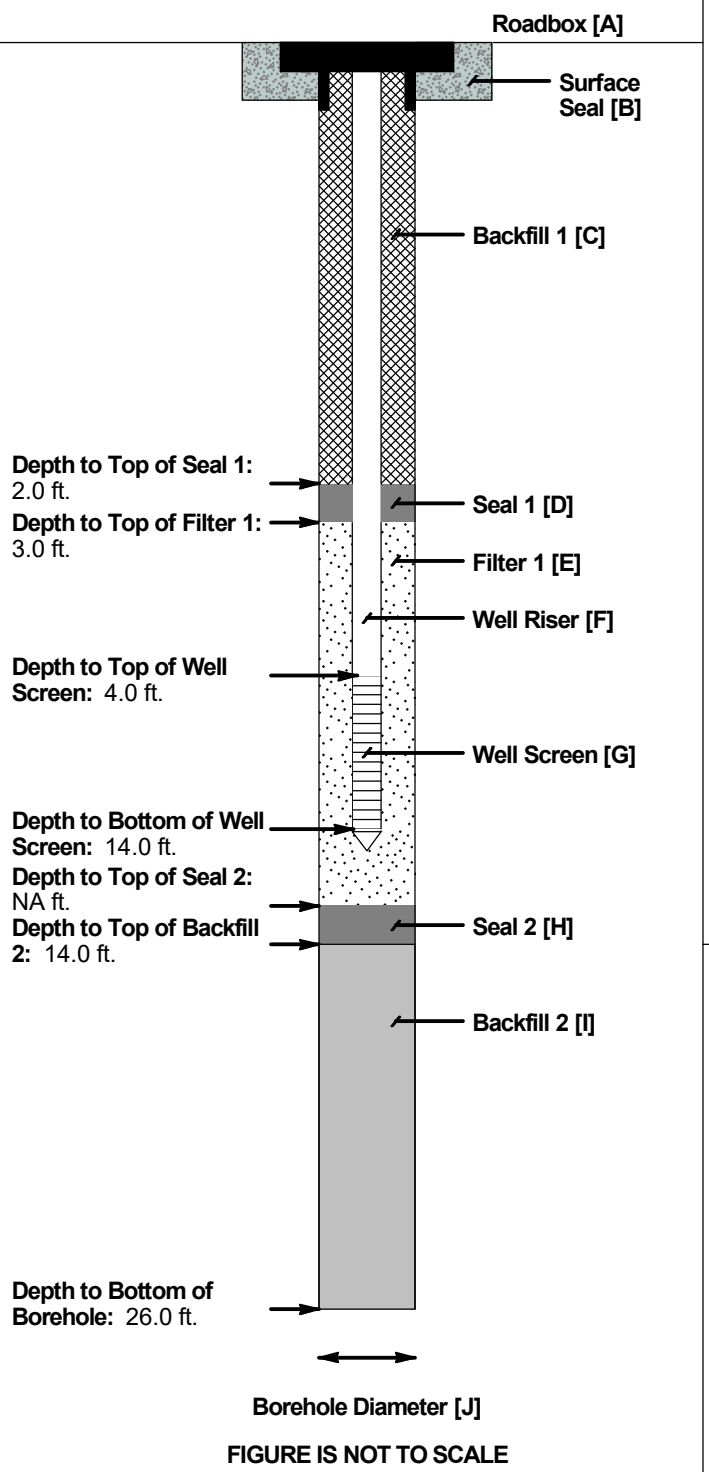


FIGURE IS NOT TO SCALE

Protective Roadbox or Guard Casing (Type/Stickup):	Roadbox / 0 in.	**[A]**
Surface Seal (Type/Thickness):	Concrete / 4 in.	**[B]**
Backfill 1 Material (Type):	Filter Sand	**[C]**
Seal 1 Material (Type/Thickness):	Bentonite Chips / 1 ft.	**[D]**
Filter 1 Material (Type/Thickness):	Filter Sand / 11 ft.	**[E]**
Well Riser Construction (Material/Type/Diameter):	PVC / Schedule 40 / 2 in.	**[F]**
Well Screen Construction (Material/Slot Size):	Slotted PVC / 0.01 in.	**[G]**
Seal 2 Material (Type/Thickness):	NA / NA ft.	**[H]**
Backfill 2 Material (Type/Thickness):	Sand & In-Situ Soil / 12 ft.	**[I]**
Borehole Diameter:	4.5 in.	**[J]**

REMARKS:

1. Borehole collapsed to 14.5 ft when pulling casing. Borehole filled with filter sand 14.0 to 14.5 ft, in-situ soil 14.5 to 26 ft.

REVIEWED BY: C. Sitar/J. LeFebvre	**REV. DATE:** 03/28/2025	**REV. NO.:** R0-FINAL	**WELL NO.:** B-GSS-465 (MW)

MONITORING WELL INSTALLATION LOG - 3/24/25 16:18 - MWTP - CONTRACT NO. 7557

METROPOLITAN WATER TUNNEL PROGRAM

MONITORING WELL INSTALLATION LOG

WELL NO.: SB-FD-542-A (MW)

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
ADDRESS: Charles Street, Needham, MA
COORDINATES: **N:** 2936531.03 **E:** 731540.06 [NAD83]
GROUND SURFACE ELEVATION: 108.4 ft. [Boston City Base]
TOP OF PVC RISER ELEVATION: 107.8 ft. [Boston City Base]

LOGGED BY: L. Pua Pita (WSP)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 53.0 ft. / ° (-90° is vertical downward)
DRILLING METHOD/FLUID: HSA / None
DRILLING COMPLETION DATE: 2025-11-18
WELL INSTALLATION/DEVELOP. DATE: 2025-11-18 / 2025-12-15

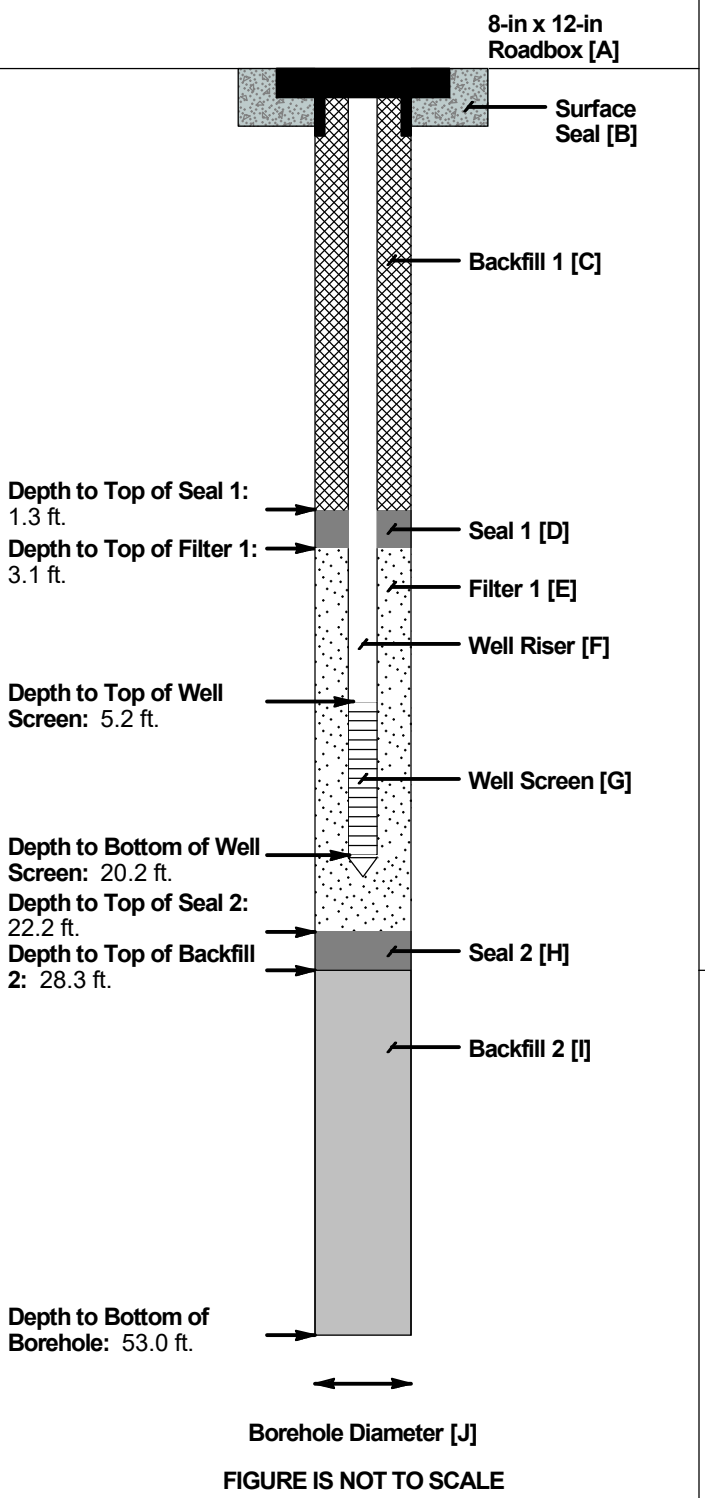


FIGURE IS NOT TO SCALE

Protective Roadbox or Guard Casing (Type/Stickup):	8-in x 12-in Roadbox / 0.0 in.	**[A]**
Surface Seal (Type/Thickness):	Concrete / 3 in.	**[B]**
Backfill 1 Material (Type):	Soil Cuttings	**[C]**
Seal 1 Material (Type/Thickness):	Bentonite / 1.8 ft.	**[D]**
Filter 1 Material (Type/Thickness):	Silica Holliston Sand / 19.1 ft.	**[E]**
Well Riser Construction (Material/Type/Diameter):	PVC / Schedule 40 / 2 in.	**[F]**
Well Screen Construction (Material/Slot Size):	Slotted PVC / 0.01 in.	**[G]**
Seal 2 Material (Type/Thickness):	Bentonite / 6.1 ft.	**[H]**
Backfill 2 Material (Type/Thickness):	Soil Cuttings / 24.7 ft.	**[I]**
Borehole Diameter:	8 in.	**[J]**

REMARKS:

Soil cave-in observed when pulling out augers up to the bottom of Seal 2.
Filter sand used was silica Holliston sand (4S).
Seal 1 and 2: Bentonite pellets 1/4-in TR30 30 minute time release.
5 50-pound bags of Quickrete fast-setting concrete were used.

REVIEWED BY: N. Strater and S. Consolvo	**REV. DATE:** 2026-06-19	**REV. NO.:** R0 Final	**WELL NO.:**SB-FD-542-A (MW)

MONITORING WELL INSTALLATION LOG - 26-6-19 06:18 - MWTP - CONTRACT NO. 7556

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
ADDRESS: Charles Street, Needham, MA
COORDINATES: **N:** 2936531.03 **E:** 731540.06 [NAD83]
GROUND SURFACE ELEVATION: 108.4 ft. [Boston City Base]
TOP OF BEDROCK ELEVATION: Not Encountered

LOGGED BY: A. Poudel & L. Pua Pita (FDE)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 53.0 ft. / ° (-90° is vertical downward)
DRILLING METHOD/FLUID: HSA / None
DRILLING COMPLETION DATE: 2025-11-18

Date	Time	Depth to Groundwater (ft)	Equiv. Static Groundwater El.	Casing Depth (ft)	Boring Depth (ft)	Remarks
2025-11-12	09:30	8.8	99.6	10.0	12.0	
2025-11-14	09:50	8.7	99.7	12.0	12.0	
2025-11-17	09:23	8.5	99.9	31.0	33.0	
2025-11-17	11:53	10.8	97.6	51.0	53.0	After drilling, before well installation.
2025-11-18	08:26	9.6	98.8	51.0	53.0	After drilling, before well installation.

GROUNDWATER LEVEL READING LOG - 26-2-2 16:05 - MWTP - CONTRACT NO. 7556

METROPOLITAN WATER TUNNEL PROGRAM

MONITORING WELL INSTALLATION LOG

WELL NO.: SB-FD-543-A (MW)

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
ADDRESS: Charles Street and Arlington Road, Needham, MA
COORDINATES: **N:** 2936553.63 **E:** 731356.32 [NAD83]
GROUND SURFACE ELEVATION: 106.9 ft. [Boston City Base]
TOP OF PVC RISER ELEVATION: 106.0 ft. [Boston City Base]

LOGGED BY: A. Poudel (WSP)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 49.6 ft. / ° (-90° is vertical downward)
DRILLING METHOD/FLUID: DW / Water
DRILLING COMPLETION DATE: 2025-12-09
WELL INSTALLATION/DEVELOP. DATE: 2025-12-09 / 2025-12-12

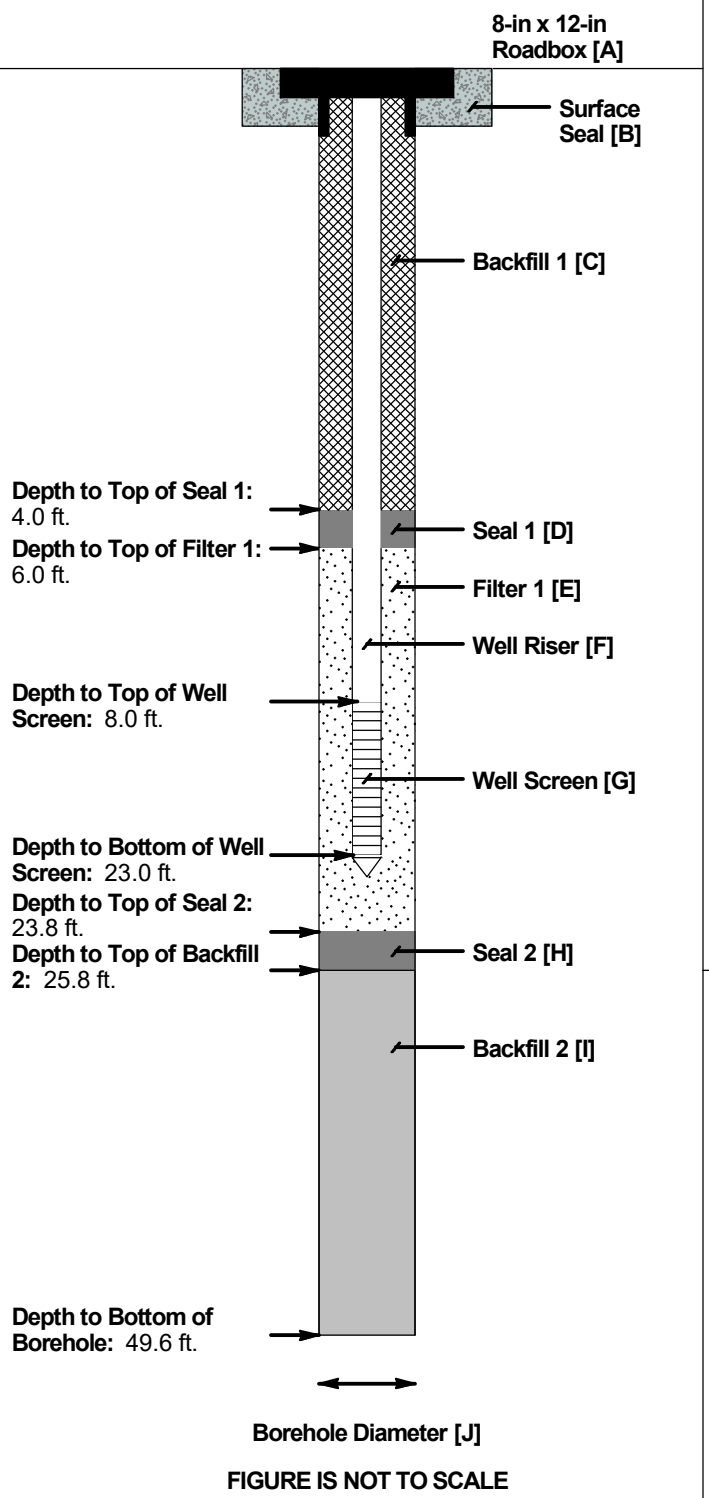


FIGURE IS NOT TO SCALE

Protective Roadbox or Guard Casing (Type/Stickup):	8-in x 12-in Roadbox / 0.0 in.	**[A]**
Surface Seal (Type/Thickness):	Concrete / 3 in.	**[B]**
Backfill 1 Material (Type):	Sand and Gravel (including cuttings)	**[C]**
Seal 1 Material (Type/Thickness):	Bentonite / 2 ft.	**[D]**
Filter 1 Material (Type/Thickness):	Silica Holliston Sand / 17.8 ft.	**[E]**
Well Riser Construction (Material/Type/Diameter):	PVC / Schedule 40 / 2 in.	**[F]**
Well Screen Construction (Material/Slot Size):	Slotted PVC / 0.01 in.	**[G]**
Seal 2 Material (Type/Thickness):	Bentonite / 2.0 ft.	**[H]**
Backfill 2 Material (Type/Thickness):	Soil Cuttings / 23.8 ft.	**[I]**
Borehole Diameter:	4.25 in.	**[J]**

REMARKS:

Soil cave-in observed when pulling out augers up to the bottom of Seal 2.
Filter sand used was silica Holliston sand (4S).
Seal 1 and 2: Bentonite pellets 1/4-in TR30 30-45 minute time release.
Approximately 1.5 50-pound bags of SAKRETE fast-setting concrete were used.

REVIEWED BY: N. Strater and S. Consolvo	**REV. DATE:** 2026-06-19	**REV. NO.:** R0 Final	**WELL NO.:** SB-FD-543-A (MW)

MONITORING WELL INSTALLATION LOG - 26-6-19 06:21 - MWTP - CONTRACT NO. 7556

METROPOLITAN WATER TUNNEL PROGRAM

GROUNDWATER LEVEL READING LOG

BORING NO.: SB-FD-543-A (MW)

MWRA CONTRACT NUMBER: 7556
MWRA CONTRACT NAME: Final Design Engineering Services
ADDRESS: Charles Street and Arlington Road, Needham, MA
COORDINATES: N: 2936553.63 **E:** 731356.32 [NAD83]
GROUND SURFACE ELEVATION: 106.9 ft. [Boston City Base]
TOP OF BEDROCK ELEVATION: Not Encountered

LOGGED BY: A. Poudel & L. Pua Pita (FDE)
DRILLING CONTRACTOR: 7NT Engineering
TOTAL DEPTH/PLUNGE: 49.6 ft. / ° (-90° is vertical downward)
DRILLING METHOD/FLUID: DW / Water
DRILLING COMPLETION DATE: 2025-12-08

Date	Time	Depth to Groundwater (ft)	Equiv. Static Groundwater El.	Casing Depth (ft)	Boring Depth (ft)	Remarks
2025-12-04	08:50			9.0	9.0	DRY
2025-12-04	15:26	7.2	99.7	42.0	44.0	
2025-12-08	12:15	6.9	100.0	42.0	46.0	
2025-12-09	09:30	7.3	99.6	42.0	49.6	Reading taken prior to well installation.

REVIEWED BY: N. Strater | **REV. DATE:** 2026-01-28 | **REV. NO.:** R0 Draft | **BORING NO.:** SB-FD-543-A (MW)

GROUNDWATER LEVEL READING LOG - 26-2-2 16:05 - MWTP - CONTRACT NO. 7556

Long-Term Stabilized Groundwater Readings in MWTP Monitoring Wells and a Piezometer in the Vicinity of NDDL

Exploration ID	Existing Ground Surface Elevation (ft) [1]	Reading		Groundwater or Equivalent Groundwater Reading [2]		Remarks
		Date	Time	Depth from Ground Surface (ft)	El. (ft)	
B-GSS-410A (PZ)	109.6	8/5/2024	12:21	8.1	101.5	Reading at the piezometer sensor 1 at EL. 59.2 feet
B-GSS-410A (PZ)	109.6	9/4/2024	7:35	8.3	101.3	Reading at the piezometer sensor 1 at EL. 59.2 feet
B-GSS-410A (PZ)	109.6	10/8/2024	11:02	8.4	101.2	Reading at the piezometer sensor 1 at EL. 59.2 feet
B-GSS-410A (PZ)	109.6	11/4/2024	12:30	8.6	101.0	Reading at the piezometer sensor 1 at EL. 59.2 feet
B-GSS-410A (PZ)	109.6	12/17/2024	12:35	8.0	101.6	Reading at the piezometer sensor 1 at EL. 59.2 feet
B-GSS-410A (PZ)	109.6	1/14/2025	10:47	8.1	101.5	Reading at the piezometer sensor 1 at EL. 59.2 feet
B-GSS-410A (PZ)	109.6	4/7/2025	12:51	7.8	101.8	Reading at the piezometer sensor 1 at EL. 59.2 feet
B-GSS-410A (PZ)	109.6	5/13/2025	9:20	7.6	102.0	Reading at the piezometer sensor 1 at EL. 59.2 feet
B-GSS-410A (PZ)	109.6	7/7/2025	8:22	8.3	101.3	Reading at the piezometer sensor 1 at EL. 59.2 feet
B-GSS-410A (PZ)	109.6	8/4/2025	10:40	8.2	101.4	Reading at the piezometer sensor 1 at EL. 59.2 feet
B-GSS-410A (PZ)	109.6	9/9/2025	13:17	8.4	101.2	Reading at the piezometer sensor 1 at EL. 59.2 feet
B-GSS-410A (PZ)	109.6	10/6/2025	10:04	8.6	101.0	Reading at the piezometer sensor 1 at EL. 59.2 feet
B-GSS-410A (PZ)	109.6	7/14/2026	14:46	8.5	101.1	Reading at the piezometer sensor 1 at EL. 59.2 feet
B-GSS-410A (PZ)	109.6	8/5/2024	12:21	11.5	98.1	Reading at the piezometer sensor 2 at EL. -255.8 feet
B-GSS-410A (PZ)	109.6	9/4/2024	7:35	11.0	98.6	Reading at the piezometer sensor 2 at EL. -255.8 feet
B-GSS-410A (PZ)	109.6	10/8/2024	11:02	11.4	98.2	Reading at the piezometer sensor 2 at EL. -255.8 feet
B-GSS-410A (PZ)	109.6	11/4/2024	12:30	12.2	97.4	Reading at the piezometer sensor 2 at EL. -255.8 feet
B-GSS-410A (PZ)	109.6	12/17/2024	12:35	11.2	98.4	Reading at the piezometer sensor 2 at EL. -255.8 feet
B-GSS-410A (PZ)	109.6	1/14/2025	10:47	11.6	98.0	Reading at the piezometer sensor 2 at EL. -255.8 feet
B-GSS-410A (PZ)	109.6	4/7/2025	12:51	11.0	98.6	Reading at the piezometer sensor 2 at EL. -255.8 feet
B-GSS-410A (PZ)	109.6	5/13/2025	9:20	11.0	98.6	Reading at the piezometer sensor 2 at EL. -255.8 feet
B-GSS-410A (PZ)	109.6	7/7/2025	8:22	12.1	97.5	Reading at the piezometer sensor 2 at EL. -255.8 feet
B-GSS-410A (PZ)	109.6	8/4/2025	10:40	12.0	97.6	Reading at the piezometer sensor 2 at EL. -255.8 feet
B-GSS-410A (PZ)	109.6	9/9/2025	13:17	12.4	97.2	Reading at the piezometer sensor 2 at EL. -255.8 feet
B-GSS-410A (PZ)	109.6	10/6/2025	10:04	12.3	97.3	Reading at the piezometer sensor 2 at EL. -255.8 feet
B-GSS-410A (PZ)	109.6	7/14/2026	14:45	12.3	97.3	Reading at the piezometer sensor 2 at EL. -255.8 feet
B-GSS-411 (MW)	111.5	8/5/2024	12:01	10.5	101.0	
B-GSS-411 (MW)	111.5	9/4/2024	7:45	10.6	100.9	
B-GSS-411 (MW)	111.5	10/8/2024	11:16	10.8	100.8	
B-GSS-411 (MW)	111.5	11/4/2024	12:24	10.9	100.6	
B-GSS-411 (MW)	111.5	12/17/2024	12:50	10.2	101.3	
B-GSS-411 (MW)	111.5	1/14/2025	10:50	10.0	101.5	
B-GSS-411 (MW)	111.5	2/4/2025	11:34	10.3	101.2	
B-GSS-411 (MW)	111.5	3/4/2025	6:58	10.1	101.4	
B-GSS-411 (MW)	111.5	4/7/2025	12:56	9.6	101.9	
B-GSS-411 (MW)	111.5	5/13/2025	9:25	9.6	101.9	
B-GSS-411 (MW)	111.5	7/7/2025	8:30	10.7	100.8	
B-GSS-411 (MW)	111.5	8/4/2025	10:47	10.3	101.2	
B-GSS-411 (MW)	111.5	9/9/2025	13:26	10.5	101.0	
B-GSS-411 (MW)	111.5	10/6/2025	10:16	10.7	100.8	
B-GSS-411 (MW)	111.5	12/17/2025	14:53	10.3	101.2	
B-GSS-411 (MW)	111.5	1/29/2026	12:18	10.3	101.2	
B-GSS-411 (MW)	111.5	2/19/2026	14:16	10.4	101.1	
B-GSS-411 (MW)	111.5	3/12/2026	11:41	9.1	102.4	
B-GSS-411 (MW)	111.5	7/14/2026	14:33	10.4	101.1	
B-GSS-412 (MW)	111.8	8/5/2024	11:39	10.9	100.9	
B-GSS-412 (MW)	111.8	9/4/2024	8:09	11.0	100.8	
B-GSS-412 (MW)	111.8	10/7/2024	12:10	11.1	100.7	
B-GSS-412 (MW)	111.8	11/4/2024	12:11	11.3	100.5	
B-GSS-412 (MW)	111.8	12/10/2024	6:40	10.9	100.9	
B-GSS-412 (MW)	111.8	1/14/2025	11:13	10.4	101.4	
B-GSS-412 (MW)	111.8	2/4/2025	11:20	10.6	101.2	
B-GSS-412 (MW)	111.8	3/3/2025	13:07	10.2	101.6	
B-GSS-412 (MW)	111.8	4/7/2025	12:45	9.9	101.9	
B-GSS-412 (MW)	111.8	5/13/2025	9:57	9.8	102.0	

Long-Term Stabilized Groundwater Readings in MWTP Monitoring Wells and a Piezometer in the Vicinity of NDDL

Exploration ID	Existing Ground Surface Elevation (ft) [1]	Reading		Groundwater or Equivalent Groundwater Reading [2]		Remarks
		Date	Time	Depth from Ground Surface (ft)	El. (ft)	
B-GSS-412 (MW)	111.8	6/2/2025	10:07	9.8	102.0	
B-GSS-412 (MW)	111.8	7/7/2025	8:11	10.6	101.2	
B-GSS-412 (MW)	111.8	8/4/2025	10:28	10.7	101.1	
B-GSS-412 (MW)	111.8	9/8/2025	15:15	11.0	100.8	
B-GSS-412 (MW)	111.8	10/6/2025	9:54	11.1	100.8	
B-GSS-412 (MW)	111.8	2/19/2026	15:47	10.9	100.9	
B-GSS-412 (MW)	111.8	3/12/2026	11:35	9.1	102.7	
B-GSS-412 (MW)	111.8	7/14/2026	13:55	10.7	101.0	
B-GSS-463 (MW)	106.8	1/14/2025	8:13	11.2	95.6	
B-GSS-463 (MW)	106.8	2/4/2025	10:57	11.3	95.5	
B-GSS-463 (MW)	106.8	3/3/2025	12:51	11.0	95.8	
B-GSS-463 (MW)	106.8	4/7/2025	12:30	10.6	96.2	
B-GSS-463 (MW)	106.8	5/13/2025	9:42	10.5	96.3	
B-GSS-463 (MW)	106.8	6/2/2025	9:49	10.5	96.3	
B-GSS-463 (MW)	106.8	7/7/2025	7:56	11.1	95.8	
B-GSS-463 (MW)	106.8	8/4/2025	9:28	11.1	95.7	
B-GSS-463 (MW)	106.8	9/8/2025	14:56	11.4	95.4	
B-GSS-463 (MW)	106.8	10/6/2025	11:20	11.5	95.3	
B-GSS-463 (MW)	106.8	11/3/2025	10:43	11.0	95.8	
B-GSS-463 (MW)	106.8	12/17/2025	14:32	11.1	95.7	
B-GSS-463 (MW)	106.8	1/29/2026	11:12	11.1	95.7	
B-GSS-463 (MW)	106.8	4/8/2026	15:58	11.1	95.7	
B-GSS-463 (MW)	106.8	5/4/2026	10:45	10.9	95.9	
B-GSS-463 (MW)	106.8	6/1/2026	11:45	10.9	95.9	
B-GSS-463 (MW)	106.8	7/13/2026	14:40	11.2	95.6	
B-GSS-463 (MW)	106.8	8/3/2026	13:15	11.2	95.6	
B-GSS-465 (MW)	105.7	1/14/2025	7:29	6.3	99.4	
B-GSS-465 (MW)	105.7	2/5/2025	11:09	5.9	99.8	
B-GSS-465 (MW)	105.7	3/3/2025	12:58	5.8	99.9	
B-GSS-465 (MW)	105.7	4/7/2025	12:35	5.9	99.9	
B-GSS-465 (MW)	105.7	8/4/2025	10:19	6.0	99.8	
B-GSS-465 (MW)	105.7	10/6/2025	9:45	5.8	99.9	
B-GSS-465 (MW)	105.7	11/3/2025	10:37	5.9	99.8	
B-GSS-465 (MW)	105.7	12/17/2025	14:28	6.0	99.7	
B-GSS-465 (MW)	105.7	4/10/2026	10:05	5.7	100.0	
B-GSS-465 (MW)	105.7	6/1/2026	11:52	6.0	99.7	
B-GSS-465 (MW)	105.7	7/13/2026	14:48	6.0	99.7	
B-GSS-465 (MW)	105.7	8/3/2026	13:21	5.9	99.8	
SB-FD-542-A (MW)	108.4	11/19/2025	10:37	9.4	99.0	Measured after well installation
SB-FD-542-A (MW)	108.4	2/4/2026	13:21	9.1	99.3	
SB-FD-542-A (MW)	108.4	2/19/2026	15:12	9.1	99.3	
SB-FD-542-A (MW)	108.4	3/12/2026	11:26	8.3	100.1	
SB-FD-542-A (MW)	108.4	4/8/2026	16:00	8.6	99.8	
SB-FD-542-A (MW)	108.4	4/10/2026	15:00	9.6	98.8	
SB-FD-542-A (MW)	108.4	5/4/2026	10:36	8.9	99.5	
SB-FD-542-A (MW)	108.4	6/1/2026	11:38	8.9	99.5	
SB-FD-542-A (MW)	108.4	7/13/2026	2:36	9.0	99.4	
SB-FD-542-A (MW)	108.4	8/3/2026	13:13	8.8	99.6	
SB-FD-542-A (MW)	108.4	9/3/2026	17:00	9.1	99.3	
SB-FD-543-A (MW)	106.9	12/12/2025	-	7.8	99.1	Measured after well installation
SB-FD-543-A (MW)	106.9	2/19/2026	15:27	7.9	99.0	
SB-FD-543-A (MW)	106.9	3/12/2026	11:23	7.1	99.8	
SB-FD-543-A (MW)	106.9	4/8/2026	4:05	8.7	98.2	
SB-FD-543-A (MW)	106.9	5/4/2026	10:50	7.7	99.2	
SB-FD-543-A (MW)	106.9	6/1/2026	11:40	7.7	99.2	

Long-Term Stabilized Groundwater Readings in MWTP Monitoring Wells and a Piezometer in the Vicinity of NDDL

Exploration ID	Existing Ground Surface Elevation (ft) [1]	Reading		Groundwater or Equivalent Groundwater Reading [2]		Remarks
		Date	Time	Depth from Ground Surface (ft)	El. (ft)	
SB-FD-543-A (MW)	106.9	7/13/2026	2:44	7.8	99.1	
SB-FD-543-A (MW)	106.9	8/3/2026	13:19	7.3	99.6	
SB-FD-543-A (MW)	106.9	9/3/2026	17:04	7.9	99.0	

Notes:

(1) MWRA Water Base (MWRAW), which is based on Boston City Base (BCB). The MWRAW datum zero reference point is approximately 6.46 feet below NAVD88 datum (i.e., MWRAW (BCB) = NAVD88 + 6.46 feet). Coordinates included in original logs that were not in BCB were converted.

(2) This table only includes the long-term groundwater readings of the monitoring wells and a piezometer in the vicinity of NDDL.

APPENDIX A-6

LABORATORY TESTING RESULTS

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:				Project No:	GTX-317525
Boring ID:	---	Sample Type:	---	Tested By:	ajl
Sample ID:	---	Test Date:	09/18/24	Checked By:	jsc
Depth :	---	Test Id:	785985		

Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
[redacted]				
B-GSS-410	SS-1A,1B,2A,2B,3A,3B	7-13	Moist, dark yellowish brown sandy silt with gravel	21.9
B-GSS-411	SS- 1,2,3,4,5	6-16	Moist, dark grayish brown silty sand with gravel	10.4
[redacted]				

Notes: Temperature of Drying : 110º Celsius

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	---	Sample Type:	---	Tested By:	ajl
Sample ID:	---	Test Date:	10/22/24	Checked By:	ank
Depth :	---	Test Id:	789561		

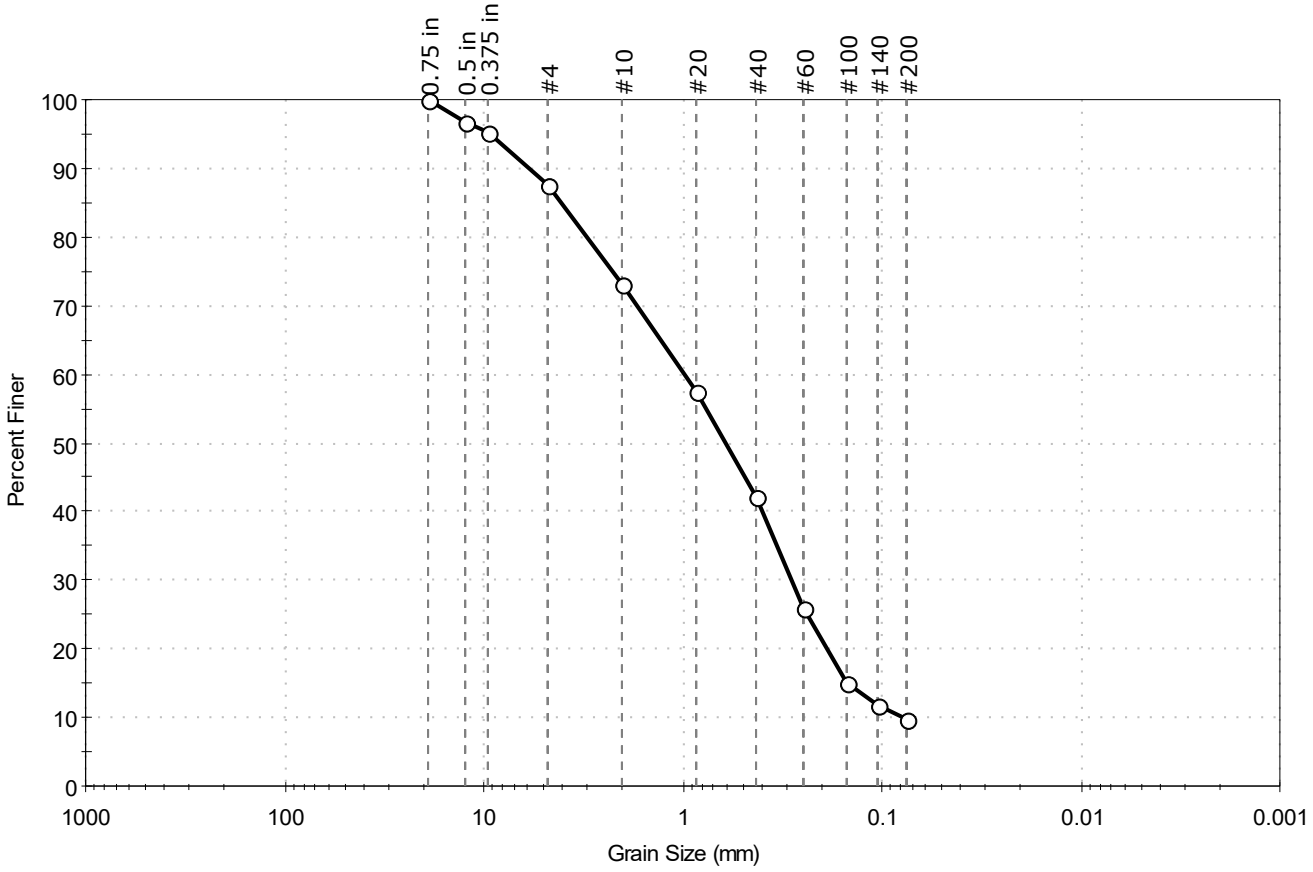
Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
B-GSS-411	SS- 6	16.0-18.0	Moist, olive brown silty sand	19.1
B-GSS-411	SS- 11A	26.0-28.0	Moist, olive brown silty sand	18.1
B-GSS-411	SS- 14	32.0-34.0	Moist, olive brown sand	15.9
B-GSS-411	SS- 17	38.0-40.0	Moist, olive brown silty sand with gravel	11.3
B-GSS-412	SS- 6A	18.0-20.0	Moist, olive brown sand with gravel	12.6
B-GSS-412	SS- 13A	32.0-33.0	Moist, olive brown sand with silt	13.0
B-GSS-412	SS- 15	36.0-38.0	Moist, light olive brown silt with gravel	.6
B-GSS-412	SS- 16	38.0-40.0	Moist, olive brown silty sand with gravel	8.3

Notes: Temperature of Drying : 110º Celsius

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-411	Sample Type:	Jar	Tested By:	ajl
Sample ID:	SS-6	Test Date:	10/28/24	Checked By:	ank
Depth :	16.0-18.0	Test Id:	789548		
Test Comment:	---				
Visual Description:	Moist, olive brown sand with silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	12.5	77.8	9.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	97		
0.375 in	9.50	95		
#4	4.75	87		
#10	2.00	73		
#20	0.85	58		
#40	0.42	42		
#60	0.25	26		
#100	0.15	15		
#140	0.11	12		
#200	0.075	9.7		

Coefficients

D_{85} =4.0843 mm	D_{30} =0.2844 mm
D_{60} =0.9730 mm	D_{15} =0.1477 mm
D_{50} =0.6036 mm	D_{10} =0.0791 mm
C_u =12.301	C_c =1.051

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (1))

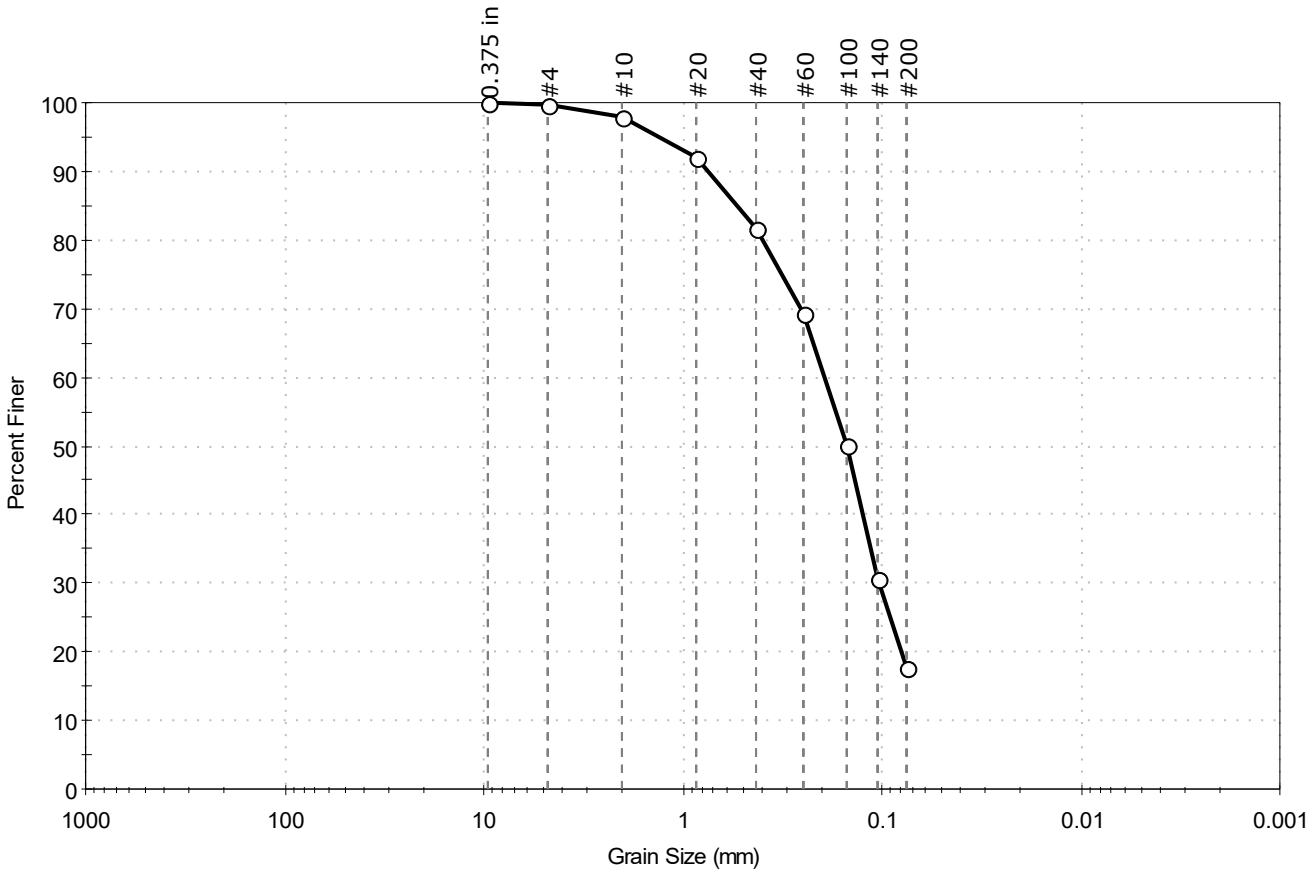
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-411	Sample Type:	Jar	Tested By:	ajl
Sample ID:	SS-11A	Test Date:	10/25/24	Checked By:	ank
Depth :	26.0-28.0	Test Id:	789549		
Test Comment:	---				
Visual Description:	Moist, olive brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.3	82.1	17.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	98		
#20	0.85	92		
#40	0.42	82		
#60	0.25	69		
#100	0.15	50		
#140	0.11	31		
#200	0.075	18		

Coefficients

D_{85} = 0.5276 mm D_{30} = 0.1039 mm

D_{60} = 0.1948 mm D_{15} = N/A

D_{50} = 0.1496 mm D_{10} = N/A

C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

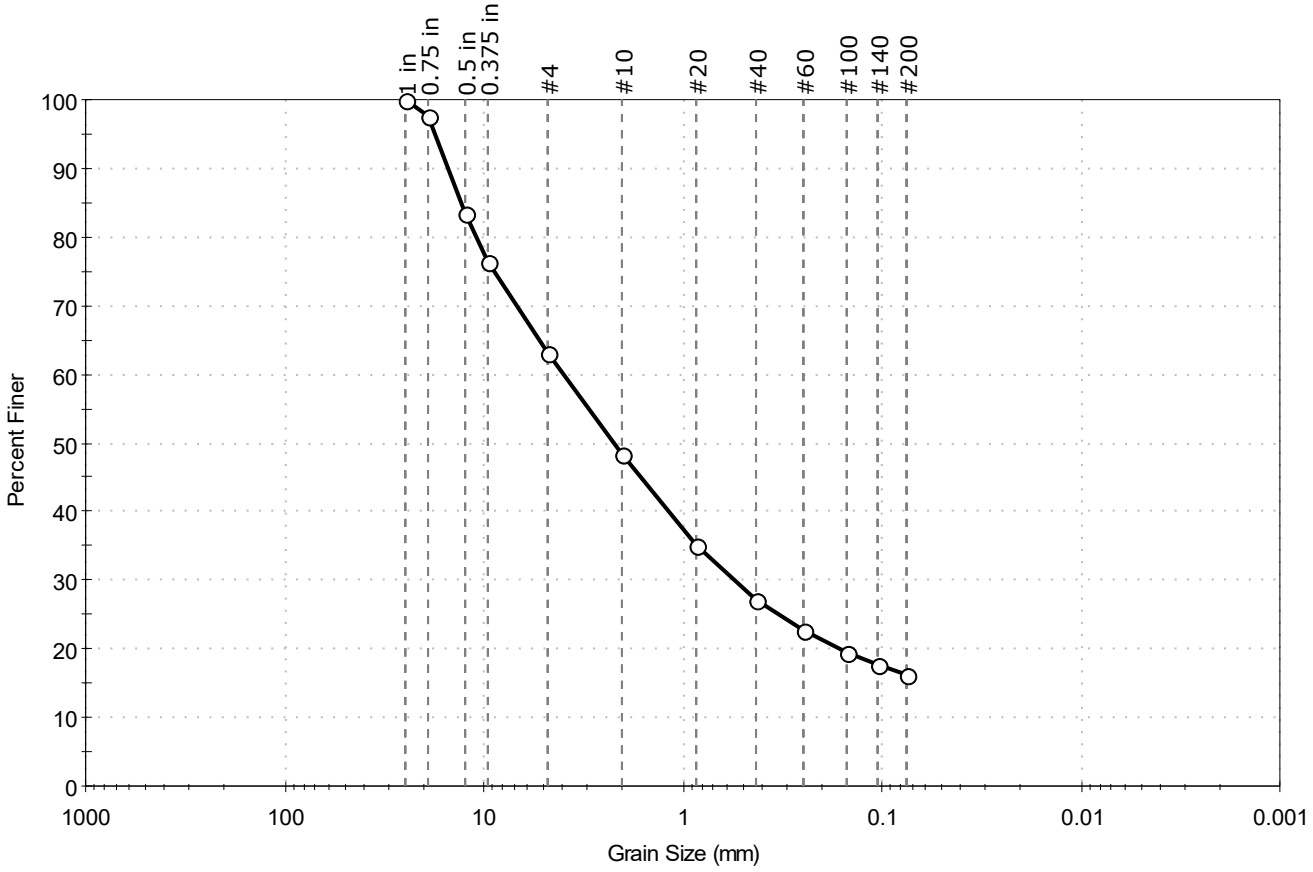
Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-411	Sample Type:	Jar	Tested By:	ajl
Sample ID:	SS-17	Test Date:	10/28/24	Checked By:	ank
Depth :	38.0-40.0	Test Id:	789550		
Test Comment:	---				
Visual Description:	Moist, olive brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	36.8	47.1	16.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	98		
0.5 in	12.50	84		
0.375 in	9.50	76		
#4	4.75	63		
#10	2.00	48		
#20	0.85	35		
#40	0.42	27		
#60	0.25	23		
#100	0.15	19		
#140	0.11	18		
#200	0.075	16		

Coefficients

D_{85} = 13.0611 mm	D_{30} = 0.5486 mm
D_{60} = 3.9401 mm	D_{15} = N/A
D_{50} = 2.2128 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

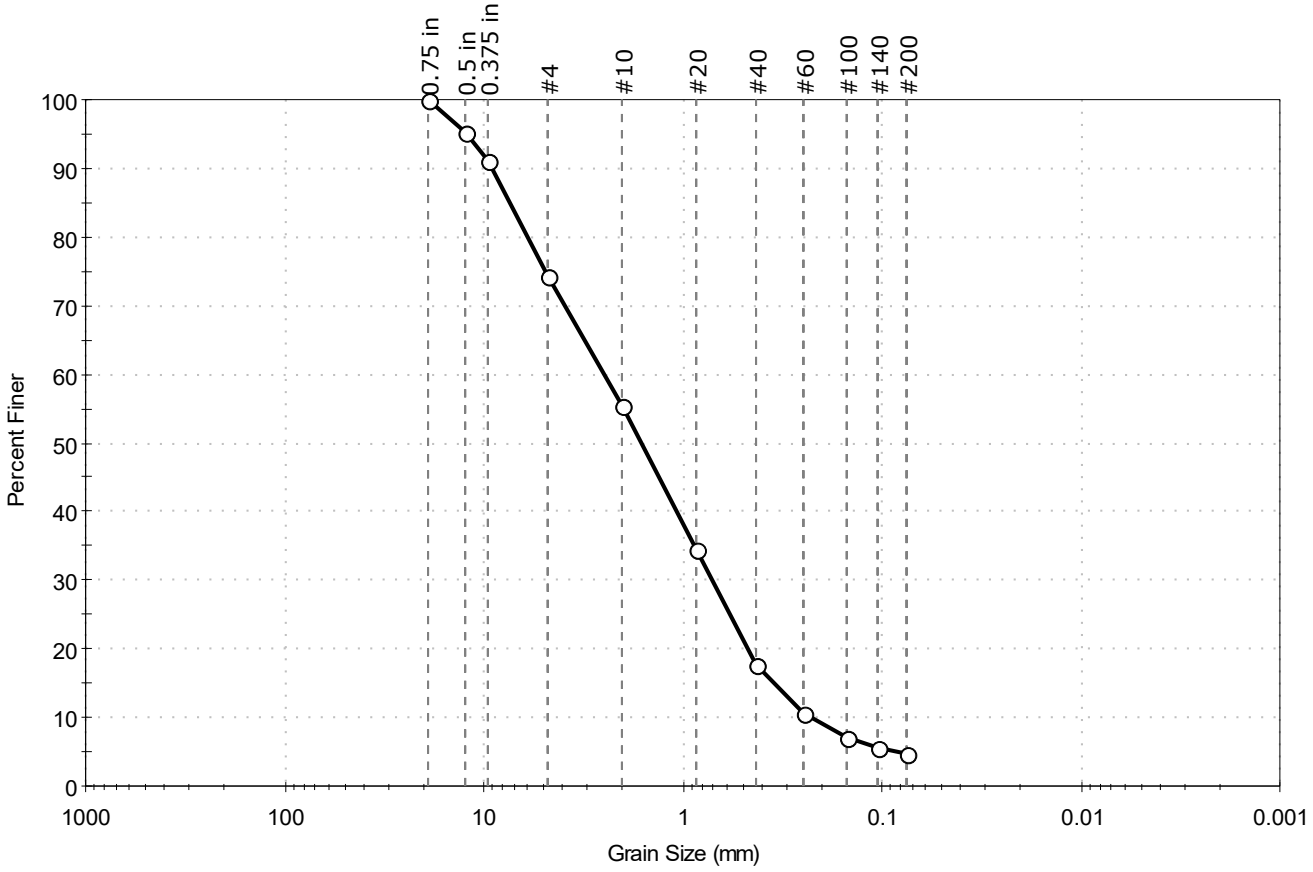
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-412	Sample Type:	Jar	Tested By:	ajl
Sample ID:	SS-6A	Test Date:	10/28/24	Checked By:	ank
Depth :	18.0-20.0	Test Id:	789551		
Test Comment:	---				
Visual Description:	Moist, olive brown sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	25.7	69.6	4.7

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	95		
0.375 in	9.50	91		
#4	4.75	74		
#10	2.00	55		
#20	0.85	35		
#40	0.42	18		
#60	0.25	10		
#100	0.15	7		
#140	0.11	6		
#200	0.075	4.7		

Coefficients

D_{85} = 7.3629 mm D_{30} = 0.7023 mm

D_{60} = 2.4738 mm D_{15} = 0.3464 mm

D_{50} = 1.6038 mm D_{10} = 0.2328 mm

C_u = 10.626 C_c = 0.856

Classification

ASTM: Poorly graded SAND with Gravel (SP)

AASHTO: Stone Fragments, Gravel and Sand (A-1-b (1))

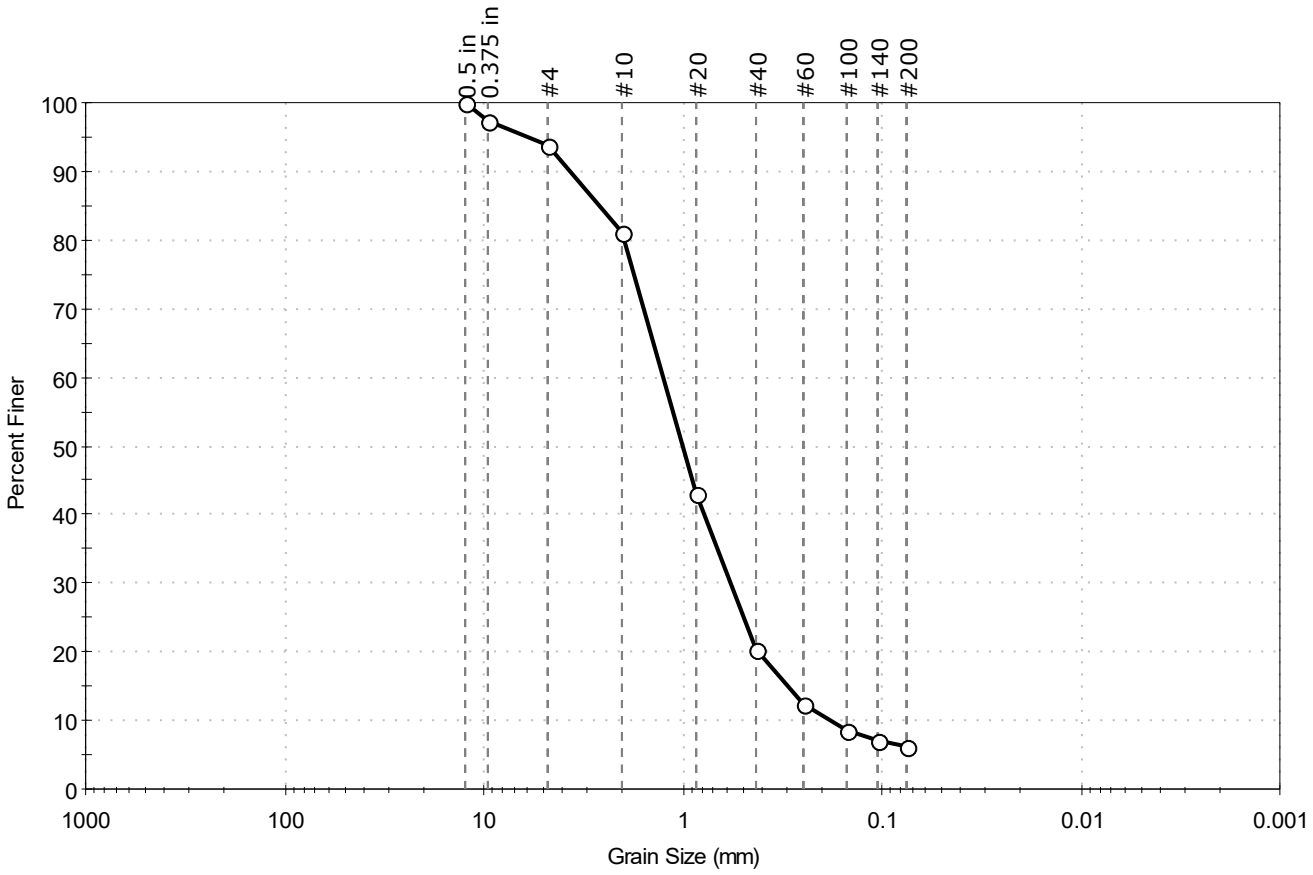
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-412	Sample Type:	Jar	Tested By:	ajl
Sample ID:	SS-13A	Test Date:	10/28/24	Checked By:	ank
Depth :	32.0-33.0	Test Id:	789552		
Test Comment:	---				
Visual Description:	Moist, olive brown sand with silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	6.1	87.7	6.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.5 in	12.50	100		
0.375 in	9.50	97		
#4	4.75	94		
#10	2.00	81		
#20	0.85	43		
#40	0.42	20		
#60	0.25	12		
#100	0.15	9		
#140	0.11	7		
#200	0.075	6.2		

Coefficients

D_{85} = 2.6031 mm	D_{30} = 0.5704 mm
D_{60} = 1.2420 mm	D_{15} = 0.2998 mm
D_{50} = 0.9912 mm	D_{10} = 0.1829 mm
C_u = 6.791	C_c = 1.432

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (1))

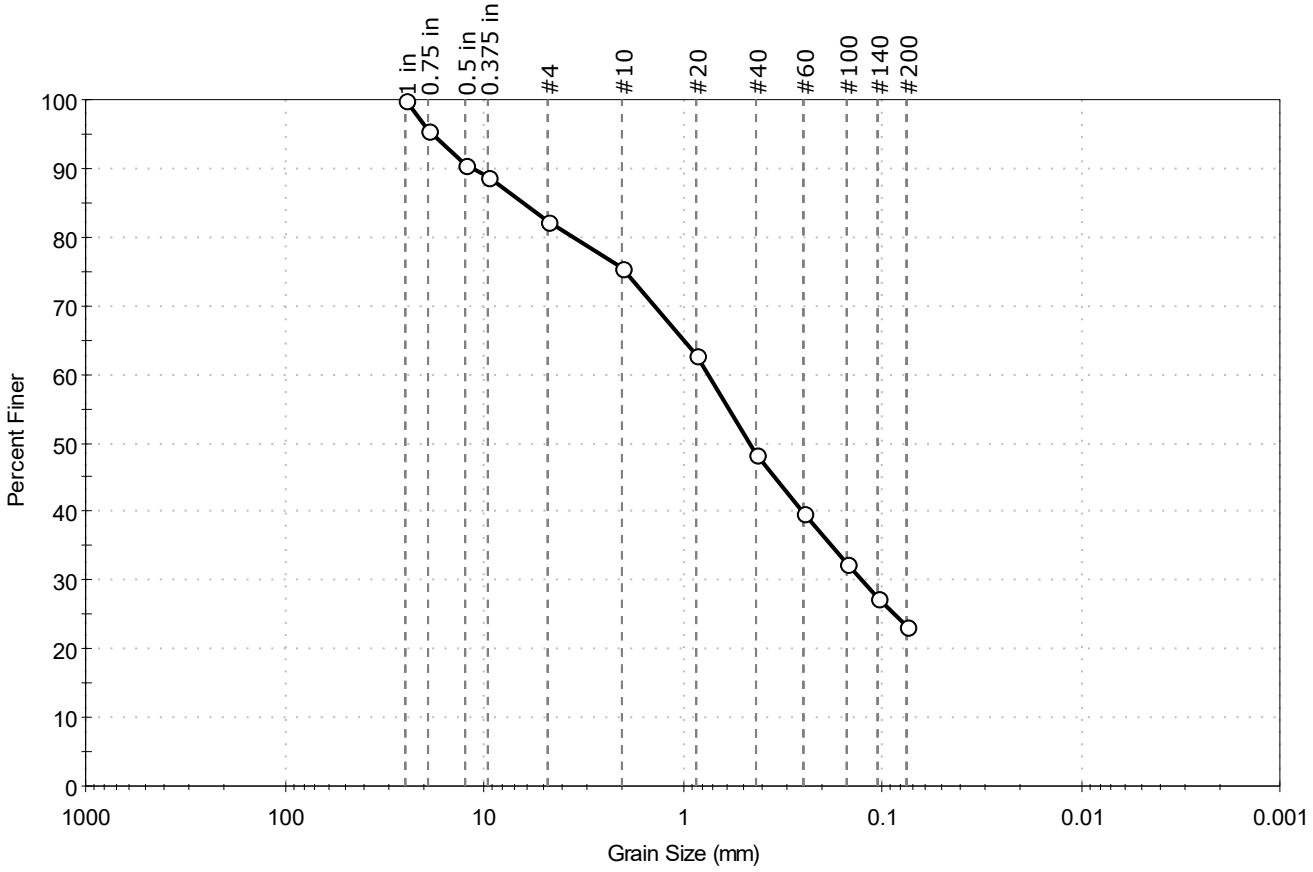
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-412	Sample Type:	Jar	Tested By:	ajl
Sample ID:	SS-16	Test Date:	10/25/24	Checked By:	ank
Depth :	38.0-40.0	Test Id:	789553		
Test Comment:	---				
Visual Description:	Moist, olive brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	17.9	58.9	23.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	95		
0.5 in	12.50	90		
0.375 in	9.50	89		
#4	4.75	82		
#10	2.00	75		
#20	0.85	63		
#40	0.42	48		
#60	0.25	40		
#100	0.15	32		
#140	0.11	28		
#200	0.075	23		

Coefficients

D_{85} =6.3626 mm	D_{30} =0.1267 mm
D_{60} =0.7431 mm	D_{15} =N/A
D_{50} =0.4585 mm	D_{10} =N/A
C_u =N/A	C_c =N/A

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	---	Sample Type:	---	Tested By:	ajl
Sample ID:	---	Test Date:	10/22/24	Checked By:	ank
Depth :	---	Test Id:	789563		

Specific Gravity of Soils by ASTM D854

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity	Comment
B-GSS-411	SS- 14	32.0-34.0	Moist, olive brown sand	2.68	
B-GSS-412	SS- 15	36.0-38.0	Moist, light olive brown silt with gravel	2.69	

Notes: Specific Gravity performed by using method B (oven dried specimens) of ASTM D854
Moisture Content determined by ASTM D2216.

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:				Project No:	GTX-317525
Boring ID:	---	Sample Type:	---	Tested By:	ajl
Sample ID:	---	Test Date:	09/24/24	Checked By:	jsc
Depth :	---	Test Id:	785944		

pH of Soil by ASTM D4972

Boring ID	Sample ID	Depth	Visual Description	pH of Soil in Distilled Water	pH of Soil in Calcium Chloride
B-GSS-410	SS-1A,1B,2A, 2B,3A,3B	7-13	Moist, dark yellowish brown sandy silt with gravel	6.7	6.1
B-GSS-411	SS-1,2,3,4,5	6-16	Moist, dark grayish brown silty sand with gravel	6.4	6.0

Notes: Sample Preparation: screened through #10 sieve

Method A, pH meter used

Client:	GEI- Delve Underground JV
Project:	MWRA Metropolitan Water Tunnel
Location:	---
GTX#:	317525
Test Date:	9/24/2024
Due Date:	9/30/2024
Tested By:	NMK
Checked By:	jsc

Laboratory Measurement of Soil Resistivity Using the Wenner Four-Electrode Method by ASTM G57 (Laboratory Measurement)

Boring ID	Sample ID	Depth, ft.	Sample Description	Electrical Resistivity, ohm-cm	Electrical Conductivity, $(ohm\text{-}cm)^{-1}$
B-GSS-410	SS-1A, 1B, 2A, 2B, 3A, 3B	7-13 ft	Moist, dark yellowish brown sandy silt with gravel	6,458	1.55E-04

Notes: Test Equipment: Nilsson Model 400 Soil Resistance Meter, MC Miller Soil Box
Water added to sample to create a thick slurry prior to testing (saturated condition).
Electrical Conductivity is calculated as inverse of Electrical Resistivity (per ASTM G57)
Test conducted in standard laboratory atmosphere: 68-73 F

Client:	GEI- Delve Underground JV
Project:	MWRA Metropolitan Water Tunnel
Location:	---
GTX#:	317525
Test Date:	09/24/24
Due Date:	09/30/24
Tested By:	NMK
Checked By:	ank

Laboratory Measurement of Soil Resistivity Using the Wenner Four-Electrode Method by ASTM G57 (Laboratory Measurement)

Boring ID	Sample ID	Depth, ft.	Sample Description	Electrical Resistivity, ohm-cm	Electrical Conductivity, $(ohm\text{-}cm)^{-1}$
[redacted]					
B-GSS-411	SS-1, 2, 3, 4, 5	6-16 ft	Moist, dark grayish brown silty sand with gravel	1,761	5.68E-04

Notes: Test Equipment: Nilsson Model 400 Soil Resistance Meter, MC Miller Soil Box
Water added to sample to create a thick slurry prior to testing (saturated condition).
Electrical Conductivity is calculated as inverse of Electrical Resistivity (per ASTM G57)
Test conducted in standard laboratory atmosphere: 68-73 F



PO Box 572455 / Salt Lake City UT 84157-2455 / USA
TEL +1 801 262 2448 · FAX +1 801 262 9870 · www.TEi-TS.com

GEOTESTING EXPRESS INCORPORATED
125 NAGOG PARK
ACTON MA 01720-3451
USA

Analysis No.	TS-A2412164-1
Report Date	23 September 2024
Date Sampled	17 September 2024
Date Received	19 September 2024
Where Sampled	Acton, MA USA
Sampled By	Client

This is to attest that we have examined: Soil: Project: MWRA Metropolitan Water Tunnel; Site Location: - — -; Job Number: GTX-317525

When examined to the applicable requirements of:

ASTM D 512-12*	“Standard Test Methods for Chloride Ion in Water” Method B
ASTM D 516-16	“Standard Test Method for Sulfate Ion in Water”
Standard Methods-2023	Part 4000 “Inorganic Nonmetallic Constituents” 4500-S^{2-} Sulfide

Results:

ASTM D 512 - Chloride Method B

Sample		Results		Minimum Detection Limit
		ppm (mg/kg)	%[1]	
SS-1, 2, 3, 4, 5		95.	0.0095	10.
B-GSS-411	6-16			
SS-1A, 1B, 2A, 2B, 3A, 3B		25.	0.0025	
B-GSS-410	7-13			
[redacted]				

NOTE: [1]Percent by weight after drying and prepared as per the Standard. *Withdrawn 2021 without Replacement

Testing Services analytical Laboratory
3455 South 500 West
Salt Lake City, UT 84115-4234 USA
TEL: +1 801 262 2448
FAX: +1 801 262 9870

ASTM D 516 – Sulfates (Soluble)

Sample		Results		Minimum Detection Limit
		ppm (mg/kg)	%[1]	
SS-1, 2, 3, 4, 5		< 10.	< 0.0010	10.
B-GSS-411	6-16			
SS-1A, 1B, 2A, 2B, 3A, 3B		< 10.	< 0.0010	
B-GSS-410	7-13			
[redacted]				

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

SM4500-S^{2-} - Sulfide

Sample		Results		Minimum Detection Limit
		ppb (µg/kg)	%[1]	
SS-1, 2, 3, 4, 5		80.	0.0000080	10.
B-GSS-411	6-16			
SS-1A, 1B, 2A, 2B, 3A, 3B		240.	0.0000240	
B-GSS-410	7-13			
[redacted]				

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

END OF ANALYSIS

USEPA Laboratory ID UT00930

Merrill Gee P.E. – Engineer in Charge

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Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	---	Sample Type:	---	Tested By:	ajl
Sample ID:	---	Test Date:	01/28/25	Checked By:	ank
Depth :	---	Test Id:	802134		

Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
B-GSS-461	SS- 2, SS-3A+3B, SS-5, SS-5-REDRIVE	8-16	Moist, light olive brown silty clay with gravel	16.3
B-GSS-462	SS- 3, SS-4, SS-5 + SS-5-REDRIVE, SS-7	10-20	Moist, light olive brown silty sand with gravel	11.5
B-GSS-463	SS- 1, SS-2, SS-3, SS-5-REDRIVE A+B	6-16	Moist, dark yellowish brown sand with gravel	10.5

Notes: Temperature of Drying : 110º Celsius

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	---	Sample Type:	---	Tested By:	ajl
Sample ID:	---	Test Date:	01/28/25	Checked By:	ank
Depth :	---	Test Id:	802118		

Moisture, Ash, and Organic Matter - ASTM D2974

Boring ID	Sample ID	Depth	Description	Moisture Content,%	Ash Content,%	Organic Matter,%
B-GSS-461	SS-2, SS-3A+3B, SS-5, SS_5_REDRIVE	8-16	Moist, light olive brown silty clay with gravel	16	99.6	.4
B-GSS-462	SS-3, SS-4, SS-5 + SS-5-REDRIVE, SS_7	10-20	Moist, light olive brown silty sand with gravel	12	99.8	.2
B-GSS-463	SS-1, SS-2, SS-3, SS-5-REDRIVE A+B	6-16	Moist, dark yellowish brown sand with gravel	10	99.6	.4
B-GSS-464	SS-1	6-8	Moist, dark brown sand with gravel	13	98.7	1.3

Notes: Moisture content determined by Method A and reported as a percentage of oven-dried mass; dried to a constant mass at temperature of 105º C
Ash content and organic matter determined by Method C; dried to constant mass at temperature 440º C

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	---	Sample Type:	---	Tested By:	ajl
Sample ID:	---	Test Date:	01/27/25	Checked By:	ank
Depth :	---	Test Id:	802119		

Specific Gravity of Soils by ASTM D854

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity	Comment
B-GSS-462	SS- 8	20-22	Moist, brown gravel with sand	2.84	
B-GSS-464	SS- 3	10-12	Moist, dark yellowish brown gravelly silt	2.63	

Notes: Specific Gravity performed by using method B (oven dried specimens) of ASTM D854

Moisture Content determined by ASTM D2216.

* Only minus No.4 Sieve material tested. Insufficient quantity of material greater than the No.4 Sieve available to perform ASTM C127 Specific Gravity of Aggregate.
72.2 %Passing the No.4 Sieve.

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	---	Sample Type:	---	Tested By:	ajl
Sample ID:	---	Test Date:	02/04/25	Checked By:	ank
Depth :	---	Test Id:	802120		

pH of Soil by ASTM D4972

Boring ID	Sample ID	Depth	Visual Description	pH of Soil in Distilled Water	pH of Soil in Calcium Chloride
B-GSS-461	SS-2, SS-3A+3B, SS-5,	8-16	Moist, light olive brown silty clay with gravel	5.6	5.4
B-GSS-462	SS-3, SS-4, SS-5 + SS-5-REDRIVE	10-20	Moist, light olive brown silty sand with gravel	6.8	6.2
B-GSS-463	SS-1, SS-2, SS-3, SS-5-REDRIVE	6-16	Moist, dark yellowish brown sand with gravel	6.4	6.3

Note: Descriptions on lab results are visual descriptions by the lab technician. See boring logs for complete soil descriptions.

Notes: Sample Preparation: screened through #10 sieve

Method A, pH meter used

Client:	GEI-Delve Underground JV
Project:	MWRA Metropolitan Water Tunnel
Location:	---
GTX#:	317525
Test Date:	01/28/25
Due Date:	02/05/25
Tested By:	NMK
Checked By:	ank

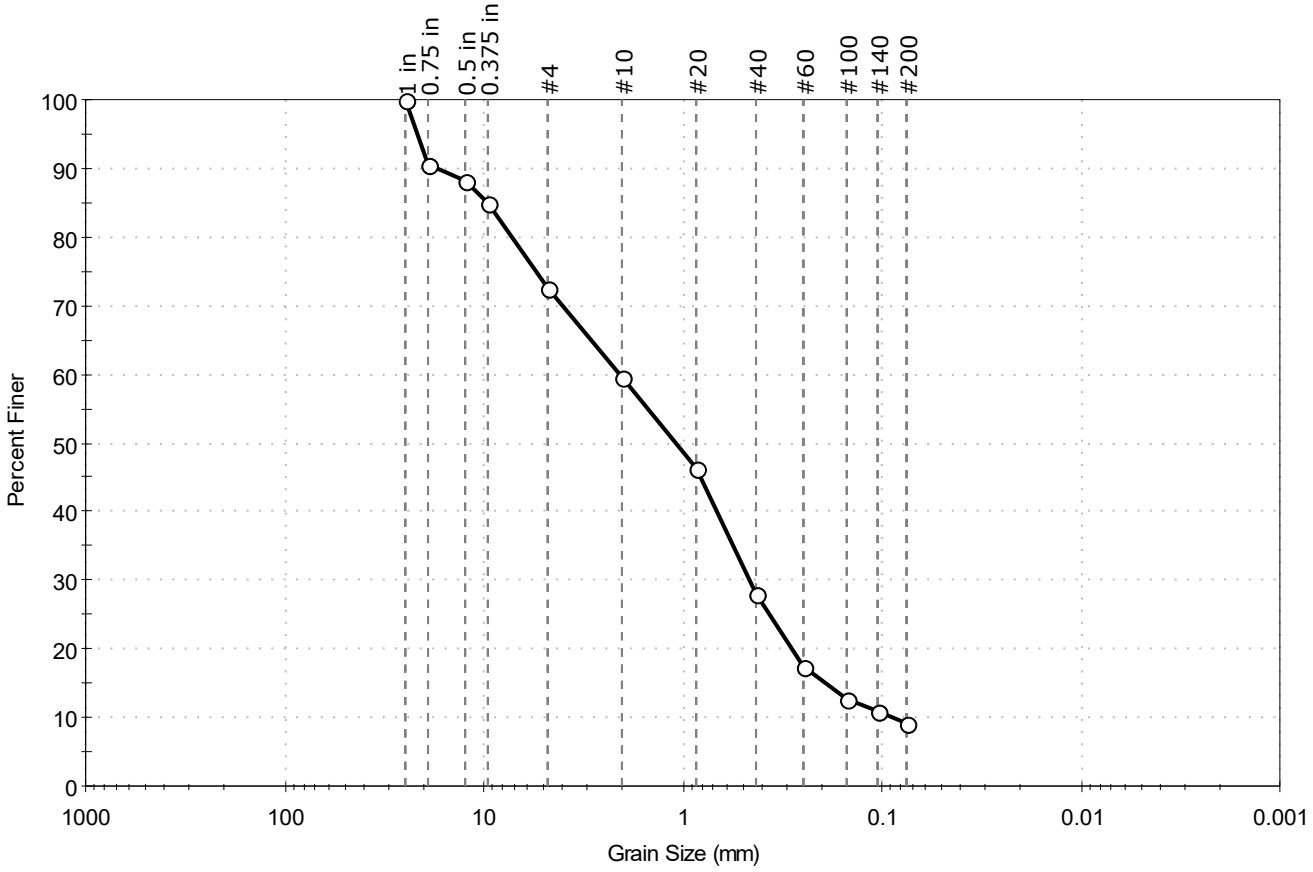
Laboratory Measurement of Soil Resistivity Using the Wenner Four-Electrode Method by ASTM G57 (Laboratory Measurement)

Boring ID	Sample ID	Depth, ft.	Sample Description	Electrical Resistivity, ohm-cm	Electrical Conductivity, $(ohm\text{-}cm)^{-1}$
B-GSS-461	SS-2, SS-3A+3B, SS-5, SS-5 REDRIVE	8-16 ft	Moist, light olive brown silty clay with gravel	271	3.69E-03
B-GSS-462	SS-3, SS-4, SS-5+SS-5 REDRIVE, SS-7	10-20 ft	Moist, light olive brown silty sand with gravel	3,524	2.84E-04
B-GSS-463	SS-1, SS-2, SS-3, SS-4, SS-5 REDRIVE A+B	6-16 ft	Moist, dark yellowish brown sand with gravel	3,244	3.08E-04

Notes: Test Equipment: Nilsson Model 400 Soil Resistance Meter, MC Miller Soil Box
Water added to sample to create a thick slurry prior to testing (saturated condition).
Electrical Conductivity is calculated as inverse of Electrical Resistivity (per ASTM G57)
Test conducted in standard laboratory atmosphere: 68-73 F

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-460	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-1	Test Date:	01/29/25	Checked By:	ank
Depth :	8-10	Test Id:	802104		
Test Comment:	---				
Visual Description:	Moist, brown sand with silt and gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	27.4	63.5	9.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	91		
0.5 in	12.50	88		
0.375 in	9.50	85		
#4	4.75	73		
#10	2.00	60		
#20	0.85	46		
#40	0.42	28		
#60	0.25	17		
#100	0.15	13		
#140	0.11	11		
#200	0.075	9.1		

Coefficients

D_{85} = 9.4705 mm	D_{30} = 0.4571 mm
D_{60} = 2.0411 mm	D_{15} = 0.1927 mm
D_{50} = 1.0763 mm	D_{10} = 0.0899 mm
C_u = 22.704	C_c = 1.139

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (1))

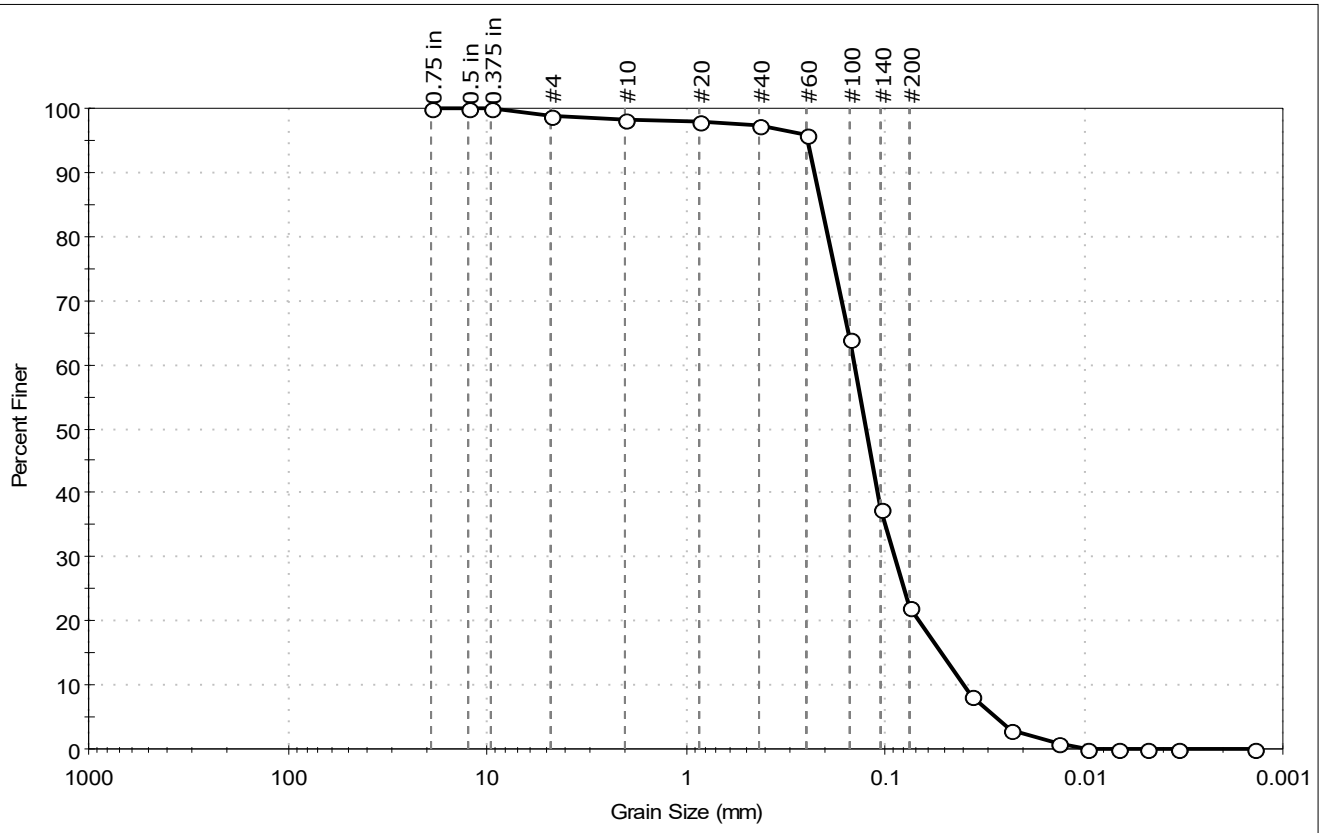
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-460	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-6	Test Date:	01/29/25	Checked By:	ank
Depth :	18-20	Test Id:	802108		
Test Comment:	---				
Visual Description:	Moist, light olive brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
–	1.1	76.7	22.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	100		
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	98		
#20	0.85	98		
#40	0.42	97		
#60	0.25	96		
#100	0.15	64		
#140	0.11	37		
#200	0.075	22		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0370	8		
---	0.0236	3		
---	0.0135	1		
---	0.0095	0		
---	0.0067	0		
---	0.0048	0		
---	0.0034	0		
---	0.0014	0		

Coefficients

D_{85} = 0.2101 mm	D_{30} = 0.0895 mm
D_{60} = 0.1423 mm	D_{15} = 0.0521 mm
D_{50} = 0.1248 mm	D_{10} = 0.0405 mm
C_u = 3.514	C_c = 1.390

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

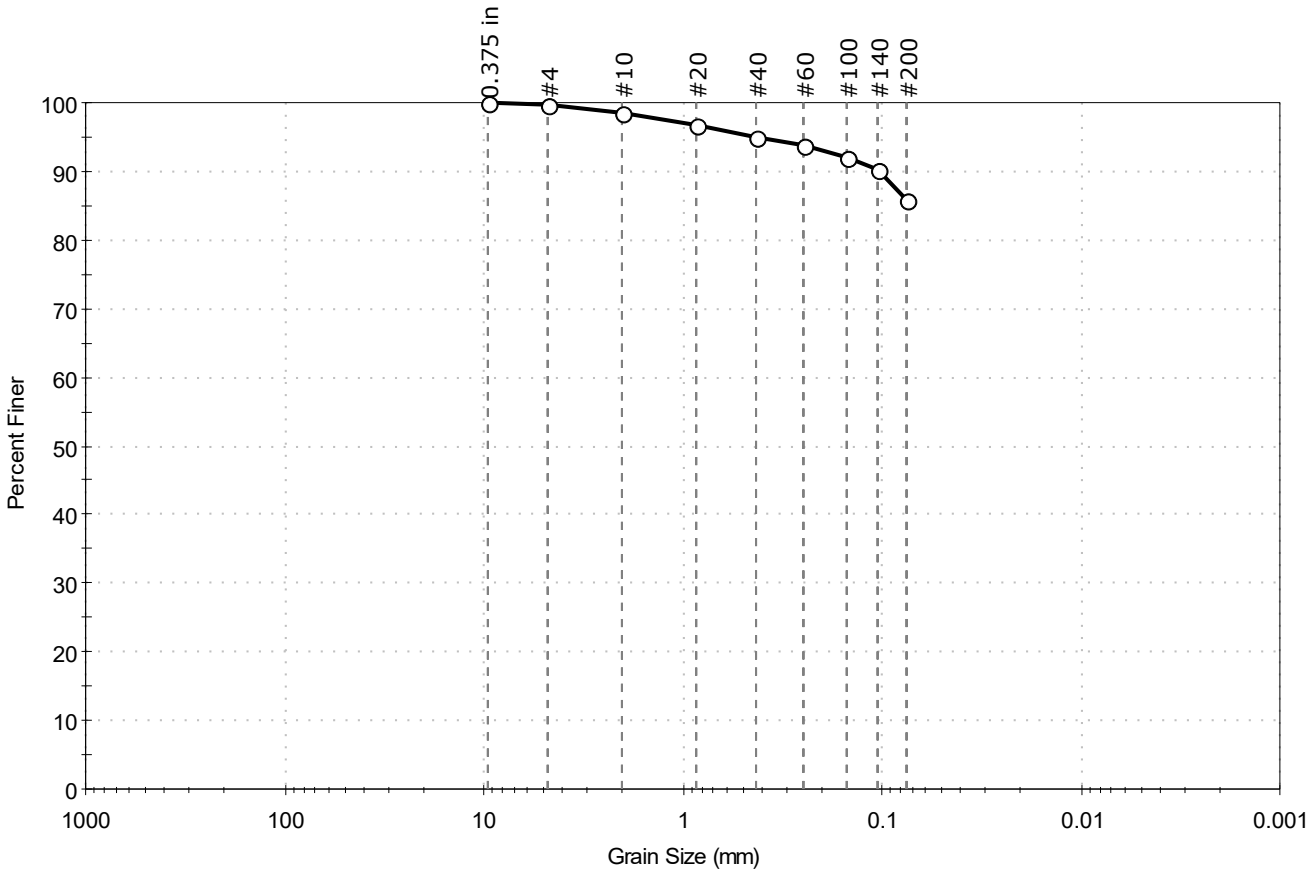
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-461	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-1	Test Date:	01/29/25	Checked By:	ank
Depth :	6-8	Test Id:	802105		
Test Comment:	---				
Visual Description:	Moist, grayish brown silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.2	14.0	85.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	100		
#10	2.00	99		
#20	0.85	97		
#40	0.42	95		
#60	0.25	94		
#100	0.15	92		
#140	0.11	90		
#200	0.075	86		

Coefficients

D_{85} = N/A D_{30} = N/A
D_{60} = N/A D_{15} = N/A
D_{50} = N/A D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

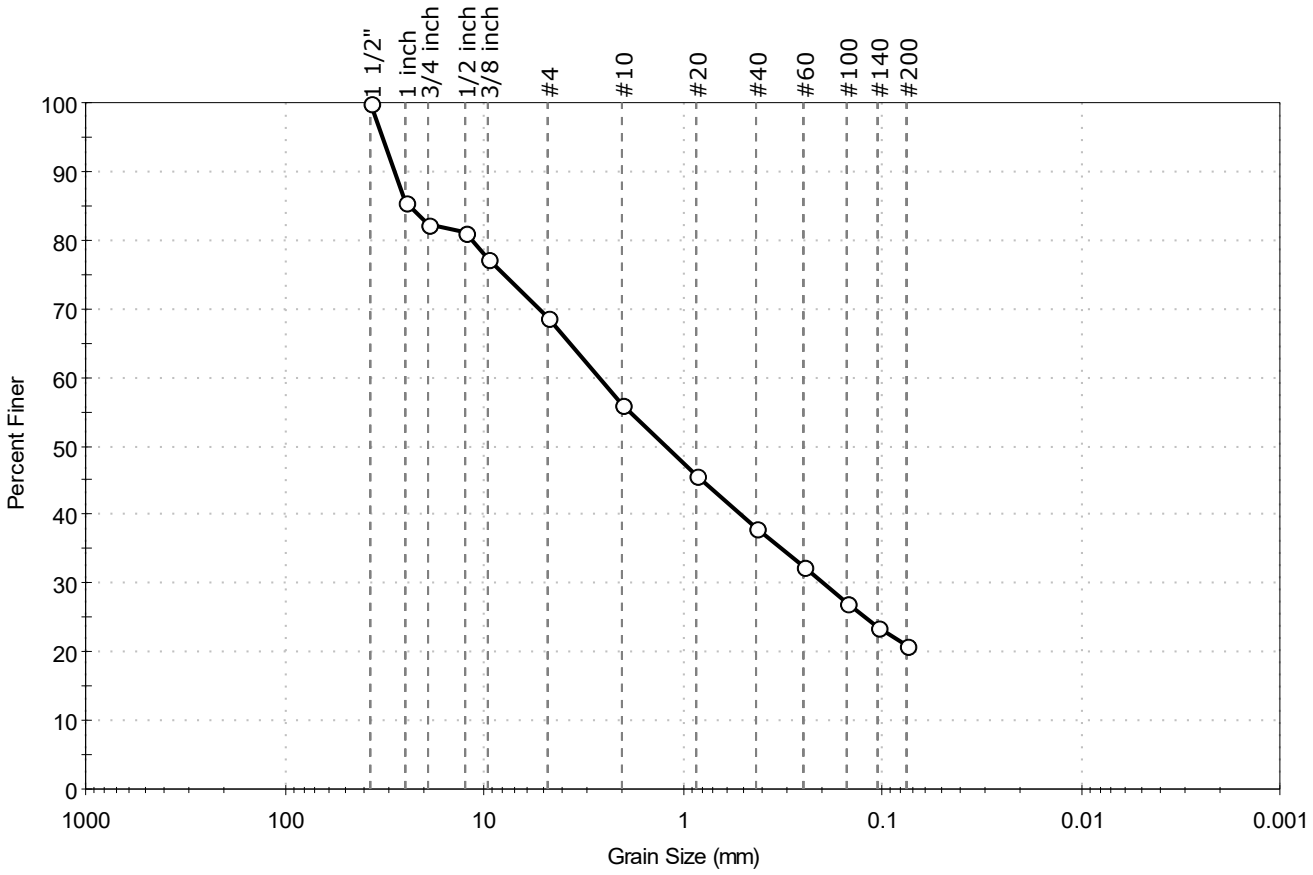
Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-461	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-10 (2 jars)	Test Date:	01/31/25	Checked By:	ank
Depth :	24-26	Test Id:	802106		
Test Comment:	---				
Visual Description:	Moist, gray silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	31.4	47.7	20.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 1/2"	37.50	100		
1 inch	25.00	86		
3/4 inch	19.00	82		
1/2 inch	12.50	81		
3/8 inch	9.50	77		
#4	4.75	69		
#10	2.00	56		
#20	0.85	46		
#40	0.42	38		
#60	0.25	33		
#100	0.15	27		
#140	0.11	24		
#200	0.075	21		

Coefficients

D_{85} = 23.9263 mm	D_{30} = 0.1956 mm
D_{60} = 2.6314 mm	D_{15} = N/A
D_{50} = 1.2161 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

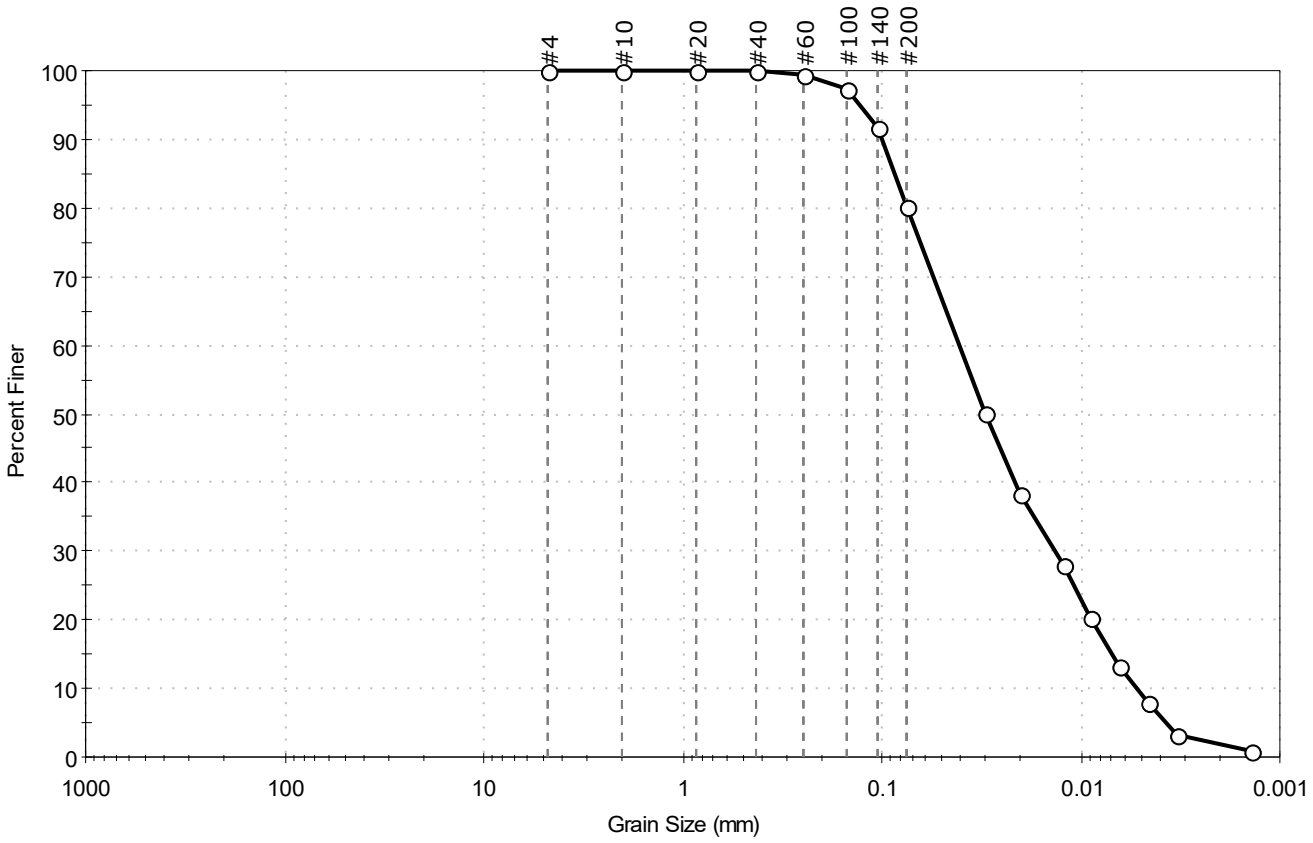
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-462	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-2	Test Date:	01/29/25	Checked By:	ank
Depth :	8-10	Test Id:	802109		
Test Comment:	---				
Visual Description:	Moist, light olive brown silt with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	19.6	80.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	97		
#140	0.11	92		
#200	0.075	80		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0303	50		
---	0.0203	38		
---	0.0122	28		
---	0.0089	20		
---	0.0064	13		
---	0.0047	8		
---	0.0033	3		
---	0.0014	1		

Coefficients

D_{85} = 0.0865 mm	D_{30} = 0.0134 mm
D_{60} = 0.0408 mm	D_{15} = 0.0070 mm
D_{50} = 0.0302 mm	D_{10} = 0.0053 mm
C_u = 7.698	C_c = 0.830

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

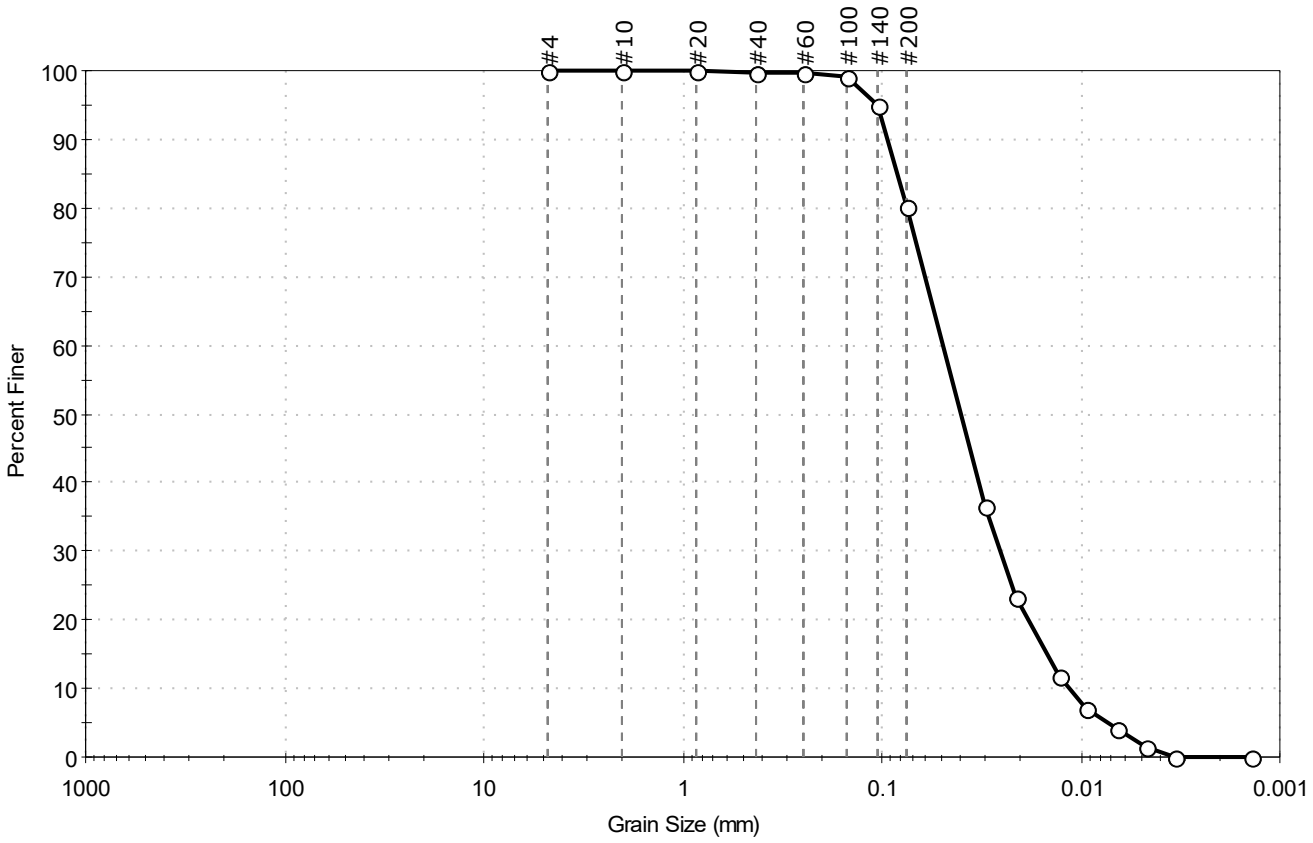
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-462	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-9	Test Date:	01/29/25	Checked By:	ank
Depth :	22-24	Test Id:	802110		
Test Comment:	---				
Visual Description:	Moist, light olive brown silt with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	19.9	80.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	100		
#60	0.25	100		
#100	0.15	99		
#140	0.11	95		
#200	0.075	80		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0306	37		
---	0.0214	23		
---	0.0129	12		
---	0.0093	7		
---	0.0066	4		
---	0.0047	1		
---	0.0034	0		
---	0.0014	0		

Coefficients

D_{85} = 0.0841 mm	D_{30} = 0.0257 mm
D_{60} = 0.0496 mm	D_{15} = 0.0148 mm
D_{50} = 0.0404 mm	D_{10} = 0.0113 mm
C_u = 4.389	C_c = 1.178

Classification

ASTM N/A

AASHTO Silty Soils (A-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

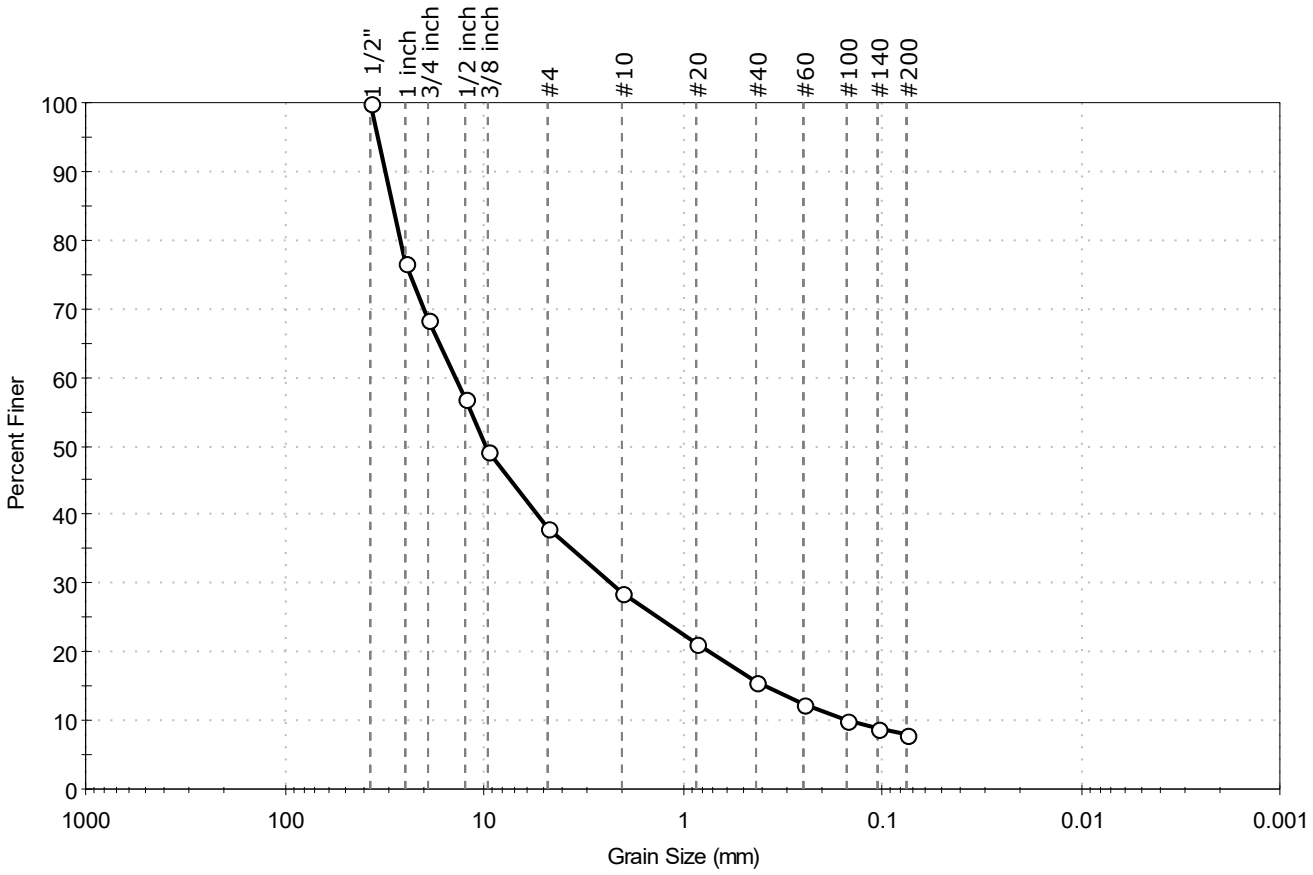
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-463	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-4 & SS-5 (combine)	Test Date:	01/31/25	Checked By:	ank
Depth :	12-16	Test Id:	802107		
Test Comment:	---				
Visual Description:	Moist, reddish yellow gravel with silt and sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	61.9	30.0	8.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 1/2"	37.50	100		
1 inch	25.00	77		
3/4 inch	19.00	69		
1/2 inch	12.50	57		
3/8 inch	9.50	49		
#4	4.75	38		
#10	2.00	29		
#20	0.85	21		
#40	0.42	16		
#60	0.25	12		
#100	0.15	10		
#140	0.11	9		
#200	0.075	8.1		

Coefficients

D_{85} = 28.8653 mm D_{30} = 2.2867 mm

D_{60} = 13.9106 mm D_{15} = 0.3784 mm

D_{50} = 9.7408 mm D_{10} = 0.1474 mm

C_u = 94.373 C_c = 2.550

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-a (1))

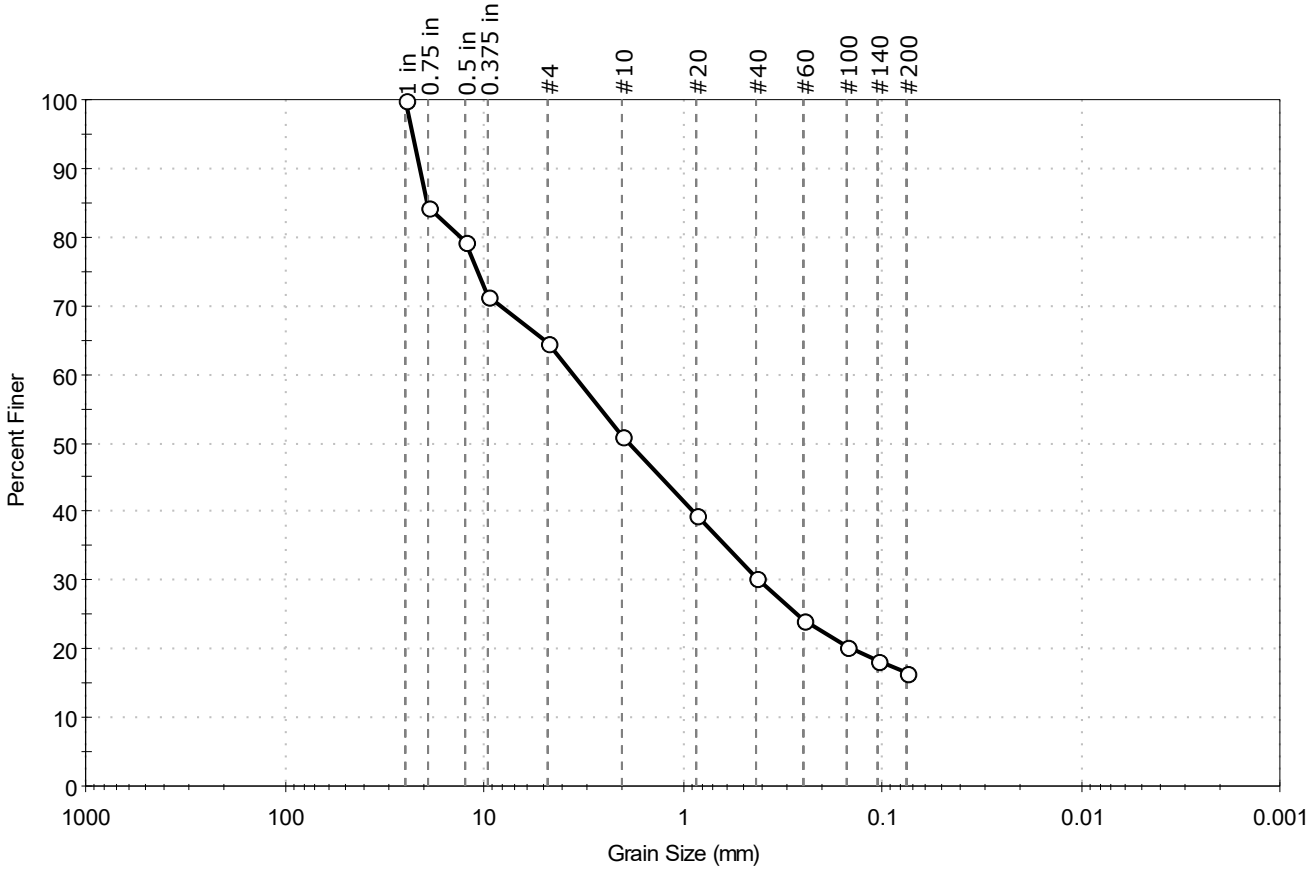
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-464	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-2	Test Date:	01/29/25	Checked By:	ank
Depth :	8-10	Test Id:	802113		
Test Comment:	---				
Visual Description:	Moist, olive brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	35.4	48.1	16.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	84		
0.5 in	12.50	79		
0.375 in	9.50	71		
#4	4.75	65		
#10	2.00	51		
#20	0.85	39		
#40	0.42	30		
#60	0.25	24		
#100	0.15	20		
#140	0.11	18		
#200	0.075	17		

Coefficients

D_{85} = 19.2253 mm	D_{30} = 0.4096 mm
D_{60} = 3.5314 mm	D_{15} = N/A
D_{50} = 1.8533 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

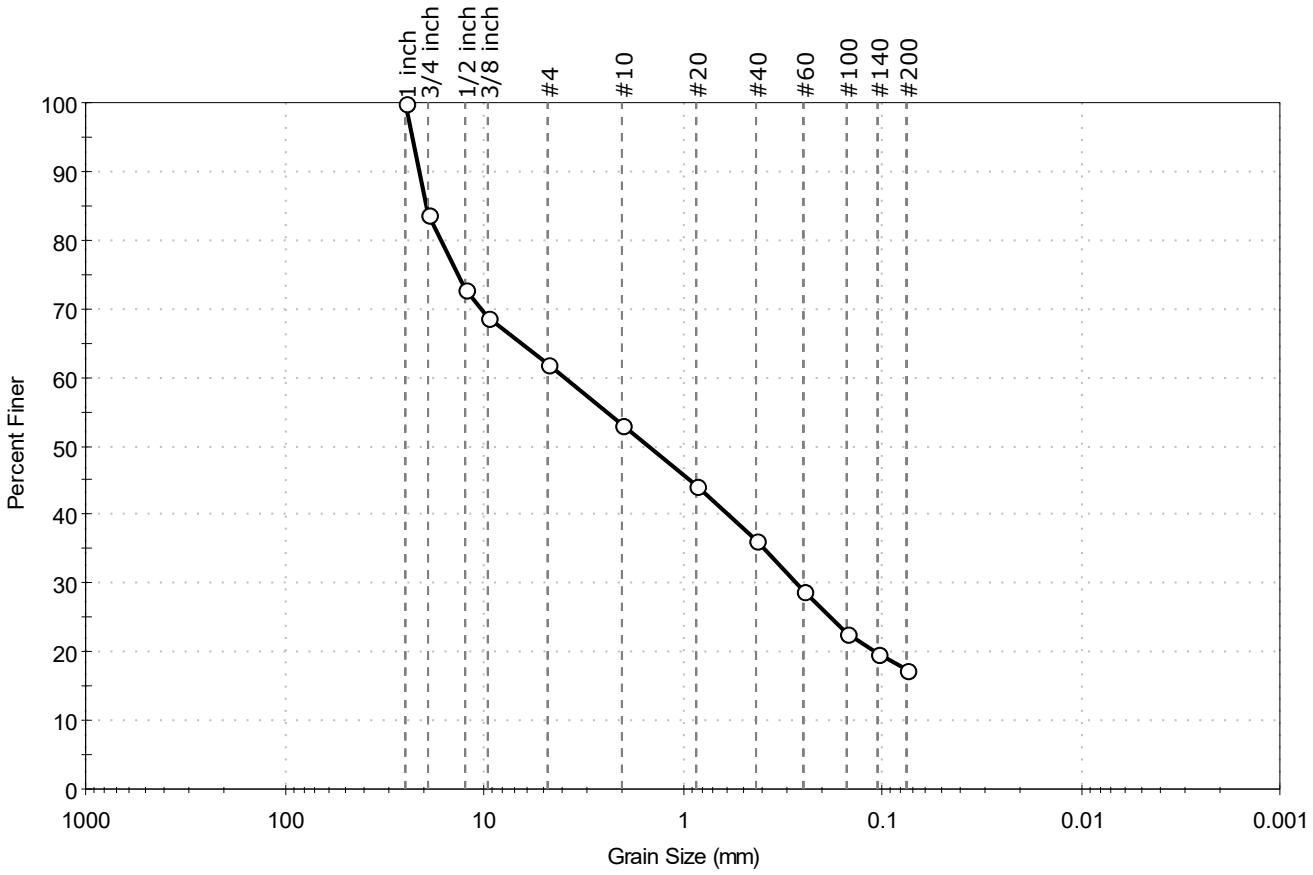
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-464	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-8	Test Date:	01/31/25	Checked By:	ank
Depth :	20-22	Test Id:	802116		
Test Comment:	---				
Visual Description:	Moist, gray silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	38.1	44.5	17.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 inch	25.00	100		
3/4 inch	19.00	84		
1/2 inch	12.50	73		
3/8 inch	9.50	69		
#4	4.75	62		
#10	2.00	53		
#20	0.85	44		
#40	0.42	36		
#60	0.25	29		
#100	0.15	23		
#140	0.11	20		
#200	0.075	17		

Coefficients

D_{85} = 19.3670 mm D_{30} = 0.2723 mm

D_{60} = 3.9381 mm D_{15} = N/A

D_{50} = 1.4703 mm D_{10} = N/A

C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

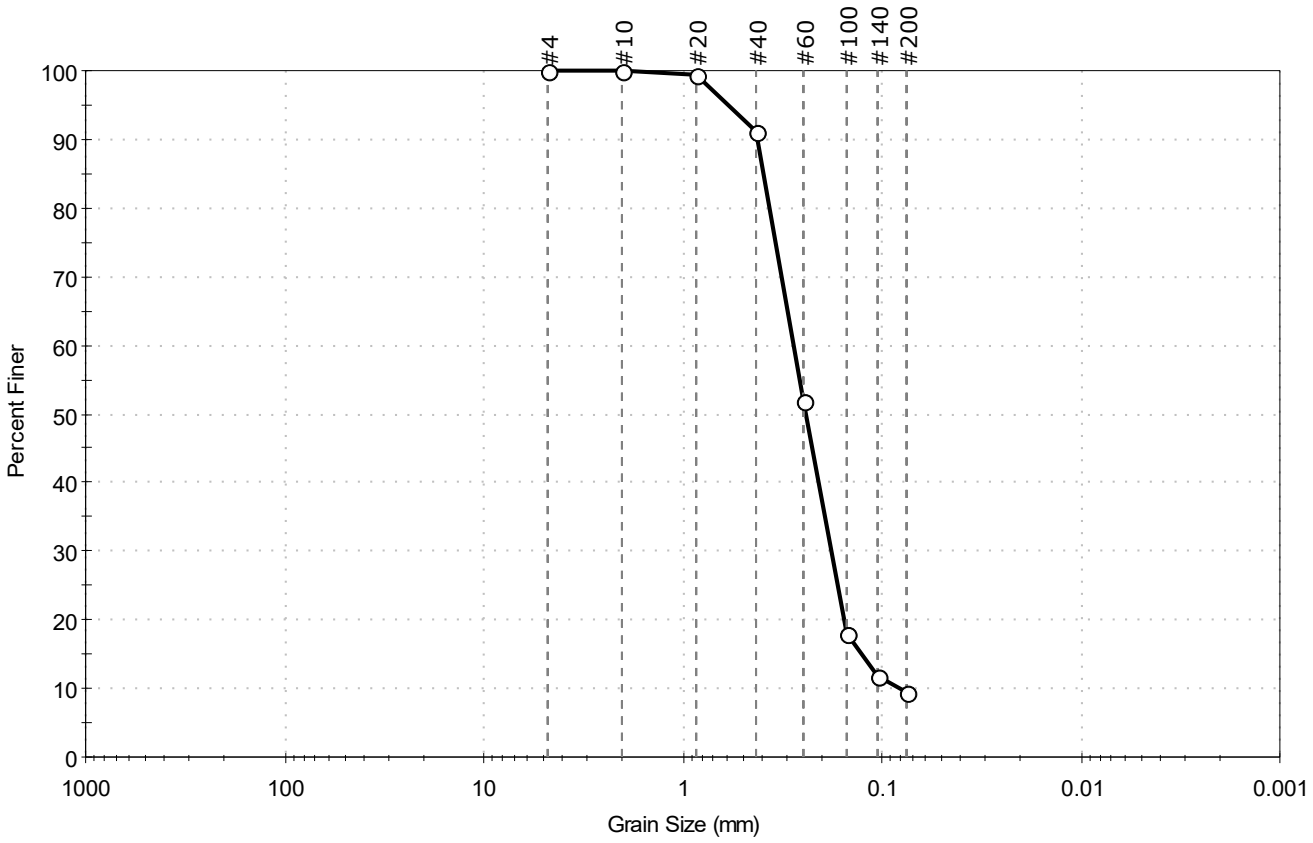
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-465	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-2	Test Date:	01/29/25	Checked By:	ank
Depth :	8-10	Test Id:	802115		
Test Comment:	---				
Visual Description:	Moist, brown sand with silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	90.6	9.4

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	91		
#60	0.25	52		
#100	0.15	18		
#140	0.11	12		
#200	0.075	9.4		

Coefficients

D_{85} = 0.3907 mm	D_{30} = 0.1796 mm
D_{60} = 0.2787 mm	D_{15} = 0.1264 mm
D_{50} = 0.2428 mm	D_{10} = 0.0817 mm
C_u = 3.411	C_c = 1.417

Classification

ASTM N/A

AASHTO Fine Sand (A-3 (1))

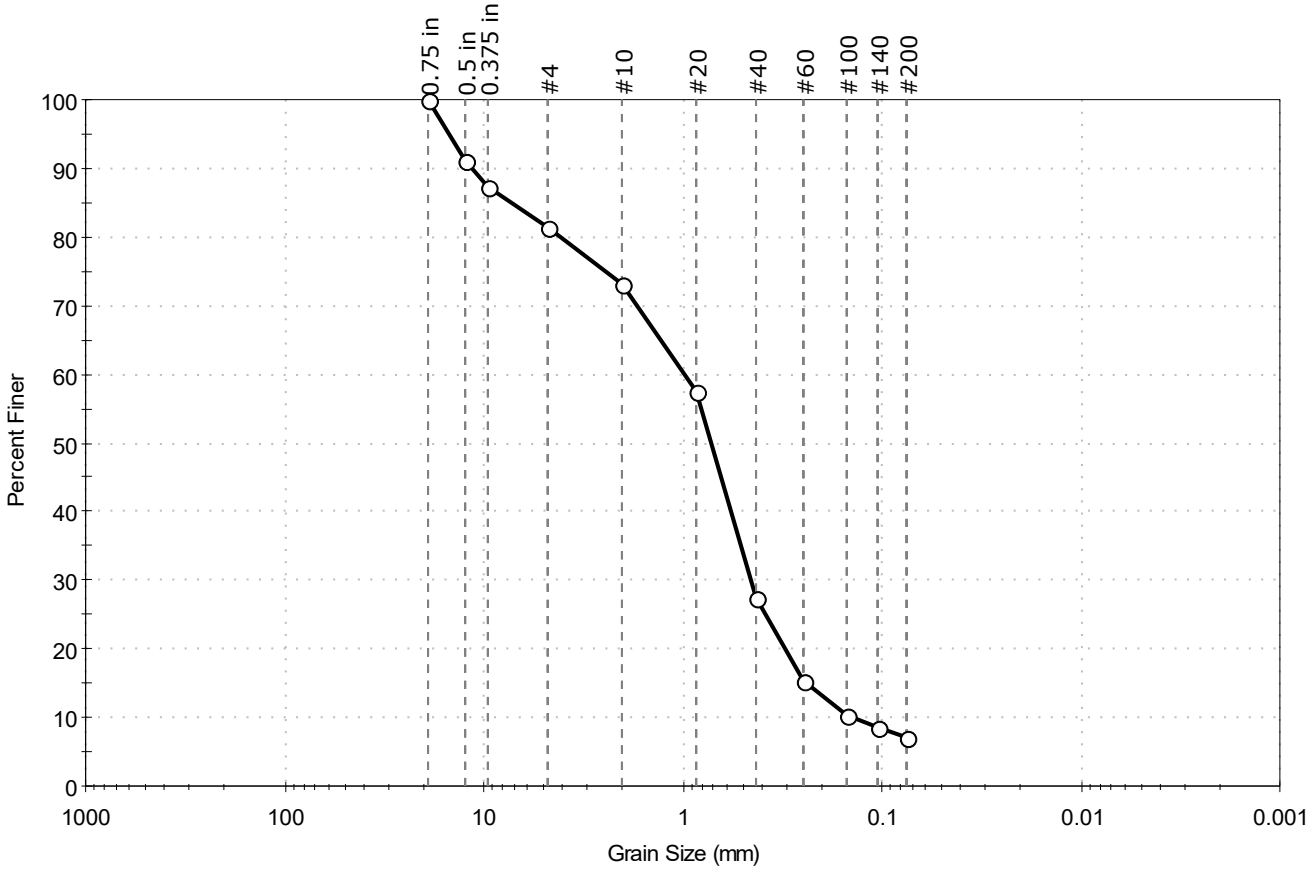
Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-465	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-6	Test Date:	01/29/25	Checked By:	ank
Depth :	16-18	Test Id:	802114		
Test Comment:	---				
Visual Description:	Moist, dark yellowish brown sand with silt and gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	18.5	74.5	7.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
0.5 in	12.50	91		
0.375 in	9.50	87		
#4	4.75	82		
#10	2.00	73		
#20	0.85	57		
#40	0.42	27		
#60	0.25	15		
#100	0.15	10		
#140	0.11	8		
#200	0.075	7.0		

Coefficients

D_{85} = 7.2063 mm
D_{30} = 0.4515 mm
D_{60} = 0.9760 mm
D_{15} = 0.2433 mm
D_{50} = 0.7160 mm
D_{10} = 0.1395 mm
C_u = 6.996
C_c = 1.497

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (1))

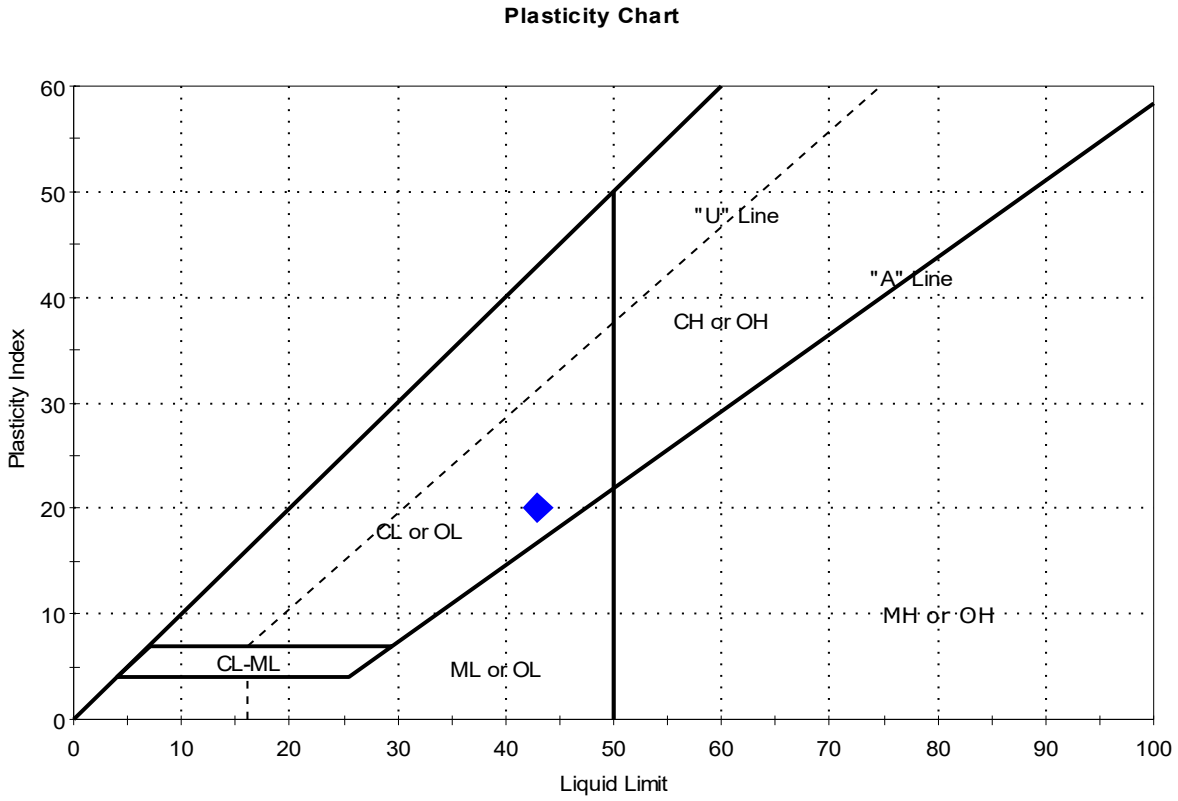
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:	---			Project No:	GTX-317525
Boring ID:	B-GSS-463	Sample Type:	Bag	Tested By:	cam
Sample ID:	SS-11	Test Date:	02/04/25	Checked By:	ank
Depth :	29-31	Test Id:	802112		
Test Comment:	---				
Visual Description:	Moist, light yellowish brown clay				
Sample Comment:	---				

Atterberg Limits - ASTM D4318



Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	SS-11	B-GSS-463	29-31'	39	43	23	20	0.8	

Sample Prepared using the WET method

Dry Strength: VERY HIGH

Dilatancy: SLOW

Toughness: LOW



PO Box 572455 / Salt Lake City UT 84157-2455 / USA
TEL +1 801 262 2448 · FAX +1 801 262 9870 · www.TEi-TS.com

GEOTESTING EXPRESS INCORPORATED
125 NAGOG PARK
ACTON MA 01720-3451
USA

Analysis No.	TS-A2512455
Report Date	03 February 2025
Date Sampled	27 January 2025
Date Received	30 January 2025
Where Sampled	Acton, MA USA
Sampled By	Client

This is to attest that we have examined: Soil: Project: MWRA Metropolitan Water Tunnel; Site Location: – — –; Job Number: GTX-317525

When examined to the applicable requirements of:

ASTM D 512-12*	"Standard Test Methods for Chloride Ion in Water" Method B
ASTM D 516-16	"Standard Test Method for Sulfate Ion in Water"
Standard Methods-2023	Part 4000 "Inorganic Nonmetallic Constituents" 4500-S^{2-} Sulfide

Results:

ASTM D 512 - Chloride Method B

Sample		Results		Minimum Detection Limit
		ppm (mg/kg)	%[1]	
B-GSS-461**		1 530.	0.1530	10.
SS-2, SS-3A + 3B, SS-5, SS-5 Redrive	8 – 16'			
B-GSS-462		38.	0.0038	
SS-3, SS-4, SS-5 + SS-5 Redrive, SS-7	10 – 20'			

NOTE: [1]Percent by weight after drying and prepared as per the Standard. *Withdrawn 2021 without Replacement **Average of 3 test runs

ASTM D 516 – Sulfates (Soluble)

Sample		Results		Minimum Detection Limit
		ppm (mg/kg)	%[1]	
B-GSS-461		< 10.	< 0.0010	10.
SS-2, SS-3A + 3B, SS-5, SS-5 Redrive	8 – 16'			
B-GSS-462		< 10.	< 0.0010	
SS-3, SS-4, SS-5 + SS-5 Redrive, SS-7	10 – 20'			

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

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Salt Lake City, UT 84115-4234 USA
TEL: +1 801 262 2448
FAX: +1 801 262 9870

SM 4500-S^{2-} Sulfide (Soluble)

Sample		Results		Minimum Detection Limit
		ppb (µg/kg)	%[1]	
B-GSS-461		80.	0.0000080	10.
SS-2, SS-3A + 3B, SS-5, SS-5 Redrive	8 – 16’			
B-GSS-462		790.	0.0000790	
SS-3, SS-4, SS-5 + SS-5 Redrive, SS-7	10 – 20’			

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

END OF ANALYSIS

USEPA Laboratory ID UT00930

Merrill Gee P.E. – Engineer in Charge

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GEOTESTING EXPRESS INCORPORATED
125 NAGOG PARK
ACTON MA 01720-3451
USA

Analysis No.	TS-A2512469
Report Date	04 February 2025
Date Sampled	28 January 2025
Date Received	03 February 2025
Where Sampled	Acton, MA USA
Sampled By	Client

This is to attest that we have examined: Soil: Project: MWRA Metropolitan Water Tunnel; Site Location: – — –; Job Number: GTX-317525

When examined to the applicable requirements of:

ASTM D 512-12*	"Standard Test Methods for Chloride Ion in Water" Method B
ASTM D 516-16	"Standard Test Method for Sulfate Ion in Water"
Standard Methods-2023	Part 4000 "Inorganic Nonmetallic Constituents" 4500-S^{2-} Sulfide

Results:

ASTM D 512 - Chloride Method B

Sample		Results		Minimum Detection Limit
		ppm (mg/kg)	%[1]	
B-GSS-463		25.	0.0025	10.
SS-1, SS-2, SS-3, SS-4, SS-5 Redrive A + B	6 – 16'			

NOTE: [1]Percent by weight after drying and prepared as per the Standard. *Withdrawn 2021 without Replacement

ASTM D 516 – Sulfates (Soluble)

Sample		Results		Minimum Detection Limit
		ppm (mg/kg)	%[1]	
B-GSS-463		< 10.	< 0.0010	10.
SS-1, SS-2, SS-3, SS-4, SS-5 Redrive A + B	6 – 16'			

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

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Salt Lake City, UT 84115-4234 USA
TEL: +1 801 262 2448
FAX: +1 801 262 9870

SM 4500-S^{2-} Sulfide (Soluble)

Sample		Results		Minimum Detection Limit
		ppb (µg/kg)	%[1]	
B-GSS-463		540.	0.0000540	10.
SS-1, SS-2, SS-3, SS-4, SS-5 Redrive A + B	6 – 16’			

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

END OF ANALYSIS

USEPA Laboratory ID UT00930

Merrill Gee P.E. – Engineer in Charge

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Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	---	Sample Type:	---	Tested By:	ajl
Sample ID:	---	Test Date:	12/31/25	Checked By:	ank
Depth :	---	Test Id:	849682		

Moisture Content of Soil and Rock - ASTM D2216

Boring ID	Sample ID	Depth	Description	Moisture Content,%
SB-FD-541	SS- 3	12.0-14.0	Moist, dark yellowish brown silty sand	15.4
SB-FD-541-C	SS- 3	17.0-19.0	Moist, brown silty gravel with sand	8.4
SB-FD-541-C	SS- 7	25.0-26.8	Moist, grayish brown silty gravel with sand	5.6
SB-FD-541-C	SS- 12	35.0-37.0	Moist, yellowish brown silty sand	13.2
SB-FD-542-A(MW)	AS- 3	4.0-10.0	Moist, light brown sand with silt	9.0
SB-FD-542-A(MW)	SS- 1 to SS-5 Composite	10.0-20.0	Moist, olive brown sand	23.7
SB-FD-543-A(MW)	AS- 3	4.0-6.0	Moist, light yellowish brown sand	8.5
SB-FD-543-A(MW)	SS- 5 to SS-9 Composite	18.0-28.0	Moist, light olive brown sand	22.0

Notes: Temperature of Drying : 110º Celsius

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	---	Sample Type:	---	Tested By:	ajl
Sample ID:	---	Test Date:	01/08/26	Checked By:	ank
Depth :	---	Test Id:	849683		

pH of Soil by ASTM D4972

Boring ID	Sample ID	Depth	Visual Description	pH of Soil in Distilled Water	pH of Soil in Calcium Chloride
B-FD-542-A (MW)	SS-1 to SS-5 Composite	10.0-20.0	Moist, olive brown sand	7.0	6.5
B-FD-543-A (MW)	SS-5 to SS-9 Composite	18.0-28.0	Moist, light olive brown sand	6.9	6.6

Notes: Sample Preparation: screened through #10 sieve

Method A, pH meter used

Client:	WSP USA, Inc.
Project:	MWRA MWTP
Location:	---
GTX#:	321964
Test Date:	01/08/26
Due Date:	01/09/26
Tested By:	NMK
Checked By:	ank

Laboratory Measurement of Soil Resistivity Using the Wenner Four-Electrode Method by ASTM G57 (Laboratory Measurement)

Boring ID	Sample ID	Depth, ft.	Sample Description	Electrical Resistivity, ohm-cm	Electrical Conductivity, $(ohm\text{-}cm)^{-1}$
SB-FD-542A (MW)	SS-1 to SS-5 Composite	10.0-20.0'	Moist, olive brown sand	2,001	5.00E-04
SB-FD-543-A (MW)	SS-5 to SS-9 Composite	18.0-28.0'	Moist, olive brown sand	2,601	3.85E-04

Notes: Test Equipment: Nilsson Model 400 Soil Resistance Meter, MC Miller Soil Box
Water added to sample to create a thick slurry prior to testing (saturated condition).
Electrical Conductivity is calculated as inverse of Electrical Resistivity (per ASTM G57)
Test conducted in standard laboratory atmosphere: 68-73 F

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-541-C	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-5	Test Date:	01/02/26	Checked By:	ank
Depth :	21.0-23.0	Test Id:	849649		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand with gravel				
Sample Comment:	---				

Specific Gravity of Soils by ASTM D854

Boring ID	Sample ID	Depth	Visual Description	Specific Gravity
SB-FD-541-C	SS- 5	21.0-23.0	Moist, yellowish brown silty sand with gravel	2.72

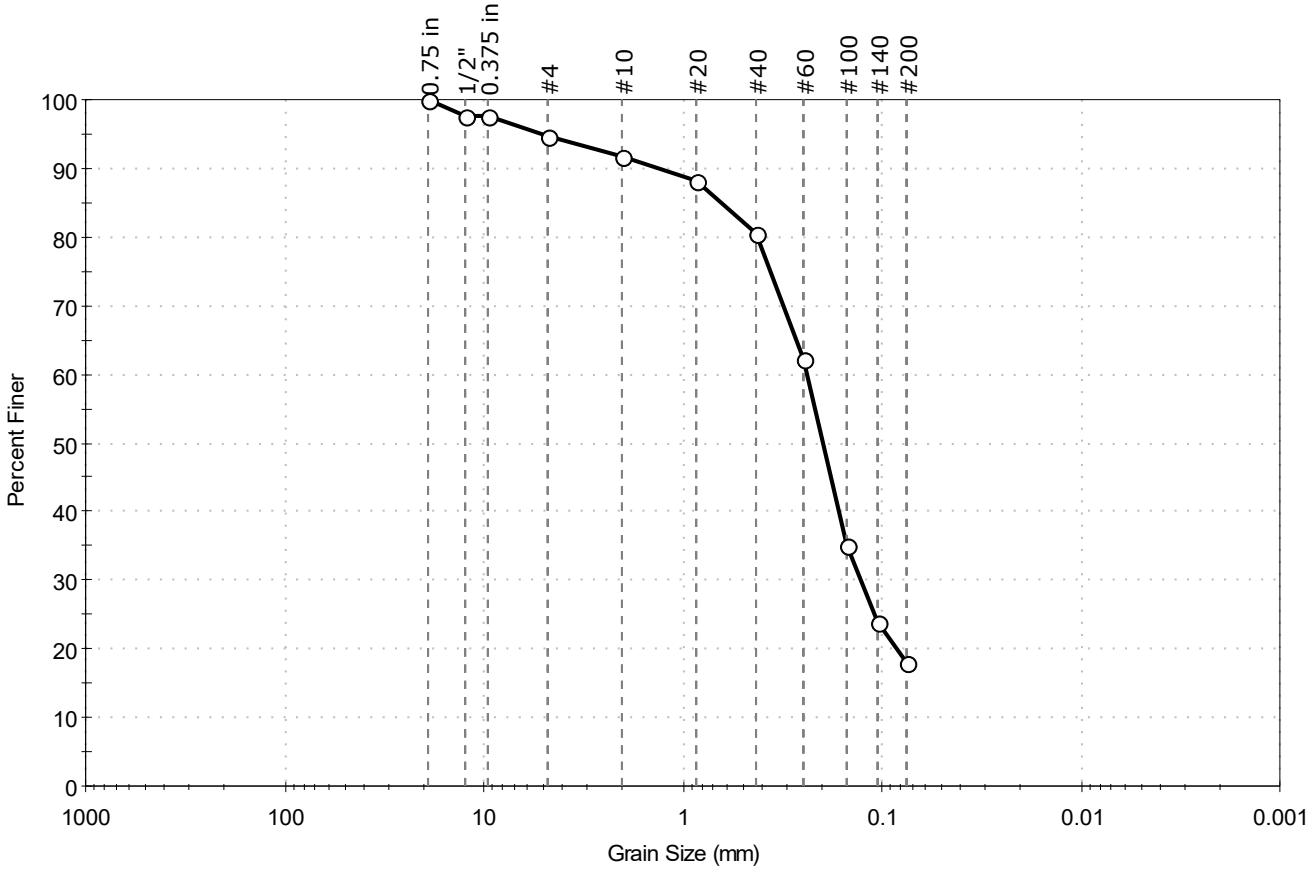
Notes: Specific Gravity performed by using method B (oven dried specimens) of ASTM D854

Moisture Content determined by ASTM D2216.

* Only minus No.4 Sieve material tested. Insufficient quantity of material greater than the No.4 Sieve available to perform ASTM C127 Specific Gravity of Aggregate.
67.1 %Passing the No.4 Sieve.

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-541	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-3	Test Date:	01/09/26	Checked By:	ank
Depth :	12.0-14.0	Test Id:	849691		
Test Comment:	---				
Visual Description:	Moist, dark yellowish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	5.4	76.6	18.0

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.75 in	19.00	100		
1/2"	12.50	98		
0.375 in	9.50	98		
#4	4.75	95		
#10	2.00	92		
#20	0.85	88		
#40	0.42	81		
#60	0.25	62		
#100	0.15	35		
#140	0.11	24		
#200	0.075	18		

Coefficients

D_{85} = 0.6359 mm
D_{30} = 0.1282 mm
D_{60} = 0.2396 mm
D_{15} = N/A
D_{50} = 0.1987 mm
D_{10} = N/A
C_u = N/A
C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

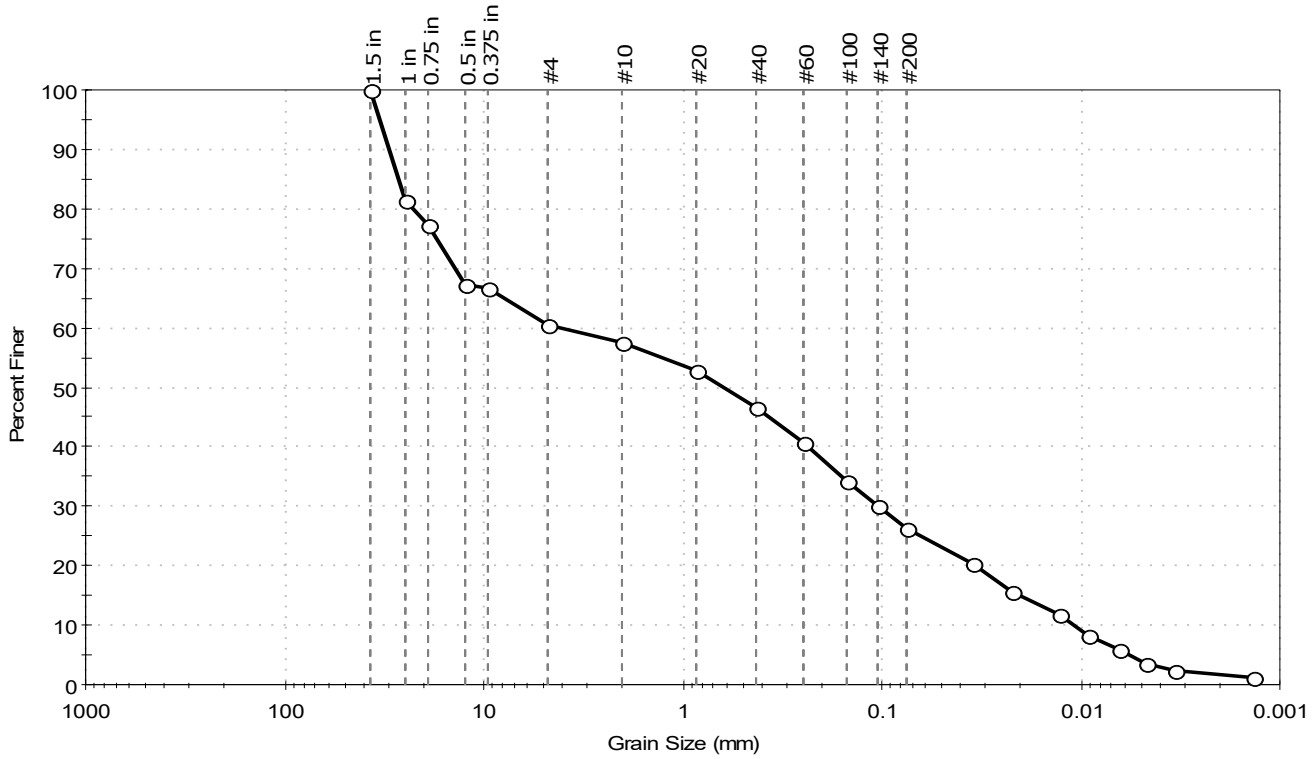
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-541-C	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-3	Test Date:	01/07/26	Checked By:	ank
Depth :	17.0-19.0	Test Id:	849646		
Test Comment:	---				
Visual Description:	Moist, brown silty gravel with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	39.5	34.4	26.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	81		
0.75 in	19.00	77		
0.5 in	12.50	67		
0.375 in	9.50	67		
#4	4.75	61		
#10	2.00	58		
#20	0.85	53		
#40	0.42	47		
#60	0.25	41		
#100	0.15	34		
#140	0.11	30		
#200	0.075	26		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0347	20		
---	0.0220	16		
---	0.0128	12		
---	0.0092	8		
---	0.0064	6		
---	0.0047	4		
---	0.0033	2		
---	0.0014	1		

Coefficients

D_{85} = 26.9934 mm D_{30} = 0.1060 mm
D_{60} = 4.0332 mm D_{15} = 0.0204 mm
D_{50} = 0.6162 mm D_{10} = 0.0107 mm
C_u = 376.935 C_c = 0.260

Classification

ASTM Silty GRAVEL with Sand (GM)

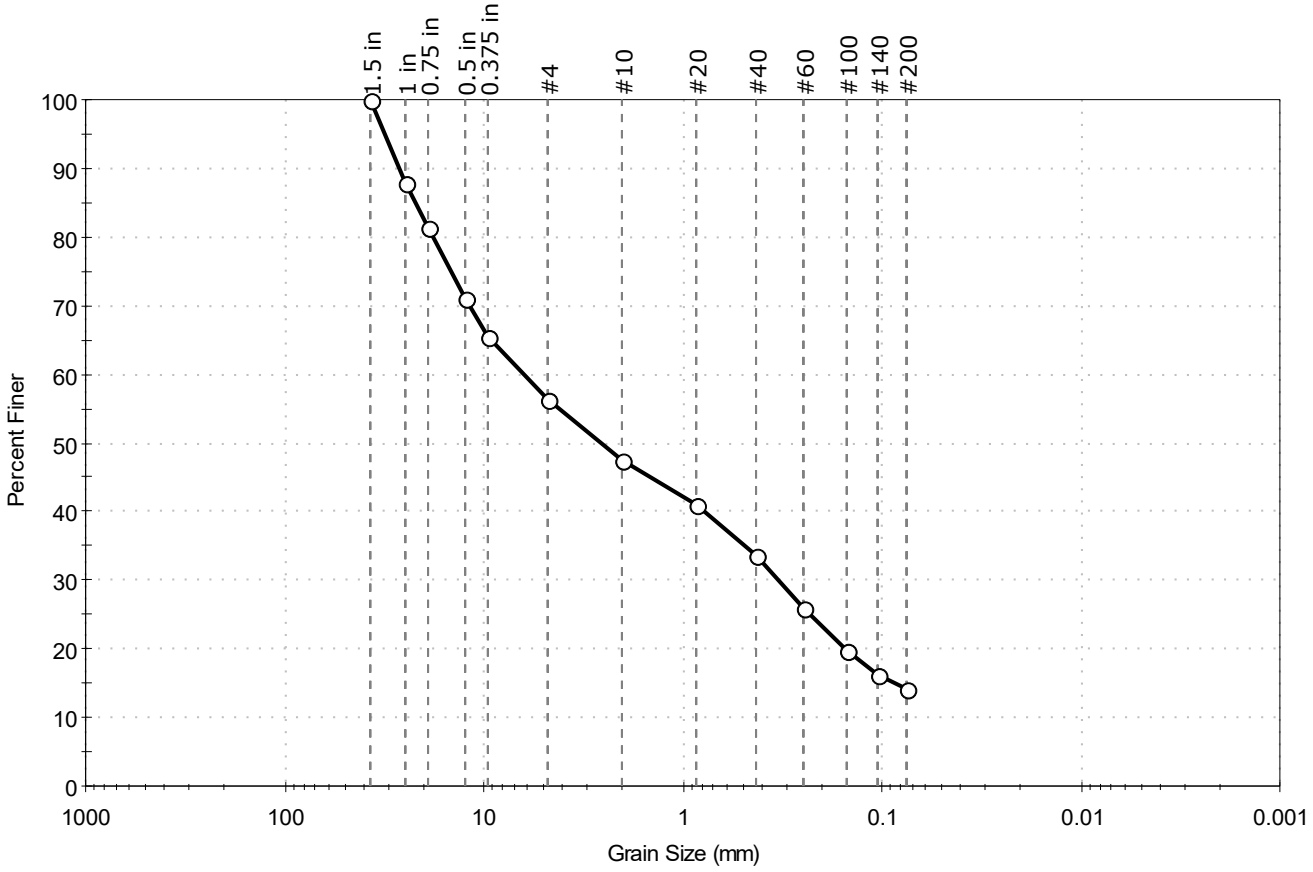
AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-541-C	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-7	Test Date:	01/07/26	Checked By:	ank
Depth :	25.0-26.8	Test Id:	849648		
Test Comment:	---				
Visual Description:	Moist, grayish brown silty gravel with sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	43.7	42.1	14.2

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1.5 in	37.50	100		
1 in	25.00	88		
0.75 in	19.00	81		
0.5 in	12.50	71		
0.375 in	9.50	66		
#4	4.75	56		
#10	2.00	48		
#20	0.85	41		
#40	0.42	34		
#60	0.25	26		
#100	0.15	20		
#140	0.11	16		
#200	0.075	14		

Coefficients

D_{85} = 22.0769 mm	D_{30} = 0.3281 mm
D_{60} = 6.2699 mm	D_{15} = 0.0861 mm
D_{50} = 2.5384 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

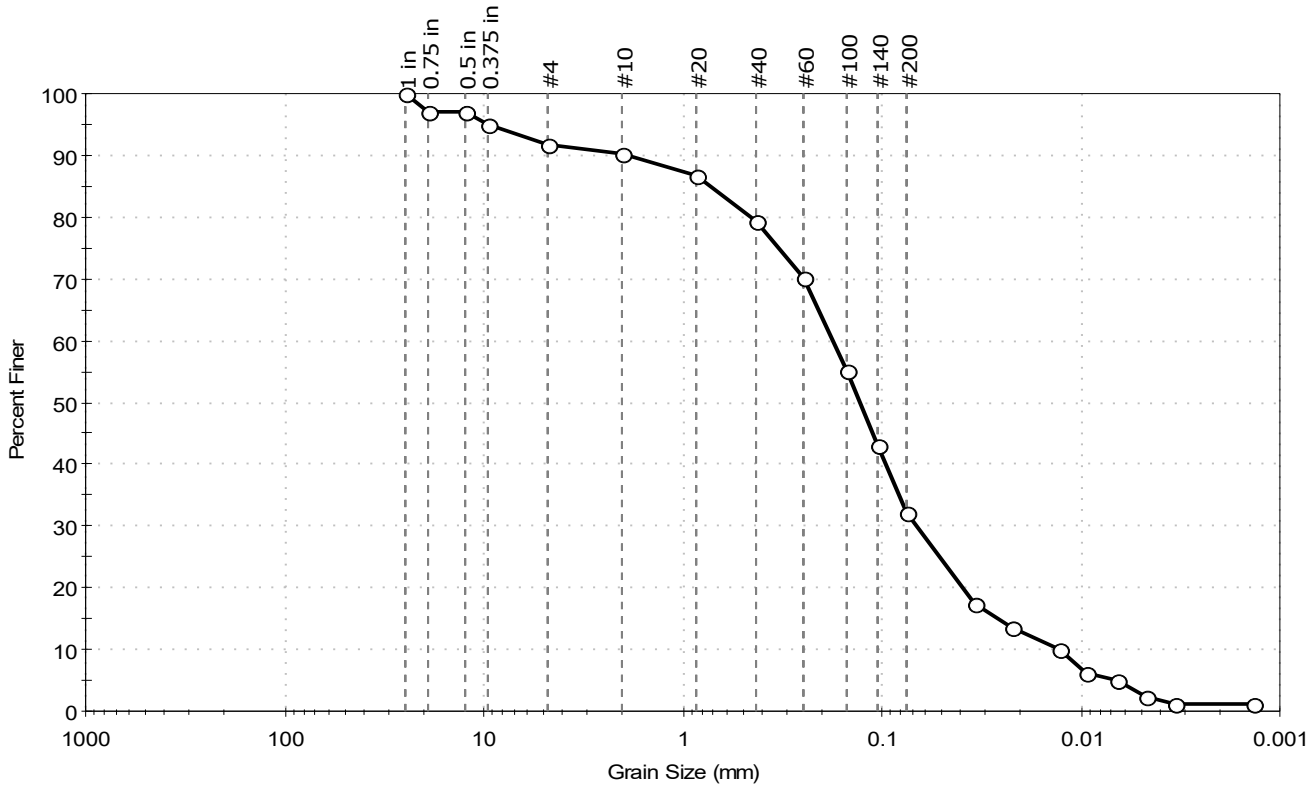
Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-541-C	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-12	Test Date:	01/07/26	Checked By:	ank
Depth :	35.0-37.0	Test Id:	849647		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	8.1	59.6	32.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	97		
0.5 in	12.50	97		
0.375 in	9.50	95		
#4	4.75	92		
#10	2.00	90		
#20	0.85	87		
#40	0.42	79		
#60	0.25	70		
#100	0.15	55		
#140	0.11	43		
#200	0.075	32		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0345	17		
---	0.0223	14		
---	0.0129	10		
---	0.0093	6		
---	0.0066	5		
---	0.0047	2		
---	0.0034	1		
---	0.0014	1		

Coefficients

D_{85} = 0.7294 mm	D_{30} = 0.0666 mm
D_{60} = 0.1764 mm	D_{15} = 0.0259 mm
D_{50} = 0.1292 mm	D_{10} = 0.0130 mm
C_u = 13.569	C_c = 1.934

Classification

ASTM Silty SAND (SM)

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

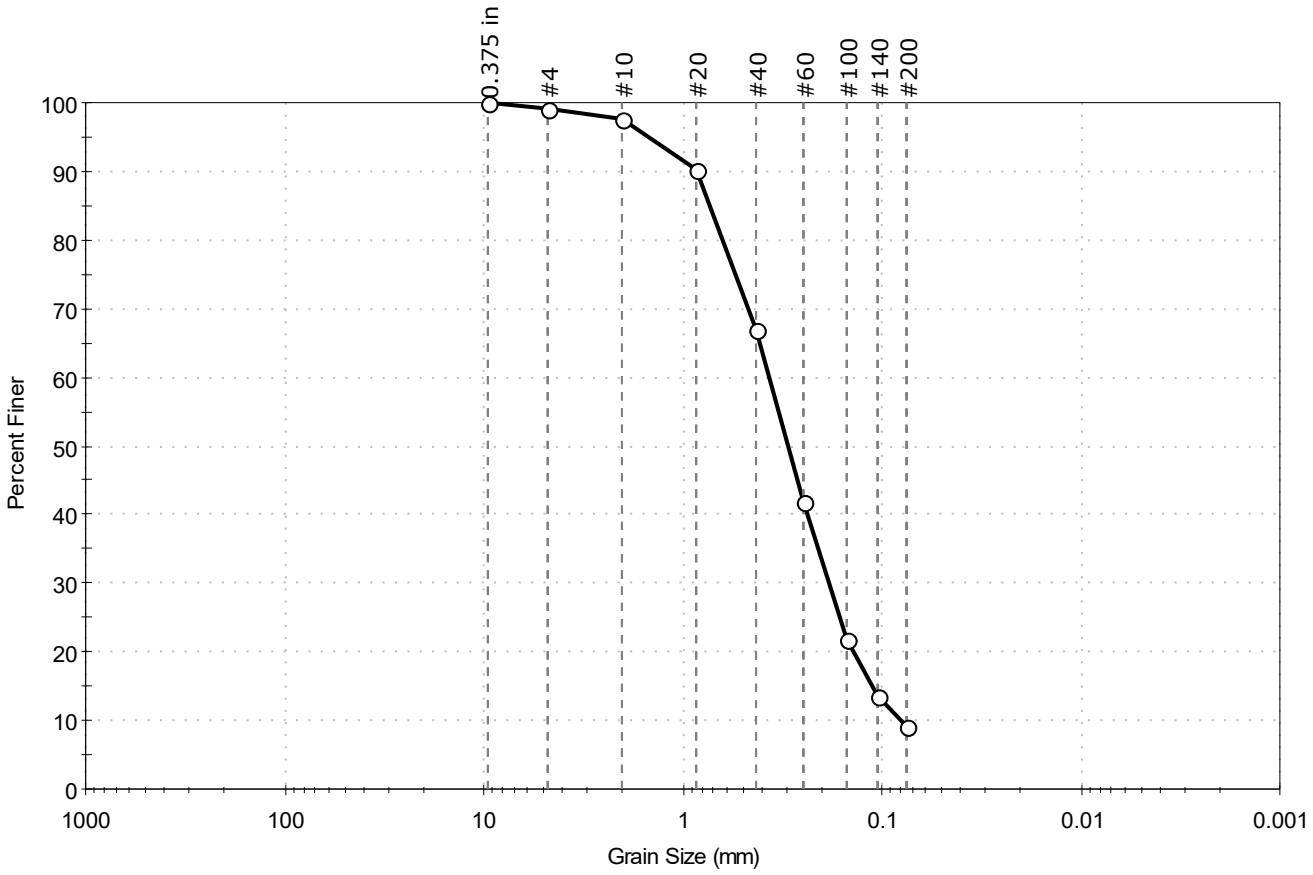
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-542-A(MW)	Sample Type:	Bag	Tested By:	ajl
Sample ID:	AS-3	Test Date:	01/09/26	Checked By:	ank
Depth :	4.0-10.0	Test Id:	849658		
Test Comment:	---				
Visual Description:	Moist, light brown sand with silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.8	89.9	9.3

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	99		
#10	2.00	98		
#20	0.85	90		
#40	0.42	67		
#60	0.25	42		
#100	0.15	22		
#140	0.11	14		
#200	0.075	9.3		

Coefficients

D_{85} = 0.7258 mm D_{30} = 0.1851 mm

D_{60} = 0.3676 mm D_{15} = 0.1121 mm

D_{50} = 0.2976 mm D_{10} = 0.0794 mm

C_u = 4.630 C_c = 1.174

Classification

ASTM N/A

AASHTO Fine Sand (A-3 (1))

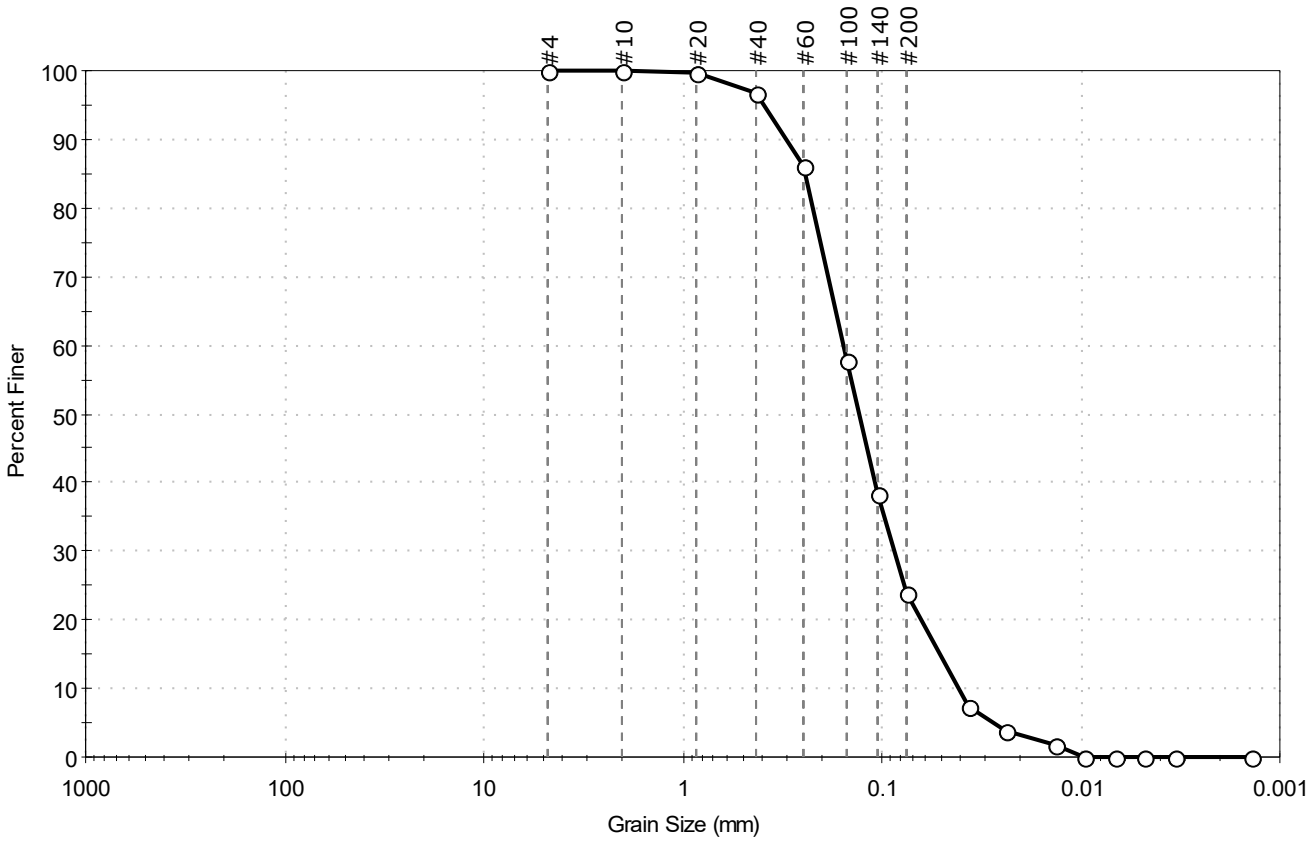
Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-542-A(MW)	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-6	Test Date:	01/06/26	Checked By:	ank
Depth :	20.0-22.0	Test Id:	849660		
Test Comment:	---				
Visual Description:	Moist, light gray silty sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	76.1	23.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	100		
#40	0.42	97		
#60	0.25	86		
#100	0.15	58		
#140	0.11	38		
#200	0.075	24		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0365	8		
---	0.0237	4		
---	0.0136	2		
---	0.0096	0		
---	0.0068	0		
---	0.0048	0		
---	0.0034	0		
---	0.0014	0		

Coefficients

D_{85} = 0.2451 mm	D_{30} = 0.0869 mm
D_{60} = 0.1563 mm	D_{15} = 0.0507 mm
D_{50} = 0.1307 mm	D_{10} = 0.0407 mm
C_u = 3.840	C_c = 1.187

Classification

ASTM Silty SAND (SM)

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Dispersion Device : Apparatus A - Mech Mixer

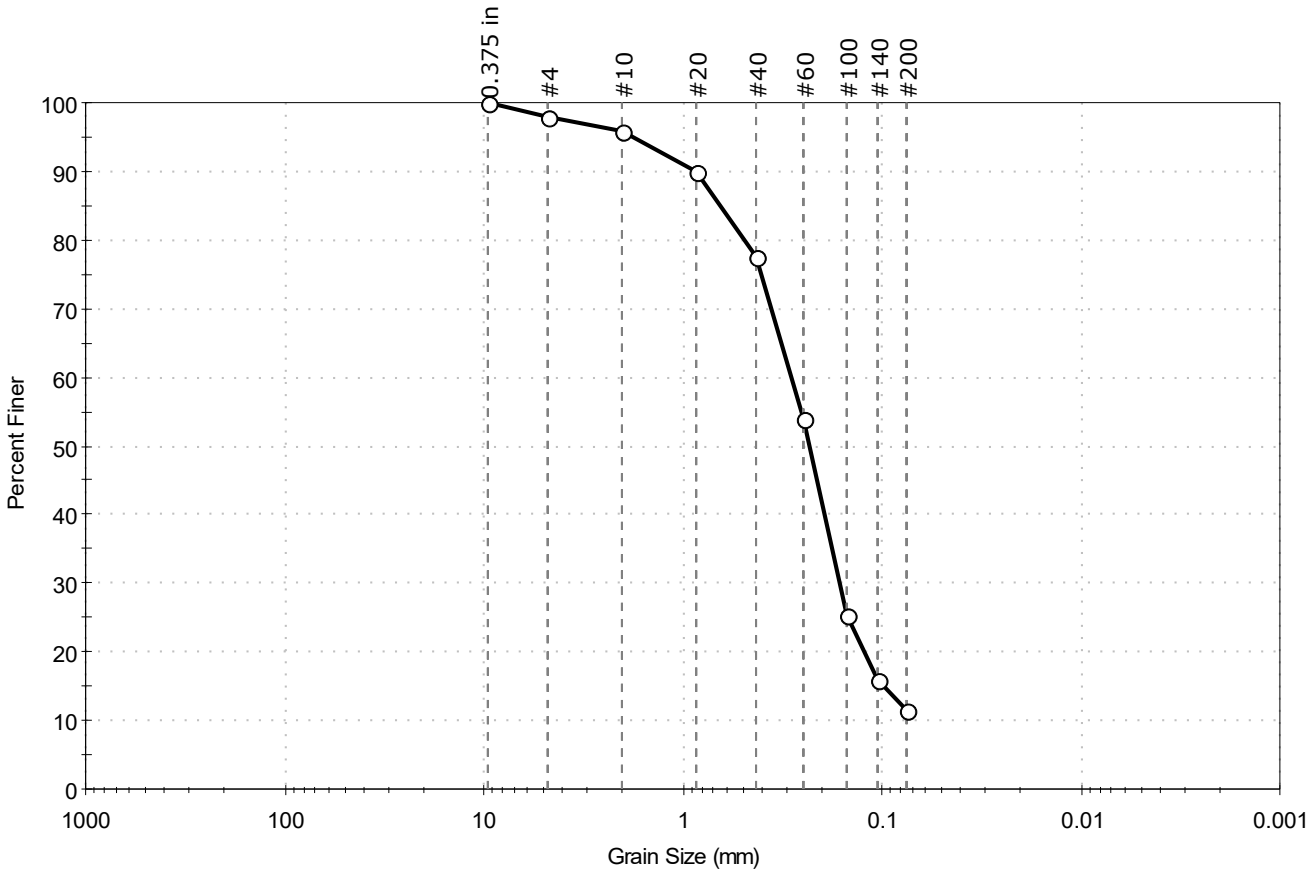
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-542-A(MW)	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-8	Test Date:	01/09/26	Checked By:	ank
Depth :	24.0-26.0	Test Id:	849659		
Test Comment:	---				
Visual Description:	Moist, light brown sand with silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	2.1	86.4	11.5

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
0.375 in	9.50	100		
#4	4.75	98		
#10	2.00	96		
#20	0.85	90		
#40	0.42	77		
#60	0.25	54		
#100	0.15	25		
#140	0.11	16		
#200	0.075	11		

Coefficients

D_{85} = 0.6454 mm
D_{30} = 0.1629 mm
D_{60} = 0.2871 mm
D_{15} = 0.0991 mm
D_{50} = 0.2333 mm
D_{10} = N/A
C_u = N/A
C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

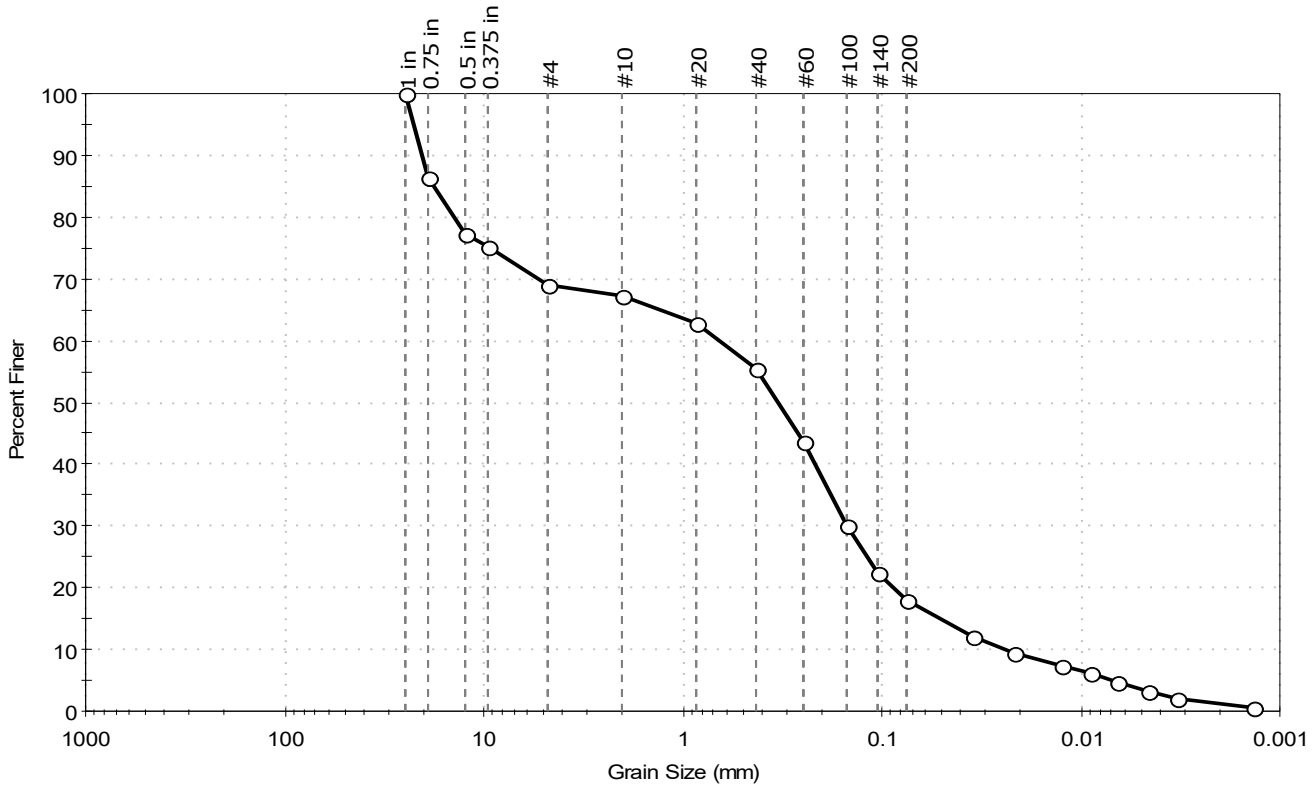
Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-542-A(MW)	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-11	Test Date:	01/07/26	Checked By:	ank
Depth :	36.0-38.0	Test Id:	849661		

Test Comment: ---
Visual Description: Moist, light yellowish brown silty sand with gravel
Sample Comment: ---

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
--	31.0	51.1	17.9

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	86		
0.5 in	12.50	77		
0.375 in	9.50	75		
#4	4.75	69		
#10	2.00	67		
#20	0.85	63		
#40	0.42	55		
#60	0.25	44		
#100	0.15	30		
#140	0.11	22		
#200	0.075	18		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0347	12		
---	0.0218	9		
---	0.0126	7		
---	0.0090	6		
---	0.0065	5		
---	0.0047	3		
---	0.0033	2		
---	0.0014	1		

Coefficients

D_{85} = 17.8739 mm D_{30} = 0.1499 mm
D_{60} = 0.6522 mm D_{15} = 0.0508 mm
D_{50} = 0.3315 mm D_{10} = 0.0239 mm
C_u = 27.289 C_c = 1.442

Classification

ASTM Silty SAND with Gravel (SM)

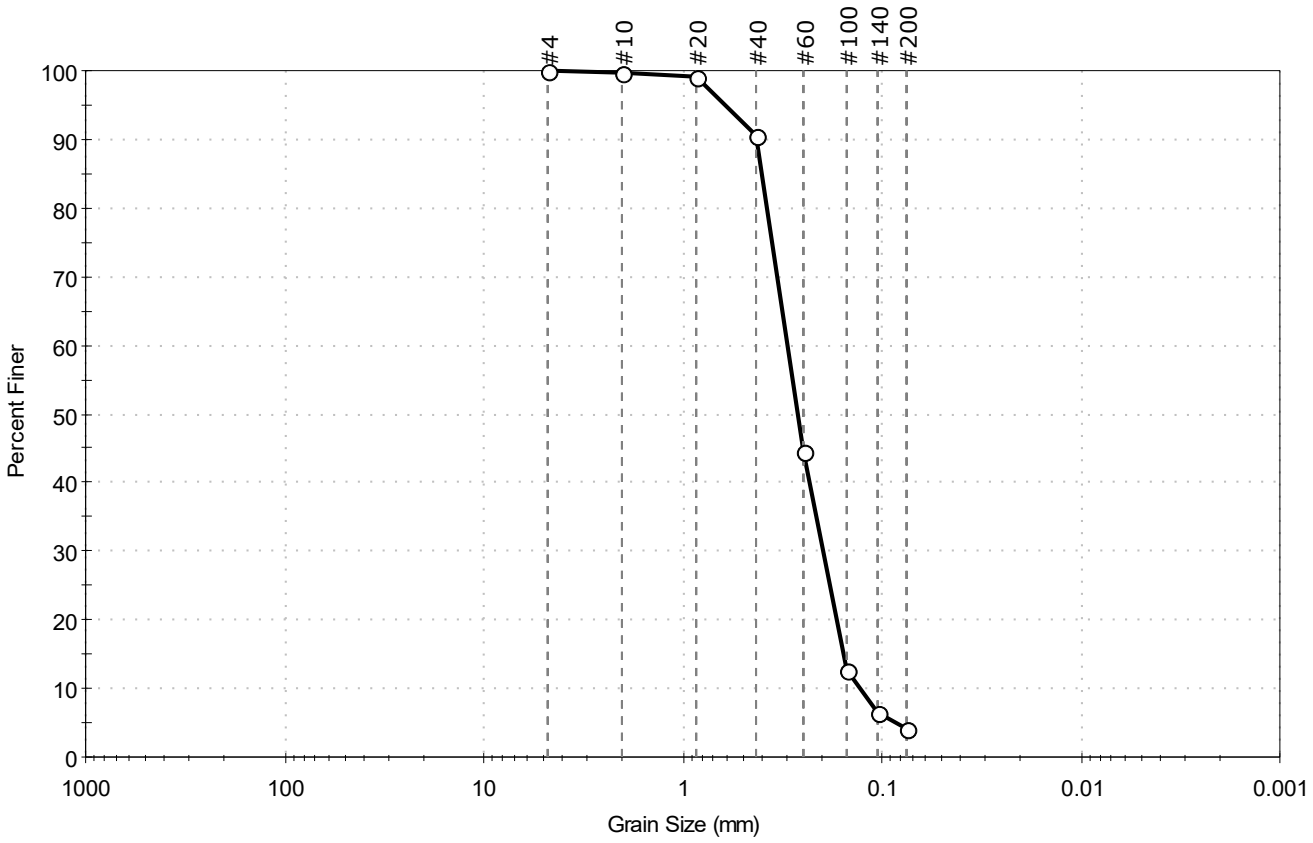
AASHTO Silty Gravel and Sand (A-2-4 (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR
Sand/Gravel Hardness : HARD
Dispersion Device : Apparatus A - Mech Mixer
Dispersion Period : 1 minute
Est. Specific Gravity : 2.65
Separation of Sample: #200 Sieve

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-543-A(MW)	Sample Type:	Bag	Tested By:	ajl
Sample ID:	AS-3	Test Date:	01/09/26	Checked By:	ank
Depth :	4.0-6.0	Test Id:	849678		
Test Comment:	---				
Visual Description:	Moist, light yellowish brown sand				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	0.0	95.9	4.1

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
#4	4.75	100		
#10	2.00	100		
#20	0.85	99		
#40	0.42	90		
#60	0.25	45		
#100	0.15	13		
#140	0.11	7		
#200	0.075	4.1		

Coefficients

D_{85} = 0.3991 mm	D_{30} = 0.1981 mm
D_{60} = 0.2990 mm	D_{15} = 0.1557 mm
D_{50} = 0.2664 mm	D_{10} = 0.1290 mm
C_u = 2.318	C_c = 1.017

Classification

ASTM Poorly graded SAND (SP)

AASHTO Fine Sand (A-3 (1))

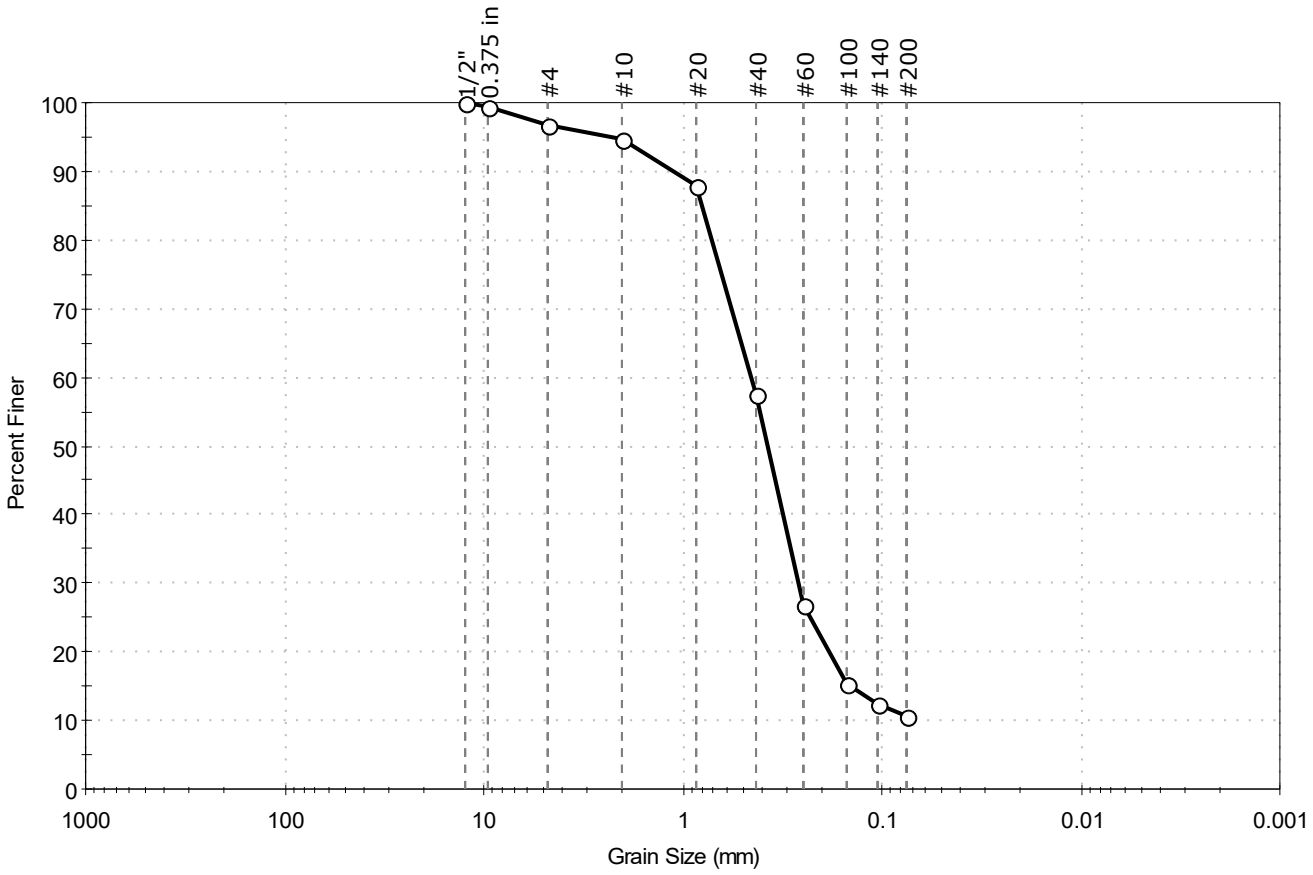
Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-543-A(MW)	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-4	Test Date:	01/09/26	Checked By:	ank
Depth :	16.0-18.0	Test Id:	849679		
Test Comment:	---				
Visual Description:	Moist, light grayish brown sand with silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	3.2	86.2	10.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1/2"	12.50	100		
0.375 in	9.50	99		
#4	4.75	97		
#10	2.00	95		
#20	0.85	88		
#40	0.42	57		
#60	0.25	27		
#100	0.15	15		
#140	0.11	12		
#200	0.075	11		

Coefficients

D_{85} = 0.7940 mm D_{30} = 0.2645 mm
D_{60} = 0.4500 mm D_{15} = 0.1425 mm
D_{50} = 0.3735 mm D_{10} = N/A
C_u = N/A C_c = N/A

Classification

ASTM N/A

AASHTO Silty Gravel and Sand (A-2-4 (0))

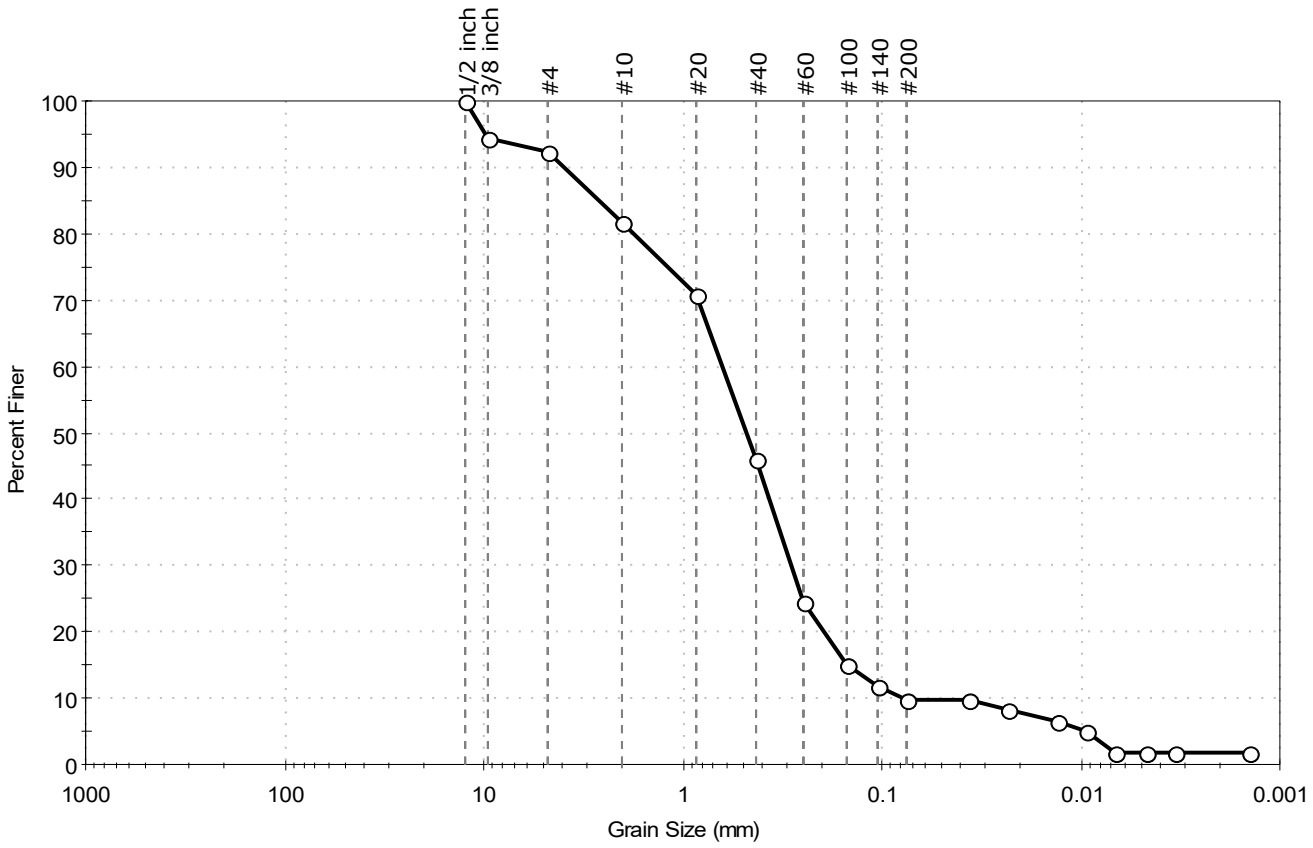
Sample/Test Description

Sand/Gravel Particle Shape : ---

Sand/Gravel Hardness : ---

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-543-A(MW)	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-10	Test Date:	01/06/26	Checked By:	ank
Depth :	31.0-33.0	Test Id:	849681		
Test Comment:	---				
Visual Description:	Moist, light brown sand with silt				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913/D7928



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	7.6	82.6	9.8

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1/2 inch	12.50	100		
3/8 inch	9.50	94		
#4	4.75	92		
#10	2.00	82		
#20	0.85	71		
#40	0.42	46		
#60	0.25	24		
#100	0.15	15		
#140	0.11	12		
#200	0.075	9.8		
Hydrometer	Particle Size (mm)	Percent Finer	Spec. Percent	Complies
---	0.0370	10		
---	0.0231	8		
---	0.0133	6		
---	0.0094	5		
---	0.0067	2		
---	0.0048	2		
---	0.0034	2		
---	0.0014	2		

Coefficients

D_{85} = 2.6068 mm	D_{30} = 0.2863 mm
D_{60} = 0.6276 mm	D_{15} = 0.1496 mm
D_{50} = 0.4746 mm	D_{10} = 0.0773 mm
C_u = 8.119	C_c = 1.690

Classification

ASTM — Well-graded SAND with Silt (SW-SM)

AASHTO — Stone Fragments, Gravel and Sand (A-1-b (1))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Dispersion Device : Apparatus A - Mech Mixer

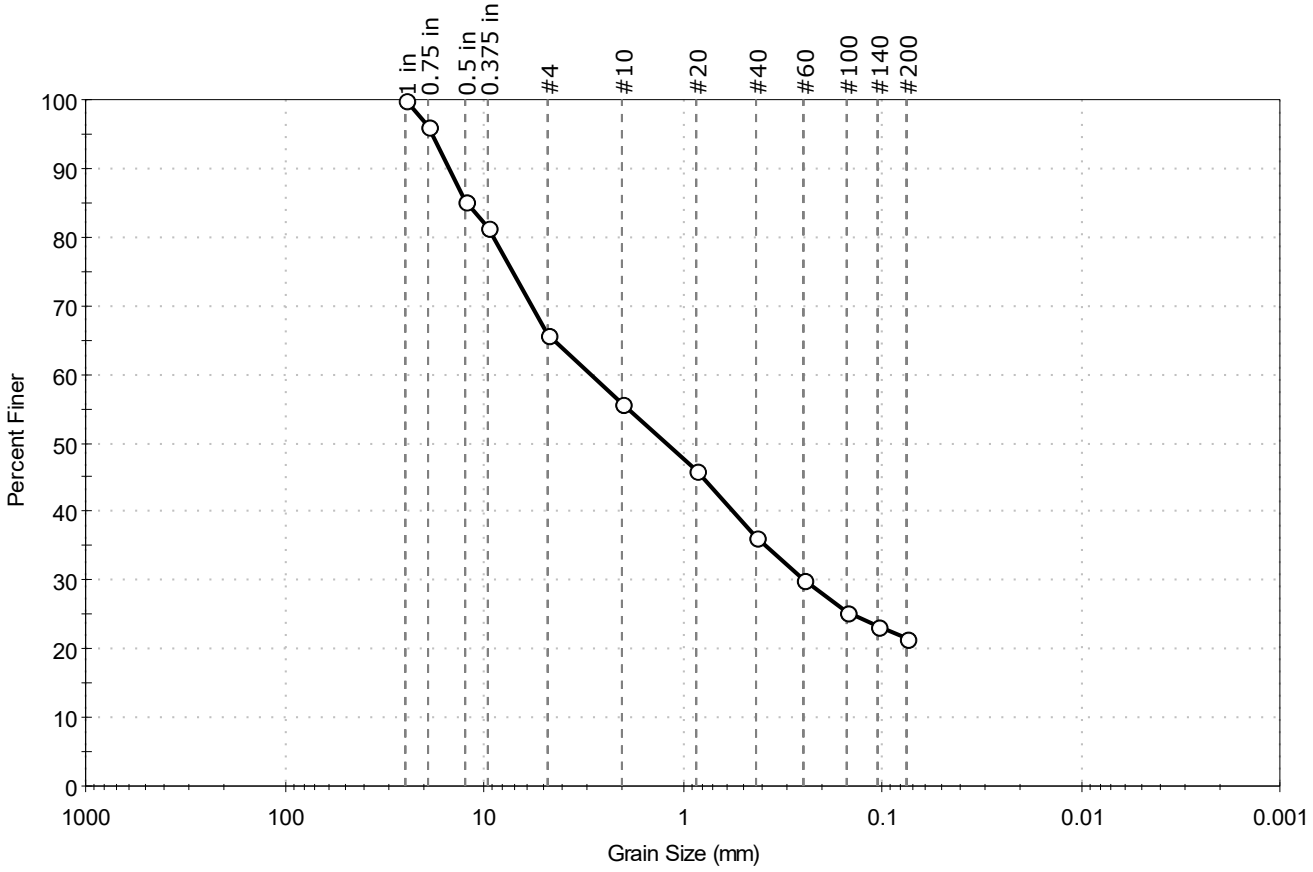
Dispersion Period : 1 minute

Est. Specific Gravity : 2.65

Separation of Sample: #200 Sieve

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-543-A(MW)	Sample Type:	Bag	Tested By:	ajl
Sample ID:	SS-14	Test Date:	01/07/26	Checked By:	ank
Depth :	46.0-48.0	Test Id:	849680		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand with gravel				
Sample Comment:	---				

Particle Size Analysis - ASTM D6913



% Cobble	% Gravel	% Sand	% Silt & Clay Size
—	34.1	44.3	21.6

Sieve Name	Sieve Size, mm	Percent Finer	Spec. Percent	Complies
1 in	25.00	100		
0.75 in	19.00	96		
0.5 in	12.50	85		
0.375 in	9.50	81		
#4	4.75	66		
#10	2.00	56		
#20	0.85	46		
#40	0.42	36		
#60	0.25	30		
#100	0.15	25		
#140	0.11	23		
#200	0.075	22		

Coefficients

D_{85} = 12.3489 mm	D_{30} = 0.2511 mm
D_{60} = 2.8966 mm	D_{15} = N/A
D_{50} = 1.2155 mm	D_{10} = N/A
C_u = N/A	C_c = N/A

Classification

ASTM N/A

AASHTO Stone Fragments, Gravel and Sand (A-1-b (0))

Sample/Test Description

Sand/Gravel Particle Shape : ANGULAR

Sand/Gravel Hardness : HARD

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-541-C	Sample Type:	Bag	Tested By:	cam
Sample ID:	SS-3	Test Date:	01/05/26	Checked By:	ank
Depth :	17.0-19.0	Test Id:	849644		
Test Comment:	---				
Visual Description:	Moist, brown silty gravel with sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	SS-3	3-FD-541	17.0-19.0	8	n/a	n/a	n/a	n/a	Silty GRAVEL with Sand (GM)

53% Retained on #40 Sieve
Dry Strength: LOW
Dilatancy: RAPID
Toughness: LOW
The sample was determined to be Non-Plastic

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-541-C	Sample Type:	Bag	Tested By:	cam
Sample ID:	SS-12	Test Date:	01/06/26	Checked By:	ank
Depth :	35.0-37.0	Test Id:	849645		
Test Comment:	---				
Visual Description:	Moist, yellowish brown silty sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	SS-12	3-FD-541	35.0-37.0	13	n/a	n/a	n/a	n/a	Silty SAND (SM)

21% Retained on #40 Sieve
Dry Strength: MEDIUM
Dilatancy: SLOW
Toughness: LOW
The sample was determined to be Non-Plastic

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-542-A(MW)	Sample Type:	Bag	Tested By:	cam
Sample ID:	SS-6	Test Date:	01/09/26	Checked By:	ank
Depth :	20.0-22.0	Test Id:	849656		
Test Comment:	---				
Visual Description:	Moist, light gray silty sand				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	SS-6	D-542-A(	20.0-22.0	21	n/a	n/a	n/a	n/a	Silty SAND (SM)

3% Retained on #40 Sieve
Dry Strength: LOW
Dilatancy: RAPID
Toughness: LOW
The sample was determined to be Non-Plastic

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-542-A(MW)	Sample Type:	Bag	Tested By:	cam
Sample ID:	SS-11	Test Date:	01/06/26	Checked By:	ank
Depth :	36.0-38.0	Test Id:	849657		
Test Comment:	---				
Visual Description:	Moist, light yellowish brown silty sand with gravel				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	SS-11	D-542-A(	36.0-38.0	11	n/a	n/a	n/a	n/a	Silty SAND with Gravel (SM)

45% Retained on #40 Sieve
Dry Strength: MEDIUM
Dilatancy: SLOW
Toughness: LOW
The sample was determined to be Non-Plastic

Client:	WSP USA, Inc.				
Project:	MWRA MWTP				
Location:	---			Project No:	GTX-321964
Boring ID:	SB-FD-543-A(MW)	Sample Type:	Bag	Tested By:	cam
Sample ID:	SS-10	Test Date:	01/02/26	Checked By:	ank
Depth :	31.0-33.0	Test Id:	849677		
Test Comment:	---				
Visual Description:	Moist, light brown sand with silt				
Sample Comment:	---				

Atterberg Limits - ASTM D4318

Sample Determined to be non-plastic

Symbol	Sample ID	Boring	Depth	Natural Moisture Content,%	Liquid Limit	Plastic Limit	Plasticity Index	Liquidity Index	Soil Classification
◆	SS-10	D-543-A(	31.0-33.0	15	n/a	n/a	n/a	n/a	Well-graded SAND with Silt (SW-SM)

54% Retained on #40 Sieve
Dry Strength: LOW
Dilatancy: RAPID
Toughness: LOW
The sample was determined to be Non-Plastic



PO Box 572455 / Salt Lake City UT 84157-2455 / USA
TEL +1 801 262 2448 · FAX +1 801 262 9870 · www.TEi-TS.com

GEOTESTING EXPRESS INCORPORATED
125 NAGOG PARK
ACTON MA 01720-3451
USA

Analysis No.	TS-A2513406
Report Date	02 January 2026
Date Sampled	30 December 2025
Date Received	31 December 2025
Where Sampled	Acton, MA USA
Sampled By	Client

This is to attest that we have examined: Soil: Project: MWRA MWTP; Site Location: – — –; Job Number: GTX-321964

When examined to the applicable requirements of:

AASHTO T 291-18	"Standard Method of Test for Determining Water-Soluble Chloride Ion Content in Soil" Method B
ASTM C 1580-20	"Standard Test Method for Water-Soluble Sulfate in Soil"
Standard Methods-2023	Part 4000 "Inorganic Nonmetallic Constituents" 4500-S^{2-} Sulfide
ASTM G 200-20	"Standard Test Method for Measurement of Oxidation-Reduction Potential (ORP) of Soil"
ASTM D 4542-22	"Standard Test Methods for Pore Water Extraction and Determination of the Soluble Salt Content of Soils by Refractometer"

Results:

AASHTO T 291 - Chloride Method B

Sample		Results		Minimum Detection Limit
		ppm (mg/kg)	%[1]	
SB-FD-542-A (MW)		508.	0.0508	10.
SS-1 to SS-5 Composite	10.0 – 20.0'			
SB-FD-543-A (MW)		402.	0.0402	
SS-5 to SS-9 Composite	18.0 – 28.0'			

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

ASTM C 1580 - Sulfates (Soluble)

Sample		Results		Minimum Detection Limit
		ppm (mg/kg)	%[1]	
SB-FD-542-A (MW)		< 10.	< 0.0010	10.
SS-1 to SS-5 Composite	10.0 – 20.0'			
SB-FD-543-A (MW)		< 10.	< 0.0010	
SS-5 to SS-9 Composite	18.0 – 28.0'			

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

Testing Services analytical Laboratory
3455 South 500 West
Salt Lake City, UT 84115-4234 USA
TEL: +1 801 262 2448
FAX: +1 801 262 9870

SM 4500-S^{2-} Sulfide (Soluble)

Sample		Results		Minimum Detection Limit
		ppb µg/kg)	%[1]	
SB-FD-542-A (MW)		150.	0.0000150	10.
SS-1 to SS-5 Composite	10.0 – 20.0’			
SB-FD-543-A (MW)		210.	0.0000210	
SS-5 to SS-9 Composite	18.0 – 28.0’			

NOTE: [1]Percent by weight after drying and prepared as per the Standard.

ASTM G 200 – Reduction Oxidation Potential (REDOX)

Sample		Results	Minimum Detection Limit
SB-FD-542-A (MW)		107.1 @ 20.4 ºC	0.1 mV
SS-1 to SS-5 Composite	10.0 – 20.0’		
SB-FD-543-A (MW)		110.8 @ 20.4 ºC	
SS-5 to SS-9 Composite	18.0 – 28.0’		

NOTE: Prepared as per the Standard.

ASTM D 4542 – Total Soluble Salts (Method B)

Sample		Results			Detection Limit
		ppm	%[1]	mS/cm	
SB-FD-542-A (MW)		1 021.	0.1021	1 596.	1.0
SS-1 to SS-5 Composite	10.0 – 20.0’				
SB-FD-543-A (MW)		951.	0.0951	1 486.	
SS-5 to SS-9 Composite	18.0 – 28.0’				

NOTE: [1]Percent by weight as received.

END OF ANALYSIS

USEPA Laboratory ID UT00930



Merrill Gee P.E. – Engineer in Charge

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Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:				Project No:	GTX-317525
Boring ID:	---	Sample Type:	---	Tested By:	gp
Sample ID:	---	Test Date:	09/10/24	Checked By:	smd
Depth :	---	Test Id:	781205		

Bulk Density and Compressive Strength of Rock Core Specimens by ASTM D7012 Method C

Boring ID	Sample Number	Depth	Bulk Density, pcf	Compressive strength, psi	Failure Type	Meets ASTM D4543	Note(s)
B-GSS-410A	C3	39.09-39.56 ft	169	4765	1	No	1 , 6,*
B-GSS-410A	C8	68.07-68.48 ft	169	8618	2	No	1 , 6,*
B-GSS-410A	C17	150.97-151.42 ft	168	12193	1	No	1 , 6,*
B-GSS-410A	C27	205.15-205.60 ft	171	11137	1	No	1 , 6,*
B-GSS-410A	C36	280.24-280.70 ft	170	14206	1	No	1,*
B-GSS-410A	C38	305.94-306.39 ft	173	12553	1	No	1,*
B-GSS-410A	C49	374.54-375.02 ft	172	13956	1	No	6,*

Notes: Density determined on core samples by measuring dimensions and weight and then calculating.

All specimens tested at the approximate as-received moisture content and at standard laboratory temperature.

The axial load was applied continuously at a stress rate that produced failure in a test time between 2 and 15 minutes.

Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure (See attached photographs)

1: Best effort end preparation. See Tolerance report for details.
2: The as-received core did not meet the ASTM side straightness tolerance due to irregularities in the sample as cored.
3: Specimen L/D < 2.
4: The as-received core did not meet the ASTM minimum diameter tolerance of 1.875 inches.
5: Specimen diameter is less than 10 times maximum particle size.
6: Specimen diameter is less than 6 times maximum particle size.

*Because the indicated tested specimens did not meet the ASTM D4543 standard tolerances, the results reported here may differ from those for a test specimen within tolerances.

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:				Project No:	GTX-317525
Boring ID:	B-GSS-410A	Sample Type:	Core	Tested By:	gp
Sample ID:	C53	Test Date:	09/19/24	Checked By:	smd
Depth :	400.9-401.7	Test Id:	781206		
Test Comment:	---				
Visual Description:	See photograph(s)				
Sample Comment:	---				

Bulk Density and Compressive Strength of Rock Core Specimens by ASTM D7012 Method C

Boring ID	Sample Number	Depth	Bulk Density, pcf	Compressive strength, psi	Failure Type	Meets ASTM D4543	Note(s)
B-GSS-410A	C53	400.94-401.39 ft	169	13501	1	No	1,*

Notes: Density determined on core samples by measuring dimensions and weight and then calculating.

All specimens tested at the approximate as-received moisture content and at standard laboratory temperature.

The axial load was applied continuously at a stress rate that produced failure in a test time between 2 and 15 minutes.

Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure (See attached photographs)

1: Best effort end preparation. See Tolerance report for details.
2: The as-received core did not meet the ASTM side straightness tolerance due to irregularities in the sample as cored.
3: Specimen L/D < 2.
4: The as-received core did not meet the ASTM minimum diameter tolerance of 1.875 inches.
5: Specimen diameter is less than 10 times maximum particle size.
6: Specimen diameter is less than 6 times maximum particle size.

*Because the indicated tested specimens did not meet the ASTM D4543 standard tolerances, the results reported here may differ from those for a test specimen within tolerances.

GeoTesting EXPRESS
A Sercel Business

Client:	GEI-Delve Underground JV	Test Date:	9/18/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	cml
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A		
Sample ID:	C3		
Depth (ft):	39.09-39.56		
Visual Description:	See photographs		

UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

BULK DENSITY

	1	2	Average
Specimen Length, in:	5.36	5.37	5.37
Specimen Diameter, in:	2.39	2.39	2.39
Specimen Mass, g:	1067.01		
Bulk Density, lb/ft^3	169	**Minimum Diameter Tolerence Met?**	YES
Length to Diameter Ratio:	2.2	**Length to Diameter Ratio Tolerance Met?**	YES

DEVIATION FROM STRAIGHTNESS (Procedure S1)

Maximum gap between side of core and reference surface plate:
Is the maximum gap ≤ 0.02 in.? YES

Maximum difference must be < 0.020 in.
Straightness Tolerance Met? YES

END FLATNESS AND PARALLELISM (Procedure FP1)

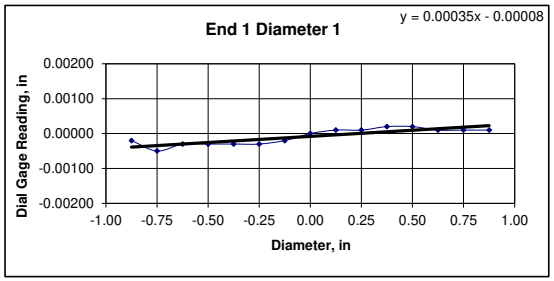
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00020	-0.00050	-0.00030	-0.00030	-0.00030	-0.00030	-0.00020	0.00000	0.00010	0.00010	0.00020	0.00020	0.00010	0.00010	0.00010
Diameter 2, in (rotated 90°)	0.00280	0.00230	0.00210	0.00170	0.00140	0.00090	0.00050	0.00000	0.00000	-0.00010	-0.00060	-0.00070	-0.00100	-0.00150	-0.00170

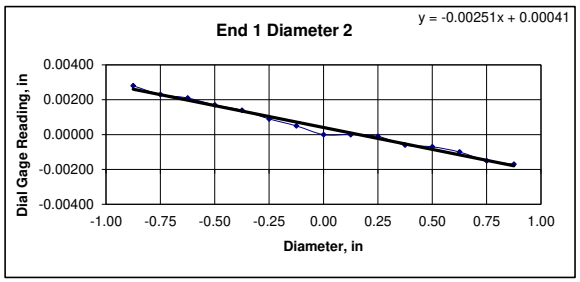
Difference between max and min readings, in:
0° = 0.00070 90° = 0.00450

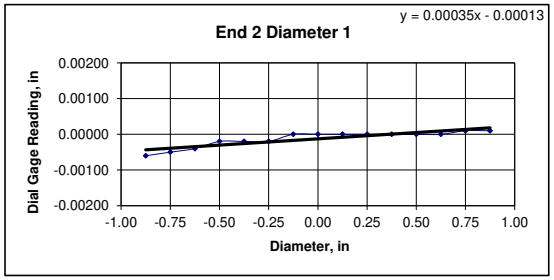
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00060	-0.00050	-0.00040	-0.00020	-0.00020	-0.00020	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00010	0.00010
Diameter 2, in (rotated 90°)	-0.00320	-0.00280	-0.00200	-0.00170	-0.00130	-0.00080	-0.00040	0.00000	0.00040	0.00060	0.00120	0.00130	0.00160	0.00220	0.00280

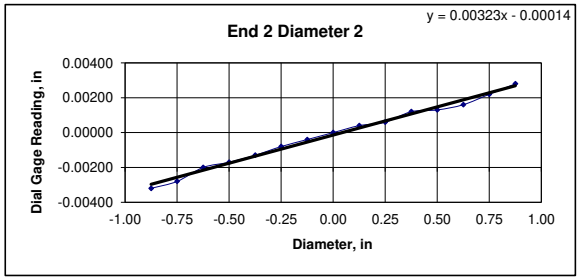
Difference between max and min readings, in:
0° = 0.0007 90° = 0.006

Maximum difference must be < 0.0020 in. Difference = ± 0.00300
Flatness Tolerance Met? NO









DIAMETER 1

End 1:
Slope of Best Fit Line 0.00035
Angle of Best Fit Line: 0.02014

End 2:
Slope of Best Fit Line 0.00035
Angle of Best Fit Line: 0.02014

Maximum Angular Difference: 0.00000

Parallelism Tolerance Met? YES
Spherically Seated

DIAMETER 2

End 1:
Slope of Best Fit Line 0.00251
Angle of Best Fit Line: 0.14389

End 2:
Slope of Best Fit Line 0.00323
Angle of Best Fit Line: 0.18515

Maximum Angular Difference: 0.04125

Parallelism Tolerance Met? NO
Spherically Seated

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)

END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?
Diameter 1, in	0.00070	2.390	0.00029	0.017	YES
Diameter 2, in (rotated 90°)	0.00450	2.390	0.00188	0.108	YES
END 2					
Diameter 1, in	0.00070	2.390	0.00029	0.017	YES
Diameter 2, in (rotated 90°)	0.00600	2.390	0.00251	0.144	YES

Maximum angle of departure must be ≤ 0.25°
Perpendicularity Tolerance Met? YES

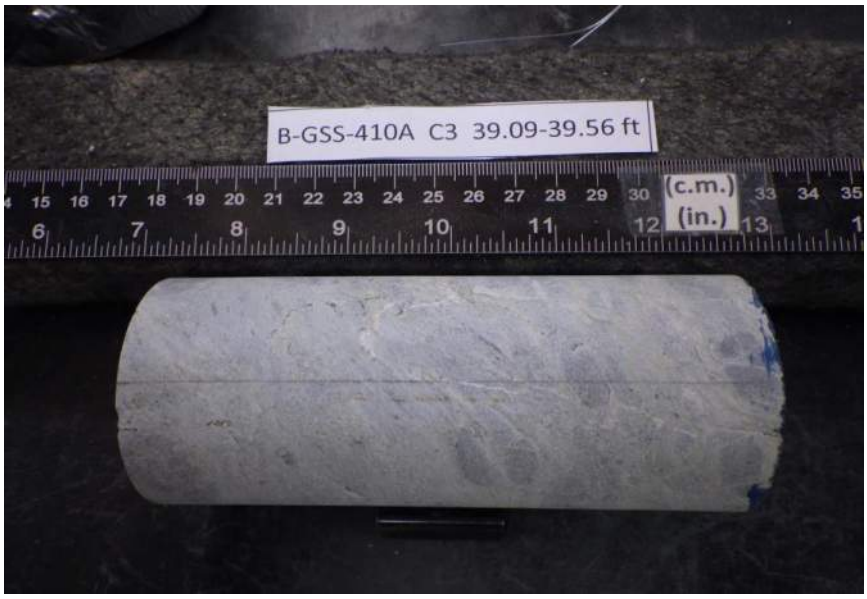
Client:	GEI-Delve Underground JV	Test Date:	9/18/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	cml
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A	Reliable dial gauge measurements could not be performed on this rock type. Tolerance measurements were performed using a machinist straightedge and feeler gauges to ASTM specifications.	
Sample ID:	C3		
Depth (ft):	39.09-39.56		
Visual Description:	See photographs		

BEST EFFORT END FLATNESS TOLERANCES OF ROCK CORE SPECIMENS TO ASTM D4543

END FLATNESS		
END 1		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES
END 2		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES

End Flatness Tolerance Met? YES

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/19/2024
Tested By:	gp
Checked By:	smd
Boring ID:	B-GSS-410A
Sample ID:	C3
Depth, ft:	39.09-39.56



After cutting and grinding



After break

Client:	GEI-Delve Underground JV	Test Date:	9/9/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	gp
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A		
Sample ID:	C8		
Depth (ft):	68.07-68.48		
Visual Description:	See photographs		

UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

BULK DENSITY

	1	2	Average
Specimen Length, in:	4.72	4.72	4.72
Specimen Diameter, in:	2.39	2.39	2.39
Specimen Mass, g:	941.3		
Bulk Density, lb/ft^3	169	**Minimum Diameter Tolerence Met?**	YES
Length to Diameter Ratio:	2.0	**Length to Diameter Ratio Tolerance Met?**	YES

DEVIATION FROM STRAIGHTNESS (Procedure S1)

Maximum gap between side of core and reference surface plate:
Is the maximum gap ≤ 0.02 in.? YES

Maximum difference must be < 0.020 in.
Straightness Tolerance Met? YES

END FLATNESS AND PARALLELISM (Procedure FP1)

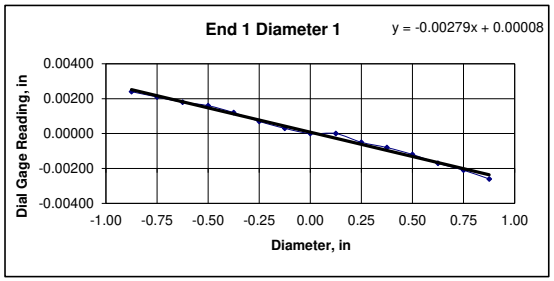
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00240	0.00210	0.00180	0.00160	0.00120	0.00070	0.00030	0.00000	0.00000	-0.00050	-0.00080	-0.00120	-0.00170	-0.00210	-0.00260
Diameter 2, in (rotated 90°)	-0.00020	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

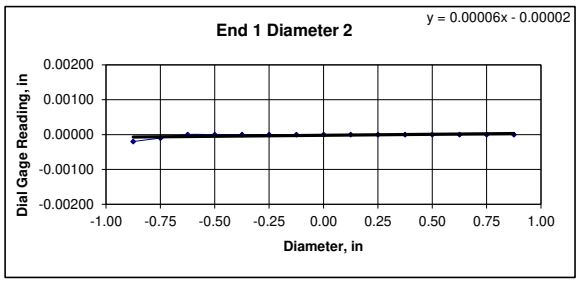
Difference between max and min readings, in:
0° = 0.00500 90° = 0.00020

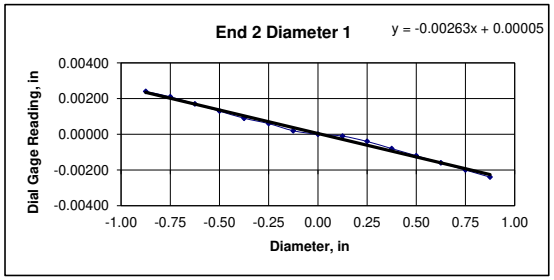
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00240	0.00210	0.00170	0.00130	0.00090	0.00060	0.00020	0.00000	-0.00010	-0.00040	-0.00080	-0.00120	-0.00160	-0.00200	-0.00240
Diameter 2, in (rotated 90°)	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00010

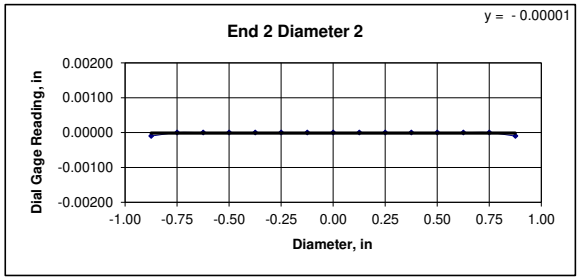
Difference between max and min readings, in:
0° = 0.0048 90° = 0.0001

Maximum difference must be < 0.0020 in. Difference = ± 0.00250
Flatness Tolerance Met? NO









DIAMETER 1

End 1:
Slope of Best Fit Line 0.00279
Angle of Best Fit Line: 0.15977

End 2:
Slope of Best Fit Line 0.00263
Angle of Best Fit Line: 0.15077

Maximum Angular Difference: 0.00900

Parallelism Tolerance Met? NO
Spherically Seated

DIAMETER 2

End 1:
Slope of Best Fit Line 0.00006
Angle of Best Fit Line: 0.00327

End 2:
Slope of Best Fit Line 0.00000
Angle of Best Fit Line: 0.00000

Maximum Angular Difference: 0.00327

Parallelism Tolerance Met? YES
Spherically Seated

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)

END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?
Diameter 1, in	0.00500	2.390	0.00209	0.120	YES
Diameter 2, in (rotated 90°)	0.00020	2.390	0.00008	0.005	YES
END 2					
Diameter 1, in	0.00480	2.390	0.00201	0.115	YES
Diameter 2, in (rotated 90°)	0.00010	2.390	0.00004	0.002	YES

Maximum angle of departure must be ≤ 0.25°
Perpendicularity Tolerance Met? YES

Client:	GEI-Delve Underground JV	Test Date:	9/9/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	gp
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A	Reliable dial gauge measurements could not be performed on this rock type. Tolerance measurements were performed using a machinist straightedge and feeler gauges to ASTM specifications.	
Sample ID:	C8		
Depth (ft):	68.07-68.48		
Visual Description:	See photographs		

BEST EFFORT END FLATNESS TOLERANCES OF ROCK CORE SPECIMENS TO ASTM D4543

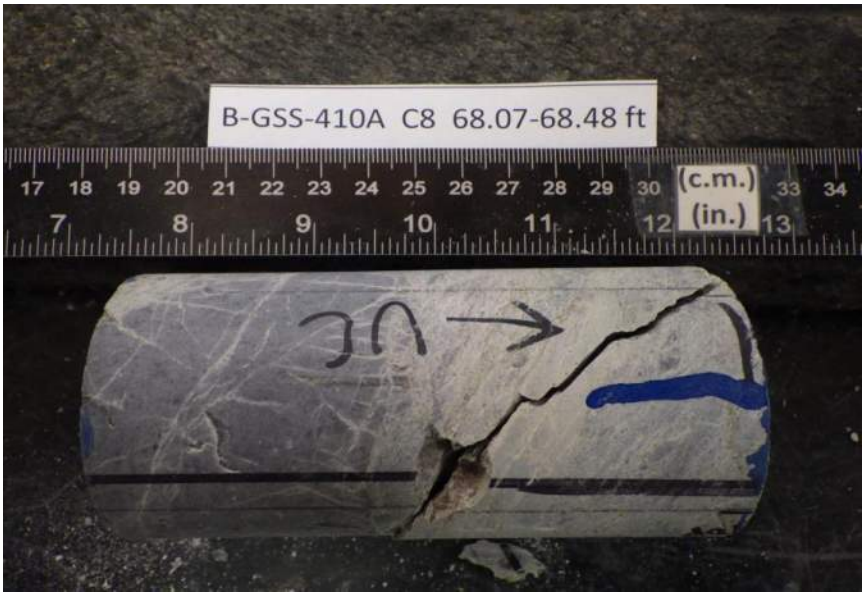
END FLATNESS		
END 1		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES
END 2		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES

End Flatness Tolerance Met? YES

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/10/2024
Tested By:	gp
Checked By:	smd
Boring ID:	B-GSS-410A
Sample ID:	C8
Depth, ft:	68.07-68.48



After cutting and grinding



After break

Client:	GEI-Delve Underground JV	Test Date:	9/18/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	cml
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A		
Sample ID:	C17		
Depth (ft):	150.97-151.42		
Visual Description:	See photographs		

UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

BULK DENSITY

	1	2	Average
Specimen Length, in:	5.26	5.26	5.26
Specimen Diameter, in:	2.39	2.39	2.39
Specimen Mass, g:	1044.3		
Bulk Density, lb/ft^3	168	**Minimum Diameter Tolerence Met?**	YES
Length to Diameter Ratio:	2.2	**Length to Diameter Ratio Tolerance Met?**	YES

DEVIATION FROM STRAIGHTNESS (Procedure S1)

Maximum gap between side of core and reference surface plate:
Is the maximum gap ≤ 0.02 in.? YES

Maximum difference must be < 0.020 in.
Straightness Tolerance Met? YES

END FLATNESS AND PARALLELISM (Procedure FP1)

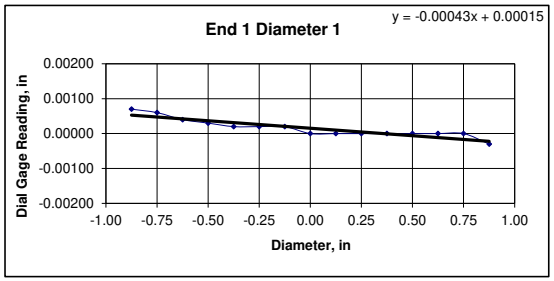
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00070	0.00060	0.00040	0.00030	0.00020	0.00020	0.00020	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00030
Diameter 2, in (rotated 90°)	-0.00010	0.00000	0.00010	0.00010	0.00010	0.00010	0.00000	0.00000	0.00010	0.00010	0.00020	0.00060	0.00070	0.00070	0.00050

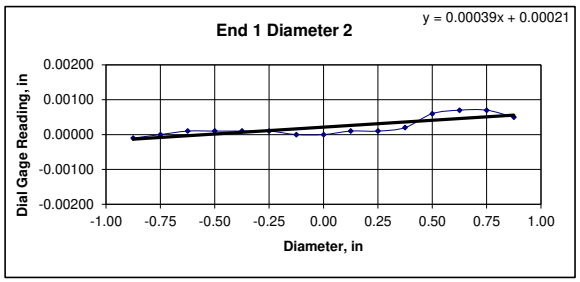
Difference between max and min readings, in:
0° = 0.00100 90° = 0.00080

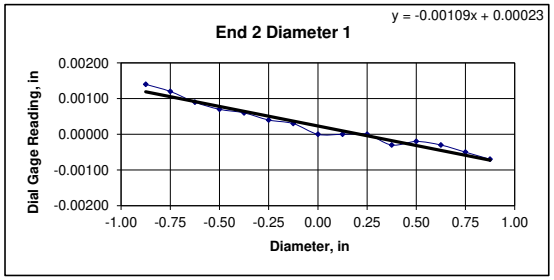
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00140	0.00120	0.00090	0.00070	0.00060	0.00040	0.00030	0.00000	0.00000	0.00000	-0.00030	-0.00020	-0.00030	-0.00050	-0.00070
Diameter 2, in (rotated 90°)	0.00110	0.00100	0.00090	0.00080	0.00060	0.00030	0.00020	0.00000	0.00000	0.00000	0.00000	-0.00030	-0.00060	-0.00010	-0.00070

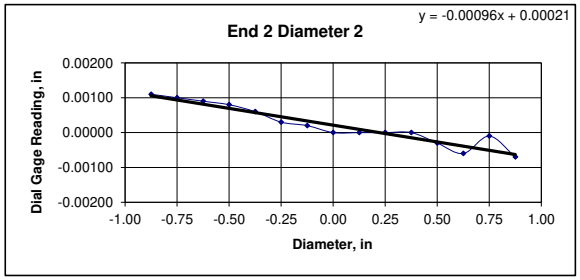
Difference between max and min readings, in:
0° = 0.0021 90° = 0.0018

Maximum difference must be < 0.0020 in. Difference = ± 0.00105
Flatness Tolerance Met? NO









DIAMETER 1

End 1:
Slope of Best Fit Line 0.00043
Angle of Best Fit Line: 0.02456

End 2:
Slope of Best Fit Line 0.00109
Angle of Best Fit Line: 0.06270

Maximum Angular Difference: 0.03814

Parallelism Tolerance Met? NO
Spherically Seated

DIAMETER 2

End 1:
Slope of Best Fit Line 0.00039
Angle of Best Fit Line: 0.02259

End 2:
Slope of Best Fit Line 0.00096
Angle of Best Fit Line: 0.05517

Maximum Angular Difference: 0.03258

Parallelism Tolerance Met? NO
Spherically Seated

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)

END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?
Diameter 1, in	0.00100	2.390	0.00042	0.024	YES
Diameter 2, in (rotated 90°)	0.00080	2.390	0.00033	0.019	YES
END 2					
Diameter 1, in	0.00210	2.390	0.00088	0.050	YES
Diameter 2, in (rotated 90°)	0.00180	2.390	0.00075	0.043	YES

Maximum angle of departure must be ≤ 0.25°
Perpendicularity Tolerance Met? YES

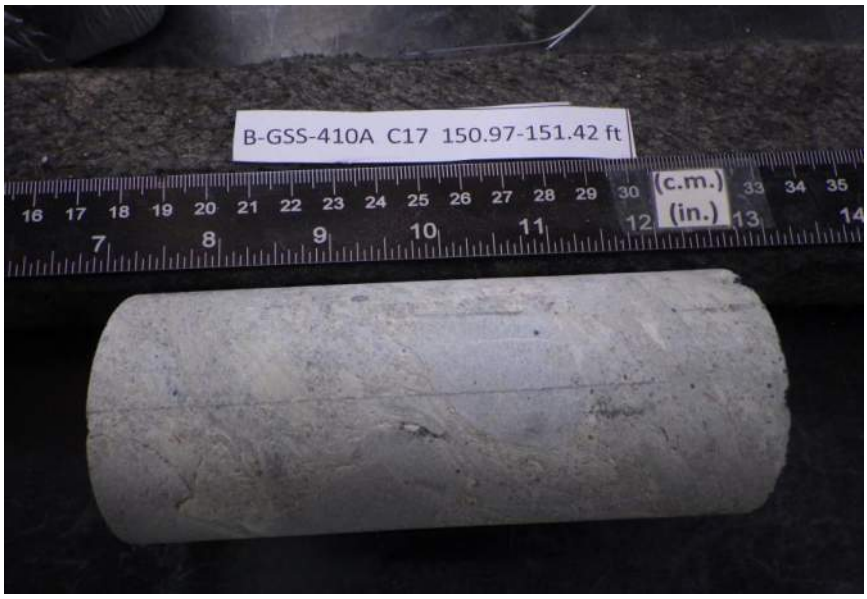
Client:	GEI-Delve Underground JV	Test Date:	9/18/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	cml
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A	Reliable dial gauge measurements could not be performed on this rock type. Tolerance measurements were performed using a machinist straightedge and feeler gauges to ASTM specifications.	
Sample ID:	C17		
Depth (ft):	150.97-151.42		
Visual Description:	See photographs		

BEST EFFORT END FLATNESS TOLERANCES OF ROCK CORE SPECIMENS TO ASTM D4543

END FLATNESS		
END 1		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES
END 2		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES

End Flatness Tolerance Met? YES

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/19/2024
Tested By:	gp
Checked By:	smd
Boring ID:	B-GSS-410A
Sample ID:	C17
Depth, ft:	150.97-151.42



After cutting and grinding



After break

Client:	GEI-Delve Underground JV	Test Date:	9/9/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	gp
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A		
Sample ID:	C27		
Depth (ft):	205.15-205.60		
Visual Description:	See photographs		

UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

BULK DENSITY

	1	2	Average
Specimen Length, in:	5.34	5.34	5.34
Specimen Diameter, in:	2.36	2.36	2.36
Specimen Mass, g:	1050.29		
Bulk Density, lb/ft^3	171	**Minimum Diameter Tolerence Met?**	YES
Length to Diameter Ratio:	2.3	**Length to Diameter Ratio Tolerance Met?**	YES

DEVIATION FROM STRAIGHTNESS (Procedure S1)

Maximum gap between side of core and reference surface plate:
Is the maximum gap ≤ 0.02 in.? YES

Maximum difference must be < 0.020 in.
Straightness Tolerance Met? YES

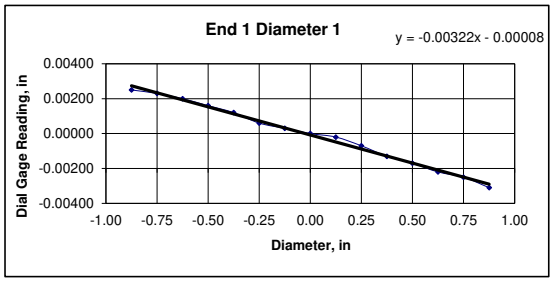
END FLATNESS AND PARALLELISM (Procedure FP1)

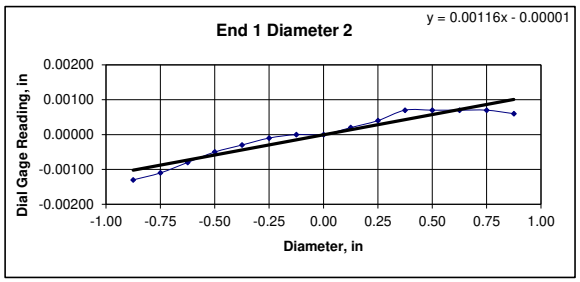
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00250	0.00230	0.00200	0.00160	0.00120	0.00060	0.00030	0.00000	-0.00020	-0.00070	-0.00130	-0.00170	-0.00220	-0.00250	-0.00310
Diameter 2, in (rotated 90°)	-0.00130	-0.00110	-0.00080	-0.00050	-0.00030	-0.00010	0.00000	0.00000	0.00020	0.00040	0.00070	0.00070	0.00070	0.00070	0.00060

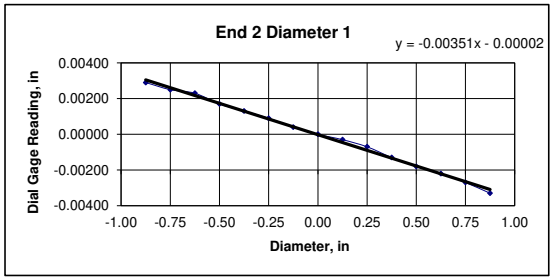
Difference between max and min readings, in:
0° = 0.00560 90° = 0.00200

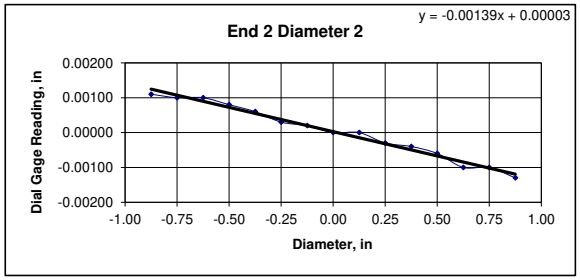
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00290	0.00250	0.00230	0.00170	0.00130	0.00090	0.00040	0.00000	-0.00030	-0.00070	-0.00130	-0.00180	-0.00220	-0.00270	-0.00330
Diameter 2, in (rotated 90°)	0.00110	0.00100	0.00100	0.00080	0.00060	0.00030	0.00020	0.00000	0.00000	-0.00030	-0.00040	-0.00060	-0.00100	-0.00100	-0.00130

Difference between max and min readings, in:
0° = 0.0062 90° = 0.0024
Maximum difference must be < 0.0020 in. Difference = ± 0.00310
Flatness Tolerance Met? NO









DIAMETER 1

End 1:
Slope of Best Fit Line 0.00322
Angle of Best Fit Line: 0.18466

End 2:
Slope of Best Fit Line 0.00351
Angle of Best Fit Line: 0.20103

Maximum Angular Difference: 0.01637

Parallelism Tolerance Met? NO
Spherically Seated

DIAMETER 2

End 1:
Slope of Best Fit Line 0.00116
Angle of Best Fit Line: 0.06646

End 2:
Slope of Best Fit Line 0.00139
Angle of Best Fit Line: 0.07989

Maximum Angular Difference: 0.01342

Parallelism Tolerance Met? NO
Spherically Seated

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)

END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?
Diameter 1, in	0.00560	2.360	0.00237	0.136	YES
Diameter 2, in (rotated 90°)	0.00200	2.360	0.00085	0.049	YES
END 2					
Diameter 1, in	0.00620	2.360	0.00263	0.151	YES
Diameter 2, in (rotated 90°)	0.00240	2.360	0.00102	0.058	YES

Maximum angle of departure must be ≤ 0.25°
Perpendicularity Tolerance Met? YES

Client:	GEI-Delve Underground JV	Test Date:	9/9/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	gp
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A	Reliable dial gauge measurements could not be performed on this rock type. Tolerance measurements were performed using a machinist straightedge and feeler gauges to ASTM specifications.	
Sample ID:	C27		
Depth (ft):	205.15-205.60		
Visual Description:	See photographs		

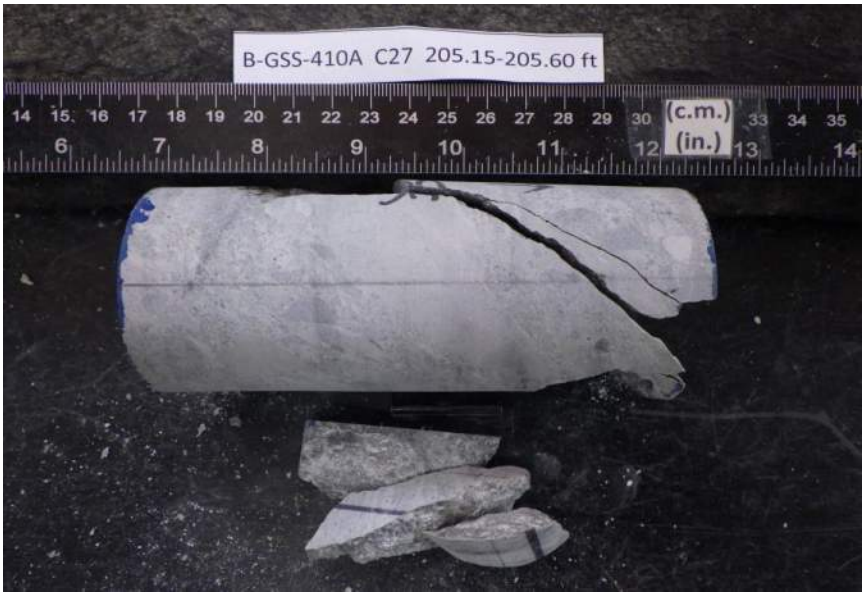
BEST EFFORT END FLATNESS TOLERANCES OF ROCK CORE SPECIMENS TO ASTM D4543

END FLATNESS		
END 1		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES
END 2		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES
	End Flatness Tolerance Met?	**YES**

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/10/2024
Tested By:	gp
Checked By:	smd
Boring ID:	B-GSS-410A
Sample ID:	C27
Depth, ft:	205.15-205.60



After cutting and grinding



After break

Client:	GEI-Delve Underground JV	Test Date:	9/9/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	gp
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A		
Sample ID:	C36		
Depth (ft):	280.24-280.70		
Visual Description:	See photographs		

UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

BULK DENSITY

	1	2	Average
Specimen Length, in:	5.36	5.36	5.36
Specimen Diameter, in:	2.39	2.39	2.39
Specimen Mass, g:	1075.8		
Bulk Density, lb/ft^3	170	**Minimum Diameter Tolerence Met?**	YES
Length to Diameter Ratio:	2.2	**Length to Diameter Ratio Tolerance Met?**	YES

DEVIATION FROM STRAIGHTNESS (Procedure S1)

Maximum gap between side of core and reference surface plate:
Is the maximum gap ≤ 0.02 in.? YES

Maximum difference must be < 0.020 in.
Straightness Tolerance Met? YES

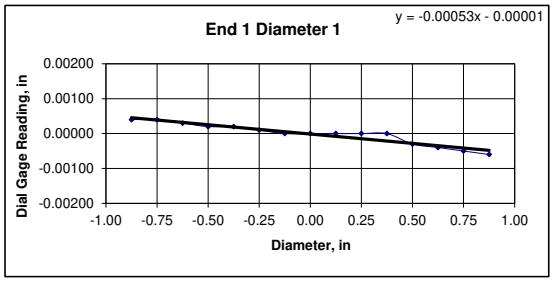
END FLATNESS AND PARALLELISM (Procedure FP1)

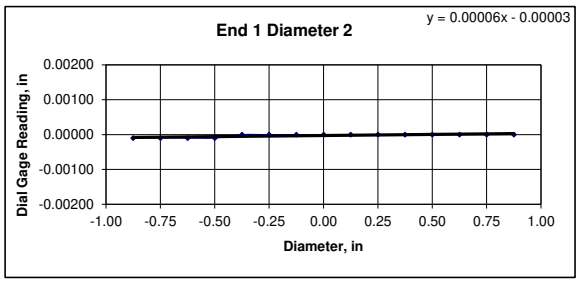
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00040	0.00040	0.00030	0.00020	0.00020	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00030	-0.00040	-0.00050	-0.00060
Diameter 2, in (rotated 90°)	-0.00010	-0.00010	-0.00010	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

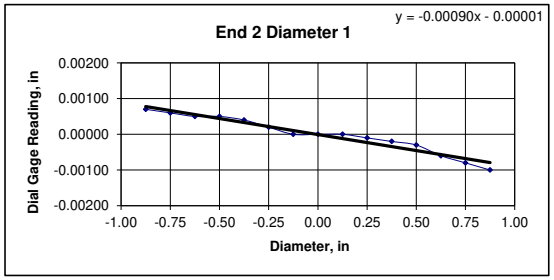
Difference between max and min readings, in:
0° = 0.00100 90° = 0.00010

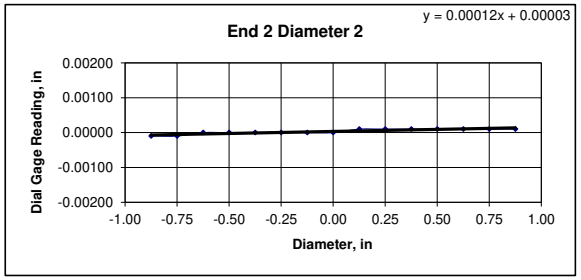
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00070	0.00060	0.00050	0.00050	0.00040	0.00020	0.00000	0.00000	0.00000	-0.00010	-0.00020	-0.00030	-0.00060	-0.00080	-0.00100
Diameter 2, in (rotated 90°)	-0.00010	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010	0.00010

Difference between max and min readings, in:
0° = 0.0017 90° = 0.0002
Maximum difference must be < 0.0020 in. Difference = ± 0.00085
Flatness Tolerance Met? YES









DIAMETER 1

End 1:
Slope of Best Fit Line 0.00053
Angle of Best Fit Line: 0.03061

End 2:
Slope of Best Fit Line 0.00090
Angle of Best Fit Line: 0.05140

Maximum Angular Difference: 0.02079

Parallelism Tolerance Met? NO
Spherically Seated

DIAMETER 2

End 1:
Slope of Best Fit Line 0.00006
Angle of Best Fit Line: 0.00360

End 2:
Slope of Best Fit Line 0.00012
Angle of Best Fit Line: 0.00671

Maximum Angular Difference: 0.00311

Parallelism Tolerance Met? YES
Spherically Seated

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)

END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?
Diameter 1, in	0.00100	2.390	0.00042	0.024	YES
Diameter 2, in (rotated 90°)	0.00010	2.390	0.00004	0.002	YES
END 2					
Diameter 1, in	0.00170	2.390	0.00071	0.041	YES
Diameter 2, in (rotated 90°)	0.00020	2.390	0.00008	0.005	YES

Maximum angle of departure must be ≤ 0.25°
Perpendicularity Tolerance Met? YES

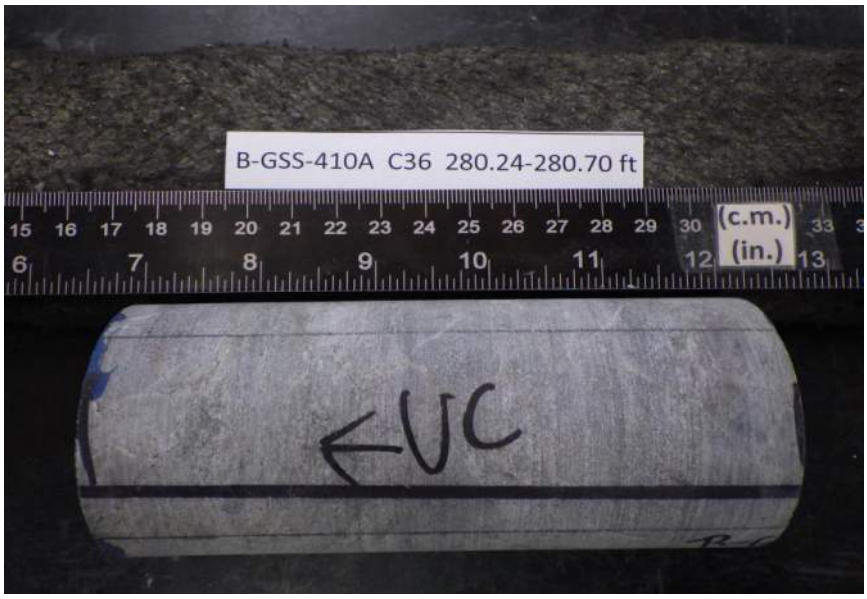
Client:	GEI-Delve Underground JV	Test Date:	9/9/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	gp
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A	Reliable dial gauge measurements could not be performed on this rock type. Tolerance measurements were performed using a machinist straightedge and feeler gauges to ASTM specifications.	
Sample ID:	C36		
Depth (ft):	280.24-280.70		
Visual Description:	See photographs		

BEST EFFORT END FLATNESS TOLERANCES OF ROCK CORE SPECIMENS TO ASTM D4543

END FLATNESS		
END 1		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES
END 2		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES

End Flatness Tolerance Met? YES

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/10/2024
Tested By:	gp
Checked By:	smd
Boring ID:	B-GSS-410A
Sample ID:	C36
Depth, ft:	280.24-280.70



After cutting and grinding



After break

Client:	GEI-Delve Underground JV	Test Date:	9/9/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	gp
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A		
Sample ID:	C38		
Depth (ft):	305.94-306.39		
Visual Description:	See photographs		

UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

BULK DENSITY

	1	2	Average
Specimen Length, in:	5.23	5.23	5.23
Specimen Diameter, in:	2.39	2.39	2.39
Specimen Mass, g:	1069.28		
Bulk Density, lb/ft^3	173	**Minimum Diameter Tolerence Met?**	YES
Length to Diameter Ratio:	2.2	**Length to Diameter Ratio Tolerance Met?**	YES

DEVIATION FROM STRAIGHTNESS (Procedure S1)

Maximum gap between side of core and reference surface plate:

Is the maximum gap ≤ 0.02 in.? YES

Maximum difference must be < 0.020 in.

Straightness Tolerance Met? YES

END FLATNESS AND PARALLELISM (Procedure FP1)

END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00180	-0.00140	-0.00100	-0.00060	-0.00030	-0.00010	0.00000	0.00000	0.00030	0.00060	0.00080	0.00110	0.00130	0.00140	0.00160
Diameter 2, in (rotated 90°)	0.00090	0.00080	0.00050	0.00050	0.00030	0.00020	0.00010	0.00000	0.00000	0.00000	-0.00020	-0.00040	-0.00060	-0.00070	-0.00120

Difference between max and min readings, in:

0° = 0.00340 90° = 0.00210

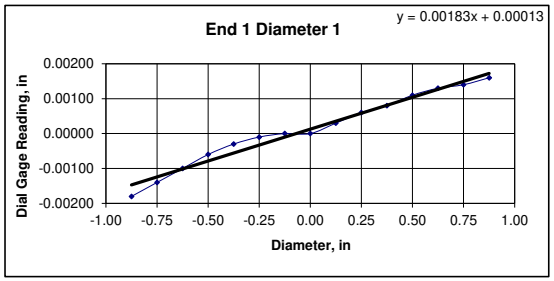
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00180	-0.00150	-0.00110	-0.00090	-0.00030	-0.00020	0.00000	0.00000	0.00020	0.00030	0.00060	0.00100	0.00120	0.00140	0.00160
Diameter 2, in (rotated 90°)	-0.00120	-0.00100	-0.00070	-0.00050	-0.00040	-0.00020	0.00000	0.00000	0.00020	0.00030	0.00050	0.00050	0.00070	0.00090	0.00100

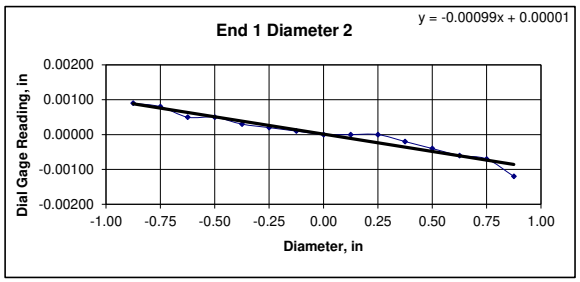
Difference between max and min readings, in:

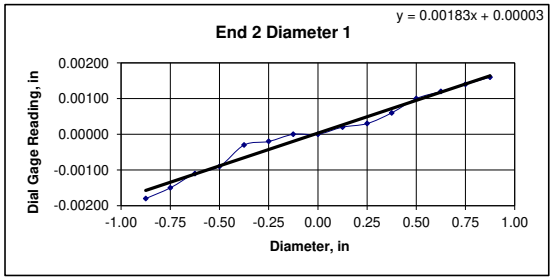
0° = 0.0034 90° = 0.0022

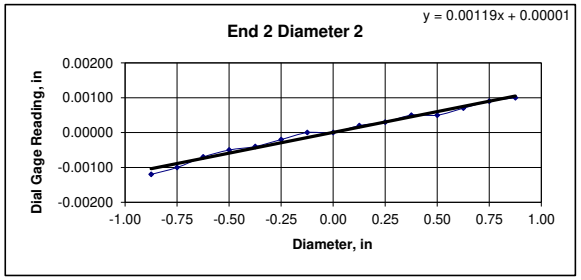
Maximum difference must be < 0.0020 in. Difference = ± 0.00170

Flatness Tolerance Met? NO









DIAMETER 1

End 1:
- Slope of Best Fit Line: 0.00183
- Angle of Best Fit Line: 0.10461

End 2:
- Slope of Best Fit Line: 0.00183
- Angle of Best Fit Line: 0.10510

Maximum Angular Difference: 0.00049

Parallelism Tolerance Met? YES

Spherically Seated

DIAMETER 2

End 1:
- Slope of Best Fit Line: 0.00099
- Angle of Best Fit Line: 0.05697

End 2:
- Slope of Best Fit Line: 0.00119
- Angle of Best Fit Line: 0.06826

Maximum Angular Difference: 0.01130

Parallelism Tolerance Met? NO

Spherically Seated

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)

END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?
Diameter 1, in	0.00340	2.390	0.00142	0.082	YES
Diameter 2, in (rotated 90°)	0.00210	2.390	0.00088	0.050	YES
END 2					
Diameter 1, in	0.00340	2.390	0.00142	0.082	YES
Diameter 2, in (rotated 90°)	0.00220	2.390	0.00092	0.053	YES

Maximum angle of departure must be ≤ 0.25°

Perpendicularity Tolerance Met? YES

Client:	GEI-Delve Underground JV	Test Date:	9/9/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	gp
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A	Reliable dial gauge measurements could not be performed on this rock type. Tolerance measurements were performed using a machinist straightedge and feeler gauges to ASTM specifications.	
Sample ID:	C38		
Depth (ft):	305.94-306.39		
Visual Description:	See photographs		

BEST EFFORT END FLATNESS TOLERANCES OF ROCK CORE SPECIMENS TO ASTM D4543

END FLATNESS		
END 1		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES
END 2		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES
	End Flatness Tolerance Met?	**YES**

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/10/2024
Tested By:	gp
Checked By:	smd
Boring ID:	B-GSS-410A
Sample ID:	C38
Depth, ft:	305.94-306.39



After cutting and grinding



After break

Client:	GEI-Delve Underground JV	Test Date:	9/9/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	gp
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A		
Sample ID:	C49		
Depth (ft):	374.54-375.02		
Visual Description:	See photographs		

UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

BULK DENSITY

	1	2	Average
Specimen Length, in:	5.40	5.40	5.40
Specimen Diameter, in:	2.37	2.37	2.37
Specimen Mass, g:	1079.43		
Bulk Density, lb/ft^3	172	**Minimum Diameter Tolerence Met?**	YES
Length to Diameter Ratio:	2.3	**Length to Diameter Ratio Tolerance Met?**	YES

DEVIATION FROM STRAIGHTNESS (Procedure S1)

Maximum gap between side of core and reference surface plate:
Is the maximum gap ≤ 0.02 in.? YES

Maximum difference must be < 0.020 in.
Straightness Tolerance Met? YES

END FLATNESS AND PARALLELISM (Procedure FP1)

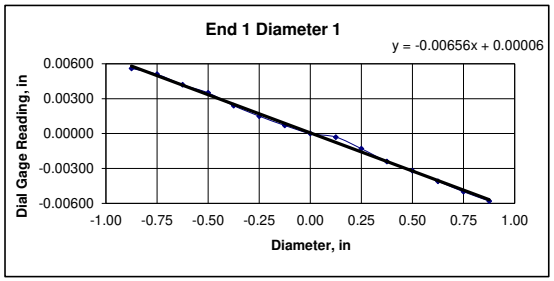
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00560	0.00510	0.00420	0.00350	0.00240	0.00150	0.00070	0.00000	-0.00030	-0.00130	-0.00240	-0.00320	-0.00410	-0.00500	-0.00580
Diameter 2, in (rotated 90°)	-0.00200	-0.00160	-0.00120	-0.00110	-0.00060	-0.00040	-0.00010	0.00000	0.00030	0.00050	0.00070	0.00110	0.00130	0.00160	0.00190

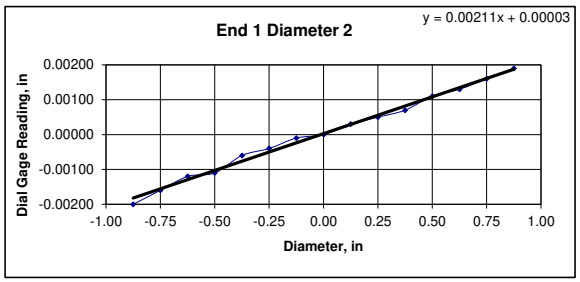
Difference between max and min readings, in:
0° = 0.01140 90° = 0.00390

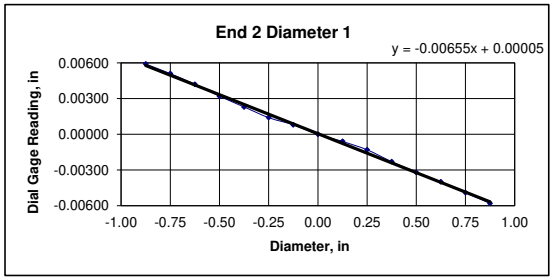
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00590	0.00510	0.00420	0.00320	0.00230	0.00140	0.00080	0.00000	-0.00060	-0.00130	-0.00230	-0.00320	-0.00400	-0.00490	-0.00580
Diameter 2, in (rotated 90°)	0.00160	0.00150	0.00120	0.00090	0.00080	0.00040	0.00010	0.00000	0.00000	-0.00030	-0.00060	-0.00100	-0.00130	-0.00170	-0.00210

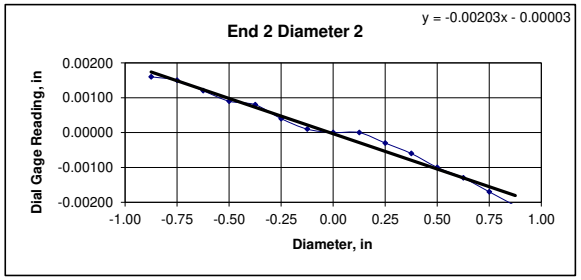
Difference between max and min readings, in:
0° = 0.0117 90° = 0.0037

Maximum difference must be < 0.0020 in. Difference = ± 0.00585
Flatness Tolerance Met? NO









DIAMETER 1

End 1:
Slope of Best Fit Line 0.00656
Angle of Best Fit Line: 0.37602

End 2:
Slope of Best Fit Line 0.00655
Angle of Best Fit Line: 0.37504

Maximum Angular Difference: 0.00098

Parallelism Tolerance Met? YES
Spherically Seated

DIAMETER 2

End 1:
Slope of Best Fit Line 0.00211
Angle of Best Fit Line: 0.12098

End 2:
Slope of Best Fit Line 0.00203
Angle of Best Fit Line: 0.11606

Maximum Angular Difference: 0.00491

Parallelism Tolerance Met? NO
Spherically Seated

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)

END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?
Diameter 1, in	0.01140	2.370	0.00481	0.276	NO
Diameter 2, in (rotated 90°)	0.00390	2.370	0.00165	0.094	YES
END 2					
Diameter 1, in	0.01170	2.370	0.00494	0.283	NO
Diameter 2, in (rotated 90°)	0.00370	2.370	0.00156	0.089	YES

Maximum angle of departure must be ≤ 0.25°
Perpendicularity Tolerance Met? NO

Client:	GEI-Delve Underground JV	Test Date:	9/9/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	gp
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A	Reliable dial gauge measurements could not be performed on this rock type. Tolerance measurements were performed using a machinist straightedge and feeler gauges to ASTM specifications.	
Sample ID:	C49		
Depth (ft):	374.54-375.02		
Visual Description:	See photographs		

BEST EFFORT END FLATNESS TOLERANCES OF ROCK CORE SPECIMENS TO ASTM D4543

END FLATNESS		
END 1		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES
END 2		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES
	End Flatness Tolerance Met?	**YES**

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/10/2024
Tested By:	gp
Checked By:	smd
Boring ID:	B-GSS-410A
Sample ID:	C49
Depth, ft:	374.54-375.02



After cutting and grinding



After break

Client:	GEI-Delve Underground JV	Test Date:	9/18/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	cml
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A		
Sample ID:	C53		
Depth (ft):	400.94-401.39		
Visual Description:	See photographs		

UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

BULK DENSITY

	1	2	Average
Specimen Length, in:	5.34	5.34	5.34
Specimen Diameter, in:	2.39	2.39	2.39
Specimen Mass, g:	1062.19		
Bulk Density, lb/ft^3	169	**Minimum Diameter Tolerence Met?**	YES
Length to Diameter Ratio:	2.2	**Length to Diameter Ratio Tolerance Met?**	YES

DEVIATION FROM STRAIGHTNESS (Procedure S1)

Maximum gap between side of core and reference surface plate:

Is the maximum gap ≤ 0.02 in.? YES

Maximum difference must be < 0.020 in.

Straightness Tolerance Met? YES

END FLATNESS AND PARALLELISM (Procedure FP1)

END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00240	0.00180	0.00160	0.00090	0.00070	0.00030	0.00010	0.00000	-0.00010	-0.00030	-0.00040	-0.00070	-0.00090	-0.00130	-0.00160
Diameter 2, in (rotated 90°)	-0.00290	-0.00230	-0.00200	-0.00130	-0.00110	-0.00070	-0.00040	0.00000	0.00060	0.00130	0.00160	0.00200	0.00240	0.00280	0.00350

Difference between max and min readings, in:

0° = 0.00400 90° = 0.00640

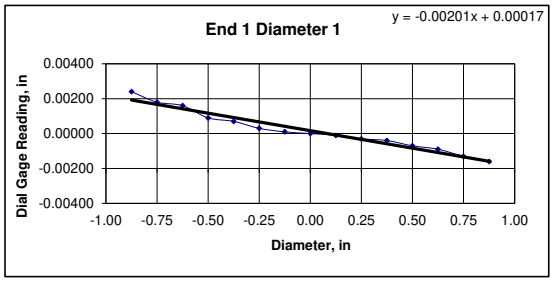
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00240	0.00220	0.00180	0.00150	0.00110	0.00080	0.00040	0.00000	-0.00030	-0.00050	-0.00070	-0.00130	-0.00180	-0.00220	-0.00260
Diameter 2, in (rotated 90°)	0.00300	0.00270	0.00230	0.00200	0.00150	0.00110	0.00050	0.00000	-0.00010	-0.00050	-0.00100	-0.00110	-0.00160	-0.00180	-0.00230

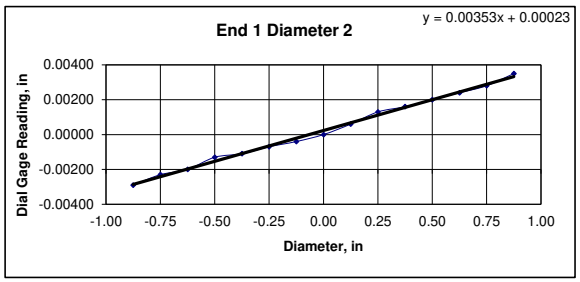
Difference between max and min readings, in:

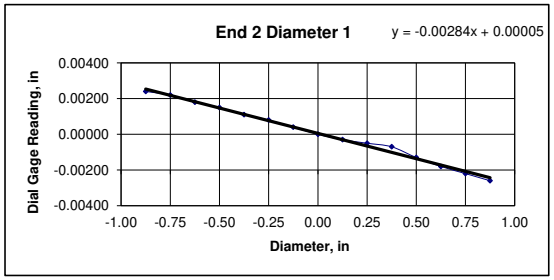
0° = 0.005 90° = 0.0053

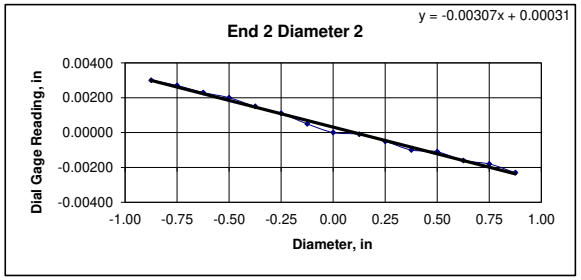
Maximum difference must be < 0.0020 in. Difference = ± 0.00320

Flatness Tolerance Met? NO









DIAMETER 1

End 1:

Slope of Best Fit Line 0.00201

Angle of Best Fit Line: 0.11492

End 2:

Slope of Best Fit Line 0.00284

Angle of Best Fit Line: 0.16256

Maximum Angular Difference: 0.04764

Parallelism Tolerance Met? NO

Spherically Seated

DIAMETER 2

End 1:

Slope of Best Fit Line 0.00353

Angle of Best Fit Line: 0.20250

End 2:

Slope of Best Fit Line 0.00307

Angle of Best Fit Line: 0.17565

Maximum Angular Difference: 0.02685

Parallelism Tolerance Met? NO

Spherically Seated

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)

END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?
Diameter 1, in	0.00400	2.390	0.00167	0.096	YES
Diameter 2, in (rotated 90°)	0.00640	2.390	0.00268	0.153	YES
END 2					
Diameter 1, in	0.00500	2.390	0.00209	0.120	YES
Diameter 2, in (rotated 90°)	0.00530	2.390	0.00222	0.127	YES

Maximum angle of departure must be ≤ 0.25°

Perpendicularity Tolerance Met? YES

Client:	GEI-Delve Underground JV	Test Date:	9/18/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	cml
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A	Reliable dial gauge measurements could not be performed on this rock type. Tolerance measurements were performed using a machinist straightedge and feeler gauges to ASTM specifications.	
Sample ID:	C53		
Depth (ft):	400.94-401.39		
Visual Description:	See photographs		

BEST EFFORT END FLATNESS TOLERANCES OF ROCK CORE SPECIMENS TO ASTM D4543

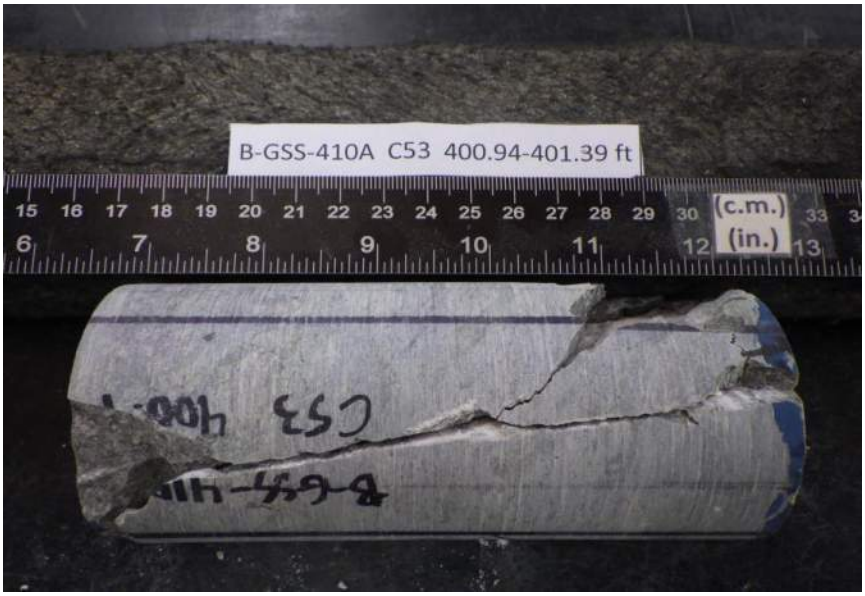
END FLATNESS		
END 1		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES
END 2		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES

End Flatness Tolerance Met? YES

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/19/2024
Tested By:	gp
Checked By:	smd
Boring ID:	B-GSS-410A
Sample ID:	C53
Depth, ft:	400.94-401.39



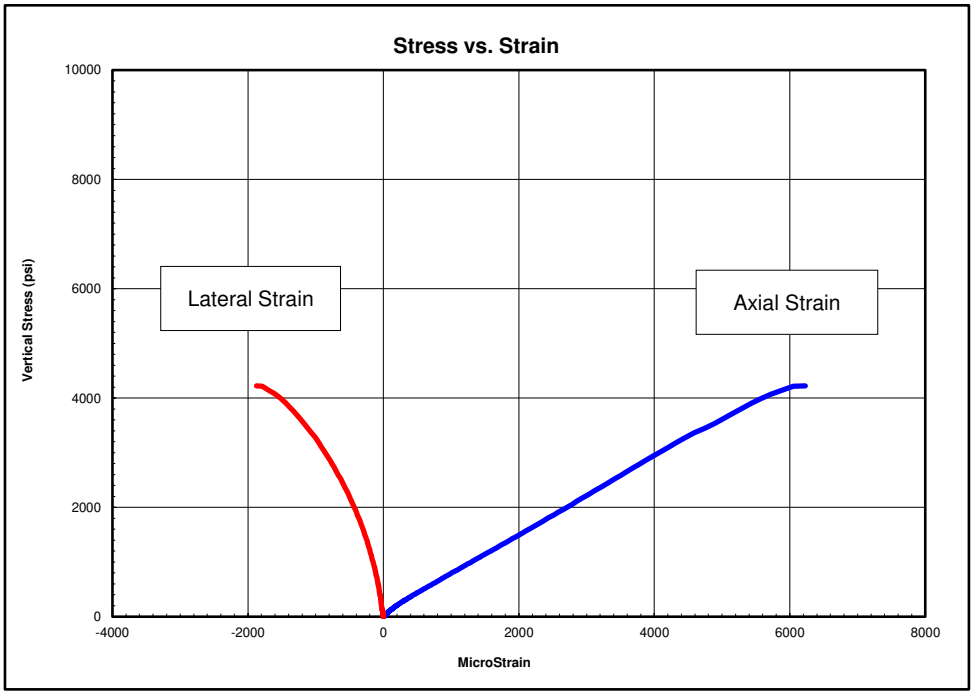
After cutting and grinding



After break

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/14/2024
Tested By:	gp
Checked By:	jsc
Boring ID:	B-GSS-410A
Sample ID:	C12
Depth, ft:	104.52-104.98
Sample Type:	rock core
Sample Description:	See photographs Intact material and discontinuity failure Best Effort end preparation performed

Compressive Strength and Elastic Moduli of Rock by ASTM D7012 - Method D



Peak Compressive Stress: 4,223 psi

Stress Range, psi	Young's Modulus, psi	Poisson's Ratio
400-1500	704,000	0.14
1500-2700	728,000	0.26
2700-3800	671,000	0.39

Notes:
Test specimen tested at the approximate as-received moisture content and at standard laboratory temperature.
The axial load was applied continuously at a stress rate that produced failure in a test time between 2 and 15 minutes.
Young's Modulus and Poisson's Ratio calculated using the tangent to the line in the stress range listed.
Calculations assume samples are isotropic, which is not necessarily the case.

Client:	GEI-Delve Underground JV	Test Date:	9/11/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	rik
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A		
Sample ID:	C12		
Depth (ft):	104.52-104.98		
Visual Description:	See photographs		

UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

BULK DENSITY

	1	2	Average
Specimen Length, in:	5.25	5.25	5.25
Specimen Diameter, in:	2.39	2.39	2.39
Specimen Mass, g:	1032.1		
Bulk Density, lb/ft^3	167	**Minimum Diameter Tolerence Met?**	YES
Length to Diameter Ratio:	2.2	**Length to Diameter Ratio Tolerance Met?**	YES

DEVIATION FROM STRAIGHTNESS (Procedure S1)

Maximum gap between side of core and reference surface plate:
Is the maximum gap ≤ 0.02 in.? YES

Maximum difference must be < 0.020 in.
Straightness Tolerance Met? YES

END FLATNESS AND PARALLELISM (Procedure FP1)

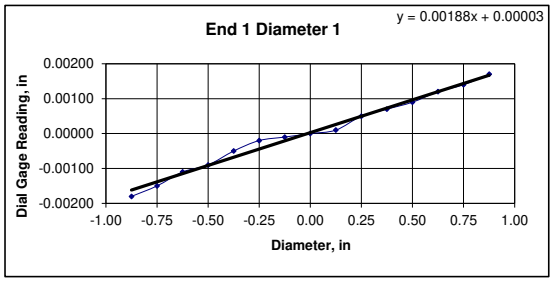
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00180	-0.00150	-0.00110	-0.00090	-0.00050	-0.00020	-0.00010	0.00000	0.00010	0.00050	0.00070	0.00090	0.00120	0.00140	0.00170
Diameter 2, in (rotated 90°)	0.00040	0.00040	0.00030	0.00020	0.00010	0.00010	0.00000	0.00000	0.00000	-0.00030	-0.00050	-0.00060	-0.00070	-0.00090	-0.00110

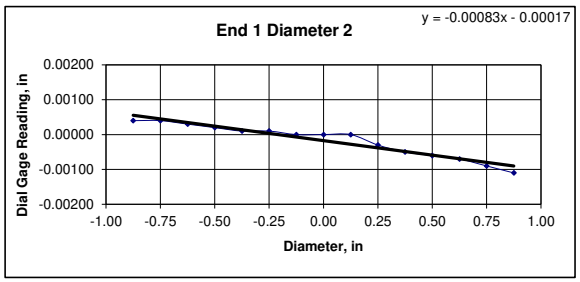
Difference between max and min readings, in:
0° = 0.00350 90° = 0.00150

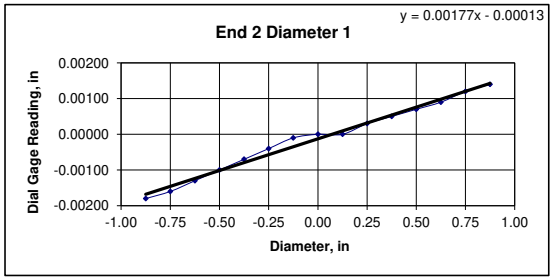
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00180	-0.00160	-0.00130	-0.00100	-0.00070	-0.00040	-0.00010	0.00000	0.00000	0.00030	0.00050	0.00070	0.00090	0.00120	0.00140
Diameter 2, in (rotated 90°)	-0.00130	-0.00100	-0.00080	-0.00050	-0.00040	-0.00020	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00010	0.00020	0.00030	0.00030

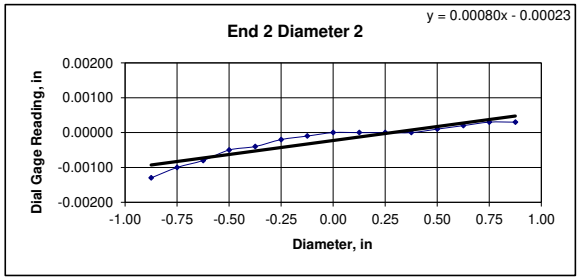
Difference between max and min readings, in:
0° = 0.0032 90° = 0.0016

Maximum difference must be < 0.0020 in. Difference = ± 0.00175
Flatness Tolerance Met? NO









DIAMETER 1

End 1:
Slope of Best Fit Line 0.00188
Angle of Best Fit Line: 0.10772

End 2:
Slope of Best Fit Line 0.00177
Angle of Best Fit Line: 0.10166

Maximum Angular Difference: 0.00606

Parallelism Tolerance Met? NO
Spherically Seated

DIAMETER 2

End 1:
Slope of Best Fit Line 0.00083
Angle of Best Fit Line: 0.04764

End 2:
Slope of Best Fit Line 0.00080
Angle of Best Fit Line: 0.04600

Maximum Angular Difference: 0.00164

Parallelism Tolerance Met? YES
Spherically Seated

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)

END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?
Diameter 1, in	0.00350	2.390	0.00146	0.084	YES
Diameter 2, in (rotated 90°)	0.00150	2.390	0.00063	0.036	YES
END 2					
Diameter 1, in	0.00320	2.390	0.00134	0.077	YES
Diameter 2, in (rotated 90°)	0.00160	2.390	0.00067	0.038	YES

Maximum angle of departure must be ≤ 0.25°
Perpendicularity Tolerance Met? YES

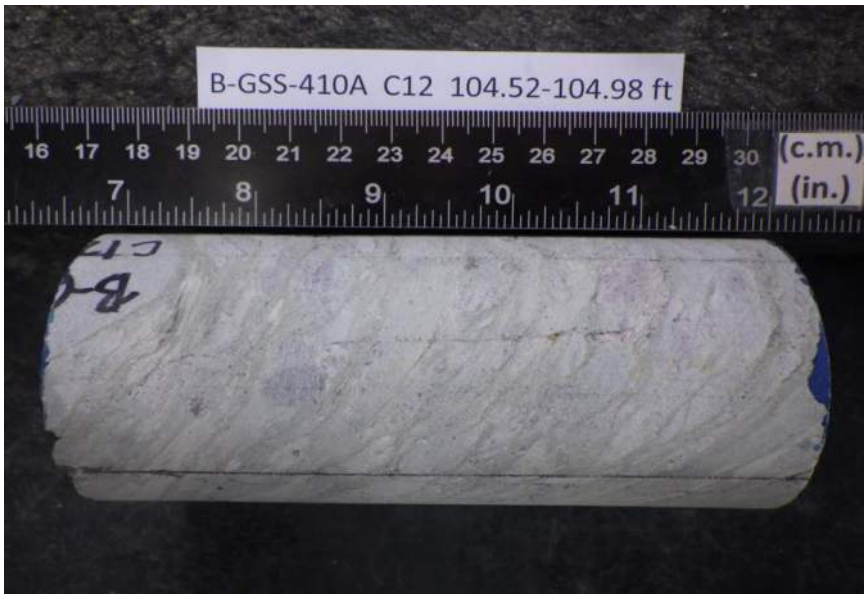
Client:	GEI-Delve Underground JV	Test Date:	9/11/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	rik
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A	Reliable dial gauge measurements could not be performed on this rock type. Tolerance measurements were performed using a machinist straightedge and feeler gauges to ASTM specifications.	
Sample ID:	C12		
Depth (ft):	104.52-104.98		
Visual Description:	See photographs		

BEST EFFORT END FLATNESS TOLERANCES OF ROCK CORE SPECIMENS TO ASTM D4543

END FLATNESS		
END 1		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES
END 2		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES

End Flatness Tolerance Met? YES

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/14/2024
Tested By:	gp
Checked By:	smd
Boring ID:	B-GSS-410A
Sample ID:	C12
Depth, ft:	104.52-104.98



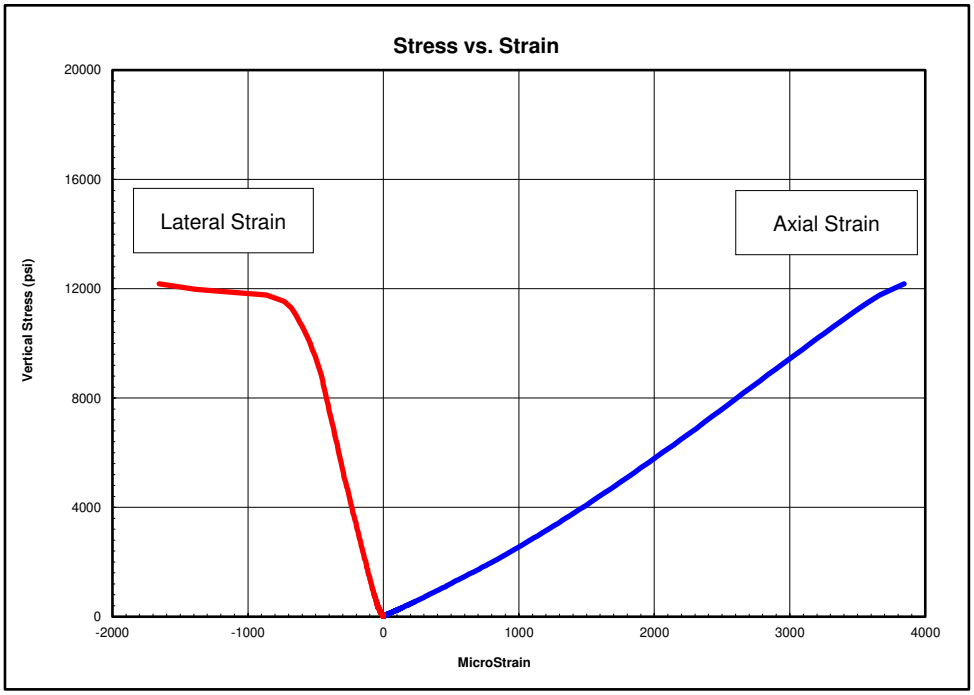
After cutting and grinding



After break

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/20/2024
Tested By:	gp
Checked By:	jsc
Boring ID:	B-GSS-410A
Sample ID:	C31
Depth, ft:	240.75-241.14
Sample Type:	rock core
Sample Description:	See photographs Intact material failure Best Effort end preparation performed

Compressive Strength and Elastic Moduli of Rock by ASTM D7012 - Method D



Peak Compressive Stress: 12,179 psi

Stress Range, psi	Young's Modulus, psi	Poisson's Ratio
1200-4500	2,870,000	0.15
4500-7700	3,530,000	0.16
7700-11000	3,660,000	0.25

Notes:
Test specimen tested at the approximate as-received moisture content and at standard laboratory temperature.
The axial load was applied continuously at a stress rate that produced failure in a test time between 2 and 15 minutes.
Young's Modulus and Poisson's Ratio calculated using the tangent to the line in the stress range listed.
Calculations assume samples are isotropic, which is not necessarily the case.

GeoTesting EXPRESS
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Client:	GEI-Delve Underground JV	Test Date:	9/18/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	cml
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A		
Sample ID:	C31		
Depth (ft):	240.75-241.14		
Visual Description:	See photographs		

UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

BULK DENSITY

	1	2	Average
Specimen Length, in:	5.26	5.25	5.26
Specimen Diameter, in:	2.40	2.41	2.41
Specimen Mass, g:	1053.17		
Bulk Density, lb/ft^3	168	**Minimum Diameter Tolerence Met?**	**YES**
Length to Diameter Ratio:	2.2	**Length to Diameter Ratio Tolerance Met?**	**YES**

DEVIATION FROM STRAIGHTNESS (Procedure S1)

Maximum gap between side of core and reference surface plate:
Is the maximum gap ≤ 0.02 in.? YES

Maximum difference must be < 0.020 in.
Straightness Tolerance Met? **YES**

END FLATNESS AND PARALLELISM (Procedure FP1)

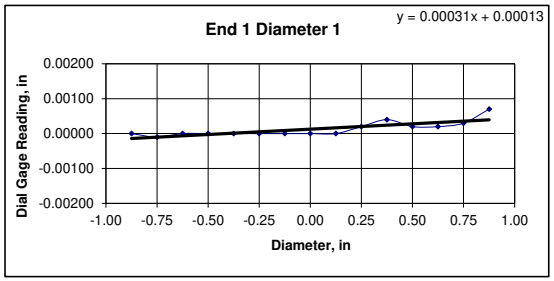
END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00000	-0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00020	0.00040	0.00020	0.00020	0.00030	0.00070
Diameter 2, in (rotated 90°)	-0.00240	-0.00150	-0.00150	-0.00140	-0.00090	-0.00050	-0.00020	0.00000	0.00030	0.00050	0.00080	0.00130	0.00150	0.00210	0.00260

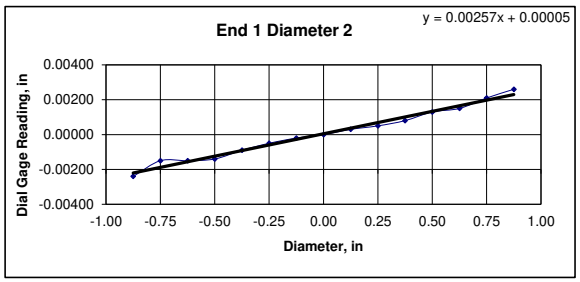
Difference between max and min readings, in:
0° = 0.00080 90° = 0.00500

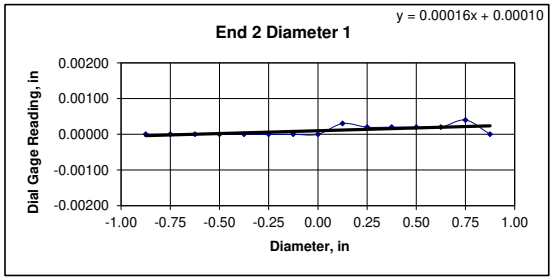
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00030	0.00020	0.00020	0.00020	0.00020	0.00040	0.00000
Diameter 2, in (rotated 90°)	0.00250	0.00230	0.00180	0.00130	0.00100	0.00080	0.00040	0.00000	0.00000	-0.00060	-0.00070	-0.00110	-0.00140	-0.00160	-0.00220

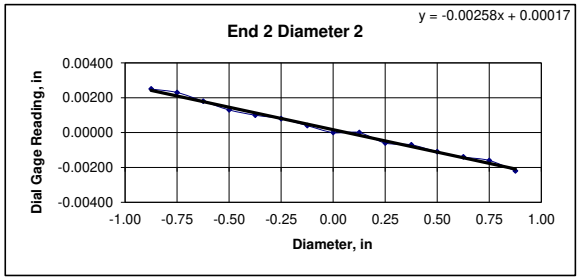
Difference between max and min readings, in:
0° = 0.0004 90° = 0.0047

Maximum difference must be < 0.0020 in. Difference = ± 0.00250
Flatness Tolerance Met? **NO**









DIAMETER 1

End 1:
Slope of Best Fit Line 0.00031
Angle of Best Fit Line: 0.01752

End 2:
Slope of Best Fit Line 0.00016
Angle of Best Fit Line: 0.00900

Maximum Angular Difference: 0.00851

Parallelism Tolerance Met? **NO**
Spherically Seated

DIAMETER 2

End 1:
Slope of Best Fit Line 0.00257
Angle of Best Fit Line: 0.14733

End 2:
Slope of Best Fit Line 0.00258
Angle of Best Fit Line: 0.14766

Maximum Angular Difference: 0.00033

Parallelism Tolerance Met? **YES**
Spherically Seated

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)

END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?
Diameter 1, in	0.00080	2.405	0.00033	0.019	YES
Diameter 2, in (rotated 90°)	0.00500	2.405	0.00208	0.119	YES
END 2					
Diameter 1, in	0.00040	2.405	0.00017	0.010	YES
Diameter 2, in (rotated 90°)	0.00470	2.405	0.00195	0.112	YES

Maximum angle of departure must be ≤ 0.25°
Perpendicularity Tolerance Met? **YES**

Client:	GEI-Delve Underground JV	Test Date:	9/18/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	cml
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A	Reliable dial gauge measurements could not be performed on this rock type. Tolerance measurements were performed using a machinist straightedge and feeler gauges to ASTM specifications.	
Sample ID:	C31		
Depth (ft):	240.75-241.14		
Visual Description:	See photographs		

BEST EFFORT END FLATNESS TOLERANCES OF ROCK CORE SPECIMENS TO ASTM D4543

END FLATNESS		
END 1		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES
END 2		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES

End Flatness Tolerance Met? YES

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/20/2024
Tested By:	gp
Checked By:	smd
Boring ID:	B-GSS-410A
Sample ID:	C31
Depth, ft:	240.75-241.14



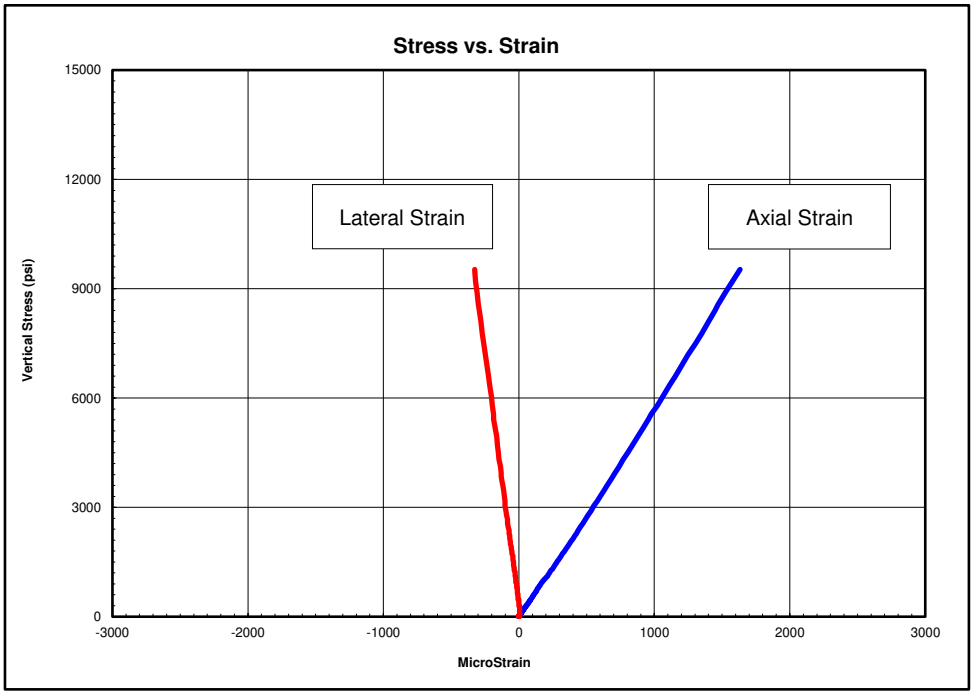
After cutting and grinding



After break

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/14/2024
Tested By:	gp
Checked By:	jsc
Boring ID:	B-GSS-410A
Sample ID:	C44
Depth, ft:	339.24-339.70
Sample Type:	rock core
Sample Description:	See photographs Intact material failure Best Effort end preparation performed

Compressive Strength and Elastic Moduli of Rock by ASTM D7012 - Method D



Peak Compressive Stress: 9,528 psi

Stress Range, psi	Young's Modulus, psi	Poisson's Ratio
1000-3500	5,550,000	0.21
3500-6000	5,930,000	0.21
6000-8600	6,090,000	0.23

Notes:
Test specimen tested at the approximate as-received moisture content and at standard laboratory temperature.
The axial load was applied continuously at a stress rate that produced failure in a test time between 2 and 15 minutes.
Young's Modulus and Poisson's Ratio calculated using the tangent to the line in the stress range listed.
Calculations assume samples are isotropic, which is not necessarily the case.

Client:	GEI-Delve Underground JV	Test Date:	9/11/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	rik
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A		
Sample ID:	C44		
Depth (ft):	339.24-339.70		
Visual Description:	See photographs		

UNIT WEIGHT DETERMINATION AND DIMENSIONAL AND SHAPE TOLERANCES OF ROCK CORE SPECIMENS BY ASTM D4543

BULK DENSITY

	1	2	Average
Specimen Length, in:	5.42	5.42	5.42
Specimen Diameter, in:	2.37	2.37	2.37
Specimen Mass, g:	1068.75		
Bulk Density, lb/ft^3	170	**Minimum Diameter Tolerence Met?**	YES
Length to Diameter Ratio:	2.3	**Length to Diameter Ratio Tolerance Met?**	YES

DEVIATION FROM STRAIGHTNESS (Procedure S1)

Maximum gap between side of core and reference surface plate:

Is the maximum gap ≤ 0.02 in.? YES

Maximum difference must be < 0.020 in.

Straightness Tolerance Met? YES

END FLATNESS AND PARALLELISM (Procedure FP1)

END 1	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00200	-0.00180	-0.00150	-0.00120	-0.00090	-0.00060	-0.00020	0.00000	0.00020	0.00050	0.00070	0.00100	0.00130	0.00150	0.00180
Diameter 2, in (rotated 90°)	0.00020	0.00010	0.00010	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	-0.00020	-0.00030	-0.00050	-0.00060	-0.00070	-0.00090

Difference between max and min readings, in:

0° = 0.00380 90° = 0.00110

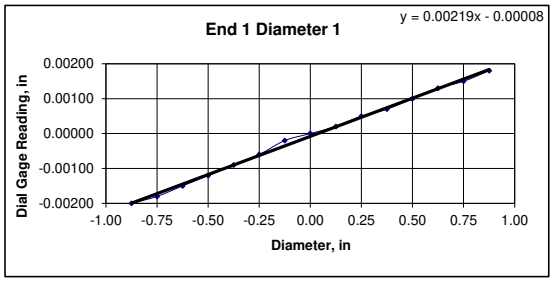
END 2	-0.875	-0.750	-0.625	-0.500	-0.375	-0.250	-0.125	0.000	0.125	0.250	0.375	0.500	0.625	0.750	0.875
Diameter 1, in	-0.00180	-0.00150	-0.00120	-0.00090	-0.00070	-0.00040	-0.00010	0.00000	0.00010	0.00050	0.00070	0.00100	0.00130	0.00160	0.00180
Diameter 2, in (rotated 90°)	-0.00060	-0.00060	-0.00030	-0.00030	-0.00030	-0.00020	0.00000	0.00000	0.00010	0.00020	0.00030	0.00040	0.00050	0.00050	0.00050

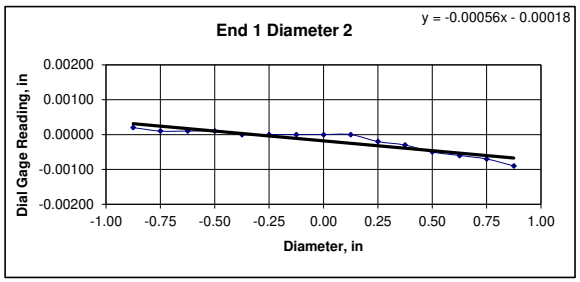
Difference between max and min readings, in:

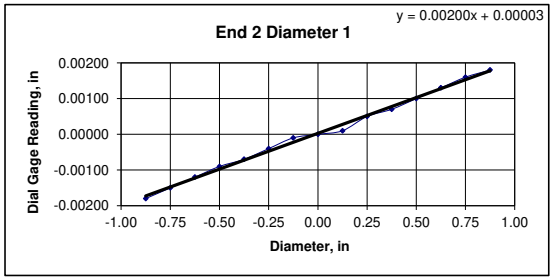
0° = 0.0036 90° = 0.0011

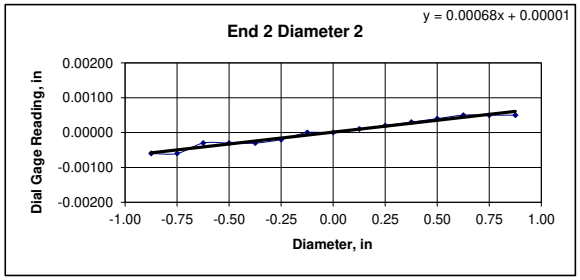
Maximum difference must be < 0.0020 in. Difference = ± 0.00190

Flatness Tolerance Met? NO









DIAMETER 1

End 1:
- Slope of Best Fit Line: 0.00219
- Angle of Best Fit Line: 0.12540

End 2:
- Slope of Best Fit Line: 0.00200
- Angle of Best Fit Line: 0.11476

Maximum Angular Difference: 0.01064

Parallelism Tolerance Met? NO

Spherically Seated

DIAMETER 2

End 1:
- Slope of Best Fit Line: 0.00056
- Angle of Best Fit Line: 0.03225

End 2:
- Slope of Best Fit Line: 0.00068
- Angle of Best Fit Line: 0.03896

Maximum Angular Difference: 0.00671

Parallelism Tolerance Met? NO

Spherically Seated

PERPENDICULARITY (Procedure P1) (Calculated from End Flatness and Parallelism measurements above)

END 1	Difference, Maximum and Minimum (in.)	Diameter (in.)	Slope	Angle°	Perpendicularity Tolerance Met?
Diameter 1, in	0.00380	2.370	0.00160	0.092	YES
Diameter 2, in (rotated 90°)	0.00110	2.370	0.00046	0.027	YES
END 2					
Diameter 1, in	0.00360	2.370	0.00152	0.087	YES
Diameter 2, in (rotated 90°)	0.00110	2.370	0.00046	0.027	YES

Maximum angle of departure must be ≤ 0.25°

Perpendicularity Tolerance Met? YES

Client:	GEI-Delve Underground JV	Test Date:	9/11/2024
Project Name:	MWRA Metropolitan Water Tunnel	Tested By:	rik
Project Location:	---	Checked By:	smd
GTX #:	317525		
Boring ID:	B-GSS-410A	Reliable dial gauge measurements could not be performed on this rock type. Tolerance measurements were performed using a machinist straightedge and feeler gauges to ASTM specifications.	
Sample ID:	C44		
Depth (ft):	339.24-339.70		
Visual Description:	See photographs		

BEST EFFORT END FLATNESS TOLERANCES OF ROCK CORE SPECIMENS TO ASTM D4543

END FLATNESS		
END 1		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES
END 2		
Diameter 1	Is the maximum gap $\leq \pm 0.001$ in.?	YES
Diameter 2 (rotated 90°)	Is the maximum gap $\leq \pm 0.001$ in.?	YES

End Flatness Tolerance Met? YES

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/14/2024
Tested By:	gp
Checked By:	smd
Boring ID:	B-GSS-410A
Sample ID:	C44
Depth, ft:	339.24-339.70



After cutting and grinding



After break

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:				Project No:	GTX-317525
Boring ID:	B-GSS-410A	Sample Type:	Core	Tested By:	jss
Sample ID:	C8	Test Date:	09/11/24	Checked By:	smd
Depth :	68-69.3	Test Id:	781194		
Test Comment:	---				
Visual Description:	---				
Sample Comment:	---				

Splitting Tensile Strength of Intact Rock Core Specimens by ASTM D3967

Specimen Depth	Test No	Thickness (L), in	Diameter (D), in	Thickness to Diameter Ratio (L/D)	Failure Load (P), lbs	Splitting Tensile Strength, psi	Failure Type
68.65-68.74 ft	ST-162	0.91	2.39	0.38	1,974	575	2





Notes: Strain rate: 2.5%/min.

ASTM requires the thickness-to-diameter ratio (L/D) of each test specimen to be between 0.2 and 0.75.

The reported thickness (L) is the average of three measurements.

The reported diameter(D) is the average of three measurements.

Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure (See attached photographs)

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:				Project No:	GTX-317525
Boring ID:	B-GSS-410A	Sample Type:	Core	Tested By:	jss
Sample ID:	C27	Test Date:	09/11/24	Checked By:	smd
Depth :	205.1-206.2	Test Id:	781195		
Test Comment:	---				
Visual Description:	---				
Sample Comment:	---				

Splitting Tensile Strength of Intact Rock Core Specimens by ASTM D3967

Specimen Depth	Test No	Thickness (L), in	Diameter (D), in	Thickness to Diameter Ratio (L/D)	Failure Load (P), lbs	Splitting Tensile Strength, psi	Failure Type
205.61-205.70 ft	ST-163	1.03	2.37	0.43	8,300	2,170	3





Notes: Strain rate: 2.5%/min.

ASTM requires the thickness-to-diameter ratio (L/D) of each test specimen to be between 0.2 and 0.75.

The reported thickness (L) is the average of three measurements.

The reported diameter(D) is the average of three measurements.

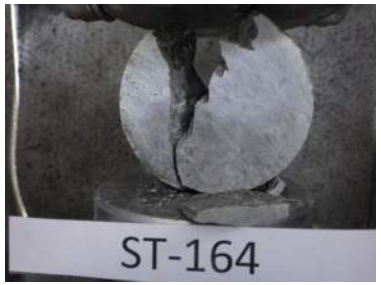
Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure (See attached photographs)

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:				Project No:	GTX-317525
Boring ID:	B-GSS-410A	Sample Type:	Core	Tested By:	jss
Sample ID:	C36	Test Date:	09/11/24	Checked By:	smd
Depth :	280.2-281.3	Test Id:	781196		
Test Comment:	---				
Visual Description:	---				
Sample Comment:	---				

Splitting Tensile Strength of Intact Rock Core Specimens by ASTM D3967

Specimen Depth	Test No	Thickness (L), in	Diameter (D), in	Thickness to Diameter Ratio (L/D)	Failure Load (P), lbs	Splitting Tensile Strength, psi	Failure Type
280.71-280.80 ft	ST-164	0.92	2.4	0.38	4,986	1,450	3





Notes: Strain rate: 2.5%/min.

ASTM requires the thickness-to-diameter ratio (L/D) of each test specimen to be between 0.2 and 0.75.

The reported thickness (L) is the average of three measurements.

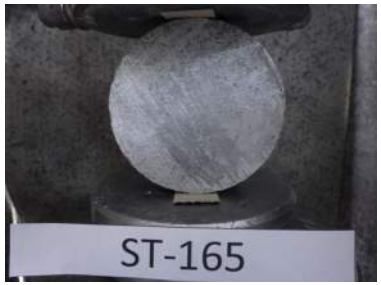
The reported diameter(D) is the average of three measurements.

Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure (See attached photographs)

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:				Project No:	GTX-317525
Boring ID:	B-GSS-410A	Sample Type:	Core	Tested By:	jss
Sample ID:	C44	Test Date:	09/11/24	Checked By:	smd
Depth :	339.2-340.2	Test Id:	781197		
Test Comment:	---				
Visual Description:	---				
Sample Comment:	---				

Splitting Tensile Strength of Intact Rock Core Specimens by ASTM D3967

Specimen Depth	Test No	Thickness (L), in	Diameter (D), in	Thickness to Diameter Ratio (L/D)	Failure Load (P), lbs	Splitting Tensile Strength, psi	Failure Type
339.71-339.80 ft	ST-165	0.91	2.37	0.38	5,407	1,600	3





Notes: Strain rate: 2.5%/min.

ASTM requires the thickness-to-diameter ratio (L/D) of each test specimen to be between 0.2 and 0.75.

The reported thickness (L) is the average of three measurements.

The reported diameter(D) is the average of three measurements.

Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure (See attached photographs)

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:				Project No:	GTX-317525
Boring ID:	B-GSS-410A	Sample Type:	Core	Tested By:	jss
Sample ID:	C53	Test Date:	09/11/24	Checked By:	smd
Depth :	400.9-401.7	Test Id:	781198		
Test Comment:	---				
Visual Description:	---				
Sample Comment:	---				

Splitting Tensile Strength of Intact Rock Core Specimens by ASTM D3967

Specimen Depth	Test No	Thickness (L), in	Diameter (D), in	Thickness to Diameter Ratio (L/D)	Failure Load (P), lbs	Splitting Tensile Strength, psi	Failure Type
401.40-401.49 ft	ST-166	0.91	2.39	0.38	4,831	1,410	3





Notes: Strain rate: 2.5%/min.

ASTM requires the thickness-to-diameter ratio (L/D) of each test specimen to be between 0.2 and 0.75.

The reported thickness (L) is the average of three measurements.

The reported diameter(D) is the average of three measurements.

Failure Type: 1 = Intact Material Failure; 2 = Discontinuity Failure; 3 = Intact Material and Discontinuity Failure (See attached photographs)

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/5/2024-9/9/2024
Tested By:	jss
Checked By:	smd

Unit Weight, Porosity & Specific Gravity of Rock - ISRM Method 2

Boring ID	Sample ID	Depth, ft.	Average Moisture Content, %	Average Dry Unit Weight, pcf	Average Bulk Specific Gravity	Average Porosity
B-GSS-410A	C17	151.43-151.69	0.17	165	2.70	0.01

Notes: Results are based on the average of teo saw-cut test specimens.
Unit weight obtained by digital caliper measurement.
Pore Volume obtained by water saturation.
Bulk Specific Gravity obtained by buoyancy technique.

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/5/2024-9/9/2024
Tested By:	jss
Checked By:	smd

Unit Weight, Porosity & Specific Gravity of Rock - ISRM Method 2

Boring ID	Sample ID	Depth, ft.	Average Moisture Content, %	Average Dry Unit Weight, pcf	Average Bulk Specific Gravity	Average Porosity
B-GSS-410A	C34	269.16-269.42	0.10	168	2.73	0.00

Notes: Results are based on the average of three saw-cut test specimens.
Unit weight obtained by digital caliper measurement.
Pore Volume obtained by water saturation.
Bulk Specific Gravity obtained by buoyancy technique.

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/5/2024-9/9/2024
Tested By:	jss
Checked By:	smd

Unit Weight, Porosity & Specific Gravity of Rock - ISRM Method 2

Boring ID	Sample ID	Depth, ft.	Average Moisture Content, %	Average Dry Unit Weight, pcf	Average Bulk Specific Gravity	Average Porosity
B-GSS-410A	C36	285.18-285.44	0.09	169	2.72	0.00

Notes: Results are based on the average of three saw-cut test specimens.
Unit weight obtained by digital caliper measurement.
Pore Volume obtained by water saturation.
Bulk Specific Gravity obtained by buoyancy technique.

Client:	GEI-Delve Underground JV
Project Name:	MWRA Metropolitan Water Tunnel
Project Location:	---
GTX #:	317525
Test Date:	9/5/2024-9/9/2024
Tested By:	jss
Checked By:	smd

Unit Weight, Porosity & Specific Gravity of Rock - ISRM Method 2

Boring ID	Sample ID	Depth, ft.	Average Moisture Content, %	Average Dry Unit Weight, pcf	Average Bulk Specific Gravity	Average Porosity
B-GSS-410A	C49	375.21-375.29	0.07	168	2.72	0.00

Notes: Results are based on the average of three saw-cut test specimens.
Unit weight obtained by digital caliper measurement.
Pore Volume obtained by water saturation.
Bulk Specific Gravity obtained by buoyancy technique.

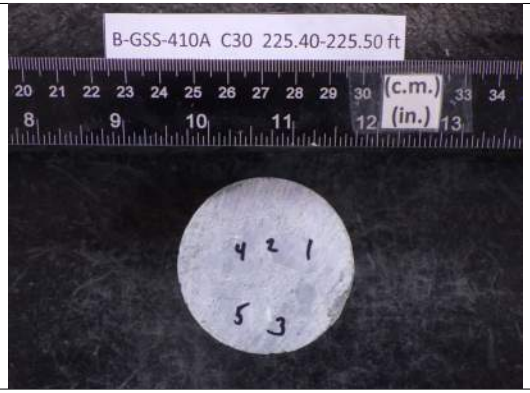
Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:				Project No:	GTX-317525
Boring ID:	B-GSS-410A	Sample Type:	Core	Tested By:	jss
Sample ID:	C30	Test Date:	09/09/24	Checked By:	smd
Depth :	225.2-226.1	Test Id:	781180		
Test Comment:	---				
Visual Description:	---				
Sample Comment:	---				

Abrasiveness of Rock Using the Cerchar Method by ASTM D7625

Boring ID	Sample ID	Depth	Stylus No	Reading 1	Reading 2	Average	Comments
B-GSS-410A	C30	225.40-225.50 ft	1	3.7	3.8	3.75	
			2	3.2	3.3	3.25	
			3	3.8	3.1	3.45	
			4	3.0	3.1	3.05	
			5	4.0	4.6	4.30	
			Average CAIs			3.56	
			Average CAI *			4.00	
				CERCHAR Abrasiveness Index Classification		**Extreme abrasiveness**	

Notes

Test Surface: Saw Cut
Moisture Condition: As Received
Apparatus Type: Original CERCHAR
Stylus Hardness: Rockwell Hardess 54/56 HRC
Stylus Displacement Relative to Rock Fabric:
Styli 1-3: Normal; Styli 4-5: Parallel
* CAI = (0.99 * CAIs) + 0.48
CAIs = CERCHAR index for smooth (saw cut) surface
CAI = CERCHAR index for natural surface
Comments:



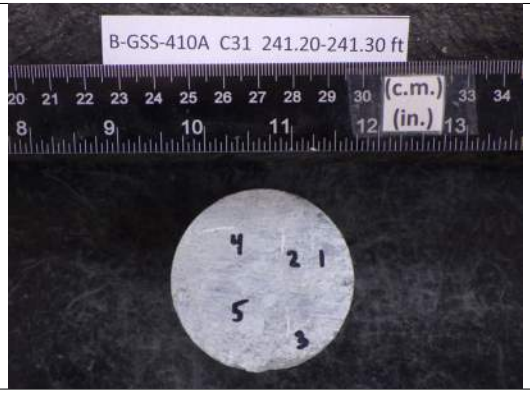
Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:				Project No:	GTX-317525
Boring ID:	B-GSS-410A	Sample Type:	Core	Tested By:	jss
Sample ID:	C31	Test Date:	09/09/24	Checked By:	smd
Depth :	240.5-241.7	Test Id:	781181		
Test Comment:	---				
Visual Description:	---				
Sample Comment:	---				

Abrasiveness of Rock Using the Cerchar Method by ASTM D7625

Boring ID	Sample ID	Depth	Stylus No	Reading 1	Reading 2	Average	Comments
B-GSS-410A	C31	241.20-241.30 ft	1	3.3	3.3	3.30	
			2	1.8	1.6	1.70	
			3	2.0	2.0	2.00	
			4	0.8	0.9	0.85	
			5	3.9	3.8	3.85	
			Average CAIs			2.34	
			Average CAI *			2.80	
				CERCHAR Abrasiveness Index Classification		**High abrasiveness**	

Notes

Test Surface: Saw Cut
Moisture Condition: As Received
Apparatus Type: Original CERCHAR
Stylus Hardness: Rockwell Hardess 54/56 HRC
Stylus Displacement Relative to Rock Fabric:
Styli 1-3: Normal; Styli 4-5: Parallel
* CAI = (0.99 * CAIs) + 0.48
CAIs = CERCHAR index for smooth (saw cut) surface
CAI = CERCHAR index for natural surface
Comments:



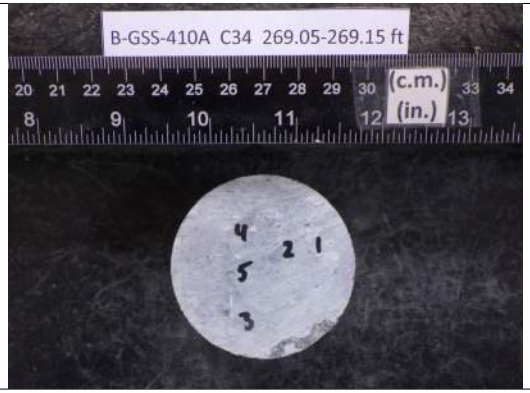
Client:	GEI-Delve Underground JV		
Project:	MWRA Metropolitan Water Tunnel		
Location:			Project No: GTX-317525
Boring ID:	B-GSS-410A	Sample Type: Core	Tested By: jss
Sample ID:	C34	Test Date: 09/09/24	Checked By: smd
Depth :	268.9-270.2	Test Id: 781182	
Test Comment:	---		
Visual Description:	---		
Sample Comment:	---		

Abrasiveness of Rock Using the Cerchar Method by ASTM D7625

Boring ID	Sample ID	Depth	Stylus No	Reading 1	Reading 2	Average	Comments
B-GSS-410A	C34	269.05-269.15 ft	1	5.0	4.6	4.80	
			2	2.3	2.9	2.60	
			3	2.6	1.9	2.25	
			4	2.9	2.3	2.60	
			5	3.0	3.3	3.15	
			Average CAIs			3.08	
			Average CAI *			3.53	
CERCHAR Abrasiveness Index Classification						**High abrasiveness**	

Notes

Test Surface: Saw Cut
Moisture Condition: As Received
Apparatus Type: Original CERCHAR
Stylus Hardness: Rockwell Hardess 54/56 HRC
Stylus Displacement Relative to Rock Fabric:
Styli 1-3: Normal; Styli 4-5: Parallel
* CAI = (0.99 * CAIs) + 0.48
CAIs = CERCHAR index for smooth (saw cut) surface
CAI = CERCHAR index for natural surface
Comments:



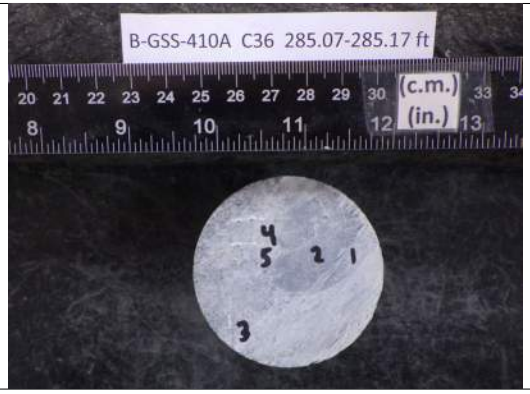
Client:	GEI-Delve Underground JV		
Project:	MWRA Metropolitan Water Tunnel		
Location:			Project No: GTX-317525
Boring ID:	B-GSS-410A	Sample Type: Core	Tested By: jss
Sample ID:	C36	Test Date: 09/09/24	Checked By: smd
Depth :	285-285.8	Test Id: 781183	
Test Comment:	---		
Visual Description:	---		
Sample Comment:	---		

Abrasiveness of Rock Using the Cerchar Method by ASTM D7625

Boring ID	Sample ID	Depth	Stylus No	Reading 1	Reading 2	Average	Comments
B-GSS-410A	C36	285.07-285.17 ft	1	3.7	3.3	3.50	
			2	4.0	3.5	3.75	
			3	1.9	2.2	2.05	
			4	1.3	1.6	1.45	
			5	3.2	3.8	3.50	
			Average CAIs			2.85	
			Average CAI *			3.30	
					CERCHAR Abrasiveness Index Classification	**High abrasiveness**	

Notes

Test Surface: Saw Cut
Moisture Condition: As Received
Apparatus Type: Original CERCHAR
Stylus Hardness: Rockwell Hardess 54/56 HRC
Stylus Displacement Relative to Rock Fabric:
Styli 1-3: Normal; Styli 4-5: Parallel
* CAI = (0.99 * CAIs) + 0.48
CAIs = CERCHAR index for smooth (saw cut) surface
CAI = CERCHAR index for natural surface
Comments:



Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:				Project No:	GTX-317525
Boring ID:	---	Sample Type:	---	Tested By:	jss
Sample ID:	---	Test Date:	08/13/24	Checked By:	smd
Depth :	---	Test Id:	781212		

Mohs Hardness Test

Boring ID	Sample ID	Depth	Scale of Hardness Number
B-GSS-410A	C8	68.0-69.3 ft	3.5
B-GSS-410A	C34	268.9-270.2 ft	3.5

Notes: The value listed above is an estimate of the hardness of the rock sample provided using the Mohs Hardness method. This method is intended to represent the hardness of individual minerals not rock hardness

Tests performed on cut surface of rock core samples provided by client.

Mohs Table of Hardness Scale

1	Talc	6	Orthoclase
2	Gypsum	7	Quartz
3	Calcite	8	Topaz
4	Fluorite	9	Corundum
5	Apatite	10	Diamond

Client:	GEI-Delve Underground JV				
Project:	MWRA Metropolitan Water Tunnel				
Location:				Project No:	GTX-317525
Boring ID:	B-GSS-410A	Sample Type:	Core	Tested By:	jss
Sample ID:	C-5	Test Date:	09/17/24	Checked By:	smd
Depth :	54-55.2	Test Id:	783407		
Test Comment:	---				
Visual Description:	See photograph(s)				
Sample Comment:	---				

Slake Durability of Shales and Similar Weak Rocks by ASTM D4644

Boring ID	Sample ID	Depth	Visual Description	Slake Durability Index %	Average water temperature, degrees C	As-Received Water Content %	Description of Fragments
B-GSS-410A	C-5	54-55.2 ft	See photograph(s)	96.5	19	0.1	Type II

Comments: Description of the appearance of the fragments retained in the drum:

Type I - Retained pieces remain virtually unchanged

Type II - Retained materials consist of large and small fragments

Type III - Retained material is exclusively small fragments

Before Test:



After Test:



APPENDIX A-7

RTN SITES ALONG NDDL ALIGNMENT

APPENDIX A-8

ENVIRONMENTAL LABORATORY TESTING RESULTS

Table 1 - Soil Analytical Data Summary
MWRA Water Tunnel Project
Needham Drain Line

		Location:		SB-FD-541				SB-FD-542						SB-FD-543	
		Sample Name:		SB-FD-541_2.0-3.0		SB-FD-541_8.0-14.0		SB-FD-542_2.0-3.0		SB-FD-542-A(MW)_10-12		SB-FD-542-A(MW) 12-14'		SB-FD-543_2.0-3.0	
		Sample Depth (feet):		2-3		8-14		2-3		10-12		12-14		2-3	
		Laboratory:		Accutest		Accutest		Accutest		Accutest		Accutest		Accutest	
		Laboratory I.D.:		JE21699-1		JE21772-1		JE21699-2		JE23137-1		JE23346-1		JE21699-3	
		Sample Date:		10/22/2025		10/23/2025		10/22/2025		11/12/2025		11/14/2025		10/22/2025	
Method	**Compound**	**Units**	**RCS-2**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
GC/MS Volatiles	1,1,1,2-Tetrachloroethane	mg/kg	0.1	0.0016	U	0.0014	U	0.0018	U	0.0018	U	NA		0.0017	U
	1,1,1-Trichloroethane	mg/kg	600	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	1,1,2,2-Tetrachloroethane	mg/kg	0.02	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	1,1,2-Trichloroethane	mg/kg	2	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	1,1-Dichloroethane	mg/kg	9	0.001	U	0.00089	U	0.0012	U	0.0012	U	NA		0.0011	U
	1,1-Dichloroethene	mg/kg	40	0.001	U	0.00089	U	0.0012	U	0.0012	U	NA		0.0011	U
	1,1-Dichloropropene	mg/kg	NS	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	1,2,3-Trichlorobenzene	mg/kg	NS	0.0048	U	0.0042	U	0.0055	U	0.0055	U	NA		0.0051	U
	1,2,3-Trichloropropane	mg/kg	1000	0.0021	U	0.0019	U	0.0024	U	0.0024	U	NA		0.0022	U
	1,2,4-Trichlorobenzene	mg/kg	6	0.0048	U	0.0042	U	0.0055	U	0.0055	U	NA		0.0051	U
	1,2,4-Trimethylbenzene	mg/kg	10000	0.0011	U	0.00093	U	0.0012	U	**0.0047**		NA		0.0011	U
	1,2-Dibromo-3-Chloropropane	mg/kg	100	0.0016	U	0.0014	U	0.0018	U	0.0018	U	NA		0.0017	U
	1,2-Dibromoethane	mg/kg	0.1	0.001	U	0.00089	U	0.0012	U	0.0012	U	NA		0.0011	U
	1,2-Dichlorobenzene	mg/kg	100	0.001	U	0.00089	U	0.0012	U	0.0012	U	NA		0.0011	U
	1,2-Dichloroethane	mg/kg	0.1	0.001	U	0.00089	U	0.0012	U	0.0012	U	NA		0.0011	U
	1,2-Dichloropropane	mg/kg	0.1	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	1,3,5-Trimethylbenzene	mg/kg	100	0.0011	U	0.00093	U	0.0012	U	**0.0027**		NA		0.0011	U
	1,3-Dichlorobenzene	mg/kg	200	0.001	U	0.00089	U	0.0012	U	0.0012	U	NA		0.0011	U
	1,3-Dichloropropane	mg/kg	5000	0.0016	U	0.0014	U	0.0018	U	0.0018	U	NA		0.0017	U
	1,4-Dichlorobenzene	mg/kg	1	0.001	U	0.00089	U	0.0012	U	0.0012	U	NA		0.0011	U
	1,4-Dioxane	mg/kg	5	0.11	U	0.093	U	0.12	U	0.12	U	NA		0.11	U
	2,2-Dichloropropane	mg/kg	NS	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	2-Butanone	mg/kg	50	0.01	U	0.0089	UJ	0.012	U	0.012	UJ	NA		0.011	U
	2-Hexanone	mg/kg	1000	0.0048	U	0.0042	U	0.0055	U	0.0055	U	NA		0.0051	U
	4-Methyl-2-Pentanone	mg/kg	50	0.0048	U	0.0042	UJ	0.0055	U	0.0055	UJ	NA		0.0051	U
	Acetone	mg/kg	50	0.009	U	**0.0058**	**J**	0.01	U	0.01	UJ	NA		**0.0152**	
	Benzene	mg/kg	200	0.00048	U	0.00043	U	0.00056	U	0.00055	U	NA		0.00051	U
	Bromobenzene	mg/kg	1000	0.0021	U	0.0019	U	0.0024	U	0.0024	U	NA		0.0022	U
	Bromochloromethane	mg/kg	NS	0.0021	U	0.0019	U	0.0024	U	0.0024	U	NA		0.0022	U
	Bromodichloromethane	mg/kg	0.1	0.0016	U	0.0014	U	0.0018	U	0.0018	U	NA		0.0017	U
	Bromoform	mg/kg	1	0.0032	U	0.0028	U	0.0037	U	0.0036	U	NA		0.0034	U
	Bromomethane	mg/kg	0.5	0.0026	U	0.0023	U	0.0031	U	0.003	U	NA		0.0028	U
	Carbon Disulfide	mg/kg	1000	0.0016	U	0.0014	U	0.0018	U	0.0018	U	NA		0.0017	U
	Carbon Tetrachloride	mg/kg	5	0.0016	U	0.0014	U	0.0018	U	0.0018	U	NA		0.0017	U
	Chlorobenzene	mg/kg	3	0.0016	U	0.0014	U	0.0018	U	0.0018	U	NA		0.0017	U
	Chloroethane	mg/kg	1000	0.0021	UJ	0.0019	UJ	0.0024	UJ	0.0024	UJ	NA		0.0022	UJ
	Chloroform	mg/kg	0.2	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	Chloromethane	mg/kg	1000	0.0042	U	0.0037	U	0.0049	U	0.0049	U	NA		0.0045	U
	Cis-1,2-Dichloroethene	mg/kg	0.1	0.001	U	0.00089	U	0.0012	U	0.0012	U	NA		0.0011	U
	Cis-1,3-Dichloropropene	mg/kg	0.1	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	Dibromochloromethane	mg/kg	0.03	0.0016	U	0.0014	U	0.0018	U	0.0018	U	NA		0.0017	U
	Dibromomethane	mg/kg	5000	0.0021	U	0.0019	U	0.0024	U	0.0024	U	NA		0.0022	U
	Dichlorodifluoromethane	mg/kg	10000	0.0026	U	0.0023	U	0.0031	U	0.003	U	NA		0.0028	U
	Ethyl Ether	mg/kg	1000	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	Ethylbenzene	mg/kg	1000	0.00079	U	0.0007	U	0.00092	U	**0.00058**	**J**	NA		0.00084	U
	Ethyl-Tert-Butyl Ether	mg/kg	NS	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	Hexachlorobutadiene	mg/kg	100	0.0021	U	0.0019	U	0.0024	U	0.0024	U	NA		0.0022	U
	Isopropyl Ether	mg/kg	1000	0.0016	U	0.0014	U	0.0018	U	0.0018	UJ	NA		0.0017	U
	Isopropylbenzene	mg/kg	10000	0.0016	U	0.0014	U	0.0018	U	0.0018	U	NA		0.0017	U
	Methyl Tert Butyl Ether	mg/kg	100	0.001	U	0.00089	U	0.0012	U	0.0012	U	NA		0.0011	U
	Methylene Chloride	mg/kg	3	0.0048	U	0.0042	U	0.0055	U	0.0055	U	NA		0.0051	U
	Naphthalene	mg/kg	20	0.0048	U	0.0042	U	0.0055	U	0.0055	U	NA		0.0051	U

Table 1 - Soil Analytical Data Summary
MWRA Water Tunnel Project
Needham Drain Line

		Location:		SB-FD-541				SB-FD-542						SB-FD-543	
		Sample Name:		SB-FD-541_2.0-3.0		SB-FD-541_8.0-14.0		SB-FD-542_2.0-3.0		SB-FD-542-A(MW)_10-12		SB-FD-542-A(MW) 12-14'		SB-FD-543_2.0-3.0	
		Sample Depth (feet):		2-3		8-14		2-3		10-12		12-14		2-3	
		Laboratory:		Accutest		Accutest		Accutest		Accutest		Accutest		Accutest	
		Laboratory I.D.:		JE21699-1		JE21772-1		JE21699-2		JE23137-1		JE23346-1		JE21699-3	
		Sample Date:		10/22/2025		10/23/2025		10/22/2025		11/12/2025		11/14/2025		10/22/2025	
Method	**Compound**	**Units**	**RCS-2**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
	N-Butylbenzene	mg/kg	NS	0.0016	U	0.0014	U	0.0018	U	**0.00088**	**J**	NA		0.0017	U
GC/MS Volatiles	N-Propylbenzene	mg/kg	1000	0.0011	U	0.00093	U	0.0012	U	**0.00092**	**J**	NA		0.0011	U
	O-Chlorotoluene	mg/kg	1000	0.0016	U	0.0014	U	0.0018	U	0.0018	U	NA		0.0017	U
	O-Xylene	mg/kg	100	0.001	U	0.00089	U	0.0012	U	**0.0018**		NA		0.0011	U
	P/M-Xylene	mg/kg	100	0.001	U	0.00089	U	0.0012	U	**0.0017**		NA		0.0011	U
	P-Chlorotoluene	mg/kg	NS	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	P-Isopropyltoluene	mg/kg	1000	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	Sec-Butylbenzene	mg/kg	NS	0.0016	U	0.0014	U	0.0018	U	0.0018	U	NA		0.0017	U
	Styrene	mg/kg	4	0.0016	U	0.0014	U	0.0018	U	0.0018	U	NA		0.0017	U
	Tert-Butylbenzene	mg/kg	1000	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	Tertiary-Amyl Methyl Ether	mg/kg	NS	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	Tetrachloroethene	mg/kg	4	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	Tetrahydrofuran	mg/kg	5000	0.0063	UJ	0.0056	UJ	0.0073	UJ	0.0073	U	NA		0.0067	UJ
	Toluene	mg/kg	1000	0.00079	U	0.0007	U	0.00092	U	0.00091	U	NA		0.00084	U
	Trans-1,2-Dichloroethene	mg/kg	1	0.001	U	0.00089	U	0.0012	U	0.0012	U	NA		0.0011	U
	Trans-1,3-Dichloropropene	mg/kg	0.1	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	Trichloroethene	mg/kg	0.3	0.00085	U	0.00075	U	0.00098	U	0.00097	U	NA		0.0009	U
	Trichlorofluoromethane	mg/kg	10000	0.0016	U	0.0014	U	0.0018	U	0.0018	U	NA		0.0017	U
	Vinyl Chloride	mg/kg	0.7	0.0011	U	0.00093	U	0.0012	U	0.0012	U	NA		0.0011	U
	Xylenes (Total)	mg/kg	100	0.001	U	0.00089	U	0.0012	U	**0.0034**		NA		0.0011	U
GC/MS Semi-volatiles	1,2,4-Trichlorobenzene	mg/kg	6	0.0048	U	0.0042	U	0.0055	U	0.0055	U	NA		0.0051	U
	1,2-Dichlorobenzene	mg/kg	100	0.001	U	0.00089	U	0.0012	U	0.0012	U	NA		0.0011	U
	1,2-Diphenylhydrazine	mg/kg	500	0.019	U	0.083	U	0.017	U	0.021	U	NA		0.02	U
	1,3-Dichlorobenzene	mg/kg	200	0.001	U	0.00089	U	0.0012	U	0.0012	U	NA		0.0011	U
	1,4-Dichlorobenzene	mg/kg	1	0.001	U	0.00089	U	0.0012	U	0.0012	U	NA		0.0011	U
	2,4,5-Trichlorophenol	mg/kg	600	0.093	U	0.41	U	0.086	U	0.11	U	NA		0.098	U
	2,4,6-Trichlorophenol	mg/kg	20	0.093	U	0.41	U	0.086	U	0.11	U	NA		0.098	U
	2,4-Dichlorophenol	mg/kg	40	0.093	U	0.41	U	0.086	U	0.11	U	NA		0.098	U
	2,4-Dimethylphenol	mg/kg	100	0.093	U	0.41	U	0.086	U	0.11	U	NA		0.098	U
	2,4-Dinitrophenol	mg/kg	50	0.15	U	0.66	U	0.14	U	0.17	U	NA		0.16	U
	2,4-Dinitrotoluene	mg/kg	10	0.019	U	0.083	U	0.017	U	0.021	U	NA		0.02	U
	2,6-Dinitrotoluene	mg/kg	1000	0.028	U	0.12	U	0.026	U	0.032	U	NA		0.03	U
	2-Chloronaphthalene	mg/kg	10000	0.037	U	0.17	U	0.034	U	0.043	U	NA		0.039	U
	2-Chlorophenol	mg/kg	100	0.037	U	0.17	U	0.034	U	0.043	U	NA		0.039	U
	2-Methylnaphthalene	mg/kg	80	**0.0285**	**J**	0.083	U	0.017	U	0.021	U	NA		0.02	U
	2-Methylphenol	mg/kg	5000	0.037	U	0.17	U	0.034	U	0.043	U	NA		0.039	U
	2-Nitrophenol	mg/kg	1000	0.093	U	0.41	U	0.086	U	0.11	U	NA		0.098	U
	3 & 4 Methylphenol	mg/kg	5000	0.037	U	0.17	U	0.034	U	0.043	U	NA		0.039	U
	3,3'-Dichlorobenzidine	mg/kg	20	0.037	U	0.17	U	0.034	U	0.043	U	NA		0.039	U
	4,6-Dinitro-2-Methylphenol	mg/kg	NS	0.093	UJ	0.41	U	0.086	UJ	0.11	U	NA		0.098	UJ
	4-Bromophenyl Phenyl Ether	mg/kg	1000	0.019	U	0.083	U	0.017	U	0.021	U	NA		0.02	U
	4-Chloro-3-Methylphenol	mg/kg	10000	0.093	U	0.41	U	0.086	U	0.11	U	NA		0.098	U
	4-Chloroaniline	mg/kg	3	0.037	UJ	0.17	U	0.034	UJ	0.043	UJ	NA		0.039	UJ
	4-Chlorophenyl Phenyl Ether	mg/kg	NS	0.019	U	0.083	U	0.017	U	0.021	U	NA		0.02	U
	4-Nitrophenol	mg/kg	1000	0.19	U	0.83	U	0.17	U	0.21	U	NA		0.2	U
	Acenaphthene	mg/kg	3000	**0.202**		0.083	U	0.017	U	0.021	U	NA		0.02	U
	Acenaphthylene	mg/kg	10	**0.0317**	**J**	0.12	U	0.026	U	0.032	U	NA		0.03	U
	Acetophenone	mg/kg	10000	0.028	U	0.12	U	0.026	U	0.032	U	NA		0.03	U
	Aniline	mg/kg	10000	0.037	U	0.17	U	0.034	U	0.043	U	NA		0.039	U
	Anthracene	mg/kg	3000	**0.423**		**0.156**	**J**	0.026	U	0.032	U	NA		0.03	U
	Benzo(A)Anthracene	mg/kg	300	**0.879**		**0.413**		0.02	U	0.024	U	NA		0.022	U
	Benzo(A)Pyrene	mg/kg	30	**0.765**		**0.305**		0.031	U	0.039	U	NA		0.036	U

Table 1 - Soil Analytical Data Summary
MWRA Water Tunnel Project
Needham Drain Line

		Location:		SB-FD-541				SB-FD-542						SB-FD-543	
		Sample Name:		SB-FD-541_2.0-3.0		SB-FD-541_8.0-14.0		SB-FD-542_2.0-3.0		SB-FD-542-A(MW)_10-12		SB-FD-542-A(MW) 12-14'		SB-FD-543_2.0-3.0	
		Sample Depth (feet):		2-3		8-14		2-3		10-12		12-14		2-3	
		Laboratory:		Accutest		Accutest		Accutest		Accutest		Accutest		Accutest	
		Laboratory I.D.:		JE21699-1		JE21772-1		JE21699-2		JE23137-1		JE23346-1		JE21699-3	
		Sample Date:		10/22/2025		10/23/2025		10/22/2025		11/12/2025		11/14/2025		10/22/2025	
Method	**Compound**	**Units**	**RCS-2**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
	Benzo(B)Fluoranthene	mg/kg	300	**0.987**		**0.399**		0.03	U	0.038	U	NA		0.035	U
	Benzo(G,H,I)Perylene	mg/kg	3000	**0.545**	**J**	**0.194**		0.026	UJ	0.032	U	NA		0.03	UJ
GC/MS Semi-volatiles	Benzo(K)Fluoranthene	mg/kg	3000	**0.337**		**0.112**	**J**	0.032	U	0.04	U	NA		0.037	U
	Benzoic Acid	mg/kg	10000	0.19	U	0.83	U	0.17	U	0.21	U	NA		0.2	U
	Benzyl Butyl Phthalate	mg/kg	1000	0.037	U	0.17	U	0.034	U	0.043	U	NA		0.039	U
	Bis(2-Chloroethoxy)Methane	mg/kg	5000	0.019	U	0.083	U	0.017	U	0.021	U	NA		0.02	U
	Bis(2-Chloroethyl)Ether	mg/kg	0.7	0.019	U	0.083	U	0.017	U	0.021	U	NA		0.02	U
	Bis(2-Chloroisopropyl)Ether	mg/kg	0.7	0.019	U	0.083	U	0.017	U	0.021	U	NA		0.02	U
	Bis(2-Ethylhexyl)Phthalate	mg/kg	700	**0.0564**	**J**	0.17	U	0.034	U	0.043	U	NA		0.039	U
	Chrysene	mg/kg	3000	**0.818**		**0.377**		0.022	U	0.028	U	NA		0.026	U
	Dibenzo(A,H)Anthracene	mg/kg	30	**0.136**		0.15	U	0.03	U	0.038	U	NA		0.035	U
	Dibenzofuran	mg/kg	1000	**0.0911**		0.083	U	0.017	U	0.021	U	NA		0.02	U
	Diethyl Phthalate	mg/kg	200	0.019	U	0.083	U	0.017	U	0.021	U	NA		0.02	U
	Dimethyl Phthalate	mg/kg	50	0.019	U	0.083	U	0.017	U	0.021	U	NA		0.02	U
	Di-N-Butylphthalate	mg/kg	500	**0.441**		0.083	U	0.017	U	0.021	U	NA		0.02	U
	Di-N-Octylphthalate	mg/kg	10000	0.019	UJ	0.083	U	0.017	UJ	0.021	U	NA		0.02	UJ
	Fluoranthene	mg/kg	3000	**2.07**		**0.87**		0.017	U	0.021	U	NA		0.02	U
	Fluorene	mg/kg	3000	**0.185**		0.12	U	0.026	U	0.032	U	NA		0.03	U
	Hexachlorobenzene	mg/kg	0.9	0.019	UJ	0.083	U	0.017	UJ	0.021	U	NA		0.02	UJ
	Hexachlorobutadiene	mg/kg	100	0.0021	U	0.0019	U	0.0024	U	0.0024	U	NA		0.0022	U
	Hexachlorocyclopentadiene	mg/kg	500	0.037	U	0.17	U	0.034	U	0.043	U	NA		0.039	U
	Hexachloroethane	mg/kg	3	0.037	U	0.17	U	0.034	U	0.043	U	NA		0.039	U
	Indeno(1,2,3-Cd)Pyrene	mg/kg	300	**0.442**		**0.168**	**J**	0.033	U	0.041	U	NA		0.037	U
	Isophorone	mg/kg	1000	0.019	U	0.083	U	0.017	U	0.021	U	NA		0.02	U
	Methanamine, N-Methyl-N-Nitroso	mg/kg	NS	0.037	U	0.17	U	0.034	U	0.043	U	NA		0.039	U
	Naphthalene	mg/kg	20	0.0048	U	0.0042	U	0.0055	U	0.0055	U	NA		0.0051	U
	Nitrobenzene	mg/kg	5000	0.019	U	0.083	U	0.017	U	0.021	U	NA		0.02	U
	N-Nitrosodi-N-Propylamine	mg/kg	500	0.019	U	0.083	U	0.017	U	0.021	U	NA		0.02	U
	N-Nitrosodiphenylamine	mg/kg	1000	0.037	U	0.17	U	0.034	U	0.043	U	NA		0.039	U
	Pentachlorophenol	mg/kg	10	0.093	U	0.41	U	0.086	U	0.11	U	NA		0.098	U
	Phenanthrene	mg/kg	1000	**1.72**		**0.579**		0.017	U	0.021	U	NA		0.02	U
	Phenol	mg/kg	20	0.037	U	0.17	U	0.034	U	0.043	U	NA		0.039	U
	Pyrene	mg/kg	3000	**1.73**		**0.779**		0.017	U	0.021	U	NA		0.02	U
	Pyridine	mg/kg	NS	0.037	UJ	0.17	U	0.034	UJ	0.043	U	NA		0.039	UJ
GC VPH	C5-C8 Aliphatics	mg/kg	500	3.4	U	3.3	U	3.1	U	4	U	NA		3.5	U
	C5-C8 Aliphatics, Unadjusted	mg/kg	500	3.4	U	3.3	U	3.1	U	4	U	NA		3.5	U
	C9-C10 Aromatics	mg/kg	500	3.4	U	3.3	U	3.1	U	**11.4**		NA		3.5	U
	C9-C12 Aliphatics	mg/kg	3000	3.4	U	3.3	U	3.1	U	**19.5**		NA		3.5	U
	C9-C12 Aliphatics, Unadjusted	mg/kg	3000	3.4	U	3.3	U	3.1	U	**31**		NA		3.5	U
	Phc As Gasoline	mg/kg	NS	6.8	U	6	U	6.3	U	7.7	U	NA		7	U
GC EPH	Aroclor 1221	mg/kg	4	0.0074	U	0.0064	U	0.0069	U	0.0088	U	NA		0.0083	U
	Aroclor 1254	mg/kg	4	0.0024	U	0.0021	U	0.0022	U	0.0028	U	NA		0.0027	U
	Aroclor 1260	mg/kg	4	**0.26**		**0.0135**	**J**	0.0071	U	0.009	U	NA		0.0085	U
	Aroclor 1262	mg/kg	4	0.0018	U	0.0016	U	0.0017	U	0.0022	U	NA		0.0021	U
	Aroclor 1268	mg/kg	4	0.0022	U	0.0019	U	0.0021	U	0.0026	U	NA		0.0025	U
	Aroclor-1016	mg/kg	4	0.0093	U	0.0081	U	0.0088	U	0.011	U	NA		0.01	U
	Aroclor-1232	mg/kg	4	0.018	U	0.016	U	0.017	U	0.022	U	NA		0.02	U
	Aroclor-1242	mg/kg	4	0.013	U	0.011	U	0.012	U	0.016	U	NA		0.015	U
	Aroclor-1248	mg/kg	4	0.0047	U	0.0041	U	0.0045	U	0.0057	U	NA		0.0053	U
	C11-C22 Aromatics	mg/kg	3000	**29.5**	**J+**	**44.6**	**J-**	1.9	U	2.6	UJ	NA		2.5	UJ
	C11-C22 Aromatics, Unadjusted	mg/kg	3000	**33.9**	**J+**	**50.1**	**J-**	1.9	U	2.6	UJ	NA		2.5	UJ
	C19-C36 Aliphatics	mg/kg	5000	**24.4**	**J+**	**22.4**	**J-**	1.3	U	1.7	U	NA		1.7	UJ

Table 1 - Soil Analytical Data Summary
MWRA Water Tunnel Project
Needham Drain Line

		Location:		SB-FD-541				SB-FD-542						SB-FD-543	
		Sample Name:		SB-FD-541_2.0-3.0		SB-FD-541_8.0-14.0		SB-FD-542_2.0-3.0		SB-FD-542-A(MW)_10-12		SB-FD-542-A(MW) 12-14'		SB-FD-543_2.0-3.0	
		Sample Depth (feet):		2-3		8-14		2-3		10-12		12-14		2-3	
		Laboratory:		Accutest		Accutest		Accutest		Accutest		Accutest		Accutest	
		Laboratory I.D.:		JE21699-1		JE21772-1		JE21699-2		JE23137-1		JE23346-1		JE21699-3	
		Sample Date:		10/22/2025		10/23/2025		10/22/2025		11/12/2025		11/14/2025		10/22/2025	
Method	**Compound**	**Units**	**RCS-2**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
	C9-C18 Aliphatics	mg/kg	3000	0.69	U	**3.46**	**J**	0.65	U	0.87	UJ	NA		0.83	UJ
	Diesel Range Organics [C10-C28]	mg/kg	NS	**103**	**J+**	**131**	**J+**	2.7	U	**247**		NA		3.1	U

Table 1 - Soil Analytical Data Summary
MWRA Water Tunnel Project
Needham Drain Line

		Location:		SB-FD-541				SB-FD-542						SB-FD-543	
		Sample Name:		SB-FD-541_2.0-3.0		SB-FD-541_8.0-14.0		SB-FD-542_2.0-3.0		SB-FD-542-A(MW)_10-12		SB-FD-542-A(MW) 12-14'		SB-FD-543_2.0-3.0	
		Sample Depth (feet):		2-3		8-14		2-3		10-12		12-14		2-3	
		Laboratory:		Accutest		Accutest		Accutest		Accutest		Accutest		Accutest	
		Laboratory I.D.:		JE21699-1		JE21772-1		JE21699-2		JE23137-1		JE23346-1		JE21699-3	
		Sample Date:		10/22/2025		10/23/2025		10/22/2025		11/12/2025		11/14/2025		10/22/2025	
Method	**Compound**	**Units**	**RCS-2**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Metals	Antimony	mg/kg	40	0.44	U	0.44	U	0.43	U	NA		0.35	U	0.53	U
	Arsenic	mg/kg	20	**6.6**		**2.7**		0.29	U	NA		0.24	U	**4.9**	
	Beryllium	mg/kg	200	**0.29**		**0.21**		0.083	U	NA		**0.17**		**0.43**	
	Cadmium	mg/kg	80	0.076	U	0.075	U	0.073	U	NA		0.059	U	0.091	U
	Chromium	mg/kg	200	**28.2**		**11.1**		**4.9**		NA		**5.3**		**15.3**	
	Chromium (Hexavalent Compounds)	mg/kg	200	**7.7**		**0.5**		0.39	U	NA		0.44	U	0.43	U
	Copper	mg/kg	NS	**28.1**		**13.3**		**4.3**		NA		**8.2**		**24.1**	
	Lead	mg/kg	600	**74.1**		**21.2**		0.43	U	NA		**2.4**	**J**	**13.5**	
	Mercury	mg/kg	40	**0.037**		0.021	U	0.024	U	NA		0.026	U	0.03	U
	Nickel	mg/kg	1000	**18.9**		**8.5**		**4.4**		NA		**5**		**14.3**	
	Selenium	mg/kg	800	0.7	U	0.7	U	0.68	U	NA		0.55	U	0.84	U
	Silver	mg/kg	200	0.18	U	0.18	U	0.18	U	NA		0.14	U	0.22	U
	Thallium	mg/kg	70	0.63	U	0.62	U	0.6	U	NA		0.49	U	0.75	U
	Zinc	mg/kg	3000	**56.4**		**28.9**		**10.3**		NA		**14.2**		**43**	
General Chemistry	Cyanide, Reactive	mg/kg	100	8.2	U	7.7	U	7.6	U	NA		9.3	U	9.4	U
	Ignitability	deg f	NS	0	U	0	U	0	U	NA		0	U	0	U
	Ph	pH units	NS	**7.57**		**7.42**		**7.72**		NA		**7.47**		**7.91**	
	Redox Potential Vs H2	mV	NS	**296**		**324**		**290**		NA		**300**		**305**	
	Specific Conductivity	umhos/cm	NS	0	U	**135**		0	U	NA		**186**		**115**	
	Sulfide, Reactive	mg/kg	NS	88	U	83	U	81	U	NA		99	U	100	U

Notes:
Yellow shading indicates concentration above the MADEP RCS-2 criteria
Grey text indicates the parameter was not analyzed or not detected
mg/kg – milligrams per kilogram
NA = Not Analyzed
NS – No Standard
J – The result is an estimated value
U - The result is non-detect at the reporting limit shown

Table 2 - Groundwater Analytical Data Summary
MWRA Water Tunnel Project
Needham Drain Line

				Location:	B-GSS-411		SB-FD-542		SB-FD-543		B-GSS-412(MW)		B-GSS-465	
				Sample Name:	B-GSS-411		SB-FD-542-A		SB-FD-543-A		B-GSS-412(MW)		B-GSS-465	
				Sample Depth (feet):	12-27		5.2-20.2		8-23.3		-		-	
				Laboratory:	Accutest		Accutest		Accutest		Accutest		Accutest	
				Laboratory I.D.:	JE25540-3		JE25540-1		JE25540-2		JE31948-2		JE31948-1	
				Sample Date:	12/18/2025		12/18/2025		12/18/2025		4/10/2026		4/10/2026	
Method	**Compound**	**Units**	**RCGW-2**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
GC/MS Volatiles	1,1,1,2-Tetrachloroethane	mg/l	0.01	0.0006	U	0.0006	U	0.0006	U	0.0006	U	0.0006	U
	1,1,1-Trichloroethane	mg/l	4	0.00054	U	0.00054	U	0.00054	U	0.00054	U	0.00054	U
	1,1,2,2-Tetrachloroethane	mg/l	0.009	0.00065	U	0.00065	U	0.00065	U	0.00065	U	0.00065	U
	1,1,2-Trichloroethane	mg/l	0.9	0.00053	U	0.00053	U	0.00053	U	0.00053	U	0.00053	U
	1,1-Dichloroethane	mg/l	2	0.00057	U	0.00057	U	0.00057	U	0.00057	U	0.00057	U
	1,1-Dichloroethene	mg/l	0.08	0.00059	U	0.00059	U	0.00059	U	0.00059	U	0.00059	U
	1,1-Dichloropropene	mg/l	NS	0.00042	U	0.00042	U	0.00042	U	0.00042	U	0.00042	U
	1,2,3-Trichlorobenzene	mg/l	NS	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U
	1,2,3-Trichloropropane	mg/l	NS	0.0007	U	0.0007	U	0.0007	U	0.0007	U	0.0007	U
	1,2,4-Trichlorobenzene	mg/l	0.2	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U
	1,2,4-Trimethylbenzene	mg/l	NS	0.001	U	**0.0062**		**0.0053**		0.001	U	0.001	U
	1,2-Dibromo-3-Chloropropane	mg/l	NS	0.00053	U	0.00053	U	0.00053	U	0.00053	U	0.00053	U
	1,2-Dibromoethane	mg/l	0.002	0.00048	U	0.00048	U	0.00048	U	0.00048	U	0.00048	U
	1,2-Dichlorobenzene	mg/l	2	0.0008	U	0.00053	U	0.00053	U	0.00053	U	0.00053	U
	1,2-Dichloroethane	mg/l	0.005	0.0006	U	0.0006	U	0.0006	U	0.0006	U	0.0006	U
	1,2-Dichloropropane	mg/l	0.003	0.00051	U	0.00051	U	0.00051	U	0.00051	U	0.00051	U
	1,3,5-Trimethylbenzene	mg/l	NS	0.001	U	**0.0032**		**0.0041**		0.001	U	0.001	U
	1,3-Dichlorobenzene	mg/l	6	0.00054	U	0.00054	U	0.00054	U	0.00054	U	0.00054	U
	1,3-Dichloropropane	mg/l	NS	0.00089	U	0.00089	U	0.00089	U	0.00089	U	0.00089	U
	1,4-Dichlorobenzene	mg/l	0.06	0.00051	U	0.00051	U	0.00051	U	0.00051	U	0.00051	U
	1,4-Dioxane	mg/l	5	0.039	U	0.039	U	0.039	U	0.039	U	0.039	U
	2,2-Dichloropropane	mg/l	NS	0.00052	U	0.00052	U	0.00052	U	0.00052	U	0.00052	U
	2-Butanone	mg/l	50	0.0027	U	0.0027	U	0.0027	U	0.0027	U	0.0027	U
	2-Hexanone	mg/l	NS	0.0048	U	0.0048	U	0.0048	U	0.0048	U	0.0048	U
	4-Methyl-2-Pentanone	mg/l	50	0.0049	U	0.0049	U	0.0049	U	0.0049	U	0.0049	U
	Acetone	mg/l	50	0.0031	U	**0.0307**		0.0031	U	0.0031	U	0.0031	U
	Benzene	mg/l	1	0.00043	U	0.00043	U	0.00043	U	0.00043	U	0.00043	U
	Bromobenzene	mg/l	NS	0.00055	U	0.00055	U	0.00055	U	0.00055	U	0.00055	U
	Bromochloromethane	mg/l	NS	0.00048	U	0.00048	U	0.00048	U	0.00048	U	0.00048	U
	Bromodichloromethane	mg/l	0.006	0.00045	U	0.00045	U	0.00045	U	0.00045	U	0.00045	U
	Bromoform	mg/l	0.7	0.00063	U	0.00063	U	0.00063	U	0.00063	U	0.00063	U
	Bromomethane	mg/l	0.007	0.0016	U	0.0016	U	0.0016	U	0.0016	U	0.0016	U
	Carbon Disulfide	mg/l	NS	0.0018	U	0.0018	U	0.0018	U	0.0018	U	0.0018	U
	Carbon Tetrachloride	mg/l	0.002	0.00055	U	0.00055	U	0.00055	U	0.00055	U	0.00055	U
	Chlorobenzene	mg/l	0.2	0.00056	U	0.00056	U	0.00056	U	0.00056	U	0.00056	U
	Chloroethane	mg/l	NS	0.00073	U	0.00073	U	0.00073	U	0.00073	U	0.00073	U
	Chloroform	mg/l	0.05	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U
	Chloromethane	mg/l	NS	0.00076	U	0.00076	U	0.00076	U	0.00076	U	0.00076	U
	Cis-1,2-Dichloroethene	mg/l	0.02	0.00051	U	0.00051	U	0.00051	U	0.00051	U	0.00051	U
	Cis-1,3-Dichloropropene	mg/l	NS	0.00047	U	0.00047	U	0.00047	U	0.00047	U	0.00047	U

Table 2 - Groundwater Analytical Data Summary
MWRA Water Tunnel Project
Needham Drain Line

		Location:		B-GSS-411		SB-FD-542		SB-FD-543		B-GSS-412(MW)		B-GSS-465	
		Sample Name:		B-GSS-411		SB-FD-542-A		SB-FD-543-A		B-GSS-412(MW)		B-GSS-465	
		Sample Depth (feet):		12-27		5.2-20.2		8-23.3		-		-	
		Laboratory:		Accutest		Accutest		Accutest		Accutest		Accutest	
		Laboratory I.D.:		JE25540-3		JE25540-1		JE25540-2		JE31948-2		JE31948-1	
		Sample Date:		12/18/2025		12/18/2025		12/18/2025		4/10/2026		4/10/2026	
Method	**Compound**	**Units**	**RCGW-2**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
GC/MS Volatiles	Dibromochloromethane	mg/l	0.02	0.00056	U	0.00056	U	0.00056	U	0.00056	U	0.00056	U
	Dibromomethane	mg/l	NS	0.00048	U	0.00048	U	0.00048	U	0.00048	U	0.00048	U
	Dichlorodifluoromethane	mg/l	NS	0.00056	U	0.00056	U	0.00056	U	0.00056	U	0.00056	U
	Ethyl Ether	mg/l	NS	0.00052	U	0.00052	U	0.00052	U	0.00052	U	0.00052	U
	Ethylbenzene	mg/l	5	0.0006	U	**0.0014**		**0.0011**		0.0006	U	0.0006	U
	Ethyl-Tert-Butyl Ether	mg/l	NS	0.00056	U	0.00056	U	0.00056	U	0.00056	U	0.00056	U
	Hexachlorobutadiene	mg/l	0.05	0.00054	U	0.00054	U	0.00054	U	0.00054	U	0.00054	U
	Isopropyl Ether	mg/l	NS	0.00068	U	0.00068	U	0.00068	U	0.00068	U	0.00068	U
	Isopropylbenzene	mg/l	NS	0.00065	U	0.00065	U	**0.00084**	**J**	0.00065	U	0.00065	U
	Methyl Tert Butyl Ether	mg/l	5	0.00051	U	0.00051	U	0.00051	U	0.00051	U	0.00051	U
	Methylene Chloride	mg/l	2	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
	Naphthalene	mg/l	0.7	0.0044	U	0.0044	U	0.0044	U	0.0044	U	0.0044	U
	N-Butylbenzene	mg/l	NS	0.00052	U	0.00052	U	**0.00066**	**J**	0.00052	U	0.00052	U
	N-Propylbenzene	mg/l	NS	0.0006	U	**0.001**	**J**	**0.0018**	**J**	0.0006	U	0.0006	U
	O-Chlorotoluene	mg/l	NS	0.00063	U	0.00063	U	0.00063	U	0.00063	U	0.00063	U
	O-Xylene	mg/l	3	0.00059	U	**0.0048**		**0.0044**		0.00059	U	0.00059	U
	P/M-Xylene	mg/l	3	0.00078	U	**0.0038**		**0.0022**		0.00078	U	0.00078	U
	P-Chlorotoluene	mg/l	NS	0.0006	U	0.0006	U	0.0006	U	0.0006	U	0.0006	U
	P-Isopropyltoluene	mg/l	NS	0.00066	U	0.00066	U	0.00066	U	0.00066	U	0.00066	U
	Sec-Butylbenzene	mg/l	NS	0.00062	U	0.00062	U	**0.00077**	**J**	0.00062	U	0.00062	U
	Styrene	mg/l	0.1	0.00049	U	0.00049	U	0.00049	U	0.00049	U	0.00049	U
	Tert-Butylbenzene	mg/l	NS	0.00069	U	0.00069	U	0.00069	U	0.00069	U	0.00069	U
	Tertiary-Amyl Methyl Ether	mg/l	NS	0.00085	U	0.00085	U	0.00085	U	0.00085	U	0.00085	U
	Tetrachloroethene	mg/l	0.02	0.00056	U	0.00056	U	0.00056	U	0.00056	U	0.00056	U
	Tetrahydrofuran	mg/l	NS	0.0032	U	0.0032	U	0.0032	U	0.0032	U	0.0032	U
	Toluene	mg/l	40	0.00049	U	**0.00082**	**J**	0.00049	U	0.00049	U	0.00049	U
	Trans-1,2-Dichloroethene	mg/l	0.09	0.00054	U	0.00054	U	0.00054	U	0.00054	U	0.00054	U
	Trans-1,3-Dichloropropene	mg/l	NS	0.00043	U	0.00043	U	0.00043	U	0.00043	U	0.00043	U
	Trichloroethene	mg/l	0.005	0.00053	U	0.00053	U	0.00053	U	0.00053	U	0.00053	U
	Trichlorofluoromethane	mg/l	NS	0.0004	U	0.0004	U	0.0004	U	0.0004	U	0.0004	U
	Vinyl Chloride	mg/l	0.002	0.00052	U	0.00052	U	0.00052	U	0.00052	U	0.00052	U
	Xylenes (Total)	mg/l	3	0.00059	U	**0.0086**		**0.0066**		0.00059	U	0.00059	U
GC/MS Semi-volatiles	1,2,4-Trichlorobenzene	mg/l	0.2	0.0005	U	0.0005	U	0.0005	U	0.0005	U	0.0005	U
	1,2-Dichlorobenzene	mg/l	2	0.0008	U	0.00053	U	0.00053	U	0.00053	U	0.00053	U
	1,2-Diphenylhydrazine	mg/l	NS	0.0008	U	0.00083	U	0.00082	U	0.0008	U	0.0008	U
	1,3-Dichlorobenzene	mg/l	6	0.00054	U	0.00054	U	0.00054	U	0.00054	U	0.00054	U
	1,4-Dichlorobenzene	mg/l	0.06	0.00051	U	0.00051	U	0.00051	U	0.00051	U	0.00051	U
	2,4,5-Trichlorophenol	mg/l	3	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	2,4,6-Trichlorophenol	mg/l	0.5	0.002	U	0.0021	U	0.002	U	0.00059	U	0.00059	U
	2,4-Dichlorophenol	mg/l	2	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U

Table 2 - Groundwater Analytical Data Summary
MWRA Water Tunnel Project
Needham Drain Line

		Location:		B-GSS-411		SB-FD-542		SB-FD-543		B-GSS-412(MW)		B-GSS-465	
		Sample Name:		B-GSS-411		SB-FD-542-A		SB-FD-543-A		B-GSS-412(MW)		B-GSS-465	
		Sample Depth (feet):		12-27		5.2-20.2		8-23.3		-		-	
		Laboratory:		Accutest		Accutest		Accutest		Accutest		Accutest	
		Laboratory I.D.:		JE25540-3		JE25540-1		JE25540-2		JE31948-2		JE31948-1	
		Sample Date:		12/18/2025		12/18/2025		12/18/2025		4/10/2026		4/10/2026	
Method	**Compound**	**Units**	**RCGW-2**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
GC/MS Semi-volatiles	2,4-Dimethylphenol	mg/l	40	0.002	UJ	0.0021	UJ	0.002	UJ	0.002	U	0.002	U
	2,4-Dinitrophenol	mg/l	20	0.0038	U	0.004	U	0.0039	U	0.0038	U	0.0038	U
	2,4-Dinitrotoluene	mg/l	20	0.0008	U	0.00083	U	0.00082	U	0.0008	U	0.0008	U
	2,6-Dinitrotoluene	mg/l	NS	0.0008	U	0.00083	U	0.00082	U	0.0008	U	0.0008	U
	2-Chloronaphthalene	mg/l	NS	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	2-Chlorophenol	mg/l	7	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
	2-Methylnaphthalene	mg/l	2	0.0008	U	**0.000263**		**0.000696**		0.00006	U	0.00006	U
	2-Methylphenol	mg/l	NS	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	2-Nitrophenol	mg/l	NS	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
	3 & 4 Methylphenol	mg/l	NS	0.0018	U	0.0019	U	0.0018	U	0.0018	U	0.0018	U
	3,3'-Dichlorobenzidine	mg/l	2	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	4,6-Dinitro-2-Methylphenol	mg/l	NS	0.003	U	0.0031	U	0.0031	U	0.003	U	0.003	U
	4-Bromophenyl Phenyl Ether	mg/l	NS	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	4-Chloro-3-Methylphenol	mg/l	NS	0.002	U	0.0021	U	0.002	U	0.002	U	0.002	U
	4-Chloroaniline	mg/l	0.3	0.002	U	0.0021	U	0.002	U	0.002	U	0.002	U
	4-Chlorophenyl Phenyl Ether	mg/l	NS	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	4-Nitrophenol	mg/l	NS	0.002	U	0.0021	U	0.002	U	0.002	U	0.002	U
	Acenaphthene	mg/l	10	0.00006	U	0.00006	U	0.00006	U	0.00006	U	0.00006	U
	Acenaphthylene	mg/l	0.04	0.00006	U	0.00006	U	0.00006	U	0.00006	U	0.00006	U
	Acetophenone	mg/l	NS	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	Aniline	mg/l	NS	0.0016	UJ	0.0017	UJ	0.0016	UJ	0.0016	U	0.0016	U
	Anthracene	mg/l	0.03	**5.57E-05**	**J**	0.00006	U	0.00006	U	0.00006	U	0.00006	U
	Benzo(A)Anthracene	mg/l	1	0.000034	U	0.000034	U	0.000034	U	0.000034	U	0.000034	U
	Benzo(A)Pyrene	mg/l	0.5	0.000034	U	0.000034	U	0.000034	U	0.000034	U	0.000034	U
	Benzo(B)Fluoranthene	mg/l	0.4	0.000034	U	0.000034	U	0.000034	U	0.000034	U	0.000034	U
	Benzo(G,H,I)Perylene	mg/l	0.02	0.00006	U	0.00006	U	0.00006	U	0.00006	U	0.00006	U
	Benzo(K)Fluoranthene	mg/l	0.1	0.00006	U	0.00006	U	0.00006	U	0.00006	U	0.00006	U
	Benzoic Acid	mg/l	NS	0.002	U	**0.0024**	**J**	0.002	U	0.002	U	0.002	U
	Benzyl Butyl Phthalate	mg/l	NS	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	Bis(2-Chloroethoxy)Methane	mg/l	NS	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	Bis(2-Chloroethyl)Ether	mg/l	0.03	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	Bis(2-Chloroisopropyl)Ether	mg/l	0.1	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	Bis(2-Ethylhexyl)Phthalate	mg/l	50	0.0018	U	0.0019	U	0.0018	U	0.0018	U	0.0018	U
	Chrysene	mg/l	0.07	0.00006	U	0.00006	U	0.00006	U	0.00006	U	0.00006	U
	Dibenzo(A,H)Anthracene	mg/l	0.04	0.00006	U	0.00006	U	0.00006	U	0.00006	U	0.00006	U
	Dibenzofuran	mg/l	NS	0.002	U	0.0021	U	0.002	U	0.002	U	0.002	U
	Diethyl Phthalate	mg/l	9	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	Dimethyl Phthalate	mg/l	50	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	Di-N-Butylphthalate	mg/l	NS	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	Di-N-Octylphthalate	mg/l	NS	0.0018	U	0.0019	U	0.0018	U	0.0018	U	0.0018	U

Table 2 - Groundwater Analytical Data Summary
MWRA Water Tunnel Project
Needham Drain Line

		Location:		B-GSS-411		SB-FD-542		SB-FD-543		B-GSS-412(MW)		B-GSS-465	
		Sample Name:		B-GSS-411		SB-FD-542-A		SB-FD-543-A		B-GSS-412(MW)		B-GSS-465	
		Sample Depth (feet):		12-27		5.2-20.2		8-23.3		-		-	
		Laboratory:		Accutest		Accutest		Accutest		Accutest		Accutest	
		Laboratory I.D.:		JE25540-3		JE25540-1		JE25540-2		JE31948-2		JE31948-1	
		Sample Date:		12/18/2025		12/18/2025		12/18/2025		4/10/2026		4/10/2026	
Method	**Compound**	**Units**	**RCGW-2**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
GC/MS Semi-volatiles	Fluoranthene	mg/l	0.2	0.00006	U	0.00006	U	0.00006	U	0.00006	U	0.00006	U
	Fluorene	mg/l	0.04	**4.64E-05**	**J**	0.00006	U	**4.58E-05**	**J**	0.00006	U	0.00006	U
	Hexachlorobenzene	mg/l	0.001	0.0008	U	0.00083	U	0.00082	U	0.0008	U	0.0008	U
	Hexachlorobutadiene	mg/l	0.05	0.00054	U	0.00054	U	0.00054	U	0.00054	U	0.00054	U
	Hexachlorocyclopentadiene	mg/l	NS	0.002	U	0.0021	U	0.002	U	0.002	U	0.002	U
	Hexachloroethane	mg/l	0.1	0.0016	U	0.0017	U	0.0016	U	0.00055	U	0.00055	U
	Indeno(1,2,3-Cd)Pyrene	mg/l	0.1	0.00006	U	0.00006	U	0.00006	U	0.00006	U	0.00006	U
	Isophorone	mg/l	NS	0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
	Methanamine, N-Methyl-N-Nitroso	mg/l	NS	0.001	U	0.001	U	0.001	U	0.00032	U	0.00032	U
	Naphthalene	mg/l	0.7	0.0044	U	0.0044	U	0.0044	U	0.0044	U	0.0044	U
	Nitrobenzene	mg/l	NS	0.0016	U	0.0017	U	0.0016	U	0.00042	U	0.00042	U
	N-Nitrosodi-N-Propylamine	mg/l	NS	0.0016	U	0.0017	U	0.0016	U	0.00065	U	0.00065	U
	N-Nitrosodiphenylamine	mg/l	NS	0.0016	U	0.0017	U	0.0016	U	0.0016	U	0.0016	U
	Pentachlorophenol	mg/l	0.2	0.003	U	0.0031	U	0.0031	U	0.003	U	0.003	U
	Phenanthrene	mg/l	10	**4.83E-05**	**J**	0.00006	U	0.00006	U	0.00006	U	0.00006	U
	Phenol	mg/l	2	0.001	U	**0.00098**	**J**	0.001	U	0.001	U	0.001	U
	Pyrene	mg/l	0.02	0.00006	U	0.00006	U	0.00006	U	0.00006	U	0.00006	U
GC VPH	C5-C8 Aliphatics	mg/l	3	0.05	U	**0.897**		**0.534**		0.05	U	0.05	U
	C5-C8 Aliphatics, Unadjusted	mg/l	3	0.05	U	**0.898**		**0.534**		0.05	U	0.05	U
	C9-C10 Aromatics	mg/l	4	0.05	U	**0.1**		**0.115**		0.05	U	0.05	U
	C9-C12 Aliphatics	mg/l	5	0.05	U	**0.107**		**0.115**		0.05	U	0.05	U
	C9-C12 Aliphatics, Unadjusted	mg/l	5	0.05	U	**0.217**		**0.237**		0.05	U	0.05	U
GC EPH	Aroclor 1221	mg/l	0.0005	0.000097	UJ	0.000097	UJ	0.000096	UJ	0.000094	U	0.000095	U
	Aroclor 1254	mg/l	0.0005	0.000069	UJ	0.000069	UJ	0.000068	UJ	0.000067	U	0.000067	U
	Aroclor 1260	mg/l	0.0005	0.00011	UJ	0.00011	UJ	0.00011	UJ	0.00011	U	0.00011	U
	Aroclor 1262	mg/l	0.0005	0.00004	UJ	0.000041	UJ	0.00004	UJ	0.000039	U	0.00004	U
	Aroclor 1268	mg/l	0.0005	0.000063	UJ	0.000063	UJ	0.000062	UJ	0.000061	U	0.000062	U
	Aroclor-1016	mg/l	0.0005	0.000051	UJ	0.000051	UJ	0.00005	UJ	0.00005	U	0.00005	U
	Aroclor-1232	mg/l	0.0005	0.000071	UJ	0.000072	UJ	0.00007	UJ	0.000069	U	0.00007	U
	Aroclor-1242	mg/l	0.0005	0.00004	UJ	0.00004	UJ	0.00004	UJ	0.000039	U	0.000039	U
	Aroclor-1248	mg/l	0.0005	0.000036	UJ	0.000037	UJ	0.000036	UJ	0.000036	U	0.000036	U
	C11-C22 Aromatics	mg/l	5	0.04	UJ	0.04	UJ	**0.0818**	**J**	0.04	U	0.04	U
	C11-C22 Aromatics, Unadjusted	mg/l	5	0.04	UJ	0.04	UJ	**0.0835**	**J**	0.04	U	0.04	U
	C19-C36 Aliphatics	mg/l	50	0.04	UJ	0.04	UJ	0.04	UJ	0.04	U	0.04	U
	C9-C18 Aliphatics	mg/l	5	0.03	UJ	0.03	UJ	0.03	UJ	0.03	U	0.03	U

Table 2 - Groundwater Analytical Data Summary
MWRA Water Tunnel Project
Needham Drain Line

				Location:	B-GSS-411		SB-FD-542		SB-FD-543		B-GSS-412(MW)		B-GSS-465	
				Sample Name:	B-GSS-411		SB-FD-542-A		SB-FD-543-A		B-GSS-412(MW)		B-GSS-465	
				Sample Depth (feet):	12-27		5.2-20.2		8-23.3		-		-	
				Laboratory:	Accutest		Accutest		Accutest		Accutest		Accutest	
				Laboratory I.D.:	JE25540-3		JE25540-1		JE25540-2		JE31948-2		JE31948-1	
				Sample Date:	12/18/2025		12/18/2025		12/18/2025		4/10/2026		4/10/2026	
Method	**Compound**	**Units**	**RCGW-2**		**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**	**Result**	**Q**
Metals	Antimony	mg/l	8		0.0047	U	0.0047	U	0.0047	U	0.0047	U	**0.0062**	
	Arsenic	mg/l	0.9		**0.0047**		0.014	U	**0.0031**		0.0028	U	0.0028	U
	Barium	mg/l	50		NA		NA		NA		NA		NA	
	Beryllium	mg/l	0.2		0.0005	U	**0.001**		0.0005	U	0.0005	U	0.0005	U
	Cadmium	mg/l	0.008		0.001	U	0.001	U	0.001	U	0.001	U	0.001	U
	Chromium	mg/l	0.3		0.002	U	0.01	U	0.002	U	**0.0151**		**0.0682**	
	Chromium (Hexavalent Compounds)	mg/l	0.3		0.008	U	0.008	U	0.008	U	0.008	U	0.008	U
	Copper	mg/l	NS		**0.0105**		0.0059	U	0.0059	U	0.0059	U	0.0059	U
	Lead	mg/l	0.01		**0.0042**		0.009	U	0.0018	U	0.0018	U	0.0018	U
	Mercury	mg/l	0.02		0.00015	U	0.00015	U	0.00015	U	0.00015	U	0.00015	U
	Nickel	mg/l	0.2		0.0017	U	0.0017	U	0.0017	U	0.0017	U	**0.0362**	
	Selenium	mg/l	0.05		0.0049	U	0.0049	U	0.0049	U	0.0049	U	0.0049	U
	Silver	mg/l	0.007		0.0061	U	0.0061	U	0.0061	U	0.0061	U	0.0061	U
	Thallium	mg/l	3		0.0018	U	0.009	U	0.0018	U	0.0018	U	0.0036	U
	Zinc	mg/l	0.9		**0.738**		0.0069	U	0.0069	U	0.0069	U	0.0069	U
General Chemistry	Chlorine, Total Residual	mg/l	NS		0.05	UJ	0.05	UJ	0.05	UJ	0.02	U	0.02	U
	Ignitability	deg f	NS		NA		NA		NA		NA		NA	
	Ph	pH units	NS		**5.8**		**6.9**		**6.71**		**7.04**		**6.99**	
	Total Suspended Solids	mg/l	NS		**15.5**		**14.1**		**4.5**		2	U	**4.3**	

Notes:
Yellow shading indicates concentration above the MADEP RCGW-2 criteria
Grey text indicates the parameter was not analyzed or not detected
mg/L – milligrams per liter
NA = Not Analyzed
NS – No Standard
J – The result is an estimated value
U - The result is non-detect at the reporting limit shown

CERTIFICATE OF ANALYSIS

Jeanne Lefebvre
GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801

RE: Drain Line Borings (2300422.1.2.4.1)
ESS Laboratory Work Order Number: 24L0327

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.



Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 6:13 pm, Dec 17, 2024

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

SAMPLE RECEIPT

The following samples were received on December 10, 2024 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Lab Number	Sample Name	Matrix	Analysis
24L0327-01	B-GSS-460-2.0	Soil	1010A, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260D Low, 8270E, 9045, 9050A, EPH8270, MADEP-EPH, MA-VPH-2.1
24L0327-02	B-GSS-461-2.0	Soil	1010A, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260D Low, 8270E, 9045, 9050A, EPH8270, MADEP-EPH, MA-VPH-2.1
24L0327-03	B-GSS-462-2.0	Soil	1010A, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260D Low, 8270E, 9045, 9050A, EPH8270, MADEP-EPH, MA-VPH-2.1
24L0327-04	B-GSS-463-2.0	Soil	1010A, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260D Low, 8270E, 9045, 9050A, EPH8270, MADEP-EPH, MA-VPH-2.1
24L0327-05	B-GSS-464-2.0	Soil	1010A, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260D Low, 8270E, 9045, 9050A, EPH8270, MADEP-EPH, MA-VPH-2.1
24L0327-06	B-GSS-465-2.0	Soil	1010A, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260D Low, 8270E, 9045, 9050A, EPH8270, MADEP-EPH, MA-VPH-2.1

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

PROJECT NARRATIVE

Semi-Volatile Organic Compounds

D4L0222-CCV1	**Calibration required quadratic regression (Q).**
	2,4-Dinitrophenol (65% @ 40-160%)
D4L0222-CCV1	**Initial Calibration Verification recovery is below lower control limit (ICV-).**
	Aniline
D4L0245-CCV1	**Calibration required quadratic regression (Q).**
	2,4-Dinitrophenol (85% @ 40-160%)

Volatile Organics Low Level

D4L0248-CCV1	**Calibration required quadratic regression (Q).**
	Naphthalene (88% @ 40-160%)
D4L0248-CCV1	**Continuing Calibration %Diff/Drift is above control limit (CD+).**
	n-Butylbenzene (21% @ 20%)
D4L0276-CCV1	**Calibration required quadratic regression (Q).**
	Naphthalene (91% @ 40-160%)
DL41234-BS1	**Blank Spike recovery is above upper control limit (B+).**
	Isopropylbenzene (133% @ 70-130%)
DL41234-BSD1	**Blank Spike recovery is above upper control limit (B+).**
	Isopropylbenzene (131% @ 70-130%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010D - ICP
6020B - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260D - VOA
8270E - SVOA
8270E SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 19-2.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **24L0327-01 through 24L0327-06**

Matrices: ( ) Ground Water/Surface Water (x) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other:_____

CAM Protocol (check all that apply below):

(x) 8260 VOC CAM II A	(x) 7470/7471 Hg CAM III B	(x) MassDEP VPH (GC/PID/FID) CAM IV A	(x) 8082 PCB CAM V A	( ) 9014 Total Cyanide/PAC CAM VI A	( ) 6860 Perchlorate CAM VIII B
(x) 8270 SVOC CAM II B	( ) 7010 Metals CAM III C	( ) MassDEP VPH (GC/MS) CAM IV C	( ) 8081 Pesticides CAM V B	( ) 7196 Hex Cr CAM VI B	( ) MassDEP APH CAM IX A
(x) 6010 Metals CAM III A	( ) 6020 Metals CAM III D	(x) MassDEP EPH CAM IV B	( ) 8151 Herbicides CAM V C	( ) Explosives CAM VIII A	( ) TO-15 VOC CAM IX B

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (x) No ( )
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (x) No ( )
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (x) No ( )
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (x) No ( )
E	VPH, EPH, APH and TO-15 only: a. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes (x) No ( )
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ( ) No ( )
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (x) No ( )

Responses to Questions G, H and I below are required for '"Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)?	Yes ( ) No (x)*
	***Data User Note:* Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**	
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes ( ) No (x)*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes (x) No ( )*

****All negative responses must be addressed in an attached laboratory narrative.***

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: _____ Date: December 17, 2024
Printed Name: Laurel Stoddard Position: Laboratory Director

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 85

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Antimony	ND (5.70)	---	6010D	---	1	KJB	12/11/24 14:25	2.07 100	DL41050
Arsenic	**1.91** (1.14)	---	6010D	---	1	KJB	12/11/24 14:25	2.07 100	DL41050
Barium	**20.7** (1.14)	---	6010D	---	1	KJB	12/11/24 14:25	2.07 100	DL41050
Beryllium	**0.29** (0.11)	---	6010D	---	1	KJB	12/11/24 14:25	2.07 100	DL41050
Cadmium	ND (0.57)	---	6010D	---	1	KJB	12/11/24 14:25	2.07 100	DL41050
Chromium	**12.9** (1.14)	---	6010D	---	1	KJB	12/11/24 14:25	2.07 100	DL41050
Lead	**32.5** (5.70)	---	6010D	---	1	KJB	12/11/24 14:25	2.07 100	DL41050
Mercury	**0.038** (0.031)	---	7471B	---	1	AFV	12/10/24 20:48	0.76 40	DL41012
Nickel	**8.01** (1.14)	---	6010D	---	1	KJB	12/11/24 14:25	2.07 100	DL41050
Selenium	ND (5.70)	---	6010D	---	1	KJB	12/11/24 14:25	2.07 100	DL41050
Silver	ND (0.57)	---	6010D	---	1	KJB	12/11/24 14:25	2.07 100	DL41050
Thallium	ND (5.70)	---	6010D	---	1	KJB	12/11/24 14:25	2.07 100	DL41050
Vanadium	**22.5** (1.14)	---	6010D	---	1	KJB	12/11/24 14:25	2.07 100	DL41050
Zinc	**36.2** (2.85)	---	6010D	---	1	KJB	12/11/24 14:25	2.07 100	DL41050

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 85
Initial Volume: 5.8g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/12/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,1,1-Trichloroethane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,1,2,2-Tetrachloroethane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,1,2-Trichloroethane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,1-Dichloroethane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,1-Dichloroethene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,1-Dichloropropene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,2,3-Trichlorobenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,2,3-Trichloropropane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,2,4-Trichlorobenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,2,4-Trimethylbenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,2-Dibromo-3-Chloropropane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,2-Dibromoethane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,2-Dichlorobenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,2-Dichloroethane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,2-Dichloropropane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,3,5-Trimethylbenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,3-Dichlorobenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,3-Dichloropropane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,4-Dichlorobenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
1,4-Dioxane	ND (0.102)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
2,2-Dichloropropane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
2-Butanone	ND (0.0508)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
2-Chlorotoluene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
2-Hexanone	ND (0.0508)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
4-Chlorotoluene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
4-Isopropyltoluene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 85
Initial Volume: 5.8g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/12/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0508)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Acetone	ND (0.0508)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Benzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Bromobenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Bromochloromethane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Bromodichloromethane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Bromoform	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Bromomethane	ND (0.0102)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Carbon Disulfide	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Carbon Tetrachloride	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Chlorobenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Chloroethane	ND (0.0102)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Chloroform	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Chloromethane	ND (0.0102)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
cis-1,2-Dichloroethene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
cis-1,3-Dichloropropene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Dibromochloromethane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Dibromomethane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Dichlorodifluoromethane	ND (0.0102)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Diethyl Ether	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Di-isopropyl ether	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Ethyl tertiary-butyl ether	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Ethylbenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Hexachlorobutadiene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Isopropylbenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Methyl tert-Butyl Ether	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Methylene Chloride	ND (0.0254)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 85
Initial Volume: 5.8g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/12/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
n-Butylbenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
n-Propylbenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
sec-Butylbenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Styrene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
tert-Butylbenzene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Tertiary-amyl methyl ether	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Tetrachloroethene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Tetrahydrofuran	ND (0.0203)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Toluene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
trans-1,2-Dichloroethene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
trans-1,3-Dichloropropene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Trichloroethene	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Trichlorofluoromethane	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Vinyl Chloride	ND (0.0102)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Xylene O	ND (0.0051)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Xylene P,M	ND (0.0102)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234
Xylenes (Total)	ND (0.0102)	---	8260D Low	---	1	MEK	12/12/24 19:32	D4L0248	DL41234

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*113 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*92 %*		*70-130*
Surrogate: Dibromofluoromethane	*107 %*		*70-130*
Surrogate: Toluene-d8	*94 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 85
Initial Volume: 16.6g
Final Volume: 15ml
Extraction Method: 5035
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (12.5)	---	MA-VPH-2.1	---	1	12/11/24 12:47	D4L0235	DL41213
C5-C8 Aliphatics1,2	ND (13.0)	---	MA-VPH-2.1	---	1	12/11/24 12:47	---	[CALC]
C9-C12 Aliphatics2,3	ND (25.9)	---	MA-VPH-2.1	---	1	12/11/24 12:47	---	[CALC]
1:1 Methanol/Soil Ratio %D	**11** (N/A)		MA-VPH-2.1			12/11/24 8:00		DL41213
Preservative:	**MeOH - covered**		MA-VPH-2.1					DL41213

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*111 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*108 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*109 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*110 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 85
Initial Volume: 20.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.029)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
1,2,4-Trichlorobenzene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
1,2-Dichlorobenzene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
1,3-Dichlorobenzene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
1,4-Dichlorobenzene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
2,4,5-Trichlorophenol	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
2,4,6-Trichlorophenol	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
2,4-Dichlorophenol	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
2,4-Dimethylphenol	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
2,4-Dinitrophenol	ND (1.17)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
2,4-Dinitrotoluene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
2,6-Dinitrotoluene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
2-Chloronaphthalene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
2-Chlorophenol	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
2-Methylnaphthalene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
2-Methylphenol	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
2-Nitrophenol	ND (0.587)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
3,3′-Dichlorobenzidine	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
3+4-Methylphenol	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
4-Bromophenyl-phenylether	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
4-Chloroaniline	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
4-Nitrophenol	ND (1.17)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Acenaphthene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Acenaphthylene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Acetophenone	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Aniline	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Anthracene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 85
Initial Volume: 20.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Benzo(a)anthracene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Benzo(a)pyrene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Benzo(b)fluoranthene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Benzo(g,h,i)perylene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Benzo(k)fluoranthene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
bis(2-Chloroethoxy)methane	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
bis(2-Chloroethyl)ether	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
bis(2-chloroisopropyl)Ether	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
bis(2-Ethylhexyl)phthalate	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Butylbenzylphthalate	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Chrysene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Dibenzo(a,h)Anthracene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Dibenzofuran	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Diethylphthalate	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Dimethylphthalate	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Di-n-butylphthalate	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Di-n-octylphthalate	ND (0.587)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Fluoranthene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Fluorene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Hexachlorobenzene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Hexachlorobutadiene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Hexachloroethane	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Indeno(1,2,3-cd)Pyrene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Isophorone	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Naphthalene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Nitrobenzene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 85
Initial Volume: 20.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Pentachlorophenol	ND (1.17)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Phenanthrene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Phenol	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106
Pyrene	ND (0.293)	---	8270E	---	1	TJ	12/12/24 20:19	D4L0245	DL41106

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*91 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*126 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*101 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*84 %*		*30-130*
Surrogate: 2-Fluorophenol	*93 %*		*30-130*
Surrogate: Nitrobenzene-d5	*78 %*		*30-130*
Surrogate: Phenol-d6	*103 %*		*30-130*
Surrogate: p-Terphenyl-d14	*99 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 85
Initial Volume: 24.7g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-01
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 12/10/24 20:10

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (11.9)	---	MADEP-EPH	---	1	JDN	12/13/24 0:14	D4L0256	DL41045
C19-C36 Aliphatics1	**27.1** (11.9)	---	MADEP-EPH	---	1	JDN	12/13/24 0:14	D4L0256	DL41045
C11-C22 Unadjusted Aromatics1	ND (11.9)	---	EPH8270	---	1	IBM	12/12/24 22:37	D4L0208	DL41045
C11-C22 Aromatics1,2	ND (11.9)	---	EPH8270	---		IBM	12/12/24 22:37	---	[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*73 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*99 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*94 %*		*40-140*
Surrogate: O-Terphenyl	*93 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 85
Initial Volume: 19g
Final Volume: 10ml
Extraction Method: 3540C

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JLG
Prepared: 12/11/24 11:29

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.06)	---	8082A	---	1	12/13/24 12:47	---	DL41105
Aroclor 1221	ND (0.06)	---	8082A	---	1	12/13/24 12:47	---	DL41105
Aroclor 1232	ND (0.06)	---	8082A	---	1	12/13/24 12:47	---	DL41105
Aroclor 1242	ND (0.06)	---	8082A	---	1	12/13/24 12:47	---	DL41105
Aroclor 1248	ND (0.06)	---	8082A	---	1	12/13/24 12:47	---	DL41105
Aroclor 1254	ND (0.06)	---	8082A	---	1	12/13/24 12:47	---	DL41105
Aroclor 1260	ND (0.06)	---	8082A	---	1	12/13/24 12:47	---	DL41105
Aroclor 1262	ND (0.06)	---	8082A	---	1	12/13/24 12:47	---	DL41105
Aroclor 1268	ND (0.06)	---	8082A	---	1	12/13/24 12:47	---	DL41105

	%Recovery	*Qualifier*	*Limits*
Surrogate: Decachlorobiphenyl	*75 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*69 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 85

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-01
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 874** (5)	---	9050A	---	1	CCP	12/11/24 16:00	umhos/cm	DL41139
Corrosivity (pH)	**7.14** (N/A)	---	9045	---	1	CCP	12/10/24 19:00	S.U.	DL41030
Corrosivity (pH) Sample Temp	**20.4**	---	2550B	---	1	CCP	12/10/24 19:00	°C	DL41030
Flashpoint	**> 200** (N/A)	---	1010A	---	1	JLK	12/11/24 16:40	°F	DL41152
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	12/11/24 15:28	mg/kg	DL41149
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	12/11/24 15:28	mg/kg	DL41149

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-2.0
Date Sampled: 12/09/24 09:30
Percent Solids: 90

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Antimony	ND (5.30)	---	6010D	---	1	KJB	12/11/24 14:46	2.09 100	DL41050
Arsenic	**1.35** (1.06)	---	6010D	---	1	KJB	12/11/24 14:46	2.09 100	DL41050
Barium	**23.5** (1.06)	---	6010D	---	1	KJB	12/11/24 14:46	2.09 100	DL41050
Beryllium	**0.37** (0.11)	---	6010D	---	1	KJB	12/11/24 14:46	2.09 100	DL41050
Cadmium	ND (0.53)	---	6010D	---	1	KJB	12/11/24 14:46	2.09 100	DL41050
Chromium	**11.8** (1.06)	---	6010D	---	1	KJB	12/11/24 14:46	2.09 100	DL41050
Lead	ND (5.30)	---	6010D	---	1	KJB	12/11/24 14:46	2.09 100	DL41050
Mercury	ND (0.032)	---	7471B	---	1	AFV	12/10/24 20:51	0.69 40	DL41012
Nickel	**11.3** (1.06)	---	6010D	---	1	KJB	12/11/24 14:46	2.09 100	DL41050
Selenium	ND (5.30)	---	6010D	---	1	KJB	12/11/24 14:46	2.09 100	DL41050
Silver	ND (0.53)	---	6010D	---	1	KJB	12/11/24 14:46	2.09 100	DL41050
Thallium	ND (5.30)	---	6010D	---	1	KJB	12/11/24 14:46	2.09 100	DL41050
Vanadium	**19.6** (1.06)	---	6010D	---	1	KJB	12/11/24 14:46	2.09 100	DL41050
Zinc	**24.0** (2.65)	---	6010D	---	1	KJB	12/11/24 14:46	2.09 100	DL41050

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-2.0
Date Sampled: 12/09/24 09:30
Percent Solids: 90
Initial Volume: 4.7g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,1,1-Trichloroethane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,1,2,2-Tetrachloroethane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,1,2-Trichloroethane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,1-Dichloroethane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,1-Dichloroethene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,1-Dichloropropene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,2,3-Trichlorobenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,2,3-Trichloropropane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,2,4-Trichlorobenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,2,4-Trimethylbenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,2-Dibromo-3-Chloropropane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,2-Dibromoethane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,2-Dichlorobenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,2-Dichloroethane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,2-Dichloropropane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,3,5-Trimethylbenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,3-Dichlorobenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,3-Dichloropropane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,4-Dichlorobenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
1,4-Dioxane	ND (0.118)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
2,2-Dichloropropane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
2-Butanone	ND (0.0589)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
2-Chlorotoluene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
2-Hexanone	ND (0.0589)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
4-Chlorotoluene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
4-Isopropyltoluene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-2.0
Date Sampled: 12/09/24 09:30
Percent Solids: 90
Initial Volume: 4.7g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0589)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Acetone	ND (0.0589)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Benzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Bromobenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Bromochloromethane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Bromodichloromethane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Bromoform	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Bromomethane	ND (0.0118)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Carbon Disulfide	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Carbon Tetrachloride	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Chlorobenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Chloroethane	ND (0.0118)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Chloroform	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Chloromethane	ND (0.0118)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
cis-1,2-Dichloroethene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
cis-1,3-Dichloropropene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Dibromochloromethane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Dibromomethane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Dichlorodifluoromethane	ND (0.0118)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Diethyl Ether	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Di-isopropyl ether	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Ethyl tertiary-butyl ether	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Ethylbenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Hexachlorobutadiene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Isopropylbenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Methyl tert-Butyl Ether	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Methylene Chloride	ND (0.0294)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-2.0
Date Sampled: 12/09/24 09:30
Percent Solids: 90
Initial Volume: 4.7g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
n-Butylbenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
n-Propylbenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
sec-Butylbenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Styrene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
tert-Butylbenzene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Tertiary-amyl methyl ether	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Tetrachloroethene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Tetrahydrofuran	ND (0.0236)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Toluene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
trans-1,2-Dichloroethene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
trans-1,3-Dichloropropene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Trichloroethene	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Trichlorofluoromethane	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Vinyl Chloride	ND (0.0118)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Xylene O	ND (0.0059)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Xylene P,M	ND (0.0118)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326
Xylenes (Total)	ND (0.0118)	---	8260D Low	---	1	MEK	12/13/24 14:45	D4L0276	DL41326

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*123 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*91 %*		*70-130*
Surrogate: Dibromofluoromethane	*115 %*		*70-130*
Surrogate: Toluene-d8	*101 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-2.0
Date Sampled: 12/09/24 09:30
Percent Solids: 90
Initial Volume: 12.5g
Final Volume: 15ml
Extraction Method: 5035
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (14.4)	---	MA-VPH-2.1	---	1	12/11/24 13:19	D4L0235	DL41213
C5-C8 Aliphatics1,2	ND (15.0)	---	MA-VPH-2.1	---	1	12/11/24 13:19	---	[CALC]
C9-C12 Aliphatics2,3	ND (29.9)	---	MA-VPH-2.1	---	1	12/11/24 13:19	---	[CALC]
1:1 Methanol/Soil Ratio %D	**17** (N/A)		MA-VPH-2.1			12/11/24 8:00		DL41213
Preservative:	**MeOH - covered**		MA-VPH-2.1					DL41213

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*110 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*107 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*104 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*103 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-2.0
Date Sampled: 12/09/24 09:30
Percent Solids: 90
Initial Volume: 19.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.029)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
1,2,4-Trichlorobenzene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
1,2-Dichlorobenzene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
1,3-Dichlorobenzene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
1,4-Dichlorobenzene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
2,4,5-Trichlorophenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
2,4,6-Trichlorophenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
2,4-Dichlorophenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
2,4-Dimethylphenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
2,4-Dinitrophenol	ND (1.14)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
2,4-Dinitrotoluene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
2,6-Dinitrotoluene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
2-Chloronaphthalene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
2-Chlorophenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
2-Methylnaphthalene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
2-Methylphenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
2-Nitrophenol	ND (0.571)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
3,3´-Dichlorobenzidine	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
3+4-Methylphenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
4-Bromophenyl-phenylether	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
4-Chloroaniline	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
4-Nitrophenol	ND (1.14)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Acenaphthene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Acenaphthylene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Acetophenone	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Aniline	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Anthracene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-2.0
Date Sampled: 12/09/24 09:30
Percent Solids: 90
Initial Volume: 19.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Benzo(a)anthracene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Benzo(a)pyrene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Benzo(b)fluoranthene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Benzo(g,h,i)perylene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Benzo(k)fluoranthene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
bis(2-Chloroethoxy)methane	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
bis(2-Chloroethyl)ether	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
bis(2-chloroisopropyl)Ether	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
bis(2-Ethylhexyl)phthalate	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Butylbenzylphthalate	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Chrysene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Dibenzo(a,h)Anthracene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Dibenzofuran	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Diethylphthalate	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Dimethylphthalate	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Di-n-butylphthalate	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Di-n-octylphthalate	ND (0.571)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Fluoranthene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Fluorene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Hexachlorobenzene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Hexachlorobutadiene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Hexachloroethane	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Indeno(1,2,3-cd)Pyrene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Isophorone	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Naphthalene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Nitrobenzene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-2.0
Date Sampled: 12/09/24 09:30
Percent Solids: 90
Initial Volume: 19.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Pentachlorophenol	ND (1.14)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Phenanthrene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Phenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106
Pyrene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 20:49	D4L0245	DL41106

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*96 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*116 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*103 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*86 %*		*30-130*
Surrogate: 2-Fluorophenol	*94 %*		*30-130*
Surrogate: Nitrobenzene-d5	*84 %*		*30-130*
Surrogate: Phenol-d6	*104 %*		*30-130*
Surrogate: p-Terphenyl-d14	*112 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-2.0
Date Sampled: 12/09/24 09:30
Percent Solids: 90
Initial Volume: 25g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-02
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 12/10/24 20:10

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (11.1)	---	MADEP-EPH	---	1	JDN	12/13/24 0:48	D4L0256	DL41045
C19-C36 Aliphatics1	ND (11.1)	---	MADEP-EPH	---	1	JDN	12/13/24 0:48	D4L0256	DL41045
C11-C22 Unadjusted Aromatics1	ND (11.1)	---	EPH8270	---	1	IBM	12/12/24 23:12	D4L0208	DL41045
C11-C22 Aromatics1,2	ND (11.1)	---	EPH8270	---		IBM	12/12/24 23:12	---	[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*69 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*98 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*97 %*		*40-140*
Surrogate: O-Terphenyl	*78 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-2.0
Date Sampled: 12/09/24 09:30
Percent Solids: 90
Initial Volume: 19.8g
Final Volume: 10ml
Extraction Method: 3540C

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JLG
Prepared: 12/11/24 11:29

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.06)	---	8082A	---	1	12/12/24 17:50	---	DL41105
Aroclor 1221	ND (0.06)	---	8082A	---	1	12/12/24 17:50	---	DL41105
Aroclor 1232	ND (0.06)	---	8082A	---	1	12/12/24 17:50	---	DL41105
Aroclor 1242	ND (0.06)	---	8082A	---	1	12/12/24 17:50	---	DL41105
Aroclor 1248	ND (0.06)	---	8082A	---	1	12/12/24 17:50	---	DL41105
Aroclor 1254	ND (0.06)	---	8082A	---	1	12/12/24 17:50	---	DL41105
Aroclor 1260	ND (0.06)	---	8082A	---	1	12/12/24 17:50	---	DL41105
Aroclor 1262	ND (0.06)	---	8082A	---	1	12/12/24 17:50	---	DL41105
Aroclor 1268	ND (0.06)	---	8082A	---	1	12/12/24 17:50	---	DL41105

	%Recovery	*Qualifier*	*Limits*
Surrogate: Decachlorobiphenyl	*68 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*72 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-2.0
Date Sampled: 12/09/24 09:30
Percent Solids: 90

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-02
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 850** (5)	---	9050A	---	1	CCP	12/11/24 16:00	umhos/cm	DL41139
Corrosivity (pH)	**5.74** (N/A)	---	9045	---	1	CCP	12/10/24 19:00	S.U.	DL41030
Corrosivity (pH) Sample Temp	**20.3**	---	2550B	---	1	CCP	12/10/24 19:00	°C	DL41030
Flashpoint	**> 200** (N/A)	---	1010A	---	1	JLK	12/11/24 16:40	°F	DL41152
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	12/11/24 15:28	mg/kg	DL41149
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	12/11/24 15:28	mg/kg	DL41149

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-2.0
Date Sampled: 12/09/24 11:30
Percent Solids: 92

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Antimony	ND (4.98)	---	6010D	---	1	KJB	12/11/24 14:48	2.18 100	DL41050
Arsenic	**1.77** (1.00)	---	6010D	---	1	KJB	12/11/24 14:48	2.18 100	DL41050
Barium	**19.4** (1.00)	---	6010D	---	1	KJB	12/11/24 14:48	2.18 100	DL41050
Beryllium	**0.31** (0.10)	---	6010D	---	1	KJB	12/11/24 14:48	2.18 100	DL41050
Cadmium	ND (0.50)	---	6010D	---	1	KJB	12/11/24 14:48	2.18 100	DL41050
Chromium	**12.2** (1.00)	---	6010D	---	1	KJB	12/11/24 14:48	2.18 100	DL41050
Lead	ND (4.98)	---	6010D	---	1	KJB	12/11/24 14:48	2.18 100	DL41050
Mercury	ND (0.029)	---	7471B	---	1	AFV	12/10/24 20:53	0.74 40	DL41012
Nickel	**9.53** (1.00)	---	6010D	---	1	KJB	12/11/24 14:48	2.18 100	DL41050
Selenium	ND (4.98)	---	6010D	---	1	KJB	12/11/24 14:48	2.18 100	DL41050
Silver	ND (0.50)	---	6010D	---	1	KJB	12/11/24 14:48	2.18 100	DL41050
Thallium	ND (4.98)	---	6010D	---	1	KJB	12/11/24 14:48	2.18 100	DL41050
Vanadium	**19.6** (1.00)	---	6010D	---	1	KJB	12/11/24 14:48	2.18 100	DL41050
Zinc	**26.1** (2.49)	---	6010D	---	1	KJB	12/11/24 14:48	2.18 100	DL41050

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-2.0
Date Sampled: 12/09/24 11:30
Percent Solids: 92
Initial Volume: 3.4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,1,1-Trichloroethane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,1,2,2-Tetrachloroethane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,1,2-Trichloroethane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,1-Dichloroethane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,1-Dichloroethene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,1-Dichloropropene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,2,3-Trichlorobenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,2,3-Trichloropropane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,2,4-Trichlorobenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,2,4-Trimethylbenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,2-Dibromo-3-Chloropropane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,2-Dibromoethane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,2-Dichlorobenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,2-Dichloroethane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,2-Dichloropropane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,3,5-Trimethylbenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,3-Dichlorobenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,3-Dichloropropane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,4-Dichlorobenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
1,4-Dioxane	ND (0.160)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
2,2-Dichloropropane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
2-Butanone	ND (0.0799)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
2-Chlorotoluene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
2-Hexanone	ND (0.0799)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
4-Chlorotoluene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
4-Isopropyltoluene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-2.0
Date Sampled: 12/09/24 11:30
Percent Solids: 92
Initial Volume: 3.4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0799)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Acetone	ND (0.0799)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Benzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Bromobenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Bromochloromethane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Bromodichloromethane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Bromoform	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Bromomethane	ND (0.0160)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Carbon Disulfide	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Carbon Tetrachloride	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Chlorobenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Chloroethane	ND (0.0160)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Chloroform	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Chloromethane	ND (0.0160)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
cis-1,2-Dichloroethene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
cis-1,3-Dichloropropene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Dibromochloromethane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Dibromomethane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Dichlorodifluoromethane	ND (0.0160)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Diethyl Ether	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Di-isopropyl ether	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Ethyl tertiary-butyl ether	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Ethylbenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Hexachlorobutadiene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Isopropylbenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Methyl tert-Butyl Ether	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Methylene Chloride	ND (0.0399)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-2.0
Date Sampled: 12/09/24 11:30
Percent Solids: 92
Initial Volume: 3.4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
n-Butylbenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
n-Propylbenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
sec-Butylbenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Styrene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
tert-Butylbenzene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Tertiary-amyl methyl ether	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Tetrachloroethene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Tetrahydrofuran	ND (0.0319)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Toluene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
trans-1,2-Dichloroethene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
trans-1,3-Dichloropropene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Trichloroethene	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Trichlorofluoromethane	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Vinyl Chloride	ND (0.0160)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Xylene O	ND (0.0080)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Xylene P,M	ND (0.0160)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326
Xylenes (Total)	ND (0.0160)	---	8260D Low	---	1	MEK	12/13/24 15:10	D4L0276	DL41326

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*121 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*88 %*		*70-130*
Surrogate: Dibromofluoromethane	*114 %*		*70-130*
Surrogate: Toluene-d8	*102 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-2.0
Date Sampled: 12/09/24 11:30
Percent Solids: 92
Initial Volume: 16g
Final Volume: 15ml
Extraction Method: 5035
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (11.0)	---	MA-VPH-2.1	---	1	12/11/24 13:50	D4L0235	DL41213
C5-C8 Aliphatics1,2	ND (11.5)	---	MA-VPH-2.1	---	1	12/11/24 13:50	---	[CALC]
C9-C12 Aliphatics2,3	ND (23.0)	---	MA-VPH-2.1	---	1	12/11/24 13:50	---	[CALC]
1:1 Methanol/Soil Ratio %D	**7** (N/A)		MA-VPH-2.1			12/11/24 8:00		DL41213
Preservative:	**MeOH - covered**		MA-VPH-2.1					DL41213

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*121 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*118 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*109 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*109 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-2.0
Date Sampled: 12/09/24 11:30
Percent Solids: 92
Initial Volume: 19.6g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:25

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.028)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
1,2,4-Trichlorobenzene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
1,2-Dichlorobenzene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
1,3-Dichlorobenzene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
1,4-Dichlorobenzene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
2,4,5-Trichlorophenol	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
2,4,6-Trichlorophenol	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
2,4-Dichlorophenol	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
2,4-Dimethylphenol	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
2,4-Dinitrophenol	ND (1.11)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
2,4-Dinitrotoluene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
2,6-Dinitrotoluene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
2-Chloronaphthalene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
2-Chlorophenol	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
2-Methylnaphthalene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
2-Methylphenol	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
2-Nitrophenol	ND (0.554)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
3,3´-Dichlorobenzidine	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
3+4-Methylphenol	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
4-Bromophenyl-phenylether	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
4-Chloroaniline	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
4-Nitrophenol	ND (1.11)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Acenaphthene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Acenaphthylene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Acetophenone	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Aniline	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Anthracene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-2.0
Date Sampled: 12/09/24 11:30
Percent Solids: 92
Initial Volume: 19.6g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:25

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Benzo(a)anthracene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Benzo(a)pyrene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Benzo(b)fluoranthene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Benzo(g,h,i)perylene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Benzo(k)fluoranthene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
bis(2-Chloroethoxy)methane	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
bis(2-Chloroethyl)ether	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
bis(2-chloroisopropyl)Ether	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
bis(2-Ethylhexyl)phthalate	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Butylbenzylphthalate	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Chrysene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Dibenzo(a,h)Anthracene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Dibenzofuran	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Diethylphthalate	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Dimethylphthalate	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Di-n-butylphthalate	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Di-n-octylphthalate	ND (0.554)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Fluoranthene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Fluorene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Hexachlorobenzene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Hexachlorobutadiene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Hexachloroethane	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Indeno(1,2,3-cd)Pyrene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Isophorone	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Naphthalene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Nitrobenzene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-2.0
Date Sampled: 12/09/24 11:30
Percent Solids: 92
Initial Volume: 19.6g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:25

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Pentachlorophenol	ND (1.11)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Phenanthrene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Phenol	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107
Pyrene	ND (0.277)	---	8270E	---	1	TJ	12/12/24 21:19	D4L0245	DL41107

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*91 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*125 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*99 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*81 %*		*30-130*
Surrogate: 2-Fluorophenol	*89 %*		*30-130*
Surrogate: Nitrobenzene-d5	*78 %*		*30-130*
Surrogate: Phenol-d6	*104 %*		*30-130*
Surrogate: p-Terphenyl-d14	*106 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-2.0
Date Sampled: 12/09/24 11:30
Percent Solids: 92
Initial Volume: 24.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-03
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 12/10/24 20:10

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (11.3)	---	MADEP-EPH	---	1	JDN	12/13/24 1:22	D4L0256	DL41045
C19-C36 Aliphatics1	ND (11.3)	---	MADEP-EPH	---	1	JDN	12/13/24 1:22	D4L0256	DL41045
C11-C22 Unadjusted Aromatics1	ND (11.3)	---	EPH8270	---	1	IBM	12/12/24 23:48	D4L0208	DL41045
C11-C22 Aromatics1,2	ND (11.3)	---	EPH8270	---		IBM	12/12/24 23:48	---	[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*92 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*93 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*92 %*		*40-140*
Surrogate: O-Terphenyl	*100 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-2.0
Date Sampled: 12/09/24 11:30
Percent Solids: 92
Initial Volume: 19g
Final Volume: 10ml
Extraction Method: 3540C

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-03
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JLG
Prepared: 12/11/24 11:29

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.06)	---	8082A	---	1	12/12/24 18:09	---	DL41105
Aroclor 1221	ND (0.06)	---	8082A	---	1	12/12/24 18:09	---	DL41105
Aroclor 1232	ND (0.06)	---	8082A	---	1	12/12/24 18:09	---	DL41105
Aroclor 1242	ND (0.06)	---	8082A	---	1	12/12/24 18:09	---	DL41105
Aroclor 1248	ND (0.06)	---	8082A	---	1	12/12/24 18:09	---	DL41105
Aroclor 1254	ND (0.06)	---	8082A	---	1	12/12/24 18:09	---	DL41105
Aroclor 1260	ND (0.06)	---	8082A	---	1	12/12/24 18:09	---	DL41105
Aroclor 1262	ND (0.06)	---	8082A	---	1	12/12/24 18:09	---	DL41105
Aroclor 1268	ND (0.06)	---	8082A	---	1	12/12/24 18:09	---	DL41105

	%Recovery	*Qualifier*	*Limits*
Surrogate: Decachlorobiphenyl	*74 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*74 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-2.0
Date Sampled: 12/09/24 11:30
Percent Solids: 92

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-03
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 1010** (5)	---	9050A	---	1	CCP	12/11/24 16:00	umhos/cm	DL41139
Corrosivity (pH)	**4.81** (N/A)	---	9045	---	1	CCP	12/10/24 19:00	S.U.	DL41030
Corrosivity (pH) Sample Temp	**20.3**	---	2550B	---	1	CCP	12/10/24 19:00	°C	DL41030
Flashpoint	**> 200** (N/A)	---	1010A	---	1	JLK	12/11/24 16:40	°F	DL41152
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	12/11/24 15:28	mg/kg	DL41149
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	12/11/24 15:28	mg/kg	DL41149

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 86

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-04
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Antimony	ND (5.53)	---	6010D	---	1	KJB	12/11/24 14:50	2.1 100	DL41050
Arsenic	**2.58** (1.11)	---	6010D	---	1	KJB	12/11/24 14:50	2.1 100	DL41050
Barium	**27.3** (1.11)	---	6010D	---	1	KJB	12/11/24 14:50	2.1 100	DL41050
Beryllium	**0.42** (0.11)	---	6010D	---	1	KJB	12/11/24 14:50	2.1 100	DL41050
Cadmium	ND (0.55)	---	6010D	---	1	KJB	12/11/24 14:50	2.1 100	DL41050
Chromium	**17.0** (1.11)	---	6010D	---	1	KJB	12/11/24 14:50	2.1 100	DL41050
Lead	**7.56** (5.53)	---	6010D	---	1	KJB	12/11/24 14:50	2.1 100	DL41050
Mercury	ND (0.033)	---	7471B	---	1	AFV	12/10/24 20:55	0.69 40	DL41012
Nickel	**14.1** (1.11)	---	6010D	---	1	KJB	12/11/24 14:50	2.1 100	DL41050
Selenium	ND (5.53)	---	6010D	---	1	KJB	12/11/24 14:50	2.1 100	DL41050
Silver	ND (0.55)	---	6010D	---	1	KJB	12/11/24 14:50	2.1 100	DL41050
Thallium	ND (5.53)	---	6010D	---	1	KJB	12/11/24 14:50	2.1 100	DL41050
Vanadium	**24.9** (1.11)	---	6010D	---	1	KJB	12/11/24 14:50	2.1 100	DL41050
Zinc	**32.5** (2.77)	---	6010D	---	1	KJB	12/11/24 14:50	2.1 100	DL41050

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 86
Initial Volume: 3.9g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,1,1-Trichloroethane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,1,2,2-Tetrachloroethane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,1,2-Trichloroethane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,1-Dichloroethane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,1-Dichloroethene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,1-Dichloropropene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,2,3-Trichlorobenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,2,3-Trichloropropane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,2,4-Trichlorobenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,2,4-Trimethylbenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,2-Dibromo-3-Chloropropane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,2-Dibromoethane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,2-Dichlorobenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,2-Dichloroethane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,2-Dichloropropane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,3,5-Trimethylbenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,3-Dichlorobenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,3-Dichloropropane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,4-Dichlorobenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
1,4-Dioxane	ND (0.149)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
2,2-Dichloropropane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
2-Butanone	ND (0.0745)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
2-Chlorotoluene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
2-Hexanone	ND (0.0745)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
4-Chlorotoluene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
4-Isopropyltoluene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 86
Initial Volume: 3.9g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0745)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Acetone	ND (0.0745)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Benzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Bromobenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Bromochloromethane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Bromodichloromethane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Bromoform	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Bromomethane	ND (0.0149)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Carbon Disulfide	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Carbon Tetrachloride	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Chlorobenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Chloroethane	ND (0.0149)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Chloroform	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Chloromethane	ND (0.0149)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
cis-1,2-Dichloroethene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
cis-1,3-Dichloropropene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Dibromochloromethane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Dibromomethane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Dichlorodifluoromethane	ND (0.0149)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Diethyl Ether	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Di-isopropyl ether	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Ethyl tertiary-butyl ether	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Ethylbenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Hexachlorobutadiene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Isopropylbenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Methyl tert-Butyl Ether	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Methylene Chloride	ND (0.0372)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 86
Initial Volume: 3.9g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
n-Butylbenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
n-Propylbenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
sec-Butylbenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Styrene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
tert-Butylbenzene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Tertiary-amyl methyl ether	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Tetrachloroethene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Tetrahydrofuran	ND (0.0298)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Toluene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
trans-1,2-Dichloroethene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
trans-1,3-Dichloropropene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Trichloroethene	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Trichlorofluoromethane	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Vinyl Chloride	ND (0.0149)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Xylene O	ND (0.0074)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Xylene P,M	ND (0.0149)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326
Xylenes (Total)	ND (0.0149)	---	8260D Low	---	1	MEK	12/13/24 15:35	D4L0276	DL41326

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*122 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*92 %*		*70-130*
Surrogate: Dibromofluoromethane	*114 %*		*70-130*
Surrogate: Toluene-d8	*103 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 86
Initial Volume: 17g
Final Volume: 15ml
Extraction Method: 5035
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (11.9)	---	MA-VPH-2.1	---	1	12/11/24 14:22	D4L0235	DL41213
C5-C8 Aliphatics1,2	ND (12.4)	---	MA-VPH-2.1	---	1	12/11/24 14:22	---	[CALC]
C9-C12 Aliphatics2,3	ND (24.7)	---	MA-VPH-2.1	---	1	12/11/24 14:22	---	[CALC]
1:1 Methanol/Soil Ratio %D	**13** (N/A)		MA-VPH-2.1			12/11/24 8:00		DL41213
Preservative:	**MeOH - covered**		MA-VPH-2.1					DL41213

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*127 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*124 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*111 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*111 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 86
Initial Volume: 20.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:25

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.028)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
1,2,4-Trichlorobenzene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
1,2-Dichlorobenzene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
1,3-Dichlorobenzene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
1,4-Dichlorobenzene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
2,4,5-Trichlorophenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
2,4,6-Trichlorophenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
2,4-Dichlorophenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
2,4-Dimethylphenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
2,4-Dinitrophenol	ND (1.14)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
2,4-Dinitrotoluene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
2,6-Dinitrotoluene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
2-Chloronaphthalene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
2-Chlorophenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
2-Methylnaphthalene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
2-Methylphenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
2-Nitrophenol	ND (0.570)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
3,3´-Dichlorobenzidine	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
3+4-Methylphenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
4-Bromophenyl-phenylether	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
4-Chloroaniline	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
4-Nitrophenol	ND (1.14)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Acenaphthene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Acenaphthylene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Acetophenone	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Aniline	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Anthracene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 86
Initial Volume: 20.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:25

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Benzo(a)anthracene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Benzo(a)pyrene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Benzo(b)fluoranthene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Benzo(g,h,i)perylene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Benzo(k)fluoranthene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
bis(2-Chloroethoxy)methane	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
bis(2-Chloroethyl)ether	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
bis(2-chloroisopropyl)Ether	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
bis(2-Ethylhexyl)phthalate	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Butylbenzylphthalate	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Chrysene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Dibenzo(a,h)Anthracene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Dibenzofuran	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Diethylphthalate	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Dimethylphthalate	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Di-n-butylphthalate	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Di-n-octylphthalate	ND (0.570)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Fluoranthene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Fluorene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Hexachlorobenzene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Hexachlorobutadiene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Hexachloroethane	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Indeno(1,2,3-cd)Pyrene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Isophorone	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Naphthalene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Nitrobenzene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 86
Initial Volume: 20.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:25

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Pentachlorophenol	ND (1.14)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Phenanthrene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Phenol	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107
Pyrene	ND (0.285)	---	8270E	---	1	TJ	12/12/24 23:49	D4L0245	DL41107

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*97 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*121 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*101 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*93 %*		*30-130*
Surrogate: 2-Fluorophenol	*94 %*		*30-130*
Surrogate: Nitrobenzene-d5	*90 %*		*30-130*
Surrogate: Phenol-d6	*105 %*		*30-130*
Surrogate: p-Terphenyl-d14	*123 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 86
Initial Volume: 25.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-04
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 12/10/24 20:10

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (11.6)	---	MADEP-EPH	---	1	JDN	12/13/24 1:56	D4L0256	DL41045
C19-C36 Aliphatics1	**18.3** (11.6)	---	MADEP-EPH	---	1	JDN	12/13/24 1:56	D4L0256	DL41045
C11-C22 Unadjusted Aromatics1	ND (11.6)	---	EPH8270	---	1	IBM	12/13/24 0:24	D4L0208	DL41045
C11-C22 Aromatics1,2	ND (11.6)	---	EPH8270	---		IBM	12/13/24 0:24	---	[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*87 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*97 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*94 %*		*40-140*
Surrogate: O-Terphenyl	*85 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 86
Initial Volume: 19g
Final Volume: 10ml
Extraction Method: 3540C

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-04
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JLG
Prepared: 12/11/24 11:29

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.06)	---	8082A	---	1	12/12/24 18:29	---	DL41105
Aroclor 1221	ND (0.06)	---	8082A	---	1	12/12/24 18:29	---	DL41105
Aroclor 1232	ND (0.06)	---	8082A	---	1	12/12/24 18:29	---	DL41105
Aroclor 1242	ND (0.06)	---	8082A	---	1	12/12/24 18:29	---	DL41105
Aroclor 1248	ND (0.06)	---	8082A	---	1	12/12/24 18:29	---	DL41105
Aroclor 1254	ND (0.06)	---	8082A	---	1	12/12/24 18:29	---	DL41105
Aroclor 1260	ND (0.06)	---	8082A	---	1	12/12/24 18:29	---	DL41105
Aroclor 1262	ND (0.06)	---	8082A	---	1	12/12/24 18:29	---	DL41105
Aroclor 1268	ND (0.06)	---	8082A	---	1	12/12/24 18:29	---	DL41105

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*69 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*75 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-2.0
Date Sampled: 12/09/24 10:00
Percent Solids: 86

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-04
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 273** (5)	---	9050A	---	1	CCP	12/11/24 16:00	umhos/cm	DL41139
Corrosivity (pH)	**7.14** (N/A)	---	9045	---	1	CCP	12/10/24 19:00	S.U.	DL41030
Corrosivity (pH) Sample Temp	**20.3**	---	2550B	---	1	CCP	12/10/24 19:00	°C	DL41030
Flashpoint	**> 200** (N/A)	---	1010A	---	1	JLK	12/11/24 16:40	°F	DL41152
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	12/11/24 15:28	mg/kg	DL41149
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	12/11/24 15:28	mg/kg	DL41149

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-2.0
Date Sampled: 12/09/24 14:00
Percent Solids: 95

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-05
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Antimony	ND (4.59)	---	6010D	---	1	KJB	12/11/24 14:52	2.3 100	DL41050
Arsenic	**1.51** (0.92)	---	6010D	---	1	KJB	12/11/24 14:52	2.3 100	DL41050
Barium	**26.2** (0.92)	---	6010D	---	1	KJB	12/11/24 14:52	2.3 100	DL41050
Beryllium	**0.27** (0.09)	---	6010D	---	1	KJB	12/11/24 14:52	2.3 100	DL41050
Cadmium	ND (0.46)	---	6010D	---	1	KJB	12/11/24 14:52	2.3 100	DL41050
Chromium	**9.66** (0.92)	---	6010D	---	1	KJB	12/11/24 14:52	2.3 100	DL41050
Lead	**9.35** (4.59)	---	6010D	---	1	KJB	12/11/24 14:52	2.3 100	DL41050
Mercury	ND (0.029)	---	7471B	---	1	AFV	12/10/24 20:58	0.72 40	DL41012
Nickel	**9.13** (0.92)	---	6010D	---	1	KJB	12/11/24 14:52	2.3 100	DL41050
Selenium	ND (4.59)	---	6010D	---	1	KJB	12/11/24 14:52	2.3 100	DL41050
Silver	ND (0.46)	---	6010D	---	1	KJB	12/11/24 14:52	2.3 100	DL41050
Thallium	ND (4.59)	---	6010D	---	1	KJB	12/11/24 14:52	2.3 100	DL41050
Vanadium	**17.2** (0.92)	---	6010D	---	1	KJB	12/11/24 14:52	2.3 100	DL41050
Zinc	**23.8** (2.29)	---	6010D	---	1	KJB	12/11/24 14:52	2.3 100	DL41050

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-2.0
Date Sampled: 12/09/24 14:00
Percent Solids: 95
Initial Volume: 4.7g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,1,1-Trichloroethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,1,2,2-Tetrachloroethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,1,2-Trichloroethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,1-Dichloroethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,1-Dichloroethene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,1-Dichloropropene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,2,3-Trichlorobenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,2,3-Trichloropropane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,2,4-Trichlorobenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,2,4-Trimethylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,2-Dibromo-3-Chloropropane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,2-Dibromoethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,2-Dichlorobenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,2-Dichloroethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,2-Dichloropropane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,3,5-Trimethylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,3-Dichlorobenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,3-Dichloropropane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,4-Dichlorobenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
1,4-Dioxane	ND (0.112)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
2,2-Dichloropropane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
2-Butanone	ND (0.0561)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
2-Chlorotoluene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
2-Hexanone	ND (0.0561)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
4-Chlorotoluene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
4-Isopropyltoluene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-2.0
Date Sampled: 12/09/24 14:00
Percent Solids: 95
Initial Volume: 4.7g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0561)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Acetone	ND (0.0561)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Benzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Bromobenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Bromochloromethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Bromodichloromethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Bromoform	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Bromomethane	ND (0.0112)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Carbon Disulfide	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Carbon Tetrachloride	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Chlorobenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Chloroethane	ND (0.0112)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Chloroform	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Chloromethane	ND (0.0112)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
cis-1,2-Dichloroethene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
cis-1,3-Dichloropropene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Dibromochloromethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Dibromomethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Dichlorodifluoromethane	ND (0.0112)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Diethyl Ether	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Di-isopropyl ether	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Ethyl tertiary-butyl ether	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Ethylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Hexachlorobutadiene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Isopropylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Methyl tert-Butyl Ether	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Methylene Chloride	ND (0.0281)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-2.0
Date Sampled: 12/09/24 14:00
Percent Solids: 95
Initial Volume: 4.7g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
n-Butylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
n-Propylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
sec-Butylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Styrene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
tert-Butylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Tertiary-amyl methyl ether	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Tetrachloroethene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Tetrahydrofuran	ND (0.0224)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Toluene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
trans-1,2-Dichloroethene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
trans-1,3-Dichloropropene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Trichloroethene	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Trichlorofluoromethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Vinyl Chloride	ND (0.0112)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Xylene O	ND (0.0056)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Xylene P,M	ND (0.0112)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326
Xylenes (Total)	ND (0.0112)	---	8260D Low	---	1	MEK	12/13/24 16:00	D4L0276	DL41326

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*122 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*89 %*		*70-130*
Surrogate: Dibromofluoromethane	*115 %*		*70-130*
Surrogate: Toluene-d8	*100 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-2.0
Date Sampled: 12/09/24 14:00
Percent Solids: 95
Initial Volume: 18.1g
Final Volume: 15ml
Extraction Method: 5035
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (9.3)	---	MA-VPH-2.1	---	1	12/11/24 14:53	D4L0235	DL41213
C5-C8 Aliphatics1,2	ND (9.71)	---	MA-VPH-2.1	---	1	12/11/24 14:53	---	[CALC]
C9-C12 Aliphatics2,3	ND (19.3)	---	MA-VPH-2.1	---	1	12/11/24 14:53	---	[CALC]
1:1 Methanol/Soil Ratio %D	**21** (N/A)		MA-VPH-2.1			12/11/24 8:00		DL41213
Preservative:	**MeOH - covered**		MA-VPH-2.1					DL41213

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*113 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*110 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*101 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*101 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-2.0
Date Sampled: 12/09/24 14:00
Percent Solids: 95
Initial Volume: 19.5g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:25

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.027)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
1,2,4-Trichlorobenzene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
1,2-Dichlorobenzene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
1,3-Dichlorobenzene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
1,4-Dichlorobenzene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
2,4,5-Trichlorophenol	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
2,4,6-Trichlorophenol	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
2,4-Dichlorophenol	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
2,4-Dimethylphenol	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
2,4-Dinitrophenol	ND (1.08)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
2,4-Dinitrotoluene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
2,6-Dinitrotoluene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
2-Chloronaphthalene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
2-Chlorophenol	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
2-Methylnaphthalene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
2-Methylphenol	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
2-Nitrophenol	ND (0.541)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
3,3′-Dichlorobenzidine	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
3+4-Methylphenol	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
4-Bromophenyl-phenylether	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
4-Chloroaniline	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
4-Nitrophenol	ND (1.08)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Acenaphthene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Acenaphthylene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Acetophenone	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Aniline	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Anthracene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-2.0
Date Sampled: 12/09/24 14:00
Percent Solids: 95
Initial Volume: 19.5g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:25

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Benzo(a)anthracene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Benzo(a)pyrene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Benzo(b)fluoranthene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Benzo(g,h,i)perylene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Benzo(k)fluoranthene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
bis(2-Chloroethoxy)methane	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
bis(2-Chloroethyl)ether	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
bis(2-chloroisopropyl)Ether	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
bis(2-Ethylhexyl)phthalate	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Butylbenzylphthalate	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Chrysene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Dibenzo(a,h)Anthracene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Dibenzofuran	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Diethylphthalate	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Dimethylphthalate	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Di-n-butylphthalate	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Di-n-octylphthalate	ND (0.541)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Fluoranthene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Fluorene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Hexachlorobenzene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Hexachlorobutadiene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Hexachloroethane	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Indeno(1,2,3-cd)Pyrene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Isophorone	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Naphthalene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Nitrobenzene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-2.0
Date Sampled: 12/09/24 14:00
Percent Solids: 95
Initial Volume: 19.5g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:25

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Pentachlorophenol	ND (1.08)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Phenanthrene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Phenol	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107
Pyrene	ND (0.270)	---	8270E	---	1	TJ	12/13/24 0:18	D4L0245	DL41107

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*88 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*112 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*93 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*82 %*		*30-130*
Surrogate: 2-Fluorophenol	*83 %*		*30-130*
Surrogate: Nitrobenzene-d5	*73 %*		*30-130*
Surrogate: Phenol-d6	*97 %*		*30-130*
Surrogate: p-Terphenyl-d14	*116 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-2.0
Date Sampled: 12/09/24 14:00
Percent Solids: 95
Initial Volume: 24.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-05
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 12/13/24 16:29

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (10.8)	---	MADEP-EPH	---	1	JDN	12/16/24 18:55	D4L0310	DL41346
C19-C36 Aliphatics1	ND (10.8)	---	MADEP-EPH	---	1	JDN	12/16/24 18:55	D4L0310	DL41346
C11-C22 Unadjusted Aromatics1	ND (10.8)	---	EPH8270	---	1	IBM	12/16/24 14:52	D4L0295	DL41346
C11-C22 Aromatics1,2	ND (10.8)	---	EPH8270	---		IBM	12/16/24 14:52	---	[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*79 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*102 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*95 %*		*40-140*
Surrogate: O-Terphenyl	*115 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-2.0
Date Sampled: 12/09/24 14:00
Percent Solids: 95
Initial Volume: 19.6g
Final Volume: 10ml
Extraction Method: 3540C

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-05
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JLG
Prepared: 12/11/24 11:29

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.05)	---	8082A	---	1	12/12/24 18:49	---	DL41105
Aroclor 1221	ND (0.05)	---	8082A	---	1	12/12/24 18:49	---	DL41105
Aroclor 1232	ND (0.05)	---	8082A	---	1	12/12/24 18:49	---	DL41105
Aroclor 1242	ND (0.05)	---	8082A	---	1	12/12/24 18:49	---	DL41105
Aroclor 1248	ND (0.05)	---	8082A	---	1	12/12/24 18:49	---	DL41105
Aroclor 1254	ND (0.05)	---	8082A	---	1	12/12/24 18:49	---	DL41105
Aroclor 1260	ND (0.05)	---	8082A	---	1	12/12/24 18:49	---	DL41105
Aroclor 1262	ND (0.05)	---	8082A	---	1	12/12/24 18:49	---	DL41105
Aroclor 1268	ND (0.05)	---	8082A	---	1	12/12/24 18:49	---	DL41105

	%Recovery	*Qualifier*	*Limits*
Surrogate: Decachlorobiphenyl	*69 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*74 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-2.0
Date Sampled: 12/09/24 14:00
Percent Solids: 95

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-05
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 276** (5)	---	9050A	---	1	CCP	12/11/24 16:00	umhos/cm	DL41139
Corrosivity (pH)	**6.53** (N/A)	---	9045	---	1	CCP	12/10/24 19:00	S.U.	DL41030
Corrosivity (pH) Sample Temp	**20.2**	---	2550B	---	1	CCP	12/10/24 19:00	°C	DL41030
Flashpoint	**> 200** (N/A)	---	1010A	---	1	JLK	12/11/24 16:40	°F	DL41152
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	12/11/24 15:28	mg/kg	DL41149
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	12/11/24 15:28	mg/kg	DL41149

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-2.0
Date Sampled: 12/10/24 08:00
Percent Solids: 93

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-06
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Antimony	ND (5.01)	---	6010D	---	1	KJB	12/11/24 14:54	2.14 100	DL41050
Arsenic	**2.11** (1.00)	---	6010D	---	1	KJB	12/11/24 14:54	2.14 100	DL41050
Barium	**29.8** (1.00)	---	6010D	---	1	KJB	12/11/24 14:54	2.14 100	DL41050
Beryllium	**0.27** (0.10)	---	6010D	---	1	KJB	12/11/24 14:54	2.14 100	DL41050
Cadmium	ND (0.50)	---	6010D	---	1	KJB	12/11/24 14:54	2.14 100	DL41050
Chromium	**12.7** (1.00)	---	6010D	---	1	KJB	12/11/24 14:54	2.14 100	DL41050
Lead	**22.8** (5.01)	---	6010D	---	1	KJB	12/11/24 14:54	2.14 100	DL41050
Mercury	ND (0.029)	---	7471B	---	1	AFV	12/10/24 21:00	0.72 40	DL41012
Nickel	**10.6** (1.00)	---	6010D	---	1	KJB	12/11/24 14:54	2.14 100	DL41050
Selenium	ND (5.01)	---	6010D	---	1	KJB	12/11/24 14:54	2.14 100	DL41050
Silver	ND (0.50)	---	6010D	---	1	KJB	12/11/24 14:54	2.14 100	DL41050
Thallium	ND (5.01)	---	6010D	---	1	KJB	12/11/24 14:54	2.14 100	DL41050
Vanadium	**19.0** (1.00)	---	6010D	---	1	KJB	12/11/24 14:54	2.14 100	DL41050
Zinc	**42.5** (2.50)	---	6010D	---	1	KJB	12/11/24 14:54	2.14 100	DL41050

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-2.0
Date Sampled: 12/10/24 08:00
Percent Solids: 93
Initial Volume: 4.6g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,1,1-Trichloroethane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,1,2,2-Tetrachloroethane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,1,2-Trichloroethane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,1-Dichloroethane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,1-Dichloroethene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,1-Dichloropropene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,2,3-Trichlorobenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,2,3-Trichloropropane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,2,4-Trichlorobenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,2,4-Trimethylbenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,2-Dibromo-3-Chloropropane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,2-Dibromoethane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,2-Dichlorobenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,2-Dichloroethane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,2-Dichloropropane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,3,5-Trimethylbenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,3-Dichlorobenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,3-Dichloropropane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,4-Dichlorobenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
1,4-Dioxane	ND (0.116)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
2,2-Dichloropropane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
2-Butanone	ND (0.0582)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
2-Chlorotoluene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
2-Hexanone	ND (0.0582)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
4-Chlorotoluene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
4-Isopropyltoluene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-2.0
Date Sampled: 12/10/24 08:00
Percent Solids: 93
Initial Volume: 4.6g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0582)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Acetone	ND (0.0582)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Benzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Bromobenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Bromochloromethane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Bromodichloromethane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Bromoform	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Bromomethane	ND (0.0116)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Carbon Disulfide	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Carbon Tetrachloride	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Chlorobenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Chloroethane	ND (0.0116)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Chloroform	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Chloromethane	ND (0.0116)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
cis-1,2-Dichloroethene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
cis-1,3-Dichloropropene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Dibromochloromethane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Dibromomethane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Dichlorodifluoromethane	ND (0.0116)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Diethyl Ether	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Di-isopropyl ether	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Ethyl tertiary-butyl ether	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Ethylbenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Hexachlorobutadiene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Isopropylbenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Methyl tert-Butyl Ether	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Methylene Chloride	ND (0.0291)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-2.0
Date Sampled: 12/10/24 08:00
Percent Solids: 93
Initial Volume: 4.6g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/13/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
n-Butylbenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
n-Propylbenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
sec-Butylbenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Styrene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
tert-Butylbenzene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Tertiary-amyl methyl ether	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Tetrachloroethene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Tetrahydrofuran	ND (0.0233)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Toluene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
trans-1,2-Dichloroethene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
trans-1,3-Dichloropropene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Trichloroethene	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Trichlorofluoromethane	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Vinyl Chloride	ND (0.0116)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Xylene O	ND (0.0058)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Xylene P,M	ND (0.0116)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326
Xylenes (Total)	ND (0.0116)	---	8260D Low	---	1	MEK	12/13/24 16:25	D4L0276	DL41326

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*121 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*91 %*		*70-130*
Surrogate: Dibromofluoromethane	*115 %*		*70-130*
Surrogate: Toluene-d8	*101 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-2.0
Date Sampled: 12/10/24 08:00
Percent Solids: 93
Initial Volume: 18.9g
Final Volume: 15ml
Extraction Method: 5035
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (9.2)	---	MA-VPH-2.1	---	1	12/11/24 15:25	D4L0235	DL41213
C5-C8 Aliphatics1,2	ND (9.63)	---	MA-VPH-2.1	---	1	12/11/24 15:25	---	[CALC]
C9-C12 Aliphatics2,3	ND (19.2)	---	MA-VPH-2.1	---	1	12/11/24 15:25	---	[CALC]
1:1 Methanol/Soil Ratio %D	**26** (N/A)		MA-VPH-2.1			12/11/24 8:00		DL41213
Preservative:	**MeOH - covered**		MA-VPH-2.1					DL41213

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*122 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*119 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*104 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*103 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-2.0
Date Sampled: 12/10/24 08:00
Percent Solids: 93
Initial Volume: 19.3g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:25

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.028)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
1,2,4-Trichlorobenzene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
1,2-Dichlorobenzene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
1,3-Dichlorobenzene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
1,4-Dichlorobenzene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
2,4,5-Trichlorophenol	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
2,4,6-Trichlorophenol	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
2,4-Dichlorophenol	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
2,4-Dimethylphenol	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
2,4-Dinitrophenol	ND (1.11)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
2,4-Dinitrotoluene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
2,6-Dinitrotoluene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
2-Chloronaphthalene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
2-Chlorophenol	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
2-Methylnaphthalene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
2-Methylphenol	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
2-Nitrophenol	ND (0.555)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
3,3′-Dichlorobenzidine	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
3+4-Methylphenol	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
4-Bromophenyl-phenylether	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
4-Chloroaniline	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
4-Nitrophenol	ND (1.11)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Acenaphthene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Acenaphthylene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Acetophenone	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Aniline	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Anthracene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-2.0
Date Sampled: 12/10/24 08:00
Percent Solids: 93
Initial Volume: 19.3g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:25

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Benzo(a)anthracene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Benzo(a)pyrene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Benzo(b)fluoranthene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Benzo(g,h,i)perylene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Benzo(k)fluoranthene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
bis(2-Chloroethoxy)methane	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
bis(2-Chloroethyl)ether	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
bis(2-chloroisopropyl)Ether	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
bis(2-Ethylhexyl)phthalate	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Butylbenzylphthalate	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Chrysene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Dibenzo(a,h)Anthracene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Dibenzofuran	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Diethylphthalate	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Dimethylphthalate	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Di-n-butylphthalate	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Di-n-octylphthalate	ND (0.555)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Fluoranthene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Fluorene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Hexachlorobenzene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Hexachlorobutadiene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Hexachloroethane	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Indeno(1,2,3-cd)Pyrene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Isophorone	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Naphthalene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Nitrobenzene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-2.0
Date Sampled: 12/10/24 08:00
Percent Solids: 93
Initial Volume: 19.3g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/11/24 11:25

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Pentachlorophenol	ND (1.11)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Phenanthrene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Phenol	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107
Pyrene	ND (0.278)	---	8270E	---	1	TJ	12/13/24 0:48	D4L0245	DL41107

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*93 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*124 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*99 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*82 %*		*30-130*
Surrogate: 2-Fluorophenol	*89 %*		*30-130*
Surrogate: Nitrobenzene-d5	*83 %*		*30-130*
Surrogate: Phenol-d6	*104 %*		*30-130*
Surrogate: p-Terphenyl-d14	*108 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-2.0
Date Sampled: 12/10/24 08:00
Percent Solids: 93
Initial Volume: 24.7g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-06
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 12/10/24 20:10

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (10.8)	---	MADEP-EPH	---	1	JDN	12/13/24 8:15	D4L0254	DL41045
C19-C36 Aliphatics1	ND (10.8)	---	MADEP-EPH	---	1	JDN	12/13/24 8:15	D4L0254	DL41045
C11-C22 Unadjusted Aromatics1	ND (10.8)	---	EPH8270	---	1	IBM	12/13/24 1:36	D4L0208	DL41045
C11-C22 Aromatics1,2	ND (10.8)	---	EPH8270	---		IBM	12/13/24 1:36	---	[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*84 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*79 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*78 %*		*40-140*
Surrogate: O-Terphenyl	*88 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-2.0
Date Sampled: 12/10/24 08:00
Percent Solids: 93
Initial Volume: 20.5g
Final Volume: 10ml
Extraction Method: 3540C

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-06
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JLG
Prepared: 12/11/24 11:29

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.05)	---	8082A	---	1	12/12/24 19:09	---	DL41105
Aroclor 1221	ND (0.05)	---	8082A	---	1	12/12/24 19:09	---	DL41105
Aroclor 1232	ND (0.05)	---	8082A	---	1	12/12/24 19:09	---	DL41105
Aroclor 1242	ND (0.05)	---	8082A	---	1	12/12/24 19:09	---	DL41105
Aroclor 1248	ND (0.05)	---	8082A	---	1	12/12/24 19:09	---	DL41105
Aroclor 1254	ND (0.05)	---	8082A	---	1	12/12/24 19:09	---	DL41105
Aroclor 1260	ND (0.05)	---	8082A	---	1	12/12/24 19:09	---	DL41105
Aroclor 1262	ND (0.05)	---	8082A	---	1	12/12/24 19:09	---	DL41105
Aroclor 1268	ND (0.05)	---	8082A	---	1	12/12/24 19:09	---	DL41105

	%Recovery	*Qualifier*	*Limits*
Surrogate: Decachlorobiphenyl	*70 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*72 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-2.0
Date Sampled: 12/10/24 08:00
Percent Solids: 93

ESS Laboratory Work Order: 24L0327
ESS Laboratory Sample ID: 24L0327-06
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 82** (5)	---	9050A	---	1	CCP	12/11/24 16:00	umhos/cm	DL41139
Corrosivity (pH)	**7.30** (N/A)	---	9045	---	1	CCP	12/10/24 19:00	S.U.	DL41030
Corrosivity (pH) Sample Temp	**20.3**	---	2550B	---	1	CCP	12/10/24 19:00	°C	DL41030
Flashpoint	**> 200** (N/A)	---	1010A	---	1	JLK	12/11/24 16:40	°F	DL41152
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	12/11/24 15:28	mg/kg	DL41149
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	12/11/24 15:28	mg/kg	DL41149

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DL41050 - 3050B										
Blank										
Antimony	ND	5.00	mg/kg wet							
Arsenic	ND	1.00	mg/kg wet							
Barium	ND	1.00	mg/kg wet							
Beryllium	ND	0.10	mg/kg wet							
Cadmium	ND	0.50	mg/kg wet							
Chromium	ND	1.00	mg/kg wet							
Lead	ND	5.00	mg/kg wet							
Nickel	ND	1.00	mg/kg wet							
Selenium	ND	5.00	mg/kg wet							
Silver	ND	0.50	mg/kg wet							
Thallium	ND	5.00	mg/kg wet							
Vanadium	ND	1.00	mg/kg wet							
Zinc	ND	2.50	mg/kg wet							
LCS										
Antimony	80.0	12.8	mg/kg wet	245.0		33	10-110			
Arsenic	141	2.56	mg/kg wet	280.0		50	32-110			
Barium	342	2.56	mg/kg wet	688.0		50	33-110			
Beryllium	52.8	0.26	mg/kg wet	105.0		50	32-110			
Cadmium	98.9	1.28	mg/kg wet	210.0		47	33-110			
Chromium	141	2.56	mg/kg wet	225.0		62	50-110			
Lead	171	12.8	mg/kg wet	350.0		49	31-110			
Nickel	59.7	2.56	mg/kg wet	95.00		63	48-111			
Selenium	159	12.8	mg/kg wet	320.0		50	29-110			
Silver	45.4	1.28	mg/kg wet	95.00		48	30-111			
Thallium	120	12.8	mg/kg wet	250.0		48	28-110			
Vanadium	159	2.56	mg/kg wet	295.0		54	34-110			
Zinc	239	6.41	mg/kg wet	500.0		48	30-110			
LCS Dup										
Antimony	73.6	13.9	mg/kg wet	245.0		30	10-110	8	30	
Arsenic	120	2.78	mg/kg wet	280.0		43	32-110	16	30	
Barium	309	2.78	mg/kg wet	688.0		45	33-110	10	30	
Beryllium	46.1	0.28	mg/kg wet	105.0		44	32-110	14	30	
Cadmium	86.4	1.39	mg/kg wet	210.0		41	33-110	13	30	
Chromium	130	2.78	mg/kg wet	225.0		58	50-110	8	30	
Lead	151	13.9	mg/kg wet	350.0		43	31-110	13	30	
Nickel	54.4	2.78	mg/kg wet	95.00		57	48-111	9	30	
Selenium	133	13.9	mg/kg wet	320.0		42	29-110	18	30	
Silver	39.3	1.39	mg/kg wet	95.00		41	30-111	14	30	
Thallium	105	13.9	mg/kg wet	250.0		42	28-110	13	30	
Vanadium	138	2.78	mg/kg wet	295.0		47	34-110	15	30	
Zinc	211	6.94	mg/kg wet	500.0		42	30-110	12	30	
Volatile Organics Low Level										

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41234 - 5035										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0500	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0500	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0500	mg/kg wet							
Acetone	ND	0.0500	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0050	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41234 - 5035										
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0250	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0200	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*0.0596*		mg/kg wet	*0.05000*		*119*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0446*		mg/kg wet	*0.05000*		*89*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0563*		mg/kg wet	*0.05000*		*113*	*70-130*			
Surrogate: Toluene-d8	*0.0500*		mg/kg wet	*0.05000*		*100*	*70-130*			
LCS										
1,1,1,2-Tetrachloroethane	0.0517	0.0050	mg/kg wet	0.05000		103	70-130			
1,1,1-Trichloroethane	0.0549	0.0050	mg/kg wet	0.05000		110	70-130			
1,1,2,2-Tetrachloroethane	0.0534	0.0050	mg/kg wet	0.05000		107	40-160			
1,1,2-Trichloroethane	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
1,1-Dichloroethane	0.0547	0.0050	mg/kg wet	0.05000		109	70-130			
1,1-Dichloroethene	0.0574	0.0050	mg/kg wet	0.05000		115	70-130			
1,1-Dichloropropene	0.0541	0.0050	mg/kg wet	0.05000		108	70-130			
1,2,3-Trichlorobenzene	0.0567	0.0050	mg/kg wet	0.05000		113	70-130			
1,2,3-Trichloropropane	0.0496	0.0050	mg/kg wet	0.05000		99	70-130			
1,2,4-Trichlorobenzene	0.0582	0.0050	mg/kg wet	0.05000		116	70-130			
1,2,4-Trimethylbenzene	0.0587	0.0050	mg/kg wet	0.05000		117	70-130			
1,2-Dibromo-3-Chloropropane	0.0519	0.0050	mg/kg wet	0.05000		104	70-130			
1,2-Dibromoethane	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41234 - 5035										
1,2-Dichlorobenzene	0.0539	0.0050	mg/kg wet	0.05000		108	70-130			
1,2-Dichloroethane	0.0511	0.0050	mg/kg wet	0.05000		102	70-130			
1,2-Dichloropropane	0.0530	0.0050	mg/kg wet	0.05000		106	70-130			
1,3,5-Trimethylbenzene	0.0586	0.0050	mg/kg wet	0.05000		117	70-130			
1,3-Dichlorobenzene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130			
1,3-Dichloropropane	0.0501	0.0050	mg/kg wet	0.05000		100	70-130			
1,4-Dichlorobenzene	0.0570	0.0050	mg/kg wet	0.05000		114	70-130			
1,4-Dioxane	0.918	0.100	mg/kg wet	1.000		92	70-130			
2,2-Dichloropropane	0.0571	0.0050	mg/kg wet	0.05000		114	70-130			
2-Butanone	0.274	0.0500	mg/kg wet	0.2500		110	40-160			
2-Chlorotoluene	0.0564	0.0050	mg/kg wet	0.05000		113	70-130			
2-Hexanone	0.228	0.0500	mg/kg wet	0.2500		91	40-160			
4-Chlorotoluene	0.0588	0.0050	mg/kg wet	0.05000		118	70-130			
4-Isopropyltoluene	0.0550	0.0050	mg/kg wet	0.05000		110	70-130			
4-Methyl-2-Pentanone	0.223	0.0500	mg/kg wet	0.2500		89	40-160			
Acetone	0.323	0.0500	mg/kg wet	0.2500		129	40-160			
Benzene	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
Bromobenzene	0.0538	0.0050	mg/kg wet	0.05000		108	70-130			
Bromochloromethane	0.0503	0.0050	mg/kg wet	0.05000		101	70-130			
Bromodichloromethane	0.0563	0.0050	mg/kg wet	0.05000		113	70-130			
Bromoform	0.0433	0.0050	mg/kg wet	0.05000		87	40-160			
Bromomethane	0.0496	0.0100	mg/kg wet	0.05000		99	40-160			
Carbon Disulfide	0.0576	0.0050	mg/kg wet	0.05000		115	70-130			
Carbon Tetrachloride	0.0544	0.0050	mg/kg wet	0.05000		109	70-130			
Chlorobenzene	0.0502	0.0050	mg/kg wet	0.05000		100	70-130			
Chloroethane	0.0610	0.0100	mg/kg wet	0.05000		122	40-160			
Chloroform	0.0524	0.0050	mg/kg wet	0.05000		105	70-130			
Chloromethane	0.0473	0.0100	mg/kg wet	0.05000		95	40-160			
cis-1,2-Dichloroethene	0.0534	0.0050	mg/kg wet	0.05000		107	70-130			
cis-1,3-Dichloropropene	0.0480	0.0050	mg/kg wet	0.05000		96	40-160			
Dibromochloromethane	0.0445	0.0050	mg/kg wet	0.05000		89	40-160			
Dibromomethane	0.0509	0.0050	mg/kg wet	0.05000		102	70-130			
Dichlorodifluoromethane	0.0396	0.0100	mg/kg wet	0.05000		79	40-160			
Diethyl Ether	0.0556	0.0050	mg/kg wet	0.05000		111	70-130			
Di-isopropyl ether	0.0552	0.0050	mg/kg wet	0.05000		110	70-130			
Ethyl tertiary-butyl ether	0.0552	0.0050	mg/kg wet	0.05000		110	70-130			
Ethylbenzene	0.0538	0.0050	mg/kg wet	0.05000		108	70-130			
Hexachlorobutadiene	0.0550	0.0050	mg/kg wet	0.05000		110	40-160			
Isopropylbenzene	0.0663	0.0050	mg/kg wet	0.05000		133	70-130			B+
Methyl tert-Butyl Ether	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
Methylene Chloride	0.0503	0.0250	mg/kg wet	0.05000		101	70-130			
Naphthalene	0.0528	0.0050	mg/kg wet	0.05000		106	40-160			
n-Butylbenzene	0.0599	0.0050	mg/kg wet	0.05000		120	70-130			
n-Propylbenzene	0.0584	0.0050	mg/kg wet	0.05000		117	70-130			
sec-Butylbenzene	0.0544	0.0050	mg/kg wet	0.05000		109	70-130			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41234 - 5035										
Styrene	0.0444	0.0050	mg/kg wet	0.05000		89	40-160			
tert-Butylbenzene	0.0577	0.0050	mg/kg wet	0.05000		115	70-130			
Tertiary-amyl methyl ether	0.0549	0.0050	mg/kg wet	0.05000		110	70-130			
Tetrachloroethene	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
Tetrahydrofuran	0.0452	0.0200	mg/kg wet	0.05000		90	70-130			
Toluene	0.0539	0.0050	mg/kg wet	0.05000		108	70-130			
trans-1,2-Dichloroethene	0.0555	0.0050	mg/kg wet	0.05000		111	70-130			
trans-1,3-Dichloropropene	0.0463	0.0050	mg/kg wet	0.05000		93	70-130			
Trichloroethene	0.0532	0.0050	mg/kg wet	0.05000		106	70-130			
Trichlorofluoromethane	0.0512	0.0050	mg/kg wet	0.05000		102	40-160			
Vinyl Chloride	0.0532	0.0100	mg/kg wet	0.05000		106	70-130			
Xylene O	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
Xylene P,M	0.0949	0.0100	mg/kg wet	0.1000		95	70-130			
Surrogate: 1,2-Dichloroethane-d4	*0.0493*		mg/kg wet	*0.05000*		*99*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0475*		mg/kg wet	*0.05000*		*95*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0506*		mg/kg wet	*0.05000*		*101*	*70-130*			
Surrogate: Toluene-d8	*0.0496*		mg/kg wet	*0.05000*		*99*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	0	20	
1,1,1-Trichloroethane	0.0556	0.0050	mg/kg wet	0.05000		111	70-130	1	20	
1,1,2,2-Tetrachloroethane	0.0509	0.0050	mg/kg wet	0.05000		102	40-160	5	20	
1,1,2-Trichloroethane	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	2	20	
1,1-Dichloroethane	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	0.5	20	
1,1-Dichloroethene	0.0580	0.0050	mg/kg wet	0.05000		116	70-130	1	20	
1,1-Dichloropropene	0.0541	0.0050	mg/kg wet	0.05000		108	70-130	0.1	20	
1,2,3-Trichlorobenzene	0.0549	0.0050	mg/kg wet	0.05000		110	70-130	3	20	
1,2,3-Trichloropropane	0.0463	0.0050	mg/kg wet	0.05000		93	70-130	7	20	
1,2,4-Trichlorobenzene	0.0564	0.0050	mg/kg wet	0.05000		113	70-130	3	20	
1,2,4-Trimethylbenzene	0.0572	0.0050	mg/kg wet	0.05000		114	70-130	3	20	
1,2-Dibromo-3-Chloropropane	0.0472	0.0050	mg/kg wet	0.05000		94	70-130	10	20	
1,2-Dibromoethane	0.0496	0.0050	mg/kg wet	0.05000		99	70-130	0.6	20	
1,2-Dichlorobenzene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130	3	20	
1,2-Dichloroethane	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	0.3	20	
1,2-Dichloropropane	0.0536	0.0050	mg/kg wet	0.05000		107	70-130	1	20	
1,3,5-Trimethylbenzene	0.0571	0.0050	mg/kg wet	0.05000		114	70-130	3	20	
1,3-Dichlorobenzene	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	3	20	
1,3-Dichloropropane	0.0499	0.0050	mg/kg wet	0.05000		100	70-130	0.4	20	
1,4-Dichlorobenzene	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	3	20	
1,4-Dioxane	0.878	0.100	mg/kg wet	1.000		88	70-130	4	20	
2,2-Dichloropropane	0.0578	0.0050	mg/kg wet	0.05000		116	70-130	1	20	
2-Butanone	0.254	0.0500	mg/kg wet	0.2500		102	40-160	8	20	
2-Chlorotoluene	0.0546	0.0050	mg/kg wet	0.05000		109	70-130	3	20	
2-Hexanone	0.203	0.0500	mg/kg wet	0.2500		81	40-160	11	20	
4-Chlorotoluene	0.0574	0.0050	mg/kg wet	0.05000		115	70-130	2	20	
4-Isopropyltoluene	0.0538	0.0050	mg/kg wet	0.05000		108	70-130	2	20	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41234 - 5035										
4-Methyl-2-Pentanone	0.207	0.0500	mg/kg wet	0.2500		83	40-160	7	20	
Acetone	0.282	0.0500	mg/kg wet	0.2500		113	40-160	14	20	
Benzene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130	0.6	20	
Bromobenzene	0.0526	0.0050	mg/kg wet	0.05000		105	70-130	2	20	
Bromochloromethane	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	0	20	
Bromodichloromethane	0.0559	0.0050	mg/kg wet	0.05000		112	70-130	0.6	20	
Bromoform	0.0427	0.0050	mg/kg wet	0.05000		85	40-160	1	20	
Bromomethane	0.0469	0.0100	mg/kg wet	0.05000		94	40-160	6	20	
Carbon Disulfide	0.0572	0.0050	mg/kg wet	0.05000		114	70-130	0.7	20	
Carbon Tetrachloride	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	0.3	20	
Chlorobenzene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130	0.7	20	
Chloroethane	0.0592	0.0100	mg/kg wet	0.05000		118	40-160	3	20	
Chloroform	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	0.2	20	
Chloromethane	0.0436	0.0100	mg/kg wet	0.05000		87	40-160	8	20	
cis-1,2-Dichloroethene	0.0531	0.0050	mg/kg wet	0.05000		106	70-130	0.6	20	
cis-1,3-Dichloropropene	0.0482	0.0050	mg/kg wet	0.05000		96	40-160	0.2	20	
Dibromochloromethane	0.0439	0.0050	mg/kg wet	0.05000		88	40-160	1	20	
Dibromomethane	0.0498	0.0050	mg/kg wet	0.05000		100	70-130	2	20	
Dichlorodifluoromethane	0.0375	0.0100	mg/kg wet	0.05000		75	40-160	6	20	
Diethyl Ether	0.0554	0.0050	mg/kg wet	0.05000		111	70-130	0.4	20	
Di-isopropyl ether	0.0551	0.0050	mg/kg wet	0.05000		110	70-130	0.1	20	
Ethyl tertiary-butyl ether	0.0557	0.0050	mg/kg wet	0.05000		111	70-130	0.9	20	
Ethylbenzene	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	0.3	20	
Hexachlorobutadiene	0.0532	0.0050	mg/kg wet	0.05000		106	40-160	3	20	
Isopropylbenzene	0.0654	0.0050	mg/kg wet	0.05000		131	70-130	1	20	B+
Methyl tert-Butyl Ether	0.0519	0.0050	mg/kg wet	0.05000		104	70-130	0.8	20	
Methylene Chloride	0.0497	0.0250	mg/kg wet	0.05000		99	70-130	1	20	
Naphthalene	0.0513	0.0050	mg/kg wet	0.05000		103	40-160	3	20	
n-Butylbenzene	0.0579	0.0050	mg/kg wet	0.05000		116	70-130	3	20	
n-Propylbenzene	0.0577	0.0050	mg/kg wet	0.05000		115	70-130	1	20	
sec-Butylbenzene	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	2	20	
Styrene	0.0443	0.0050	mg/kg wet	0.05000		89	40-160	0.3	20	
tert-Butylbenzene	0.0565	0.0050	mg/kg wet	0.05000		113	70-130	2	20	
Tertiary-amyl methyl ether	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	0.04	20	
Tetrachloroethene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130	2	20	
Tetrahydrofuran	0.0430	0.0200	mg/kg wet	0.05000		86	70-130	5	20	
Toluene	0.0535	0.0050	mg/kg wet	0.05000		107	70-130	0.6	20	
trans-1,2-Dichloroethene	0.0558	0.0050	mg/kg wet	0.05000		112	70-130	0.6	20	
trans-1,3-Dichloropropene	0.0465	0.0050	mg/kg wet	0.05000		93	70-130	0.5	20	
Trichloroethene	0.0531	0.0050	mg/kg wet	0.05000		106	70-130	0.1	20	
Trichlorofluoromethane	0.0509	0.0050	mg/kg wet	0.05000		102	40-160	0.7	20	
Vinyl Chloride	0.0502	0.0100	mg/kg wet	0.05000		100	70-130	6	20	
Xylene O	0.0464	0.0050	mg/kg wet	0.05000		93	70-130	0.04	20	
Xylene P,M	0.0949	0.0100	mg/kg wet	0.1000		95	70-130	0	20	
Surrogate: 1,2-Dichloroethane-d4	*0.0486*		mg/kg wet	*0.05000*		*97*	*70-130*			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41234 - 5035										
Surrogate: 4-Bromofluorobenzene	*0.0495*		mg/kg wet	*0.05000*		*99*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0498*		mg/kg wet	*0.05000*		*100*	*70-130*			
Surrogate: Toluene-d8	*0.0494*		mg/kg wet	*0.05000*		*99*	*70-130*			
Batch DL41326 - 5035										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0500	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0500	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0500	mg/kg wet							
Acetone	ND	0.0500	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41326 - 5035										
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0050	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0250	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0200	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*0.0575*		mg/kg wet	*0.05000*		*115*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0433*		mg/kg wet	*0.05000*		*87*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0558*		mg/kg wet	*0.05000*		*112*	*70-130*			
Surrogate: Toluene-d8	*0.0495*		mg/kg wet	*0.05000*		*99*	*70-130*			
LCS										
1,1,1,2-Tetrachloroethane	0.0526	0.0050	mg/kg wet	0.05000		105	70-130			
1,1,1-Trichloroethane	0.0533	0.0050	mg/kg wet	0.05000		107	70-130			
1,1,2,2-Tetrachloroethane	0.0520	0.0050	mg/kg wet	0.05000		104	40-160			
1,1,2-Trichloroethane	0.0529	0.0050	mg/kg wet	0.05000		106	70-130			
1,1-Dichloroethane	0.0538	0.0050	mg/kg wet	0.05000		108	70-130			
1,1-Dichloroethene	0.0556	0.0050	mg/kg wet	0.05000		111	70-130			
1,1-Dichloropropene	0.0519	0.0050	mg/kg wet	0.05000		104	70-130			
1,2,3-Trichlorobenzene	0.0552	0.0050	mg/kg wet	0.05000		110	70-130			

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41326 - 5035										
1,2,3-Trichloropropane	0.0483	0.0050	mg/kg wet	0.05000		97	70-130			
1,2,4-Trichlorobenzene	0.0561	0.0050	mg/kg wet	0.05000		112	70-130			
1,2,4-Trimethylbenzene	0.0548	0.0050	mg/kg wet	0.05000		110	70-130			
1,2-Dibromo-3-Chloropropane	0.0503	0.0050	mg/kg wet	0.05000		101	70-130			
1,2-Dibromoethane	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
1,2-Dichlorobenzene	0.0516	0.0050	mg/kg wet	0.05000		103	70-130			
1,2-Dichloroethane	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
1,2-Dichloropropane	0.0539	0.0050	mg/kg wet	0.05000		108	70-130			
1,3,5-Trimethylbenzene	0.0546	0.0050	mg/kg wet	0.05000		109	70-130			
1,3-Dichlorobenzene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130			
1,3-Dichloropropane	0.0517	0.0050	mg/kg wet	0.05000		103	70-130			
1,4-Dichlorobenzene	0.0537	0.0050	mg/kg wet	0.05000		107	70-130			
1,4-Dioxane	0.959	0.100	mg/kg wet	1.000		96	70-130			
2,2-Dichloropropane	0.0550	0.0050	mg/kg wet	0.05000		110	70-130			
2-Butanone	0.261	0.0500	mg/kg wet	0.2500		104	40-160			
2-Chlorotoluene	0.0529	0.0050	mg/kg wet	0.05000		106	70-130			
2-Hexanone	0.217	0.0500	mg/kg wet	0.2500		87	40-160			
4-Chlorotoluene	0.0552	0.0050	mg/kg wet	0.05000		110	70-130			
4-Isopropyltoluene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130			
4-Methyl-2-Pentanone	0.227	0.0500	mg/kg wet	0.2500		91	40-160			
Acetone	0.279	0.0500	mg/kg wet	0.2500		112	40-160			
Benzene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
Bromobenzene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
Bromochloromethane	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
Bromodichloromethane	0.0571	0.0050	mg/kg wet	0.05000		114	70-130			
Bromoform	0.0449	0.0050	mg/kg wet	0.05000		90	40-160			
Bromomethane	0.0453	0.0100	mg/kg wet	0.05000		91	40-160			
Carbon Disulfide	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			
Carbon Tetrachloride	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
Chlorobenzene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130			
Chloroethane	0.0548	0.0100	mg/kg wet	0.05000		110	40-160			
Chloroform	0.0517	0.0050	mg/kg wet	0.05000		103	70-130			
Chloromethane	0.0425	0.0100	mg/kg wet	0.05000		85	40-160			
cis-1,2-Dichloroethene	0.0533	0.0050	mg/kg wet	0.05000		107	70-130			
cis-1,3-Dichloropropene	0.0497	0.0050	mg/kg wet	0.05000		99	40-160			
Dibromochloromethane	0.0462	0.0050	mg/kg wet	0.05000		92	40-160			
Dibromomethane	0.0526	0.0050	mg/kg wet	0.05000		105	70-130			
Dichlorodifluoromethane	0.0364	0.0100	mg/kg wet	0.05000		73	40-160			
Diethyl Ether	0.0579	0.0050	mg/kg wet	0.05000		116	70-130			
Di-isopropyl ether	0.0563	0.0050	mg/kg wet	0.05000		113	70-130			
Ethyl tertiary-butyl ether	0.0572	0.0050	mg/kg wet	0.05000		114	70-130			
Ethylbenzene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130			
Hexachlorobutadiene	0.0505	0.0050	mg/kg wet	0.05000		101	40-160			
Isopropylbenzene	0.0611	0.0050	mg/kg wet	0.05000		122	70-130			
Methyl tert-Butyl Ether	0.0546	0.0050	mg/kg wet	0.05000		109	70-130			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41326 - 5035										
Methylene Chloride	0.0502	0.0250	mg/kg wet	0.05000		100	70-130			
Naphthalene	0.0518	0.0050	mg/kg wet	0.05000		104	40-160			
n-Butylbenzene	0.0545	0.0050	mg/kg wet	0.05000		109	70-130			
n-Propylbenzene	0.0535	0.0050	mg/kg wet	0.05000		107	70-130			
sec-Butylbenzene	0.0501	0.0050	mg/kg wet	0.05000		100	70-130			
Styrene	0.0448	0.0050	mg/kg wet	0.05000		90	40-160			
tert-Butylbenzene	0.0531	0.0050	mg/kg wet	0.05000		106	70-130			
Tertiary-amyl methyl ether	0.0577	0.0050	mg/kg wet	0.05000		115	70-130			
Tetrachloroethene	0.0500	0.0050	mg/kg wet	0.05000		100	70-130			
Tetrahydrofuran	0.0479	0.0200	mg/kg wet	0.05000		96	70-130			
Toluene	0.0529	0.0050	mg/kg wet	0.05000		106	70-130			
trans-1,2-Dichloroethene	0.0543	0.0050	mg/kg wet	0.05000		109	70-130			
trans-1,3-Dichloropropene	0.0485	0.0050	mg/kg wet	0.05000		97	70-130			
Trichloroethene	0.0524	0.0050	mg/kg wet	0.05000		105	70-130			
Trichlorofluoromethane	0.0483	0.0050	mg/kg wet	0.05000		97	40-160			
Vinyl Chloride	0.0475	0.0100	mg/kg wet	0.05000		95	70-130			
Xylene O	0.0462	0.0050	mg/kg wet	0.05000		92	70-130			
Xylene P,M	0.0941	0.0100	mg/kg wet	0.1000		94	70-130			
Surrogate: 1,2-Dichloroethane-d4	*0.0498*		mg/kg wet	*0.05000*		*100*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0507*		mg/kg wet	*0.05000*		*101*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0501*		mg/kg wet	*0.05000*		*100*	*70-130*			
Surrogate: Toluene-d8	*0.0496*		mg/kg wet	*0.05000*		*99*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	0.0552	0.0050	mg/kg wet	0.05000		110	70-130	5	20	
1,1,1-Trichloroethane	0.0551	0.0050	mg/kg wet	0.05000		110	70-130	3	20	
1,1,2,2-Tetrachloroethane	0.0545	0.0050	mg/kg wet	0.05000		109	40-160	5	20	
1,1,2-Trichloroethane	0.0541	0.0050	mg/kg wet	0.05000		108	70-130	2	20	
1,1-Dichloroethane	0.0553	0.0050	mg/kg wet	0.05000		111	70-130	3	20	
1,1-Dichloroethene	0.0586	0.0050	mg/kg wet	0.05000		117	70-130	5	20	
1,1-Dichloropropene	0.0538	0.0050	mg/kg wet	0.05000		108	70-130	4	20	
1,2,3-Trichlorobenzene	0.0571	0.0050	mg/kg wet	0.05000		114	70-130	3	20	
1,2,3-Trichloropropane	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	4	20	
1,2,4-Trichlorobenzene	0.0581	0.0050	mg/kg wet	0.05000		116	70-130	4	20	
1,2,4-Trimethylbenzene	0.0567	0.0050	mg/kg wet	0.05000		113	70-130	3	20	
1,2-Dibromo-3-Chloropropane	0.0537	0.0050	mg/kg wet	0.05000		107	70-130	7	20	
1,2-Dibromoethane	0.0547	0.0050	mg/kg wet	0.05000		109	70-130	5	20	
1,2-Dichlorobenzene	0.0534	0.0050	mg/kg wet	0.05000		107	70-130	3	20	
1,2-Dichloroethane	0.0535	0.0050	mg/kg wet	0.05000		107	70-130	3	20	
1,2-Dichloropropane	0.0555	0.0050	mg/kg wet	0.05000		111	70-130	3	20	
1,3,5-Trimethylbenzene	0.0567	0.0050	mg/kg wet	0.05000		113	70-130	4	20	
1,3-Dichlorobenzene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130	3	20	
1,3-Dichloropropane	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	5	20	
1,4-Dichlorobenzene	0.0553	0.0050	mg/kg wet	0.05000		111	70-130	3	20	
1,4-Dioxane	1.04	0.100	mg/kg wet	1.000		104	70-130	8	20	
2,2-Dichloropropane	0.0564	0.0050	mg/kg wet	0.05000		113	70-130	3	20	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41326 - 5035										
2-Butanone	0.275	0.0500	mg/kg wet	0.2500		110	40-160	5	20	
2-Chlorotoluene	0.0546	0.0050	mg/kg wet	0.05000		109	70-130	3	20	
2-Hexanone	0.240	0.0500	mg/kg wet	0.2500		96	40-160	10	20	
4-Chlorotoluene	0.0566	0.0050	mg/kg wet	0.05000		113	70-130	3	20	
4-Isopropyltoluene	0.0527	0.0050	mg/kg wet	0.05000		105	70-130	4	20	
4-Methyl-2-Pentanone	0.237	0.0500	mg/kg wet	0.2500		95	40-160	5	20	
Acetone	0.311	0.0500	mg/kg wet	0.2500		124	40-160	11	20	
Benzene	0.0535	0.0050	mg/kg wet	0.05000		107	70-130	2	20	
Bromobenzene	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	2	20	
Bromochloromethane	0.0536	0.0050	mg/kg wet	0.05000		107	70-130	3	20	
Bromodichloromethane	0.0581	0.0050	mg/kg wet	0.05000		116	70-130	2	20	
Bromoform	0.0473	0.0050	mg/kg wet	0.05000		95	40-160	5	20	
Bromomethane	0.0480	0.0100	mg/kg wet	0.05000		96	40-160	6	20	
Carbon Disulfide	0.0575	0.0050	mg/kg wet	0.05000		115	70-130	4	20	
Carbon Tetrachloride	0.0544	0.0050	mg/kg wet	0.05000		109	70-130	3	20	
Chlorobenzene	0.0531	0.0050	mg/kg wet	0.05000		106	70-130	5	20	
Chloroethane	0.0593	0.0100	mg/kg wet	0.05000		119	40-160	8	20	
Chloroform	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	3	20	
Chloromethane	0.0456	0.0100	mg/kg wet	0.05000		91	40-160	7	20	
cis-1,2-Dichloroethene	0.0544	0.0050	mg/kg wet	0.05000		109	70-130	2	20	
cis-1,3-Dichloropropene	0.0504	0.0050	mg/kg wet	0.05000		101	40-160	2	20	
Dibromochloromethane	0.0482	0.0050	mg/kg wet	0.05000		96	40-160	4	20	
Dibromomethane	0.0534	0.0050	mg/kg wet	0.05000		107	70-130	2	20	
Dichlorodifluoromethane	0.0385	0.0100	mg/kg wet	0.05000		77	40-160	6	20	
Diethyl Ether	0.0597	0.0050	mg/kg wet	0.05000		119	70-130	3	20	
Di-isopropyl ether	0.0576	0.0050	mg/kg wet	0.05000		115	70-130	2	20	
Ethyl tertiary-butyl ether	0.0583	0.0050	mg/kg wet	0.05000		117	70-130	2	20	
Ethylbenzene	0.0560	0.0050	mg/kg wet	0.05000		112	70-130	6	20	
Hexachlorobutadiene	0.0535	0.0050	mg/kg wet	0.05000		107	40-160	6	20	
Isopropylbenzene	0.0642	0.0050	mg/kg wet	0.05000		128	70-130	5	20	
Methyl tert-Butyl Ether	0.0561	0.0050	mg/kg wet	0.05000		112	70-130	3	20	
Methylene Chloride	0.0515	0.0250	mg/kg wet	0.05000		103	70-130	2	20	
Naphthalene	0.0545	0.0050	mg/kg wet	0.05000		109	40-160	5	20	
n-Butylbenzene	0.0567	0.0050	mg/kg wet	0.05000		113	70-130	4	20	
n-Propylbenzene	0.0561	0.0050	mg/kg wet	0.05000		112	70-130	5	20	
sec-Butylbenzene	0.0521	0.0050	mg/kg wet	0.05000		104	70-130	4	20	
Styrene	0.0471	0.0050	mg/kg wet	0.05000		94	40-160	5	20	
tert-Butylbenzene	0.0561	0.0050	mg/kg wet	0.05000		112	70-130	5	20	
Tertiary-amyl methyl ether	0.0587	0.0050	mg/kg wet	0.05000		117	70-130	2	20	
Tetrachloroethene	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	8	20	
Tetrahydrofuran	0.0510	0.0200	mg/kg wet	0.05000		102	70-130	6	20	
Toluene	0.0547	0.0050	mg/kg wet	0.05000		109	70-130	3	20	
trans-1,2-Dichloroethene	0.0565	0.0050	mg/kg wet	0.05000		113	70-130	4	20	
trans-1,3-Dichloropropene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130	2	20	
Trichloroethene	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	3	20	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41326 - 5035										
Trichlorofluoromethane	0.0507	0.0050	mg/kg wet	0.05000		101	40-160	5	20	
Vinyl Chloride	0.0505	0.0100	mg/kg wet	0.05000		101	70-130	6	20	
Xylene O	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	5	20	
Xylene P,M	0.0991	0.0100	mg/kg wet	0.1000		99	70-130	5	20	
Surrogate: 1,2-Dichloroethane-d4	*0.0492*		mg/kg wet	*0.05000*		*98*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0511*		mg/kg wet	*0.05000*		*102*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0504*		mg/kg wet	*0.05000*		*101*	*70-130*			
Surrogate: Toluene-d8	*0.0508*		mg/kg wet	*0.05000*		*102*	*70-130*			
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch DL41213 - 5035										
Blank										
1,2,4-Trimethylbenzene	ND	0.2	mg/kg wet							
2,2,4-Trimethylpentane	ND	5.0	mg/kg wet							
2-Methylpentane	ND	5.0	mg/kg wet							
Benzene	ND	0.2	mg/kg wet							
C5-C8 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
C9-C10 Aromatics	ND	10.0	mg/kg wet							
C9-C12 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
Ethylbenzene	ND	0.2	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.05	mg/kg wet							
Naphthalene	ND	0.2	mg/kg wet							
n-Butylcyclohexane	ND	5.0	mg/kg wet							
n-Decane	ND	5.0	mg/kg wet							
Nonane (C9)	ND	5.0	mg/kg wet							
Pentane	ND	5.0	mg/kg wet							
Toluene	ND	0.2	mg/kg wet							
Xylene O	ND	0.2	mg/kg wet							
Xylene P,M	ND	0.4	mg/kg wet							
Surrogate: 2,5-Dibromotoluene - FID	*5.52*		mg/kg wet	*5.000*		*110*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*5.63*		mg/kg wet	*5.000*		*113*	*70-130*			
Surrogate: Trifluorotoluene - FID	*5.07*		mg/kg wet	*5.333*		*95*	*70-130*			
Surrogate: Trifluorotoluene - PID	*5.24*		mg/kg wet	*5.333*		*98*	*70-130*			
LCS										
1,2,4-Trimethylbenzene	9.7	0.2	mg/kg wet	10.00		97	70-130			
2,2,4-Trimethylpentane	16.6	5.0	mg/kg wet	15.00		111	70-130			
2-Methylpentane	15.7	5.0	mg/kg wet	15.00		104	70-130			
Benzene	4.7	0.2	mg/kg wet	5.000		93	70-130			
C5-C8 Unadjusted Aliphatics	44.1	10.0	mg/kg wet	40.00		110	70-130			
C9-C10 Aromatics	9.7	10.0	mg/kg wet	10.00		97	70-130			
C9-C12 Unadjusted Aliphatics	22.3	10.0	mg/kg wet	30.00		74	70-130			
Ethylbenzene	5.1	0.2	mg/kg wet	5.000		101	70-130			
Methyl tert-Butyl Ether	12.9	0.05	mg/kg wet	15.00		86	70-130			
Naphthalene	9.5	0.2	mg/kg wet	10.00		95	70-130			
n-Butylcyclohexane	9.7	5.0	mg/kg wet	10.00		97	70-130			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch DL41213 - 5035										
n-Decane	8.3	5.0	mg/kg wet	10.00		83	70-130			
Nonane (C9)	9.6	5.0	mg/kg wet	10.00		96	30-130			
Pentane	11.4	5.0	mg/kg wet	10.00		114	70-130			
Toluene	14.4	0.2	mg/kg wet	15.00		96	70-130			
Xylene O	9.6	0.2	mg/kg wet	10.00		96	70-130			
Xylene P,M	19.4	0.4	mg/kg wet	20.00		97	70-130			
Surrogate: 2,5-Dibromotoluene - FID	*5.85*		mg/kg wet	*5.000*		*117*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*6.10*		mg/kg wet	*5.000*		*122*	*70-130*			
Surrogate: Trifluorotoluene - FID	*5.62*		mg/kg wet	*5.333*		*105*	*70-130*			
Surrogate: Trifluorotoluene - PID	*5.98*		mg/kg wet	*5.333*		*112*	*70-130*			
LCS Dup										
1,2,4-Trimethylbenzene	10.0	0.2	mg/kg wet	10.00		100	70-130	2	25	
2,2,4-Trimethylpentane	14.9	5.0	mg/kg wet	15.00		99	70-130	11	25	
2-Methylpentane	13.9	5.0	mg/kg wet	15.00		93	70-130	12	25	
Benzene	4.4	0.2	mg/kg wet	5.000		88	70-130	6	25	
C5-C8 Unadjusted Aliphatics	38.6	10.0	mg/kg wet	40.00		96	70-130	13	25	
C9-C10 Aromatics	10.0	10.0	mg/kg wet	10.00		100	70-130	2	25	
C9-C12 Unadjusted Aliphatics	21.6	10.0	mg/kg wet	30.00		72	70-130	3	25	
Ethylbenzene	4.9	0.2	mg/kg wet	5.000		97	70-130	4	25	
Methyl tert-Butyl Ether	12.6	0.05	mg/kg wet	15.00		84	70-130	2	25	
Naphthalene	10.5	0.2	mg/kg wet	10.00		105	70-130	9	25	
n-Butylcyclohexane	9.3	5.0	mg/kg wet	10.00		93	70-130	4	25	
n-Decane	8.3	5.0	mg/kg wet	10.00		83	70-130	0.5	25	
Nonane (C9)	9.2	5.0	mg/kg wet	10.00		92	30-130	4	25	
Pentane	9.3	5.0	mg/kg wet	10.00		93	70-130	20	25	
Toluene	13.7	0.2	mg/kg wet	15.00		91	70-130	5	25	
Xylene O	9.5	0.2	mg/kg wet	10.00		95	70-130	1	25	
Xylene P,M	19.0	0.4	mg/kg wet	20.00		95	70-130	2	25	
Surrogate: 2,5-Dibromotoluene - FID	*6.18*		mg/kg wet	*5.000*		*124*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*6.27*		mg/kg wet	*5.000*		*125*	*70-130*			
Surrogate: Trifluorotoluene - FID	*5.15*		mg/kg wet	*5.333*		*97*	*70-130*			
Surrogate: Trifluorotoluene - PID	*5.46*		mg/kg wet	*5.333*		*102*	*70-130*			
Semi-Volatile Organic Compounds										
Batch DL41106 - 3546										
Blank										
1,1-Biphenyl	ND	0.025	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.250	mg/kg wet							
1,2-Dichlorobenzene	ND	0.250	mg/kg wet							
1,3-Dichlorobenzene	ND	0.250	mg/kg wet							
1,4-Dichlorobenzene	ND	0.250	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.250	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.250	mg/kg wet							
2,4-Dichlorophenol	ND	0.250	mg/kg wet							
2,4-Dimethylphenol	ND	0.250	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41106 - 3546										
2,4-Dinitrophenol	ND	1.00	mg/kg wet							
2,4-Dinitrotoluene	ND	0.250	mg/kg wet							
2,6-Dinitrotoluene	ND	0.250	mg/kg wet							
2-Chloronaphthalene	ND	0.250	mg/kg wet							
2-Chlorophenol	ND	0.250	mg/kg wet							
2-Methylnaphthalene	ND	0.250	mg/kg wet							
2-Methylphenol	ND	0.250	mg/kg wet							
2-Nitrophenol	ND	0.500	mg/kg wet							
3,3´-Dichlorobenzidine	ND	0.250	mg/kg wet							
3+4-Methylphenol	ND	0.250	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.250	mg/kg wet							
4-Chloroaniline	ND	0.250	mg/kg wet							
4-Nitrophenol	ND	1.00	mg/kg wet							
Acenaphthene	ND	0.250	mg/kg wet							
Acenaphthylene	ND	0.250	mg/kg wet							
Acetophenone	ND	0.250	mg/kg wet							
Aniline	ND	0.250	mg/kg wet							
Anthracene	ND	0.250	mg/kg wet							
Azobenzene	ND	0.250	mg/kg wet							
Benzo(a)anthracene	ND	0.250	mg/kg wet							
Benzo(a)pyrene	ND	0.250	mg/kg wet							
Benzo(b)fluoranthene	ND	0.250	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.250	mg/kg wet							
Benzo(k)fluoranthene	ND	0.250	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.250	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.250	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.250	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.250	mg/kg wet							
Butylbenzylphthalate	ND	0.250	mg/kg wet							
Chrysene	ND	0.250	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.250	mg/kg wet							
Dibenzofuran	ND	0.250	mg/kg wet							
Diethylphthalate	ND	0.250	mg/kg wet							
Dimethylphthalate	ND	0.250	mg/kg wet							
Di-n-butylphthalate	ND	0.250	mg/kg wet							
Di-n-octylphthalate	ND	0.500	mg/kg wet							
Fluoranthene	ND	0.250	mg/kg wet							
Fluorene	ND	0.250	mg/kg wet							
Hexachlorobenzene	ND	0.250	mg/kg wet							
Hexachlorobutadiene	ND	0.250	mg/kg wet							
Hexachloroethane	ND	0.250	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.250	mg/kg wet							
Isophorone	ND	0.250	mg/kg wet							
Naphthalene	ND	0.250	mg/kg wet							
Nitrobenzene	ND	0.250	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41106 - 3546										
N-Nitrosodimethylamine	ND	0.250	mg/kg wet							
Pentachlorophenol	ND	1.00	mg/kg wet							
Phenanthrene	ND	0.250	mg/kg wet							
Phenol	ND	0.250	mg/kg wet							
Pyrene	ND	0.250	mg/kg wet							
Pyridine	ND	0.250	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	*1.95*		mg/kg wet	*2.500*		*78*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.16*		mg/kg wet	*3.750*		*84*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*2.93*		mg/kg wet	*3.750*		*78*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.07*		mg/kg wet	*2.500*		*83*	*30-130*			
Surrogate: 2-Fluorophenol	*2.80*		mg/kg wet	*3.750*		*75*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.93*		mg/kg wet	*2.500*		*77*	*30-130*			
Surrogate: Phenol-d6	*2.83*		mg/kg wet	*3.750*		*76*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.44*		mg/kg wet	*2.500*		*98*	*30-130*			
LCS										
1,1-Biphenyl	2.12	0.025	mg/kg wet	2.500		85	40-140			
1,2,4-Trichlorobenzene	1.84	0.250	mg/kg wet	2.500		73	40-140			
1,2-Dichlorobenzene	2.03	0.250	mg/kg wet	2.500		81	40-140			
1,3-Dichlorobenzene	2.02	0.250	mg/kg wet	2.500		81	40-140			
1,4-Dichlorobenzene	2.07	0.250	mg/kg wet	2.500		83	40-140			
2,4,5-Trichlorophenol	2.15	0.250	mg/kg wet	2.500		86	30-130			
2,4,6-Trichlorophenol	1.99	0.250	mg/kg wet	2.500		79	30-130			
2,4-Dichlorophenol	1.80	0.250	mg/kg wet	2.500		72	30-130			
2,4-Dimethylphenol	1.77	0.250	mg/kg wet	2.500		71	30-130			
2,4-Dinitrophenol	1.17	1.00	mg/kg wet	2.500		47	15-140			
2,4-Dinitrotoluene	2.09	0.250	mg/kg wet	2.500		84	40-140			
2,6-Dinitrotoluene	2.07	0.250	mg/kg wet	2.500		83	40-140			
2-Chloronaphthalene	1.96	0.250	mg/kg wet	2.500		78	40-140			
2-Chlorophenol	2.01	0.250	mg/kg wet	2.500		80	30-130			
2-Methylnaphthalene	1.92	0.250	mg/kg wet	2.500		77	40-140			
2-Methylphenol	1.95	0.250	mg/kg wet	2.500		78	15-140			
2-Nitrophenol	1.85	0.500	mg/kg wet	2.500		74	30-130			
3,3´-Dichlorobenzidine	2.00	0.250	mg/kg wet	2.500		80	40-140			
3+4-Methylphenol	3.82	0.250	mg/kg wet	5.000		76	15-140			
4-Bromophenyl-phenylether	2.42	0.250	mg/kg wet	2.500		97	40-140			
4-Chloroaniline	1.39	0.250	mg/kg wet	2.500		56	15-140			
4-Nitrophenol	1.57	1.00	mg/kg wet	2.500		63	15-140			
Acenaphthene	2.13	0.250	mg/kg wet	2.500		85	40-140			
Acenaphthylene	2.14	0.250	mg/kg wet	2.500		85	40-140			
Acetophenone	1.86	0.250	mg/kg wet	2.500		74	40-140			
Aniline	1.09	0.250	mg/kg wet	2.500		44	40-140			
Anthracene	2.37	0.250	mg/kg wet	2.500		95	40-140			
Azobenzene	2.33	0.250	mg/kg wet	2.500		93	40-140			
Benzo(a)anthracene	2.15	0.250	mg/kg wet	2.500		86	40-140			
Benzo(a)pyrene	2.32	0.250	mg/kg wet	2.500		93	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41106 - 3546										
Benzo(b)fluoranthene	2.09	0.250	mg/kg wet	2.500		84	40-140			
Benzo(g,h,i)perylene	2.30	0.250	mg/kg wet	2.500		92	40-140			
Benzo(k)fluoranthene	2.26	0.250	mg/kg wet	2.500		91	40-140			
bis(2-Chloroethoxy)methane	1.86	0.250	mg/kg wet	2.500		74	40-140			
bis(2-Chloroethyl)ether	2.02	0.250	mg/kg wet	2.500		81	40-140			
bis(2-chloroisopropyl)Ether	1.76	0.250	mg/kg wet	2.500		70	40-140			
bis(2-Ethylhexyl)phthalate	2.18	0.250	mg/kg wet	2.500		87	40-140			
Butylbenzylphthalate	2.29	0.250	mg/kg wet	2.500		92	40-140			
Chrysene	2.24	0.250	mg/kg wet	2.500		90	40-140			
Dibenzo(a,h)Anthracene	2.38	0.250	mg/kg wet	2.500		95	40-140			
Dibenzofuran	2.06	0.250	mg/kg wet	2.500		82	40-140			
Diethylphthalate	2.08	0.250	mg/kg wet	2.500		83	40-140			
Dimethylphthalate	2.10	0.250	mg/kg wet	2.500		84	15-140			
Di-n-butylphthalate	2.37	0.250	mg/kg wet	2.500		95	40-140			
Di-n-octylphthalate	2.11	0.500	mg/kg wet	2.500		84	40-140			
Fluoranthene	2.22	0.250	mg/kg wet	2.500		89	40-140			
Fluorene	2.10	0.250	mg/kg wet	2.500		84	40-140			
Hexachlorobenzene	2.24	0.250	mg/kg wet	2.500		90	40-140			
Hexachlorobutadiene	1.82	0.250	mg/kg wet	2.500		73	40-140			
Hexachloroethane	2.06	0.250	mg/kg wet	2.500		83	40-140			
Indeno(1,2,3-cd)Pyrene	2.24	0.250	mg/kg wet	2.500		89	40-140			
Isophorone	1.65	0.250	mg/kg wet	2.500		66	40-140			
Naphthalene	1.76	0.250	mg/kg wet	2.500		70	40-140			
Nitrobenzene	1.79	0.250	mg/kg wet	2.500		71	40-140			
N-Nitrosodimethylamine	1.85	0.250	mg/kg wet	2.500		74	40-140			
Pentachlorophenol	1.86	1.00	mg/kg wet	2.500		74	15-140			
Phenanthrene	2.32	0.250	mg/kg wet	2.500		93	40-140			
Phenol	1.88	0.250	mg/kg wet	2.500		75	15-140			
Pyrene	2.36	0.250	mg/kg wet	2.500		94	40-140			
Pyridine	2.51	0.250	mg/kg wet	2.500		101	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*2.03*		mg/kg wet	*2.500*		*81*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.68*		mg/kg wet	*3.750*		*98*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.02*		mg/kg wet	*3.750*		*81*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.17*		mg/kg wet	*2.500*		*87*	*30-130*			
Surrogate: 2-Fluorophenol	*2.89*		mg/kg wet	*3.750*		*77*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.80*		mg/kg wet	*2.500*		*72*	*30-130*			
Surrogate: Phenol-d6	*3.02*		mg/kg wet	*3.750*		*81*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.32*		mg/kg wet	*2.500*		*93*	*30-130*			
LCS Dup										
1,1-Biphenyl	2.35	0.025	mg/kg wet	2.500		94	40-140	10	30	
1,2,4-Trichlorobenzene	1.98	0.250	mg/kg wet	2.500		79	40-140	8	30	
1,2-Dichlorobenzene	2.19	0.250	mg/kg wet	2.500		88	40-140	8	30	
1,3-Dichlorobenzene	2.18	0.250	mg/kg wet	2.500		87	40-140	8	30	
1,4-Dichlorobenzene	2.24	0.250	mg/kg wet	2.500		90	40-140	8	30	
2,4,5-Trichlorophenol	2.51	0.250	mg/kg wet	2.500		101	30-130	15	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41106 - 3546										
2,4,6-Trichlorophenol	2.25	0.250	mg/kg wet	2.500		90	30-130	13	30	
2,4-Dichlorophenol	1.94	0.250	mg/kg wet	2.500		78	30-130	8	30	
2,4-Dimethylphenol	1.89	0.250	mg/kg wet	2.500		76	30-130	7	30	
2,4-Dinitrophenol	1.52	1.00	mg/kg wet	2.500		61	15-140	26	30	
2,4-Dinitrotoluene	2.31	0.250	mg/kg wet	2.500		93	40-140	10	30	
2,6-Dinitrotoluene	2.34	0.250	mg/kg wet	2.500		94	40-140	12	30	
2-Chloronaphthalene	2.18	0.250	mg/kg wet	2.500		87	40-140	10	30	
2-Chlorophenol	2.18	0.250	mg/kg wet	2.500		87	30-130	8	30	
2-Methylnaphthalene	2.09	0.250	mg/kg wet	2.500		84	40-140	8	30	
2-Methylphenol	2.18	0.250	mg/kg wet	2.500		87	15-140	11	30	
2-Nitrophenol	1.94	0.500	mg/kg wet	2.500		78	30-130	5	30	
3,3´-Dichlorobenzidine	2.27	0.250	mg/kg wet	2.500		91	40-140	13	30	
3+4-Methylphenol	4.26	0.250	mg/kg wet	5.000		85	15-140	11	30	
4-Bromophenyl-phenylether	2.73	0.250	mg/kg wet	2.500		109	40-140	12	30	
4-Chloroaniline	1.56	0.250	mg/kg wet	2.500		62	15-140	11	30	
4-Nitrophenol	1.85	1.00	mg/kg wet	2.500		74	15-140	16	30	
Acenaphthene	2.37	0.250	mg/kg wet	2.500		95	40-140	11	30	
Acenaphthylene	2.37	0.250	mg/kg wet	2.500		95	40-140	10	30	
Acetophenone	2.11	0.250	mg/kg wet	2.500		85	40-140	13	30	
Aniline	1.27	0.250	mg/kg wet	2.500		51	40-140	15	30	
Anthracene	2.65	0.250	mg/kg wet	2.500		106	40-140	11	30	
Azobenzene	2.58	0.250	mg/kg wet	2.500		103	40-140	11	30	
Benzo(a)anthracene	2.40	0.250	mg/kg wet	2.500		96	40-140	11	30	
Benzo(a)pyrene	2.57	0.250	mg/kg wet	2.500		103	40-140	10	30	
Benzo(b)fluoranthene	2.32	0.250	mg/kg wet	2.500		93	40-140	11	30	
Benzo(g,h,i)perylene	2.53	0.250	mg/kg wet	2.500		101	40-140	10	30	
Benzo(k)fluoranthene	2.51	0.250	mg/kg wet	2.500		100	40-140	10	30	
bis(2-Chloroethoxy)methane	2.03	0.250	mg/kg wet	2.500		81	40-140	8	30	
bis(2-Chloroethyl)ether	2.26	0.250	mg/kg wet	2.500		91	40-140	12	30	
bis(2-chloroisopropyl)Ether	1.88	0.250	mg/kg wet	2.500		75	40-140	7	30	
bis(2-Ethylhexyl)phthalate	2.42	0.250	mg/kg wet	2.500		97	40-140	11	30	
Butylbenzylphthalate	2.55	0.250	mg/kg wet	2.500		102	40-140	11	30	
Chrysene	2.49	0.250	mg/kg wet	2.500		100	40-140	11	30	
Dibenzo(a,h)Anthracene	2.63	0.250	mg/kg wet	2.500		105	40-140	10	30	
Dibenzofuran	2.26	0.250	mg/kg wet	2.500		90	40-140	10	30	
Diethylphthalate	2.32	0.250	mg/kg wet	2.500		93	40-140	11	30	
Dimethylphthalate	2.34	0.250	mg/kg wet	2.500		93	15-140	11	30	
Di-n-butylphthalate	2.62	0.250	mg/kg wet	2.500		105	40-140	10	30	
Di-n-octylphthalate	2.36	0.500	mg/kg wet	2.500		94	40-140	11	30	
Fluoranthene	2.48	0.250	mg/kg wet	2.500		99	40-140	11	30	
Fluorene	2.33	0.250	mg/kg wet	2.500		93	40-140	11	30	
Hexachlorobenzene	2.47	0.250	mg/kg wet	2.500		99	40-140	10	30	
Hexachlorobutadiene	1.95	0.250	mg/kg wet	2.500		78	40-140	7	30	
Hexachloroethane	2.25	0.250	mg/kg wet	2.500		90	40-140	8	30	
Indeno(1,2,3-cd)Pyrene	2.48	0.250	mg/kg wet	2.500		99	40-140	10	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41106 - 3546										
Isophorone	1.81	0.250	mg/kg wet	2.500		72	40-140	9	30	
Naphthalene	1.90	0.250	mg/kg wet	2.500		76	40-140	7	30	
Nitrobenzene	1.95	0.250	mg/kg wet	2.500		78	40-140	9	30	
N-Nitrosodimethylamine	2.01	0.250	mg/kg wet	2.500		80	40-140	8	30	
Pentachlorophenol	2.05	1.00	mg/kg wet	2.500		82	15-140	10	30	
Phenanthrene	2.56	0.250	mg/kg wet	2.500		103	40-140	10	30	
Phenol	2.10	0.250	mg/kg wet	2.500		84	15-140	11	30	
Pyrene	2.62	0.250	mg/kg wet	2.500		105	40-140	10	30	
Pyridine	2.69	0.250	mg/kg wet	2.500		108	40-140	7	30	
Surrogate: 1,2-Dichlorobenzene-d4	*2.13*		mg/kg wet	*2.500*		*85*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.90*		mg/kg wet	*3.750*		*104*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.26*		mg/kg wet	*3.750*		*87*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.31*		mg/kg wet	*2.500*		*92*	*30-130*			
Surrogate: 2-Fluorophenol	*3.05*		mg/kg wet	*3.750*		*81*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.86*		mg/kg wet	*2.500*		*74*	*30-130*			
Surrogate: Phenol-d6	*3.24*		mg/kg wet	*3.750*		*86*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.47*		mg/kg wet	*2.500*		*99*	*30-130*			
Batch DL41107 - 3546										
Blank										
1,1-Biphenyl	ND	0.025	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.250	mg/kg wet							
1,2-Dichlorobenzene	ND	0.250	mg/kg wet							
1,3-Dichlorobenzene	ND	0.250	mg/kg wet							
1,4-Dichlorobenzene	ND	0.250	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.250	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.250	mg/kg wet							
2,4-Dichlorophenol	ND	0.250	mg/kg wet							
2,4-Dimethylphenol	ND	0.250	mg/kg wet							
2,4-Dinitrophenol	ND	1.00	mg/kg wet							
2,4-Dinitrotoluene	ND	0.250	mg/kg wet							
2,6-Dinitrotoluene	ND	0.250	mg/kg wet							
2-Chloronaphthalene	ND	0.250	mg/kg wet							
2-Chlorophenol	ND	0.250	mg/kg wet							
2-Methylnaphthalene	ND	0.250	mg/kg wet							
2-Methylphenol	ND	0.250	mg/kg wet							
2-Nitrophenol	ND	0.500	mg/kg wet							
3,3´-Dichlorobenzidine	ND	0.250	mg/kg wet							
3+4-Methylphenol	ND	0.250	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.250	mg/kg wet							
4-Chloroaniline	ND	0.250	mg/kg wet							
4-Nitrophenol	ND	1.00	mg/kg wet							
Acenaphthene	ND	0.250	mg/kg wet							
Acenaphthylene	ND	0.250	mg/kg wet							
Acetophenone	ND	0.250	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41107 - 3546										
Aniline	ND	0.250	mg/kg wet							
Anthracene	ND	0.250	mg/kg wet							
Azobenzene	ND	0.250	mg/kg wet							
Benzo(a)anthracene	ND	0.250	mg/kg wet							
Benzo(a)pyrene	ND	0.250	mg/kg wet							
Benzo(b)fluoranthene	ND	0.250	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.250	mg/kg wet							
Benzo(k)fluoranthene	ND	0.250	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.250	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.250	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.250	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.250	mg/kg wet							
Butylbenzylphthalate	ND	0.250	mg/kg wet							
Chrysene	ND	0.250	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.250	mg/kg wet							
Dibenzofuran	ND	0.250	mg/kg wet							
Diethylphthalate	ND	0.250	mg/kg wet							
Dimethylphthalate	ND	0.250	mg/kg wet							
Di-n-butylphthalate	ND	0.250	mg/kg wet							
Di-n-octylphthalate	ND	0.500	mg/kg wet							
Fluoranthene	ND	0.250	mg/kg wet							
Fluorene	ND	0.250	mg/kg wet							
Hexachlorobenzene	ND	0.250	mg/kg wet							
Hexachlorobutadiene	ND	0.250	mg/kg wet							
Hexachloroethane	ND	0.250	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.250	mg/kg wet							
Isophorone	ND	0.250	mg/kg wet							
Naphthalene	ND	0.250	mg/kg wet							
Nitrobenzene	ND	0.250	mg/kg wet							
N-Nitrosodimethylamine	ND	0.250	mg/kg wet							
Pentachlorophenol	ND	1.00	mg/kg wet							
Phenanthrene	ND	0.250	mg/kg wet							
Phenol	ND	0.250	mg/kg wet							
Pyrene	ND	0.250	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	*2.12*		mg/kg wet	*2.500*		*85*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.54*		mg/kg wet	*3.750*		*94*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.38*		mg/kg wet	*3.750*		*90*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.12*		mg/kg wet	*2.500*		*85*	*30-130*			
Surrogate: 2-Fluorophenol	*3.20*		mg/kg wet	*3.750*		*85*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.11*		mg/kg wet	*2.500*		*84*	*30-130*			
Surrogate: Phenol-d6	*3.41*		mg/kg wet	*3.750*		*91*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.32*		mg/kg wet	*2.500*		*93*	*30-130*			
LCS										
1,1-Biphenyl	2.17	0.025	mg/kg wet	2.500		87	40-140			
1,2,4-Trichlorobenzene	1.89	0.250	mg/kg wet	2.500		76	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41107 - 3546										
1,2-Dichlorobenzene	2.18	0.250	mg/kg wet	2.500		87	40-140			
1,3-Dichlorobenzene	2.13	0.250	mg/kg wet	2.500		85	40-140			
1,4-Dichlorobenzene	2.21	0.250	mg/kg wet	2.500		89	40-140			
2,4,5-Trichlorophenol	2.50	0.250	mg/kg wet	2.500		100	30-130			
2,4,6-Trichlorophenol	2.13	0.250	mg/kg wet	2.500		85	30-130			
2,4-Dichlorophenol	1.97	0.250	mg/kg wet	2.500		79	30-130			
2,4-Dimethylphenol	1.93	0.250	mg/kg wet	2.500		77	30-130			
2,4-Dinitrophenol	1.64	1.00	mg/kg wet	2.500		65	15-140			
2,4-Dinitrotoluene	2.50	0.250	mg/kg wet	2.500		100	40-140			
2,6-Dinitrotoluene	2.41	0.250	mg/kg wet	2.500		96	40-140			
2-Chloronaphthalene	2.03	0.250	mg/kg wet	2.500		81	40-140			
2-Chlorophenol	2.23	0.250	mg/kg wet	2.500		89	30-130			
2-Methylnaphthalene	2.12	0.250	mg/kg wet	2.500		85	40-140			
2-Methylphenol	2.25	0.250	mg/kg wet	2.500		90	15-140			
2-Nitrophenol	1.88	0.500	mg/kg wet	2.500		75	30-130			
3,3´-Dichlorobenzidine	2.36	0.250	mg/kg wet	2.500		94	40-140			
3+4-Methylphenol	4.57	0.250	mg/kg wet	5.000		91	15-140			
4-Bromophenyl-phenylether	2.45	0.250	mg/kg wet	2.500		98	40-140			
4-Chloroaniline	1.67	0.250	mg/kg wet	2.500		67	15-140			
4-Nitrophenol	2.16	1.00	mg/kg wet	2.500		86	15-140			
Acenaphthene	2.34	0.250	mg/kg wet	2.500		93	40-140			
Acenaphthylene	2.24	0.250	mg/kg wet	2.500		90	40-140			
Acetophenone	2.18	0.250	mg/kg wet	2.500		87	40-140			
Aniline	1.21	0.250	mg/kg wet	2.500		48	40-140			
Anthracene	2.57	0.250	mg/kg wet	2.500		103	40-140			
Azobenzene	2.32	0.250	mg/kg wet	2.500		93	40-140			
Benzo(a)anthracene	2.31	0.250	mg/kg wet	2.500		92	40-140			
Benzo(a)pyrene	2.47	0.250	mg/kg wet	2.500		99	40-140			
Benzo(b)fluoranthene	2.13	0.250	mg/kg wet	2.500		85	40-140			
Benzo(g,h,i)perylene	2.62	0.250	mg/kg wet	2.500		105	40-140			
Benzo(k)fluoranthene	2.34	0.250	mg/kg wet	2.500		94	40-140			
bis(2-Chloroethoxy)methane	2.01	0.250	mg/kg wet	2.500		81	40-140			
bis(2-Chloroethyl)ether	2.34	0.250	mg/kg wet	2.500		94	40-140			
bis(2-chloroisopropyl)Ether	1.94	0.250	mg/kg wet	2.500		77	40-140			
bis(2-Ethylhexyl)phthalate	2.34	0.250	mg/kg wet	2.500		93	40-140			
Butylbenzylphthalate	2.32	0.250	mg/kg wet	2.500		93	40-140			
Chrysene	2.40	0.250	mg/kg wet	2.500		96	40-140			
Dibenzo(a,h)Anthracene	2.71	0.250	mg/kg wet	2.500		108	40-140			
Dibenzofuran	2.29	0.250	mg/kg wet	2.500		92	40-140			
Diethylphthalate	2.50	0.250	mg/kg wet	2.500		100	40-140			
Dimethylphthalate	2.37	0.250	mg/kg wet	2.500		95	15-140			
Di-n-butylphthalate	2.80	0.250	mg/kg wet	2.500		112	40-140			
Di-n-octylphthalate	2.12	0.500	mg/kg wet	2.500		85	40-140			
Fluoranthene	2.71	0.250	mg/kg wet	2.500		108	40-140			
Fluorene	2.36	0.250	mg/kg wet	2.500		94	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41107 - 3546										
Hexachlorobenzene	2.37	0.250	mg/kg wet	2.500		95	40-140			
Hexachlorobutadiene	1.84	0.250	mg/kg wet	2.500		74	40-140			
Hexachloroethane	2.22	0.250	mg/kg wet	2.500		89	40-140			
Indeno(1,2,3-cd)Pyrene	2.57	0.250	mg/kg wet	2.500		103	40-140			
Isophorone	1.86	0.250	mg/kg wet	2.500		75	40-140			
Naphthalene	1.86	0.250	mg/kg wet	2.500		74	40-140			
Nitrobenzene	1.85	0.250	mg/kg wet	2.500		74	40-140			
N-Nitrosodimethylamine	2.03	0.250	mg/kg wet	2.500		81	40-140			
Pentachlorophenol	2.29	1.00	mg/kg wet	2.500		92	15-140			
Phenanthrene	2.44	0.250	mg/kg wet	2.500		97	40-140			
Phenol	2.17	0.250	mg/kg wet	2.500		87	15-140			
Pyrene	2.08	0.250	mg/kg wet	2.500		83	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*2.11*		mg/kg wet	*2.500*		*84*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.71*		mg/kg wet	*3.750*		*99*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.33*		mg/kg wet	*3.750*		*89*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.13*		mg/kg wet	*2.500*		*85*	*30-130*			
Surrogate: 2-Fluorophenol	*3.06*		mg/kg wet	*3.750*		*82*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.78*		mg/kg wet	*2.500*		*71*	*30-130*			
Surrogate: Phenol-d6	*3.44*		mg/kg wet	*3.750*		*92*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.00*		mg/kg wet	*2.500*		*80*	*30-130*			
LCS Dup										
1,1-Biphenyl	2.16	0.025	mg/kg wet	2.500		86	40-140	0.7	30	
1,2,4-Trichlorobenzene	1.88	0.250	mg/kg wet	2.500		75	40-140	0.6	30	
1,2-Dichlorobenzene	2.10	0.250	mg/kg wet	2.500		84	40-140	4	30	
1,3-Dichlorobenzene	2.06	0.250	mg/kg wet	2.500		82	40-140	4	30	
1,4-Dichlorobenzene	2.13	0.250	mg/kg wet	2.500		85	40-140	4	30	
2,4,5-Trichlorophenol	2.35	0.250	mg/kg wet	2.500		94	30-130	6	30	
2,4,6-Trichlorophenol	2.28	0.250	mg/kg wet	2.500		91	30-130	7	30	
2,4-Dichlorophenol	1.94	0.250	mg/kg wet	2.500		77	30-130	2	30	
2,4-Dimethylphenol	1.87	0.250	mg/kg wet	2.500		75	30-130	4	30	
2,4-Dinitrophenol	1.88	1.00	mg/kg wet	2.500		75	15-140	14	30	
2,4-Dinitrotoluene	2.43	0.250	mg/kg wet	2.500		97	40-140	3	30	
2,6-Dinitrotoluene	2.36	0.250	mg/kg wet	2.500		94	40-140	2	30	
2-Chloronaphthalene	2.00	0.250	mg/kg wet	2.500		80	40-140	1	30	
2-Chlorophenol	2.16	0.250	mg/kg wet	2.500		86	30-130	3	30	
2-Methylnaphthalene	2.04	0.250	mg/kg wet	2.500		81	40-140	4	30	
2-Methylphenol	2.21	0.250	mg/kg wet	2.500		88	15-140	2	30	
2-Nitrophenol	1.97	0.500	mg/kg wet	2.500		79	30-130	5	30	
3,3´-Dichlorobenzidine	2.22	0.250	mg/kg wet	2.500		89	40-140	6	30	
3+4-Methylphenol	4.37	0.250	mg/kg wet	5.000		87	15-140	4	30	
4-Bromophenyl-phenylether	2.46	0.250	mg/kg wet	2.500		98	40-140	0.6	30	
4-Chloroaniline	1.51	0.250	mg/kg wet	2.500		60	15-140	10	30	
4-Nitrophenol	2.14	1.00	mg/kg wet	2.500		86	15-140	0.9	30	
Acenaphthene	2.28	0.250	mg/kg wet	2.500		91	40-140	3	30	
Acenaphthylene	2.26	0.250	mg/kg wet	2.500		90	40-140	0.7	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41107 - 3546										
Acetophenone	2.09	0.250	mg/kg wet	2.500		84	40-140	4	30	
Aniline	1.28	0.250	mg/kg wet	2.500		51	40-140	6	30	
Anthracene	2.56	0.250	mg/kg wet	2.500		103	40-140	0.04	30	
Azobenzene	2.38	0.250	mg/kg wet	2.500		95	40-140	2	30	
Benzo(a)anthracene	2.31	0.250	mg/kg wet	2.500		92	40-140	0.2	30	
Benzo(a)pyrene	2.37	0.250	mg/kg wet	2.500		95	40-140	4	30	
Benzo(b)fluoranthene	2.07	0.250	mg/kg wet	2.500		83	40-140	3	30	
Benzo(g,h,i)perylene	2.37	0.250	mg/kg wet	2.500		95	40-140	10	30	
Benzo(k)fluoranthene	2.30	0.250	mg/kg wet	2.500		92	40-140	2	30	
bis(2-Chloroethoxy)methane	1.97	0.250	mg/kg wet	2.500		79	40-140	2	30	
bis(2-Chloroethyl)ether	2.21	0.250	mg/kg wet	2.500		89	40-140	6	30	
bis(2-chloroisopropyl)Ether	1.85	0.250	mg/kg wet	2.500		74	40-140	5	30	
bis(2-Ethylhexyl)phthalate	2.29	0.250	mg/kg wet	2.500		92	40-140	2	30	
Butylbenzylphthalate	2.39	0.250	mg/kg wet	2.500		95	40-140	3	30	
Chrysene	2.36	0.250	mg/kg wet	2.500		94	40-140	2	30	
Dibenzo(a,h)Anthracene	2.48	0.250	mg/kg wet	2.500		99	40-140	9	30	
Dibenzofuran	2.23	0.250	mg/kg wet	2.500		89	40-140	3	30	
Diethylphthalate	2.37	0.250	mg/kg wet	2.500		95	40-140	5	30	
Dimethylphthalate	2.31	0.250	mg/kg wet	2.500		92	15-140	2	30	
Di-n-butylphthalate	2.57	0.250	mg/kg wet	2.500		103	40-140	8	30	
Di-n-octylphthalate	2.05	0.500	mg/kg wet	2.500		82	40-140	3	30	
Fluoranthene	2.48	0.250	mg/kg wet	2.500		99	40-140	9	30	
Fluorene	2.31	0.250	mg/kg wet	2.500		92	40-140	2	30	
Hexachlorobenzene	2.36	0.250	mg/kg wet	2.500		94	40-140	0.5	30	
Hexachlorobutadiene	1.80	0.250	mg/kg wet	2.500		72	40-140	2	30	
Hexachloroethane	2.12	0.250	mg/kg wet	2.500		85	40-140	5	30	
Indeno(1,2,3-cd)Pyrene	2.36	0.250	mg/kg wet	2.500		94	40-140	9	30	
Isophorone	1.79	0.250	mg/kg wet	2.500		72	40-140	4	30	
Naphthalene	1.81	0.250	mg/kg wet	2.500		73	40-140	3	30	
Nitrobenzene	1.85	0.250	mg/kg wet	2.500		74	40-140	0.04	30	
N-Nitrosodimethylamine	1.96	0.250	mg/kg wet	2.500		78	40-140	3	30	
Pentachlorophenol	2.10	1.00	mg/kg wet	2.500		84	15-140	9	30	
Phenanthrene	2.47	0.250	mg/kg wet	2.500		99	40-140	1	30	
Phenol	2.11	0.250	mg/kg wet	2.500		84	15-140	3	30	
Pyrene	2.36	0.250	mg/kg wet	2.500		94	40-140	13	30	
Surrogate: 1,2-Dichlorobenzene-d4	*2.05*		mg/kg wet	*2.500*		*82*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.82*		mg/kg wet	*3.750*		*102*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.22*		mg/kg wet	*3.750*		*86*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.12*		mg/kg wet	*2.500*		*85*	*30-130*			
Surrogate: 2-Fluorophenol	*2.94*		mg/kg wet	*3.750*		*78*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.77*		mg/kg wet	*2.500*		*71*	*30-130*			
Surrogate: Phenol-d6	*3.34*		mg/kg wet	*3.750*		*89*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.22*		mg/kg wet	*2.500*		*89*	*30-130*			

MADEP-EPH Extractable Petroleum Hydrocarbons

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL41045 - 3546										
Blank										
C19-C36 Aliphatics1	ND	10.0	mg/kg wet							
C9-C18 Aliphatics1	ND	10.0	mg/kg wet							
Surrogate: 1-Chlorooctadecane	*1.45*		mg/kg wet	*2.000*		*73*	*40-140*			
Blank										
2-Methylnaphthalene	ND	0.20	mg/kg wet							
Acenaphthene	ND	0.40	mg/kg wet							
Acenaphthylene	ND	0.20	mg/kg wet							
Anthracene	ND	0.40	mg/kg wet							
Benzo(a)anthracene	ND	0.40	mg/kg wet							
Benzo(a)pyrene	ND	0.40	mg/kg wet							
Benzo(b)fluoranthene	ND	0.40	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet							
Benzo(k)fluoranthene	ND	0.40	mg/kg wet							
C11-C22 Unadjusted Aromatics1	ND	10.0	mg/kg wet							
Chrysene	ND	0.40	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet							
Fluoranthene	ND	0.40	mg/kg wet							
Fluorene	ND	0.40	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet							
Naphthalene	ND	0.40	mg/kg wet							
Phenanthrene	ND	0.40	mg/kg wet							
Pyrene	ND	0.40	mg/kg wet							
Surrogate: 2-Bromonaphthalene	*1.81*		mg/kg wet	*2.000*		*91*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.75*		mg/kg wet	*2.000*		*88*	*40-140*			
Surrogate: O-Terphenyl	*1.77*		mg/kg wet	*2.000*		*89*	*40-140*			
LCS										
C19-C36 Aliphatics1	13.9	10.0	mg/kg wet	16.00		87	40-140			
C9-C18 Aliphatics1	9.3	10.0	mg/kg wet	12.00		77	40-140			
Surrogate: 1-Chlorooctadecane	*1.83*		mg/kg wet	*2.000*		*92*	*40-140*			
LCS										
2-Methylnaphthalene	1.19	0.20	mg/kg wet	2.000		59	40-140			
Acenaphthene	1.37	0.40	mg/kg wet	2.000		68	40-140			
Acenaphthylene	1.39	0.20	mg/kg wet	2.000		69	40-140			
Anthracene	1.54	0.40	mg/kg wet	2.000		77	40-140			
Benzo(a)anthracene	1.51	0.40	mg/kg wet	2.000		75	40-140			
Benzo(a)pyrene	1.60	0.40	mg/kg wet	2.000		80	40-140			
Benzo(b)fluoranthene	1.41	0.40	mg/kg wet	2.000		71	40-140			
Benzo(g,h,i)perylene	1.30	0.40	mg/kg wet	2.000		65	40-140			
Benzo(k)fluoranthene	1.48	0.40	mg/kg wet	2.000		74	40-140			
C11-C22 Unadjusted Aromatics1	27.1	10.0	mg/kg wet	34.00		80	40-140			
Chrysene	1.51	0.40	mg/kg wet	2.000		75	40-140			
Dibenzo(a,h)Anthracene	1.42	0.20	mg/kg wet	2.000		71	40-140			
Fluoranthene	1.56	0.40	mg/kg wet	2.000		78	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL41045 - 3546										
Fluorene	1.43	0.40	mg/kg wet	2.000		71	40-140			
Indeno(1,2,3-cd)Pyrene	1.41	0.40	mg/kg wet	2.000		71	40-140			
Naphthalene	1.11	0.40	mg/kg wet	2.000		55	40-140			
Phenanthrene	1.47	0.40	mg/kg wet	2.000		74	40-140			
Pyrene	1.52	0.40	mg/kg wet	2.000		76	40-140			
Surrogate: 2-Bromonaphthalene	*1.84*		mg/kg wet	*2.000*		*92*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.88*		mg/kg wet	*2.000*		*94*	*40-140*			
Surrogate: O-Terphenyl	*1.95*		mg/kg wet	*2.000*		*97*	*40-140*			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS Dup										
C19-C36 Aliphatics1	14.3	10.0	mg/kg wet	16.00		89	40-140	3	25	
C9-C18 Aliphatics1	9.4	10.0	mg/kg wet	12.00		78	40-140	0.7	25	
Surrogate: 1-Chlorooctadecane	*1.81*		mg/kg wet	*2.000*		*91*	*40-140*			
LCS Dup										
2-Methylnaphthalene	1.16	0.20	mg/kg wet	2.000		58	40-140	2	30	
Acenaphthene	1.31	0.40	mg/kg wet	2.000		65	40-140	4	30	
Acenaphthylene	1.28	0.20	mg/kg wet	2.000		64	40-140	8	30	
Anthracene	1.46	0.40	mg/kg wet	2.000		73	40-140	5	30	
Benzo(a)anthracene	1.46	0.40	mg/kg wet	2.000		73	40-140	3	30	
Benzo(a)pyrene	1.53	0.40	mg/kg wet	2.000		77	40-140	4	30	
Benzo(b)fluoranthene	1.36	0.40	mg/kg wet	2.000		68	40-140	4	30	
Benzo(g,h,i)perylene	1.26	0.40	mg/kg wet	2.000		63	40-140	3	30	
Benzo(k)fluoranthene	1.47	0.40	mg/kg wet	2.000		74	40-140	0.8	30	
C11-C22 Unadjusted Aromatics1	25.6	10.0	mg/kg wet	34.00		75	40-140	5	25	
Chrysene	1.48	0.40	mg/kg wet	2.000		74	40-140	2	30	
Dibenzo(a,h)Anthracene	1.37	0.20	mg/kg wet	2.000		69	40-140	4	30	
Fluoranthene	1.50	0.40	mg/kg wet	2.000		75	40-140	4	30	
Fluorene	1.33	0.40	mg/kg wet	2.000		66	40-140	7	30	
Indeno(1,2,3-cd)Pyrene	1.29	0.40	mg/kg wet	2.000		65	40-140	9	30	
Naphthalene	1.06	0.40	mg/kg wet	2.000		53	40-140	4	30	
Phenanthrene	1.40	0.40	mg/kg wet	2.000		70	40-140	5	30	
Pyrene	1.47	0.40	mg/kg wet	2.000		73	40-140	4	30	
Surrogate: 2-Bromonaphthalene	*1.69*		mg/kg wet	*2.000*		*85*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.77*		mg/kg wet	*2.000*		*89*	*40-140*			
Surrogate: O-Terphenyl	*1.89*		mg/kg wet	*2.000*		*95*	*40-140*			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	
Batch DL41346 - 3546										
Blank										
C19-C36 Aliphatics1	ND	10.0	mg/kg wet							
C9-C18 Aliphatics1	ND	10.0	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL41346 - 3546										
Surrogate: 1-Chlorooctadecane	*1.74*		mg/kg wet	*2.000*		*87*	*40-140*			
Blank										
2-Methylnaphthalene	ND	0.20	mg/kg wet							
Acenaphthene	ND	0.40	mg/kg wet							
Acenaphthylene	ND	0.20	mg/kg wet							
Anthracene	ND	0.40	mg/kg wet							
Benzo(a)anthracene	ND	0.40	mg/kg wet							
Benzo(a)pyrene	ND	0.40	mg/kg wet							
Benzo(b)fluoranthene	ND	0.40	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet							
Benzo(k)fluoranthene	ND	0.40	mg/kg wet							
C11-C22 Unadjusted Aromatics1	ND	10.0	mg/kg wet							
Chrysene	ND	0.40	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet							
Fluoranthene	ND	0.40	mg/kg wet							
Fluorene	ND	0.40	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet							
Naphthalene	ND	0.40	mg/kg wet							
Phenanthrene	ND	0.40	mg/kg wet							
Pyrene	ND	0.40	mg/kg wet							
Surrogate: 2-Bromonaphthalene	*2.05*		mg/kg wet	*2.000*		*103*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.94*		mg/kg wet	*2.000*		*97*	*40-140*			
Surrogate: O-Terphenyl	*2.33*		mg/kg wet	*2.000*		*116*	*40-140*			
LCS										
C19-C36 Aliphatics1	15.0	10.0	mg/kg wet	16.00		94	40-140			
C9-C18 Aliphatics1	8.7	10.0	mg/kg wet	12.00		73	40-140			
Surrogate: 1-Chlorooctadecane	*1.74*		mg/kg wet	*2.000*		*87*	*40-140*			
LCS										
2-Methylnaphthalene	1.34	0.20	mg/kg wet	2.000		67	40-140			
Acenaphthene	1.47	0.40	mg/kg wet	2.000		74	40-140			
Acenaphthylene	1.49	0.20	mg/kg wet	2.000		75	40-140			
Anthracene	1.91	0.40	mg/kg wet	2.000		95	40-140			
Benzo(a)anthracene	2.14	0.40	mg/kg wet	2.000		107	40-140			
Benzo(a)pyrene	2.14	0.40	mg/kg wet	2.000		107	40-140			
Benzo(b)fluoranthene	2.04	0.40	mg/kg wet	2.000		102	40-140			
Benzo(g,h,i)perylene	2.02	0.40	mg/kg wet	2.000		101	40-140			
Benzo(k)fluoranthene	1.94	0.40	mg/kg wet	2.000		97	40-140			
C11-C22 Unadjusted Aromatics1	31.5	10.0	mg/kg wet	34.00		93	40-140			
Chrysene	1.97	0.40	mg/kg wet	2.000		98	40-140			
Dibenzo(a,h)Anthracene	2.02	0.20	mg/kg wet	2.000		101	40-140			
Fluoranthene	1.84	0.40	mg/kg wet	2.000		92	40-140			
Fluorene	1.57	0.40	mg/kg wet	2.000		78	40-140			
Indeno(1,2,3-cd)Pyrene	2.01	0.40	mg/kg wet	2.000		101	40-140			
Naphthalene	1.32	0.40	mg/kg wet	2.000		66	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL41346 - 3546										
Phenanthrene	1.64	0.40	mg/kg wet	2.000		82	40-140			
Pyrene	1.79	0.40	mg/kg wet	2.000		89	40-140			
Surrogate: 2-Bromonaphthalene	*2.03*		mg/kg wet	*2.000*		*102*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.94*		mg/kg wet	*2.000*		*97*	*40-140*			
Surrogate: O-Terphenyl	*2.20*		mg/kg wet	*2.000*		*110*	*40-140*			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS Dup										
C19-C36 Aliphatics1	12.7	10.0	mg/kg wet	16.00		79	40-140	17	25	
C9-C18 Aliphatics1	9.0	10.0	mg/kg wet	12.00		75	40-140	4	25	
Surrogate: 1-Chlorooctadecane	*1.75*		mg/kg wet	*2.000*		*87*	*40-140*			
LCS Dup										
2-Methylnaphthalene	1.40	0.20	mg/kg wet	2.000		70	40-140	4	30	
Acenaphthene	1.58	0.40	mg/kg wet	2.000		79	40-140	7	30	
Acenaphthylene	1.61	0.20	mg/kg wet	2.000		80	40-140	7	30	
Anthracene	1.99	0.40	mg/kg wet	2.000		99	40-140	4	30	
Benzo(a)anthracene	2.09	0.40	mg/kg wet	2.000		104	40-140	2	30	
Benzo(a)pyrene	2.06	0.40	mg/kg wet	2.000		103	40-140	4	30	
Benzo(b)fluoranthene	1.97	0.40	mg/kg wet	2.000		98	40-140	3	30	
Benzo(g,h,i)perylene	1.84	0.40	mg/kg wet	2.000		92	40-140	10	30	
Benzo(k)fluoranthene	1.85	0.40	mg/kg wet	2.000		93	40-140	4	30	
C11-C22 Unadjusted Aromatics1	31.1	10.0	mg/kg wet	34.00		91	40-140	1	25	
Chrysene	1.82	0.40	mg/kg wet	2.000		91	40-140	8	30	
Dibenzo(a,h)Anthracene	1.84	0.20	mg/kg wet	2.000		92	40-140	10	30	
Fluoranthene	1.85	0.40	mg/kg wet	2.000		93	40-140	0.5	30	
Fluorene	1.65	0.40	mg/kg wet	2.000		83	40-140	5	30	
Indeno(1,2,3-cd)Pyrene	1.83	0.40	mg/kg wet	2.000		92	40-140	10	30	
Naphthalene	1.34	0.40	mg/kg wet	2.000		67	40-140	2	30	
Phenanthrene	1.75	0.40	mg/kg wet	2.000		88	40-140	7	30	
Pyrene	1.79	0.40	mg/kg wet	2.000		90	40-140	0.07	30	
Surrogate: 2-Bromonaphthalene	*2.05*		mg/kg wet	*2.000*		*102*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.94*		mg/kg wet	*2.000*		*97*	*40-140*			
Surrogate: O-Terphenyl	*2.26*		mg/kg wet	*2.000*		*113*	*40-140*			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	
8082A Polychlorinated Biphenyls (PCB)										
Batch DL41105 - 3540C										
Blank										
Aroclor 1016	ND	0.02	mg/kg wet							
Aroclor 1016 [2C]	ND	0.02	mg/kg wet							
Aroclor 1221	ND	0.02	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082A Polychlorinated Biphenyls (PCB)										
Batch DL41105 - 3540C										
Aroclor 1221 [2C]	ND	0.02	mg/kg wet							
Aroclor 1232	ND	0.02	mg/kg wet							
Aroclor 1232 [2C]	ND	0.02	mg/kg wet							
Aroclor 1242	ND	0.02	mg/kg wet							
Aroclor 1242 [2C]	ND	0.02	mg/kg wet							
Aroclor 1248	ND	0.02	mg/kg wet							
Aroclor 1248 [2C]	ND	0.02	mg/kg wet							
Aroclor 1254	ND	0.02	mg/kg wet							
Aroclor 1254 [2C]	ND	0.02	mg/kg wet							
Aroclor 1260	ND	0.02	mg/kg wet							
Aroclor 1260 [2C]	ND	0.02	mg/kg wet							
Aroclor 1262	ND	0.02	mg/kg wet							
Aroclor 1262 [2C]	ND	0.02	mg/kg wet							
Aroclor 1268	ND	0.02	mg/kg wet							
Aroclor 1268 [2C]	ND	0.02	mg/kg wet							
Surrogate: Decachlorobiphenyl	*0.0214*		mg/kg wet	*0.02500*		*86*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0194*		mg/kg wet	*0.02500*		*78*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0193*		mg/kg wet	*0.02500*		*77*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0199*		mg/kg wet	*0.02500*		*80*	*30-150*			
LCS										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		80	40-140			
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		79	40-140			
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		82	40-140			
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		80	40-140			
Surrogate: Decachlorobiphenyl	*0.0210*		mg/kg wet	*0.02500*		*84*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0189*		mg/kg wet	*0.02500*		*76*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0197*		mg/kg wet	*0.02500*		*79*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0192*		mg/kg wet	*0.02500*		*77*	*30-150*			
LCS Dup										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		80	40-140	0.3	30	
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		79	40-140	0.7	30	
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		83	40-140	1	30	
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		81	40-140	1	30	
Surrogate: Decachlorobiphenyl	*0.0213*		mg/kg wet	*0.02500*		*85*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0192*		mg/kg wet	*0.02500*		*77*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0195*		mg/kg wet	*0.02500*		*78*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0192*		mg/kg wet	*0.02500*		*77*	*30-150*			
Classical Chemistry										
Batch DL41139 - General Preparation										
Blank										
Conductivity	ND	5	umhos/cm							
LCS										
Conductivity	1320		umhos/cm	1410		94	90-110			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch DL41149 - General Preparation										
Blank										
Reactive Cyanide	ND	2.0	mg/kg							
Reactive Sulfide	ND	2.0	mg/kg							
LCS										
Reactive Cyanide	4.2	2.0	mg/kg	100.3		4	0.68-5.41			
Reactive Sulfide	2.2	2.0	mg/kg	10.00		22	0-44			
Batch DL41152 - General Preparation										
Reference										
Flashpoint	81		°F	81.00		100	97.9-102.1			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

Notes and Definitions

Z-04	MeOH - covered
WL	Results obtained from a deionized water leach of the sample.
U	Analyte included in the analysis, but not detected
Q	Calibration required quadratic regression (Q).
ICV-	Initial Calibration Verification recovery is below lower control limit (ICV-).
D	Diluted.
CD+	Continuing Calibration %Diff/Drift is above control limit (CD+).
B+	Blank Spike recovery is above upper control limit (B+).
>	Greater than.
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0327

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB

Shipped/Delivered Via: ESS Courier

ESS Project ID: 24L0327
Date Received: 12/10/2024
Project Due Date: 12/17/2024
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 2.8 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** (Yes) / No / NA
10. Were any analyses received outside of hold time? Yes / (No)

11. Any Subcontracting needed? Yes / (No)
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? (Yes) / No
    a. Air bubbles in aqueous VOAs? Yes / (No)
    b. Does methanol cover soil completely? (Yes) / No / NA
13. Are the samples properly preserved? (Yes) / No
    a. If metals preserved upon receipt: Date: Time: By/Acid Lot#:
    b. If dissolved metals are requested, are they: Yes / No Field Filtered Yes / No To Be Lab Filtered
    c. Low Level VOA vials frozen: Date: 12/10/24 Time: 1057 By: TD

Sample Receiving Notes:

Sample 3 COC = "B-ass-462-2.0" Jars = "B-ass-462-2.5"

14. Was there a need to contact Project Manager? (Yes) / No
    a. Was there a need to contact the client? (Yes) / No
    Who was contacted: Date: Time: By:

Resolution:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	624168	Yes	N/A	Yes	VOA Vial	DI Water	
1	624169	Yes	N/A	Yes	VOA Vial	DI Water	
1	624346	Yes	N/A	Yes	VOA Vial	MeOH	
1	624347	Yes	N/A	Yes	VOA Vial	MeOH	
1	624358	Yes	N/A	Yes	8 oz jar	NP	
1	624364	Yes	N/A	Yes	4 oz. Jar	NP	
2	624170	Yes	N/A	Yes	VOA Vial	DI Water	
2	624171	Yes	N/A	Yes	VOA Vial	DI Water	
2	624348	Yes	N/A	Yes	VOA Vial	MeOH	
2	624349	Yes	N/A	Yes	VOA Vial	MeOH	
2	624359	Yes	N/A	Yes	8 oz jar	NP	
2	624365	Yes	N/A	Yes	4 oz. Jar	NP	
3	624172	Yes	N/A	Yes	VOA Vial	DI Water	
3	624173	Yes	N/A	Yes	VOA Vial	DI Water	
3	624350	Yes	N/A	Yes	VOA Vial	MeOH	
3	624351	Yes	N/A	Yes	VOA Vial	MeOH	
3	624360	Yes	N/A	Yes	8 oz jar	NP	
3	624366	Yes	N/A	Yes	4 oz. Jar	NP	
4	624174	Yes	N/A	Yes	VOA Vial	DI Water	
4	624175	Yes	N/A	Yes	VOA Vial	DI Water	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB

ESS Project ID: 24L0327

Date Received: 12/10/2024

4	624352	Yes	N/A	Yes	VOA Vial	MeOH
4	624353	Yes	N/A	Yes	VOA Vial	MeOH
4	624361	Yes	N/A	Yes	8 oz jar	NP
4	624367	Yes	N/A	Yes	4 oz. Jar	NP
5	624176	Yes	N/A	Yes	VOA Vial	DI Water
5	624177	Yes	N/A	Yes	VOA Vial	DI Water
5	624354	Yes	N/A	Yes	VOA Vial	MeOH
5	624355	Yes	N/A	Yes	VOA Vial	MeOH
5	624362	Yes	N/A	Yes	8 oz jar	NP
5	624368	Yes	N/A	Yes	4 oz. Jar	NP
6	624178	Yes	N/A	Yes	VOA Vial	DI Water
6	624179	Yes	N/A	Yes	VOA Vial	DI Water
6	624356	Yes	N/A	Yes	VOA Vial	MeOH
6	624357	Yes	N/A	Yes	VOA Vial	MeOH
6	624363	Yes	N/A	Yes	8 oz jar	NP
6	624369	Yes	N/A	Yes	4 oz. Jar	NP

2nd Review

Were all containers scanned into storage/lab? Initials BB

Are barcode labels on correct containers? (Yes) / No

Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA

Are all Hex Chrome stickers attached? Yes / No / NA

Are all QC stickers attached? Yes / No / NA

Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: _____ Date & Time: 12/10/24 16:43

Reviewed By: _____ Date & Time: 12/10/24 1657

Chain-of-Custody Record

Laboratory:

Laboratory Job # (Lab use only) 24L0327

GEI Consultants
400 Unicorn Park Drive
Woburn, MA 01801
PH: 781.721.4000

Project Information

Project Name: Drain Line Borings
Project Number: 2300422.1.2.4.1
Project Location: Needham, Massachusetts
Project Manager: Jeanne Lefebvre
JLefebvre@geiconsultants.com

Page 1 of 1

Send Report to: agrossman@geiconsultants.com
labdata@geiconsultants.com AG 12/12/2024
JLefebvre@geiconsultants.com

MCP PRESUMPTIVE CERTAINTY AND MCP ANALYTICAL METHODS REQUIRED: (YES) NO

STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS
State/Federal Program: (MA) 401WQC Other _____ NH RI CT NY ME
MA MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if (GW-1) is required.

Sample Handling
Samples Field Filtered: YES NO (NA)
Sampled Shipped With Ice: (YES) NO

Lab Sample Number	GEI Sample ID	Collection Date	Collection Time	Matrix	No. of Bottles	Sampler(s) Initials	Preservative: MeOH/DI H_2O	VOCs via EPA 8260D	SVOCs via EPA 8270D	VPH/EPH (Carbon Fractions Only)	Total MCP 14 Metals	PCBs via EPA 8082A	Conductivity via EPA 9050A	Corrosivity via EPA 9045	Ignitability via EPA 1010A	Reactivity via EPA 7.3.3.2 and 7.3.4.1	TCLP*	Sample Specific Remarks
1	B-GSS-460-2.0	12/9/2024	1000	SO	6	EW	None	X	X	X	X	X	X	X	X	X	X	
2	B-GSS-461-2.0	12/9/2024	~~1050~~ 1130	SO	6		None	X	X	X	X	X	X	X	X	X	X	
3	B-GSS-462-2.0	12/9/2024	1130	SO	6	EW	None	X	X	X	X	X	X	X	X	X	X	
4	B-GSS-463-2.0	12/10/2024	1000	SO	6	EW	None	X	X	X	X	X	X	X	X	X	X	
5	B-GSS-464-2.0	12/9/2024	2:00pm	SO	6	EW	None	X	X	X	X	X	X	X	X	X	X	
6	B-GSS-465-2.0	12/10/2024	800	SO	6	EW	None	X	X	X	X	X	X	X	X	X	X	

	Relinquished by sampler: (signature)	Date	Time	Received by: (signature)
1.	Emily Watt	12/10/2024	2:45pm	1. 12/10/24 245p
2.	2-8 onic	12/10/24	1555	2.
3.				3.
4.				4.
5.				5.

Turnaround Time (Business days):
5-Day __X__ 4-Day ____ 3-Day ____
2-Day ____ 1-Day ____ Other ____

Before submitting rush turnaround samples, you **must** notify the laboratory to confirm that the TAT can be achieved.

Additional Requirements/Comments/Remarks:

*Run TCLP if 20x rule has been exceeded.

Sample Matrix Abbreviations: SO = Soil GW = Groundwater SW = Surface Water SD = Sediment CO = Concrete PC = Paint Chip CLK = Caulk

CERTIFICATE OF ANALYSIS

Jeanne Lefebvre
GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801

RE: Drain Line Borings (2300422.1.2.4.1)
ESS Laboratory Work Order Number: 24L0504

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.



Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 8:19 pm, Dec 20, 2024

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0504

SAMPLE RECEIPT

The following samples were received on December 13, 2024 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Low Level VOA vials were frozen by ESS Laboratory on 12/13/24 at 15:28.
Tetrahydrofuran is reported above the MA CAM reporting limit of 0.010 mg/kg.

Lab Number	Sample Name	Matrix	Analysis
24L0504-01	B-GSS-462-14.0	Soil	1010A, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260D Low, 8270E, 9045, 9050A, EPH8270, MADEP-EPH, MA-VPH-2.1
24L0504-02	B-GSS-460-14.0	Soil	1010A, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260D Low, 8270E, 9045, 9050A, EPH8270, MADEP-EPH, MA-VPH-2.1

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0504

PROJECT NARRATIVE

Semi-Volatile Organic Compounds

D4L0300-CCV1	**Calibration required quadratic regression (Q).**
	2,4-Dinitrophenol (86% @ 40-160%)
D4L0300-CCV1	**Initial Calibration Verification recovery is below lower control limit (ICV-).**
	Aniline
D4L0328-CCV1	**Calibration required quadratic regression (Q).**
	2,4-Dinitrophenol (69% @ 40-160%)
D4L0328-CCV1	**Continuing Calibration %Diff/Drift is above control limit (CD+).**
	2,4,5-Trichlorophenol (20% @ 20%), Di-n-octylphthalate (20% @ 20%)
D4L0328-CCV1	**Initial Calibration Verification recovery is below lower control limit (ICV-).**
	Aniline

Total Metals

24L0504-01	**Elevated Method Reporting Limits due to sample matrix (EL).**
	Arsenic

Volatile Organics Low Level

D4L0282-CCV1	**Continuing Calibration %Diff/Drift is below control limit (CD-).**
	Xylene O (24% @ 20%), Xylene P,M (23% @ 20%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0504

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010D - ICP
6020B - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260D - VOA
8270E - SVOA
8270E SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 19-2.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0504

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **24L0504-01 through 24L0504-02**

Matrices: ( ) Ground Water/Surface Water (x) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other:_____

CAM Protocol (check all that apply below):

(x) 8260 VOC CAM II A	(x) 7470/7471 Hg CAM III B	(x) MassDEP VPH (GC/PID/FID) CAM IV A	(x) 8082 PCB CAM V A	( ) 9014 Total Cyanide/PAC CAM VI A	( ) 6860 Perchlorate CAM VIII B
(x) 8270 SVOC CAM II B	( ) 7010 Metals CAM III C	( ) MassDEP VPH (GC/MS) CAM IV C	( ) 8081 Pesticides CAM V B	( ) 7196 Hex Cr CAM VI B	( ) MassDEP APH CAM IX A
(x) 6010 Metals CAM III A	( ) 6020 Metals CAM III D	(x) MassDEP EPH CAM IV B	( ) 8151 Herbicides CAM V C	( ) Explosives CAM VIII A	( ) TO-15 VOC CAM IX B

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (x) No ( )
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (x) No ( )
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (x) No ( )
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (x) No ( )
E	VPH, EPH, APH and TO-15 only: a. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes (x) No ( )
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ( ) No ( )
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (x) No ( )

Responses to Questions G, H and I below are required for "'Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)?	Yes ( ) No (x)*
	***Data User Note:* Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**	
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes ( ) No (x)*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes (x) No ( )*

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: _____ Date: December 20, 2024
Printed Name: Laurel Stoddard Position: Laboratory Director

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-14.0
Date Sampled: 12/12/24 09:00
Percent Solids: 90

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV		Batch
Antimony	ND (5.57)	---	6010D	---	1	KJB	12/17/24 13:52	2	100	DL41620
Arsenic	**EL** ND (2.78)	---	6010D	---	1	KJB	12/17/24 13:52	2	100	DL41620
Barium	**50.4** (1.11)	---	6010D	---	1	KJB	12/17/24 13:52	2	100	DL41620
Beryllium	**0.41** (0.11)	---	6010D	---	1	KJB	12/17/24 13:52	2	100	DL41620
Cadmium	ND (0.56)	---	6010D	---	1	KJB	12/17/24 13:52	2	100	DL41620
Chromium	**37.5** (1.11)	---	6010D	---	1	KJB	12/17/24 13:52	2	100	DL41620
Lead	ND (5.57)	---	6010D	---	1	KJB	12/17/24 13:52	2	100	DL41620
Mercury	ND (0.033)	---	7471B	---	1	AFV	12/16/24 18:36	0.66	40	DL41626
Nickel	**15.7** (1.11)	---	6010D	---	1	KJB	12/17/24 13:52	2	100	DL41620
Selenium	ND (5.57)	---	6010D	---	1	KJB	12/17/24 13:52	2	100	DL41620
Silver	ND (0.56)	---	6010D	---	1	KJB	12/17/24 13:52	2	100	DL41620
Thallium	ND (5.57)	---	6010D	---	1	KJB	12/17/24 13:52	2	100	DL41620
Vanadium	**33.5** (1.11)	---	6010D	---	1	KJB	12/17/24 13:52	2	100	DL41620
Zinc	**30.5** (2.78)	---	6010D	---	1	KJB	12/17/24 13:52	2	100	DL41620

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-14.0
Date Sampled: 12/12/24 09:00
Percent Solids: 90
Initial Volume: 4.9g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/15/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,1,1-Trichloroethane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,1,2,2-Tetrachloroethane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,1,2-Trichloroethane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,1-Dichloroethane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,1-Dichloroethene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,1-Dichloropropene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,2,3-Trichlorobenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,2,3-Trichloropropane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,2,4-Trichlorobenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,2,4-Trimethylbenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,2-Dibromo-3-Chloropropane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,2-Dibromoethane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,2-Dichlorobenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,2-Dichloroethane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,2-Dichloropropane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,3,5-Trimethylbenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,3-Dichlorobenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,3-Dichloropropane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,4-Dichlorobenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
1,4-Dioxane	ND (0.114)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
2,2-Dichloropropane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
2-Butanone	ND (0.0568)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
2-Chlorotoluene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
2-Hexanone	ND (0.0568)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
4-Chlorotoluene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
4-Isopropyltoluene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-14.0
Date Sampled: 12/12/24 09:00
Percent Solids: 90
Initial Volume: 4.9g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/15/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0568)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Acetone	ND (0.0568)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Benzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Bromobenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Bromochloromethane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Bromodichloromethane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Bromoform	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Bromomethane	ND (0.0114)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Carbon Disulfide	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Carbon Tetrachloride	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Chlorobenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Chloroethane	ND (0.0114)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Chloroform	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Chloromethane	ND (0.0114)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
cis-1,2-Dichloroethene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
cis-1,3-Dichloropropene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Dibromochloromethane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Dibromomethane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Dichlorodifluoromethane	ND (0.0114)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Diethyl Ether	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Di-isopropyl ether	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Ethyl tertiary-butyl ether	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Ethylbenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Hexachlorobutadiene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Isopropylbenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Methyl tert-Butyl Ether	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Methylene Chloride	ND (0.0284)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-14.0
Date Sampled: 12/12/24 09:00
Percent Solids: 90
Initial Volume: 4.9g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/15/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
n-Butylbenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
n-Propylbenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
sec-Butylbenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Styrene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
tert-Butylbenzene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Tertiary-amyl methyl ether	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Tetrachloroethene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Tetrahydrofuran	ND (0.0227)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Toluene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
trans-1,2-Dichloroethene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
trans-1,3-Dichloropropene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Trichloroethene	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Trichlorofluoromethane	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Vinyl Chloride	ND (0.0114)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Xylene O	ND (0.0057)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Xylene P,M	ND (0.0114)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502
Xylenes (Total)	ND (0.0114)	---	8260D Low	---	1	MEK	12/15/24 21:42	D4L0282	DL41502

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*103 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*96 %*		*70-130*
Surrogate: Dibromofluoromethane	*98 %*		*70-130*
Surrogate: Toluene-d8	*101 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-14.0
Date Sampled: 12/12/24 09:00
Percent Solids: 90
Initial Volume: 19.5g
Final Volume: 15ml
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (9.7)	---	MA-VPH-2.1	---	1	12/16/24 19:05	D4L0305	DL41634
C5-C8 Aliphatics1,2	ND (10.1)	---	MA-VPH-2.1	---	1	12/16/24 19:05	---	[CALC]
C9-C12 Aliphatics2,3	ND (20.2)	---	MA-VPH-2.1	---	1	12/16/24 19:05	---	[CALC]
1:1 Methanol/Soil Ratio %D	**30** (N/A)		MA-VPH-2.1			12/15/24 8:00		DL41634
Preservative:	**MeOH - covered**		MA-VPH-2.1					DL41634

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*84 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*88 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*94 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*94 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-14.0
Date Sampled: 12/12/24 09:00
Percent Solids: 90
Initial Volume: 19.9g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/16/24 11:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.028)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
1,2,4-Trichlorobenzene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
1,2-Dichlorobenzene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
1,3-Dichlorobenzene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
1,4-Dichlorobenzene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
2,4,5-Trichlorophenol	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
2,4,6-Trichlorophenol	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
2,4-Dichlorophenol	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
2,4-Dimethylphenol	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
2,4-Dinitrophenol	ND (1.12)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
2,4-Dinitrotoluene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
2,6-Dinitrotoluene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
2-Chloronaphthalene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
2-Chlorophenol	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
2-Methylnaphthalene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
2-Methylphenol	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
2-Nitrophenol	ND (0.559)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
3,3´-Dichlorobenzidine	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
3+4-Methylphenol	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
4-Bromophenyl-phenylether	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
4-Chloroaniline	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
4-Nitrophenol	ND (1.12)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Acenaphthene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Acenaphthylene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Acetophenone	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Aniline	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Anthracene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-14.0
Date Sampled: 12/12/24 09:00
Percent Solids: 90
Initial Volume: 19.9g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/16/24 11:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Benzo(a)anthracene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Benzo(a)pyrene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Benzo(b)fluoranthene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Benzo(g,h,i)perylene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Benzo(k)fluoranthene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
bis(2-Chloroethoxy)methane	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
bis(2-Chloroethyl)ether	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
bis(2-chloroisopropyl)Ether	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
bis(2-Ethylhexyl)phthalate	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Butylbenzylphthalate	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Chrysene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Dibenzo(a,h)Anthracene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Dibenzofuran	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Diethylphthalate	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Dimethylphthalate	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Di-n-butylphthalate	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Di-n-octylphthalate	ND (0.559)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Fluoranthene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Fluorene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Hexachlorobenzene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Hexachlorobutadiene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Hexachloroethane	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Indeno(1,2,3-cd)Pyrene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Isophorone	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Naphthalene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Nitrobenzene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-14.0
Date Sampled: 12/12/24 09:00
Percent Solids: 90
Initial Volume: 19.9g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/16/24 11:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Pentachlorophenol	ND (1.12)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Phenanthrene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Phenol	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605
Pyrene	ND (0.280)	---	8270E	---	1	TJ	12/17/24 21:26	D4L0328	DL41605

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*86 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*86 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*92 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*84 %*		*30-130*
Surrogate: 2-Fluorophenol	*82 %*		*30-130*
Surrogate: Nitrobenzene-d5	*78 %*		*30-130*
Surrogate: Phenol-d6	*94 %*		*30-130*
Surrogate: p-Terphenyl-d14	*106 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-14.0
Date Sampled: 12/12/24 09:00
Percent Solids: 90
Initial Volume: 24.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-01
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 12/16/24 11:30

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (11.5)	---	MADEP-EPH	---	1	JDN	12/18/24 7:56	D4L0309	DL41604
C19-C36 Aliphatics1	ND (11.5)	---	MADEP-EPH	---	1	JDN	12/18/24 7:56	D4L0309	DL41604
C11-C22 Unadjusted Aromatics1	ND (11.5)	---	EPH8270	---	1	IBM	12/17/24 17:29	D4L0334	DL41604
C11-C22 Aromatics1,2	ND (11.5)	---	EPH8270	---		IBM	12/17/24 17:29	---	[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*81 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*104 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*99 %*		*40-140*
Surrogate: O-Terphenyl	*106 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-14.0
Date Sampled: 12/12/24 09:00
Percent Solids: 90
Initial Volume: 20.3g
Final Volume: 10ml
Extraction Method: 3540C

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JLG
Prepared: 12/16/24 10:17

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.05)	---	8082A	---	1	12/18/24 0:07	---	DL41602
Aroclor 1221	ND (0.05)	---	8082A	---	1	12/18/24 0:07	---	DL41602
Aroclor 1232	ND (0.05)	---	8082A	---	1	12/18/24 0:07	---	DL41602
Aroclor 1242	ND (0.05)	---	8082A	---	1	12/18/24 0:07	---	DL41602
Aroclor 1248	ND (0.05)	---	8082A	---	1	12/18/24 0:07	---	DL41602
Aroclor 1254	ND (0.05)	---	8082A	---	1	12/18/24 0:07	---	DL41602
Aroclor 1260	ND (0.05)	---	8082A	---	1	12/18/24 0:07	---	DL41602
Aroclor 1262	ND (0.05)	---	8082A	---	1	12/18/24 0:07	---	DL41602
Aroclor 1268	ND (0.05)	---	8082A	---	1	12/18/24 0:07	---	DL41602

	%Recovery	*Qualifier*	*Limits*
Surrogate: Decachlorobiphenyl	*69 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*71 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-462-14.0
Date Sampled: 12/12/24 09:00
Percent Solids: 90

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-01
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 159** (5)	---	9050A	---	1	JLK	12/17/24 15:23	umhos/cm	DL41744
Corrosivity (pH)	**7.17** (N/A)	---	9045	---	1	CCP	12/13/24 18:22	S.U.	DL41330
Corrosivity (pH) Sample Temp	**20.6**	---	2550B	---	1	CCP	12/13/24 18:22	°C	DL41330
Flashpoint	**> 200** (N/A)	---	1010A	---	1	LAB	12/17/24 14:36	°F	DL41716
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	12/16/24 17:15	mg/kg	DL41655
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	12/16/24 17:15	mg/kg	DL41655

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-14.0
Date Sampled: 12/13/24 09:15
Percent Solids: 81

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV		Batch
Antimony	ND (6.17)	---	6010D	---	1	KJB	12/17/24 13:54	2	100	DL41620
Arsenic	**3.09** (3.09)	---	6010D	---	1	KJB	12/17/24 13:54	2	100	DL41620
Barium	**22.1** (1.23)	---	6010D	---	1	KJB	12/17/24 13:54	2	100	DL41620
Beryllium	**0.24** (0.12)	---	6010D	---	1	KJB	12/17/24 13:54	2	100	DL41620
Cadmium	ND (0.62)	---	6010D	---	1	KJB	12/17/24 13:54	2	100	DL41620
Chromium	**9.26** (1.23)	---	6010D	---	1	KJB	12/17/24 13:54	2	100	DL41620
Lead	ND (6.17)	---	6010D	---	1	KJB	12/17/24 13:54	2	100	DL41620
Mercury	ND (0.036)	---	7471B	---	1	AFV	12/16/24 18:38	0.67	40	DL41626
Nickel	**7.24** (1.23)	---	6010D	---	1	KJB	12/17/24 13:54	2	100	DL41620
Selenium	ND (6.17)	---	6010D	---	1	KJB	12/17/24 13:54	2	100	DL41620
Silver	ND (0.62)	---	6010D	---	1	KJB	12/17/24 13:54	2	100	DL41620
Thallium	ND (6.17)	---	6010D	---	1	KJB	12/17/24 13:54	2	100	DL41620
Vanadium	**13.9** (1.23)	---	6010D	---	1	KJB	12/17/24 13:54	2	100	DL41620
Zinc	**20.1** (3.09)	---	6010D	---	1	KJB	12/17/24 13:54	2	100	DL41620

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-14.0
Date Sampled: 12/13/24 09:15
Percent Solids: 81
Initial Volume: 5.8g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/15/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,1,1-Trichloroethane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,1,2,2-Tetrachloroethane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,1,2-Trichloroethane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,1-Dichloroethane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,1-Dichloroethene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,1-Dichloropropene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,2,3-Trichlorobenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,2,3-Trichloropropane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,2,4-Trichlorobenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,2,4-Trimethylbenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,2-Dibromo-3-Chloropropane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,2-Dibromoethane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,2-Dichlorobenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,2-Dichloroethane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,2-Dichloropropane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,3,5-Trimethylbenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,3-Dichlorobenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,3-Dichloropropane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,4-Dichlorobenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
1,4-Dioxane	ND (0.106)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
2,2-Dichloropropane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
2-Butanone	ND (0.0532)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
2-Chlorotoluene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
2-Hexanone	ND (0.0532)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
4-Chlorotoluene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
4-Isopropyltoluene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-14.0
Date Sampled: 12/13/24 09:15
Percent Solids: 81
Initial Volume: 5.8g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/15/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0532)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Acetone	ND (0.0532)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Benzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Bromobenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Bromochloromethane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Bromodichloromethane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Bromoform	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Bromomethane	ND (0.0106)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Carbon Disulfide	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Carbon Tetrachloride	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Chlorobenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Chloroethane	ND (0.0106)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Chloroform	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Chloromethane	ND (0.0106)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
cis-1,2-Dichloroethene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
cis-1,3-Dichloropropene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Dibromochloromethane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Dibromomethane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Dichlorodifluoromethane	ND (0.0106)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Diethyl Ether	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Di-isopropyl ether	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Ethyl tertiary-butyl ether	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Ethylbenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Hexachlorobutadiene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Isopropylbenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Methyl tert-Butyl Ether	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Methylene Chloride	ND (0.0266)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-14.0
Date Sampled: 12/13/24 09:15
Percent Solids: 81
Initial Volume: 5.8g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/15/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
n-Butylbenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
n-Propylbenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
sec-Butylbenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Styrene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
tert-Butylbenzene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Tertiary-amyl methyl ether	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Tetrachloroethene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Tetrahydrofuran	ND (0.0213)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Toluene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
trans-1,2-Dichloroethene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
trans-1,3-Dichloropropene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Trichloroethene	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Trichlorofluoromethane	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Vinyl Chloride	ND (0.0106)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Xylene O	ND (0.0053)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Xylene P,M	ND (0.0106)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502
Xylenes (Total)	ND (0.0106)	---	8260D Low	---	1	MEK	12/15/24 22:07	D4L0282	DL41502

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*107 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*98 %*		*70-130*
Surrogate: Dibromofluoromethane	*101 %*		*70-130*
Surrogate: Toluene-d8	*101 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-14.0
Date Sampled: 12/13/24 09:15
Percent Solids: 81
Initial Volume: 18.4g
Final Volume: 15ml
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (12.4)	---	MA-VPH-2.1	---	1	12/16/24 19:40	D4L0305	DL41634
C5-C8 Aliphatics1,2	ND (13.0)	---	MA-VPH-2.1	---	1	12/16/24 19:40	---	[CALC]
C9-C12 Aliphatics2,3	ND (25.8)	---	MA-VPH-2.1	---	1	12/16/24 19:40	---	[CALC]
1:1 Methanol/Soil Ratio %D	**23** (N/A)		MA-VPH-2.1			12/15/24 8:00		DL41634
Preservative:	**MeOH - covered**		MA-VPH-2.1					DL41634

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*91 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*93 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*80 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*82 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-14.0
Date Sampled: 12/13/24 09:15
Percent Solids: 81
Initial Volume: 19.9g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/16/24 11:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.031)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
1,2,4-Trichlorobenzene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
1,2-Dichlorobenzene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
1,3-Dichlorobenzene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
1,4-Dichlorobenzene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
2,4,5-Trichlorophenol	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
2,4,6-Trichlorophenol	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
2,4-Dichlorophenol	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
2,4-Dimethylphenol	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
2,4-Dinitrophenol	ND (1.24)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
2,4-Dinitrotoluene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
2,6-Dinitrotoluene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
2-Chloronaphthalene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
2-Chlorophenol	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
2-Methylnaphthalene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
2-Methylphenol	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
2-Nitrophenol	ND (0.620)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
3,3′-Dichlorobenzidine	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
3+4-Methylphenol	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
4-Bromophenyl-phenylether	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
4-Chloroaniline	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
4-Nitrophenol	ND (1.24)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Acenaphthene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Acenaphthylene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Acetophenone	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Aniline	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Anthracene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-14.0
Date Sampled: 12/13/24 09:15
Percent Solids: 81
Initial Volume: 19.9g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/16/24 11:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Benzo(a)anthracene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Benzo(a)pyrene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Benzo(b)fluoranthene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Benzo(g,h,i)perylene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Benzo(k)fluoranthene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
bis(2-Chloroethoxy)methane	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
bis(2-Chloroethyl)ether	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
bis(2-chloroisopropyl)Ether	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
bis(2-Ethylhexyl)phthalate	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Butylbenzylphthalate	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Chrysene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Dibenzo(a,h)Anthracene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Dibenzofuran	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Diethylphthalate	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Dimethylphthalate	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Di-n-butylphthalate	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Di-n-octylphthalate	ND (0.620)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Fluoranthene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Fluorene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Hexachlorobenzene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Hexachlorobutadiene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Hexachloroethane	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Indeno(1,2,3-cd)Pyrene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Isophorone	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Naphthalene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Nitrobenzene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-14.0
Date Sampled: 12/13/24 09:15
Percent Solids: 81
Initial Volume: 19.9g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/16/24 11:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Pentachlorophenol	ND (1.24)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Phenanthrene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Phenol	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605
Pyrene	ND (0.310)	---	8270E	---	1	TJ	12/17/24 21:56	D4L0328	DL41605

	%Recovery	*Qualifier*	*Limits*
Surrogate: 1,2-Dichlorobenzene-d4	*86 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*80 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*90 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*86 %*		*30-130*
Surrogate: 2-Fluorophenol	*80 %*		*30-130*
Surrogate: Nitrobenzene-d5	*81 %*		*30-130*
Surrogate: Phenol-d6	*90 %*		*30-130*
Surrogate: p-Terphenyl-d14	*107 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-14.0
Date Sampled: 12/13/24 09:15
Percent Solids: 81
Initial Volume: 24.6g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-02
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 12/16/24 11:30

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (12.5)	---	MADEP-EPH	---	1	JDN	12/19/24 21:39	D4L0377	DL41604
C19-C36 Aliphatics1	ND (12.5)	---	MADEP-EPH	---	1	JDN	12/19/24 21:39	D4L0377	DL41604
C11-C22 Unadjusted Aromatics1	ND (12.5)	---	EPH8270	---	1	IBM	12/17/24 18:07	D4L0334	DL41604
C11-C22 Aromatics1,2	ND (12.5)	---	EPH8270	---		IBM	12/17/24 18:07	---	[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*100 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*105 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*99 %*		*40-140*
Surrogate: O-Terphenyl	*106 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-14.0
Date Sampled: 12/13/24 09:15
Percent Solids: 81
Initial Volume: 20.1g
Final Volume: 10ml
Extraction Method: 3540C

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JLG
Prepared: 12/16/24 11:14

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.06)	---	8082A	---	1	12/17/24 13:47	---	DL41603
Aroclor 1221	ND (0.06)	---	8082A	---	1	12/17/24 13:47	---	DL41603
Aroclor 1232	ND (0.06)	---	8082A	---	1	12/17/24 13:47	---	DL41603
Aroclor 1242	ND (0.06)	---	8082A	---	1	12/17/24 13:47	---	DL41603
Aroclor 1248	ND (0.06)	---	8082A	---	1	12/17/24 13:47	---	DL41603
Aroclor 1254	ND (0.06)	---	8082A	---	1	12/17/24 13:47	---	DL41603
Aroclor 1260	ND (0.06)	---	8082A	---	1	12/17/24 13:47	---	DL41603
Aroclor 1262	ND (0.06)	---	8082A	---	1	12/17/24 13:47	---	DL41603
Aroclor 1268	ND (0.06)	---	8082A	---	1	12/17/24 13:47	---	DL41603

	%Recovery	*Qualifier*	*Limits*
Surrogate: Decachlorobiphenyl	*81 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*91 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-460-14.0
Date Sampled: 12/13/24 09:15
Percent Solids: 81

ESS Laboratory Work Order: 24L0504
ESS Laboratory Sample ID: 24L0504-02
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 249** (5)	---	9050A	---	1	JLK	12/17/24 15:23	umhos/cm	DL41744
Corrosivity (pH)	**6.85** (N/A)	---	9045	---	1	CCP	12/13/24 18:22	S.U.	DL41330
Corrosivity (pH) Sample Temp	**20.5**	---	2550B	---	1	CCP	12/13/24 18:22	°C	DL41330
Flashpoint	**> 200** (N/A)	---	1010A	---	1	LAB	12/17/24 14:36	°F	DL41716
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	12/16/24 17:15	mg/kg	DL41655
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	12/16/24 17:15	mg/kg	DL41655

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DL41620 - 3050B										
Blank										
Antimony	ND	4.72	mg/kg wet							
Arsenic	ND	2.36	mg/kg wet							
Barium	ND	0.94	mg/kg wet							
Beryllium	ND	0.09	mg/kg wet							
Cadmium	ND	0.47	mg/kg wet							
Chromium	ND	0.94	mg/kg wet							
Lead	ND	4.72	mg/kg wet							
Nickel	ND	0.94	mg/kg wet							
Selenium	ND	4.72	mg/kg wet							
Silver	ND	0.47	mg/kg wet							
Thallium	ND	4.72	mg/kg wet							
Vanadium	ND	0.94	mg/kg wet							
Zinc	ND	2.36	mg/kg wet							
LCS										
Antimony	74.0	15.6	mg/kg wet	245.0		30	10-110			
Arsenic	128	7.81	mg/kg wet	280.0		46	32-110			
Barium	318	3.12	mg/kg wet	688.0		46	33-110			
Beryllium	49.1	0.31	mg/kg wet	105.0		47	32-110			
Cadmium	91.2	1.56	mg/kg wet	210.0		43	33-110			
Chromium	149	3.12	mg/kg wet	225.0		66	50-110			
Lead	162	15.6	mg/kg wet	350.0		46	31-110			
Nickel	63.4	3.12	mg/kg wet	95.00		67	48-111			
Selenium	140	15.6	mg/kg wet	320.0		44	29-110			
Silver	41.3	1.56	mg/kg wet	95.00		43	30-111			
Thallium	114	15.6	mg/kg wet	250.0		46	28-110			
Vanadium	144	3.12	mg/kg wet	295.0		49	34-110			
Zinc	226	7.81	mg/kg wet	500.0		45	30-110			
LCS Dup										
Antimony	78.8	15.6	mg/kg wet	245.0		32	10-110	6	30	
Arsenic	141	7.81	mg/kg wet	280.0		50	32-110	9	30	
Barium	352	3.12	mg/kg wet	688.0		51	33-110	10	30	
Beryllium	52.1	0.31	mg/kg wet	105.0		50	32-110	6	30	
Cadmium	97.2	1.56	mg/kg wet	210.0		46	33-110	6	30	
Chromium	163	3.12	mg/kg wet	225.0		72	50-110	9	30	
Lead	172	15.6	mg/kg wet	350.0		49	31-110	6	30	
Nickel	67.6	3.12	mg/kg wet	95.00		71	48-111	6	30	
Selenium	152	15.6	mg/kg wet	320.0		48	29-110	9	30	
Silver	45.7	1.56	mg/kg wet	95.00		48	30-111	10	30	
Thallium	121	15.6	mg/kg wet	250.0		49	28-110	6	30	
Vanadium	159	3.12	mg/kg wet	295.0		54	34-110	10	30	
Zinc	242	7.81	mg/kg wet	500.0		48	30-110	7	30	
Batch DL41626 - 245.1/7470A										

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DL41626 - 245.1/7470A										
Blank										
Mercury	ND	0.030	mg/kg wet							
LCS										
Mercury	22.9	3.14	mg/kg wet	24.90		92	80-120			
LCS Dup										
Mercury	23.4	3.30	mg/kg wet	24.90		94	80-120	2	30	
Volatile Organics Low Level										
Batch DL41502 - 5035										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0500	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0500	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0500	mg/kg wet							
Acetone	ND	0.0500	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41502 - 5035										
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0050	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0250	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0200	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*0.0564*		mg/kg wet	*0.05000*		*113*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0443*		mg/kg wet	*0.05000*		*89*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0536*		mg/kg wet	*0.05000*		*107*	*70-130*			
Surrogate: Toluene-d8	*0.0491*		mg/kg wet	*0.05000*		*98*	*70-130*			
LCS										
1,1,1,2-Tetrachloroethane	0.0424	0.0050	mg/kg wet	0.05000		85	70-130			
1,1,1-Trichloroethane	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
1,1,2,2-Tetrachloroethane	0.0501	0.0050	mg/kg wet	0.05000		100	40-160			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41502 - 5035										
1,1,2-Trichloroethane	0.0470	0.0050	mg/kg wet	0.05000		94	70-130			
1,1-Dichloroethane	0.0483	0.0050	mg/kg wet	0.05000		97	70-130			
1,1-Dichloroethene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130			
1,1-Dichloropropene	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			
1,2,3-Trichlorobenzene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130			
1,2,3-Trichloropropane	0.0459	0.0050	mg/kg wet	0.05000		92	70-130			
1,2,4-Trichlorobenzene	0.0513	0.0050	mg/kg wet	0.05000		103	70-130			
1,2,4-Trimethylbenzene	0.0519	0.0050	mg/kg wet	0.05000		104	70-130			
1,2-Dibromo-3-Chloropropane	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
1,2-Dibromoethane	0.0413	0.0050	mg/kg wet	0.05000		83	70-130			
1,2-Dichlorobenzene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
1,2-Dichloroethane	0.0468	0.0050	mg/kg wet	0.05000		94	70-130			
1,2-Dichloropropane	0.0480	0.0050	mg/kg wet	0.05000		96	70-130			
1,3,5-Trimethylbenzene	0.0520	0.0050	mg/kg wet	0.05000		104	70-130			
1,3-Dichlorobenzene	0.0476	0.0050	mg/kg wet	0.05000		95	70-130			
1,3-Dichloropropane	0.0414	0.0050	mg/kg wet	0.05000		83	70-130			
1,4-Dichlorobenzene	0.0498	0.0050	mg/kg wet	0.05000		100	70-130			
1,4-Dioxane	0.826	0.100	mg/kg wet	1.000		83	70-130			
2,2-Dichloropropane	0.0505	0.0050	mg/kg wet	0.05000		101	70-130			
2-Butanone	0.237	0.0500	mg/kg wet	0.2500		95	40-160			
2-Chlorotoluene	0.0501	0.0050	mg/kg wet	0.05000		100	70-130			
2-Hexanone	0.179	0.0500	mg/kg wet	0.2500		72	40-160			
4-Chlorotoluene	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
4-Isopropyltoluene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130			
4-Methyl-2-Pentanone	0.204	0.0500	mg/kg wet	0.2500		81	40-160			
Acetone	0.258	0.0500	mg/kg wet	0.2500		103	40-160			
Benzene	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
Bromobenzene	0.0485	0.0050	mg/kg wet	0.05000		97	70-130			
Bromochloromethane	0.0458	0.0050	mg/kg wet	0.05000		92	70-130			
Bromodichloromethane	0.0510	0.0050	mg/kg wet	0.05000		102	70-130			
Bromoform	0.0374	0.0050	mg/kg wet	0.05000		75	40-160			
Bromomethane	0.0493	0.0100	mg/kg wet	0.05000		99	40-160			
Carbon Disulfide	0.0509	0.0050	mg/kg wet	0.05000		102	70-130			
Carbon Tetrachloride	0.0484	0.0050	mg/kg wet	0.05000		97	70-130			
Chlorobenzene	0.0403	0.0050	mg/kg wet	0.05000		81	70-130			
Chloroethane	0.0528	0.0100	mg/kg wet	0.05000		106	40-160			
Chloroform	0.0465	0.0050	mg/kg wet	0.05000		93	70-130			
Chloromethane	0.0432	0.0100	mg/kg wet	0.05000		86	40-160			
cis-1,2-Dichloroethene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
cis-1,3-Dichloropropene	0.0441	0.0050	mg/kg wet	0.05000		88	40-160			
Dibromochloromethane	0.0371	0.0050	mg/kg wet	0.05000		74	40-160			
Dibromomethane	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
Dichlorodifluoromethane	0.0348	0.0100	mg/kg wet	0.05000		70	40-160			
Diethyl Ether	0.0507	0.0050	mg/kg wet	0.05000		101	70-130			
Di-isopropyl ether	0.0503	0.0050	mg/kg wet	0.05000		101	70-130			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41502 - 5035										
Ethyl tertiary-butyl ether	0.0505	0.0050	mg/kg wet	0.05000		101	70-130			
Ethylbenzene	0.0430	0.0050	mg/kg wet	0.05000		86	70-130			
Hexachlorobutadiene	0.0484	0.0050	mg/kg wet	0.05000		97	40-160			
Isopropylbenzene	0.0592	0.0050	mg/kg wet	0.05000		118	70-130			
Methyl tert-Butyl Ether	0.0478	0.0050	mg/kg wet	0.05000		96	70-130			
Methylene Chloride	0.0450	0.0250	mg/kg wet	0.05000		90	70-130			
Naphthalene	0.0483	0.0050	mg/kg wet	0.05000		97	40-160			
n-Butylbenzene	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
n-Propylbenzene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
sec-Butylbenzene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130			
Styrene	0.0364	0.0050	mg/kg wet	0.05000		73	40-160			
tert-Butylbenzene	0.0515	0.0050	mg/kg wet	0.05000		103	70-130			
Tertiary-amyl methyl ether	0.0504	0.0050	mg/kg wet	0.05000		101	70-130			
Tetrachloroethene	0.0403	0.0050	mg/kg wet	0.05000		81	70-130			
Tetrahydrofuran	0.0429	0.0200	mg/kg wet	0.05000		86	70-130			
Toluene	0.0476	0.0050	mg/kg wet	0.05000		95	70-130			
trans-1,2-Dichloroethene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
trans-1,3-Dichloropropene	0.0426	0.0050	mg/kg wet	0.05000		85	70-130			
Trichloroethene	0.0473	0.0050	mg/kg wet	0.05000		95	70-130			
Trichlorofluoromethane	0.0448	0.0050	mg/kg wet	0.05000		90	40-160			
Vinyl Chloride	0.0461	0.0100	mg/kg wet	0.05000		92	70-130			
Xylene O	0.0378	0.0050	mg/kg wet	0.05000		76	70-130			
Xylene P,M	0.0766	0.0100	mg/kg wet	0.1000		77	70-130			
Surrogate: 1,2-Dichloroethane-d4	*0.0531*		mg/kg wet	*0.05000*		*106*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0475*		mg/kg wet	*0.05000*		*95*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0532*		mg/kg wet	*0.05000*		*106*	*70-130*			
Surrogate: Toluene-d8	*0.0479*		mg/kg wet	*0.05000*		*96*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	0.0437	0.0050	mg/kg wet	0.05000		87	70-130	3	20	
1,1,1-Trichloroethane	0.0499	0.0050	mg/kg wet	0.05000		100	70-130	2	20	
1,1,2,2-Tetrachloroethane	0.0473	0.0050	mg/kg wet	0.05000		95	40-160	6	20	
1,1,2-Trichloroethane	0.0477	0.0050	mg/kg wet	0.05000		95	70-130	2	20	
1,1-Dichloroethane	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	1	20	
1,1-Dichloroethene	0.0518	0.0050	mg/kg wet	0.05000		104	70-130	2	20	
1,1-Dichloropropene	0.0479	0.0050	mg/kg wet	0.05000		96	70-130	1	20	
1,2,3-Trichlorobenzene	0.0470	0.0050	mg/kg wet	0.05000		94	70-130	7	20	
1,2,3-Trichloropropane	0.0444	0.0050	mg/kg wet	0.05000		89	70-130	3	20	
1,2,4-Trichlorobenzene	0.0477	0.0050	mg/kg wet	0.05000		95	70-130	7	20	
1,2,4-Trimethylbenzene	0.0476	0.0050	mg/kg wet	0.05000		95	70-130	9	20	
1,2-Dibromo-3-Chloropropane	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	0.4	20	
1,2-Dibromoethane	0.0440	0.0050	mg/kg wet	0.05000		88	70-130	6	20	
1,2-Dichlorobenzene	0.0443	0.0050	mg/kg wet	0.05000		89	70-130	8	20	
1,2-Dichloroethane	0.0468	0.0050	mg/kg wet	0.05000		94	70-130	0.09	20	
1,2-Dichloropropane	0.0484	0.0050	mg/kg wet	0.05000		97	70-130	0.9	20	
1,3,5-Trimethylbenzene	0.0478	0.0050	mg/kg wet	0.05000		96	70-130	8	20	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41502 - 5035										
1,3-Dichlorobenzene	0.0431	0.0050	mg/kg wet	0.05000		86	70-130	10	20	
1,3-Dichloropropane	0.0435	0.0050	mg/kg wet	0.05000		87	70-130	5	20	
1,4-Dichlorobenzene	0.0461	0.0050	mg/kg wet	0.05000		92	70-130	8	20	
1,4-Dioxane	0.978	0.100	mg/kg wet	1.000		98	70-130	17	20	
2,2-Dichloropropane	0.0511	0.0050	mg/kg wet	0.05000		102	70-130	1	20	
2-Butanone	0.259	0.0500	mg/kg wet	0.2500		104	40-160	9	20	
2-Chlorotoluene	0.0458	0.0050	mg/kg wet	0.05000		92	70-130	9	20	
2-Hexanone	0.212	0.0500	mg/kg wet	0.2500		85	40-160	17	20	
4-Chlorotoluene	0.0478	0.0050	mg/kg wet	0.05000		96	70-130	9	20	
4-Isopropyltoluene	0.0445	0.0050	mg/kg wet	0.05000		89	70-130	9	20	
4-Methyl-2-Pentanone	0.227	0.0500	mg/kg wet	0.2500		91	40-160	11	20	
Acetone	0.305	0.0500	mg/kg wet	0.2500		122	40-160	17	20	
Benzene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130	0.7	20	
Bromobenzene	0.0443	0.0050	mg/kg wet	0.05000		89	70-130	9	20	
Bromochloromethane	0.0461	0.0050	mg/kg wet	0.05000		92	70-130	0.7	20	
Bromodichloromethane	0.0510	0.0050	mg/kg wet	0.05000		102	70-130	0	20	
Bromoform	0.0398	0.0050	mg/kg wet	0.05000		80	40-160	6	20	
Bromomethane	0.0464	0.0100	mg/kg wet	0.05000		93	40-160	6	20	
Carbon Disulfide	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	2	20	
Carbon Tetrachloride	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	0.9	20	
Chlorobenzene	0.0422	0.0050	mg/kg wet	0.05000		84	70-130	4	20	
Chloroethane	0.0529	0.0100	mg/kg wet	0.05000		106	40-160	0.2	20	
Chloroform	0.0465	0.0050	mg/kg wet	0.05000		93	70-130	0.04	20	
Chloromethane	0.0411	0.0100	mg/kg wet	0.05000		82	40-160	5	20	
cis-1,2-Dichloroethene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130	0.1	20	
cis-1,3-Dichloropropene	0.0441	0.0050	mg/kg wet	0.05000		88	40-160	0.09	20	
Dibromochloromethane	0.0387	0.0050	mg/kg wet	0.05000		77	40-160	4	20	
Dibromomethane	0.0471	0.0050	mg/kg wet	0.05000		94	70-130	1	20	
Dichlorodifluoromethane	0.0337	0.0100	mg/kg wet	0.05000		67	40-160	3	20	
Diethyl Ether	0.0520	0.0050	mg/kg wet	0.05000		104	70-130	2	20	
Di-isopropyl ether	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	0.08	20	
Ethyl tertiary-butyl ether	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	1	20	
Ethylbenzene	0.0452	0.0050	mg/kg wet	0.05000		90	70-130	5	20	
Hexachlorobutadiene	0.0445	0.0050	mg/kg wet	0.05000		89	40-160	8	20	
Isopropylbenzene	0.0543	0.0050	mg/kg wet	0.05000		109	70-130	9	20	
Methyl tert-Butyl Ether	0.0492	0.0050	mg/kg wet	0.05000		98	70-130	3	20	
Methylene Chloride	0.0453	0.0250	mg/kg wet	0.05000		91	70-130	0.6	20	
Naphthalene	0.0475	0.0050	mg/kg wet	0.05000		95	40-160	2	20	
n-Butylbenzene	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	9	20	
n-Propylbenzene	0.0480	0.0050	mg/kg wet	0.05000		96	70-130	9	20	
sec-Butylbenzene	0.0448	0.0050	mg/kg wet	0.05000		90	70-130	8	20	
Styrene	0.0378	0.0050	mg/kg wet	0.05000		76	40-160	4	20	
tert-Butylbenzene	0.0473	0.0050	mg/kg wet	0.05000		95	70-130	8	20	
Tertiary-amyl methyl ether	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	2	20	
Tetrachloroethene	0.0435	0.0050	mg/kg wet	0.05000		87	70-130	7	20	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41502 - 5035										
Tetrahydrofuran	0.0480	0.0200	mg/kg wet	0.05000		96	70-130	11	20	
Toluene	0.0480	0.0050	mg/kg wet	0.05000		96	70-130	1	20	
trans-1,2-Dichloroethene	0.0499	0.0050	mg/kg wet	0.05000		100	70-130	1	20	
trans-1,3-Dichloropropene	0.0433	0.0050	mg/kg wet	0.05000		87	70-130	2	20	
Trichloroethene	0.0478	0.0050	mg/kg wet	0.05000		96	70-130	1	20	
Trichlorofluoromethane	0.0458	0.0050	mg/kg wet	0.05000		92	40-160	2	20	
Vinyl Chloride	0.0457	0.0100	mg/kg wet	0.05000		91	70-130	1	20	
Xylene O	0.0395	0.0050	mg/kg wet	0.05000		79	70-130	4	20	
Xylene P,M	0.0804	0.0100	mg/kg wet	0.1000		80	70-130	5	20	
Surrogate: 1,2-Dichloroethane-d4	*0.0531*		mg/kg wet	*0.05000*		*106*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0487*		mg/kg wet	*0.05000*		*97*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0520*		mg/kg wet	*0.05000*		*104*	*70-130*			
Surrogate: Toluene-d8	*0.0491*		mg/kg wet	*0.05000*		*98*	*70-130*			
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch DL41634 - 5030B										
Blank										
1,2,4-Trimethylbenzene	ND	0.2	mg/kg wet							
2,2,4-Trimethylpentane	ND	5.0	mg/kg wet							
2-Methylpentane	ND	5.0	mg/kg wet							
Benzene	ND	0.2	mg/kg wet							
C5-C8 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
C9-C10 Aromatics	ND	10.0	mg/kg wet							
C9-C12 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
Ethylbenzene	ND	0.2	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.05	mg/kg wet							
Naphthalene	ND	0.2	mg/kg wet							
n-Butylcyclohexane	ND	5.0	mg/kg wet							
n-Decane	ND	5.0	mg/kg wet							
Nonane (C9)	ND	5.0	mg/kg wet							
Pentane	ND	5.0	mg/kg wet							
Toluene	ND	0.2	mg/kg wet							
Xylene O	ND	0.2	mg/kg wet							
Xylene P,M	ND	0.4	mg/kg wet							
Surrogate: 2,5-Dibromotoluene - FID	*4.08*		mg/kg wet	*5.000*		*82*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*4.23*		mg/kg wet	*5.000*		*85*	*70-130*			
Surrogate: Trifluorotoluene - FID	*4.60*		mg/kg wet	*5.333*		*86*	*70-130*			
Surrogate: Trifluorotoluene - PID	*4.65*		mg/kg wet	*5.333*		*87*	*70-130*			
LCS										
1,2,4-Trimethylbenzene	8.7	0.2	mg/kg wet	10.00		87	70-130			
2,2,4-Trimethylpentane	13.5	5.0	mg/kg wet	15.00		90	70-130			
2-Methylpentane	13.3	5.0	mg/kg wet	15.00		89	70-130			
Benzene	4.3	0.2	mg/kg wet	5.000		87	70-130			
C5-C8 Unadjusted Aliphatics	36.2	10.0	mg/kg wet	40.00		90	70-130			
C9-C10 Aromatics	8.7	10.0	mg/kg wet	10.00		87	70-130			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch DL41634 - 5030B										
C9-C12 Unadjusted Aliphatics	21.5	10.0	mg/kg wet	30.00		72	70-130			
Ethylbenzene	4.5	0.2	mg/kg wet	5.000		90	70-130			
Methyl tert-Butyl Ether	11.8	0.05	mg/kg wet	15.00		78	70-130			
Naphthalene	8.8	0.2	mg/kg wet	10.00		88	70-130			
n-Butylcyclohexane	8.8	5.0	mg/kg wet	10.00		88	70-130			
n-Decane	8.8	5.0	mg/kg wet	10.00		88	70-130			
Nonane (C9)	8.5	5.0	mg/kg wet	10.00		85	30-130			
Pentane	9.4	5.0	mg/kg wet	10.00		94	70-130			
Toluene	12.8	0.2	mg/kg wet	15.00		86	70-130			
Xylene O	7.9	0.2	mg/kg wet	10.00		79	70-130			
Xylene P,M	17.5	0.4	mg/kg wet	20.00		88	70-130			
Surrogate: 2,5-Dibromotoluene - FID	*4.40*		mg/kg wet	*5.000*		*88*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*4.49*		mg/kg wet	*5.000*		*90*	*70-130*			
Surrogate: Trifluorotoluene - FID	*4.77*		mg/kg wet	*5.333*		*89*	*70-130*			
Surrogate: Trifluorotoluene - PID	*4.81*		mg/kg wet	*5.333*		*90*	*70-130*			
LCS Dup										
1,2,4-Trimethylbenzene	9.1	0.2	mg/kg wet	10.00		91	70-130	4	25	
2,2,4-Trimethylpentane	13.8	5.0	mg/kg wet	15.00		92	70-130	2	25	
2-Methylpentane	12.7	5.0	mg/kg wet	15.00		85	70-130	5	25	
Benzene	4.5	0.2	mg/kg wet	5.000		89	70-130	3	25	
C5-C8 Unadjusted Aliphatics	35.3	10.0	mg/kg wet	40.00		88	70-130	2	25	
C9-C10 Aromatics	9.1	10.0	mg/kg wet	10.00		91	70-130	4	25	
C9-C12 Unadjusted Aliphatics	26.8	10.0	mg/kg wet	30.00		89	70-130	22	25	
Ethylbenzene	4.7	0.2	mg/kg wet	5.000		93	70-130	3	25	
Methyl tert-Butyl Ether	11.9	0.05	mg/kg wet	15.00		79	70-130	0.8	25	
Naphthalene	9.3	0.2	mg/kg wet	10.00		93	70-130	6	25	
n-Butylcyclohexane	10.5	5.0	mg/kg wet	10.00		105	70-130	18	25	
n-Decane	10.9	5.0	mg/kg wet	10.00		109	70-130	21	25	
Nonane (C9)	10.9	5.0	mg/kg wet	10.00		109	30-130	25	25	
Pentane	9.0	5.0	mg/kg wet	10.00		90	70-130	5	25	
Toluene	13.3	0.2	mg/kg wet	15.00		89	70-130	4	25	
Xylene O	8.2	0.2	mg/kg wet	10.00		82	70-130	4	25	
Xylene P,M	18.1	0.4	mg/kg wet	20.00		91	70-130	3	25	
Surrogate: 2,5-Dibromotoluene - FID	*4.33*		mg/kg wet	*5.000*		*87*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*4.44*		mg/kg wet	*5.000*		*89*	*70-130*			
Surrogate: Trifluorotoluene - FID	*4.82*		mg/kg wet	*5.333*		*90*	*70-130*			
Surrogate: Trifluorotoluene - PID	*5.02*		mg/kg wet	*5.333*		*94*	*70-130*			
Semi-Volatile Organic Compounds										
Batch DL41605 - 3546										
Blank										
1,1-Biphenyl	ND	0.025	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.250	mg/kg wet							
1,2-Dichlorobenzene	ND	0.250	mg/kg wet							
1,3-Dichlorobenzene	ND	0.250	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41605 - 3546										
1,4-Dichlorobenzene	ND	0.250	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.250	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.250	mg/kg wet							
2,4-Dichlorophenol	ND	0.250	mg/kg wet							
2,4-Dimethylphenol	ND	0.250	mg/kg wet							
2,4-Dinitrophenol	ND	1.00	mg/kg wet							
2,4-Dinitrotoluene	ND	0.250	mg/kg wet							
2,6-Dinitrotoluene	ND	0.250	mg/kg wet							
2-Chloronaphthalene	ND	0.250	mg/kg wet							
2-Chlorophenol	ND	0.250	mg/kg wet							
2-Methylnaphthalene	ND	0.250	mg/kg wet							
2-Methylphenol	ND	0.250	mg/kg wet							
2-Nitrophenol	ND	0.500	mg/kg wet							
3,3´-Dichlorobenzidine	ND	0.250	mg/kg wet							
3+4-Methylphenol	ND	0.250	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.250	mg/kg wet							
4-Chloroaniline	ND	0.250	mg/kg wet							
4-Nitrophenol	ND	1.00	mg/kg wet							
Acenaphthene	ND	0.250	mg/kg wet							
Acenaphthylene	ND	0.250	mg/kg wet							
Acetophenone	ND	0.250	mg/kg wet							
Aniline	ND	0.250	mg/kg wet							
Anthracene	ND	0.250	mg/kg wet							
Azobenzene	ND	0.250	mg/kg wet							
Benzo(a)anthracene	ND	0.250	mg/kg wet							
Benzo(a)pyrene	ND	0.250	mg/kg wet							
Benzo(b)fluoranthene	ND	0.250	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.250	mg/kg wet							
Benzo(k)fluoranthene	ND	0.250	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.250	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.250	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.250	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.250	mg/kg wet							
Butylbenzylphthalate	ND	0.250	mg/kg wet							
Chrysene	ND	0.250	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.250	mg/kg wet							
Dibenzofuran	ND	0.250	mg/kg wet							
Diethylphthalate	ND	0.250	mg/kg wet							
Dimethylphthalate	ND	0.250	mg/kg wet							
Di-n-butylphthalate	ND	0.250	mg/kg wet							
Di-n-octylphthalate	ND	0.500	mg/kg wet							
Fluoranthene	ND	0.250	mg/kg wet							
Fluorene	ND	0.250	mg/kg wet							
Hexachlorobenzene	ND	0.250	mg/kg wet							
Hexachlorobutadiene	ND	0.250	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41605 - 3546										
Hexachloroethane	ND	0.250	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.250	mg/kg wet							
Isophorone	ND	0.250	mg/kg wet							
Naphthalene	ND	0.250	mg/kg wet							
Nitrobenzene	ND	0.250	mg/kg wet							
N-Nitrosodimethylamine	ND	0.250	mg/kg wet							
Pentachlorophenol	ND	1.00	mg/kg wet							
Phenanthrene	ND	0.250	mg/kg wet							
Phenol	ND	0.250	mg/kg wet							
Pyrene	ND	0.250	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	*2.08*		mg/kg wet	*2.500*		*83*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.30*		mg/kg wet	*3.750*		*88*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.10*		mg/kg wet	*3.750*		*83*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.15*		mg/kg wet	*2.500*		*86*	*30-130*			
Surrogate: 2-Fluorophenol	*2.91*		mg/kg wet	*3.750*		*78*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.06*		mg/kg wet	*2.500*		*82*	*30-130*			
Surrogate: Phenol-d6	*3.05*		mg/kg wet	*3.750*		*81*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.67*		mg/kg wet	*2.500*		*107*	*30-130*			
LCS										
1,1-Biphenyl	2.20	0.025	mg/kg wet	2.500		88	40-140			
1,2,4-Trichlorobenzene	1.86	0.250	mg/kg wet	2.500		75	40-140			
1,2-Dichlorobenzene	2.10	0.250	mg/kg wet	2.500		84	40-140			
1,3-Dichlorobenzene	2.06	0.250	mg/kg wet	2.500		82	40-140			
1,4-Dichlorobenzene	2.16	0.250	mg/kg wet	2.500		86	40-140			
2,4,5-Trichlorophenol	2.33	0.250	mg/kg wet	2.500		93	30-130			
2,4,6-Trichlorophenol	2.05	0.250	mg/kg wet	2.500		82	30-130			
2,4-Dichlorophenol	1.83	0.250	mg/kg wet	2.500		73	30-130			
2,4-Dimethylphenol	1.87	0.250	mg/kg wet	2.500		75	30-130			
2,4-Dinitrophenol	1.86	1.00	mg/kg wet	2.500		74	15-140			
2,4-Dinitrotoluene	2.25	0.250	mg/kg wet	2.500		90	40-140			
2,6-Dinitrotoluene	2.23	0.250	mg/kg wet	2.500		89	40-140			
2-Chloronaphthalene	2.01	0.250	mg/kg wet	2.500		80	40-140			
2-Chlorophenol	2.08	0.250	mg/kg wet	2.500		83	30-130			
2-Methylnaphthalene	1.98	0.250	mg/kg wet	2.500		79	40-140			
2-Methylphenol	2.03	0.250	mg/kg wet	2.500		81	15-140			
2-Nitrophenol	1.94	0.500	mg/kg wet	2.500		77	30-130			
3,3´-Dichlorobenzidine	2.15	0.250	mg/kg wet	2.500		86	40-140			
3+4-Methylphenol	4.03	0.250	mg/kg wet	5.000		81	15-140			
4-Bromophenyl-phenylether	2.46	0.250	mg/kg wet	2.500		98	40-140			
4-Chloroaniline	1.36	0.250	mg/kg wet	2.500		55	15-140			
4-Nitrophenol	1.74	1.00	mg/kg wet	2.500		70	15-140			
Acenaphthene	2.25	0.250	mg/kg wet	2.500		90	40-140			
Acenaphthylene	2.21	0.250	mg/kg wet	2.500		88	40-140			
Acetophenone	1.93	0.250	mg/kg wet	2.500		77	40-140			
Aniline	1.06	0.250	mg/kg wet	2.500		42	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41605 - 3546										
Anthracene	2.52	0.250	mg/kg wet	2.500		101	40-140			
Azobenzene	2.42	0.250	mg/kg wet	2.500		97	40-140			
Benzo(a)anthracene	2.31	0.250	mg/kg wet	2.500		93	40-140			
Benzo(a)pyrene	2.51	0.250	mg/kg wet	2.500		100	40-140			
Benzo(b)fluoranthene	2.16	0.250	mg/kg wet	2.500		86	40-140			
Benzo(g,h,i)perylene	2.49	0.250	mg/kg wet	2.500		100	40-140			
Benzo(k)fluoranthene	2.47	0.250	mg/kg wet	2.500		99	40-140			
bis(2-Chloroethoxy)methane	1.89	0.250	mg/kg wet	2.500		76	40-140			
bis(2-Chloroethyl)ether	2.18	0.250	mg/kg wet	2.500		87	40-140			
bis(2-chloroisopropyl)Ether	1.80	0.250	mg/kg wet	2.500		72	40-140			
bis(2-Ethylhexyl)phthalate	2.31	0.250	mg/kg wet	2.500		92	40-140			
Butylbenzylphthalate	2.45	0.250	mg/kg wet	2.500		98	40-140			
Chrysene	2.47	0.250	mg/kg wet	2.500		99	40-140			
Dibenzo(a,h)Anthracene	2.60	0.250	mg/kg wet	2.500		104	40-140			
Dibenzofuran	2.13	0.250	mg/kg wet	2.500		85	40-140			
Diethylphthalate	2.19	0.250	mg/kg wet	2.500		88	40-140			
Dimethylphthalate	2.18	0.250	mg/kg wet	2.500		87	15-140			
Di-n-butylphthalate	2.44	0.250	mg/kg wet	2.500		98	40-140			
Di-n-octylphthalate	2.22	0.500	mg/kg wet	2.500		89	40-140			
Fluoranthene	2.38	0.250	mg/kg wet	2.500		95	40-140			
Fluorene	2.18	0.250	mg/kg wet	2.500		87	40-140			
Hexachlorobenzene	2.41	0.250	mg/kg wet	2.500		97	40-140			
Hexachlorobutadiene	1.85	0.250	mg/kg wet	2.500		74	40-140			
Hexachloroethane	2.11	0.250	mg/kg wet	2.500		85	40-140			
Indeno(1,2,3-cd)Pyrene	2.43	0.250	mg/kg wet	2.500		97	40-140			
Isophorone	1.74	0.250	mg/kg wet	2.500		70	40-140			
Naphthalene	1.81	0.250	mg/kg wet	2.500		72	40-140			
Nitrobenzene	1.87	0.250	mg/kg wet	2.500		75	40-140			
N-Nitrosodimethylamine	2.01	0.250	mg/kg wet	2.500		80	40-140			
Pentachlorophenol	2.00	1.00	mg/kg wet	2.500		80	15-140			
Phenanthrene	2.41	0.250	mg/kg wet	2.500		96	40-140			
Phenol	2.01	0.250	mg/kg wet	2.500		80	15-140			
Pyrene	2.58	0.250	mg/kg wet	2.500		103	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*2.08*		mg/kg wet	*2.500*		*83*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.78*		mg/kg wet	*3.750*		*101*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.14*		mg/kg wet	*3.750*		*84*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.23*		mg/kg wet	*2.500*		*89*	*30-130*			
Surrogate: 2-Fluorophenol	*2.96*		mg/kg wet	*3.750*		*79*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.82*		mg/kg wet	*2.500*		*73*	*30-130*			
Surrogate: Phenol-d6	*3.18*		mg/kg wet	*3.750*		*85*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.47*		mg/kg wet	*2.500*		*99*	*30-130*			
LCS Dup										
1,1-Biphenyl	2.28	0.025	mg/kg wet	2.500		91	40-140	4	30	
1,2,4-Trichlorobenzene	1.90	0.250	mg/kg wet	2.500		76	40-140	2	30	
1,2-Dichlorobenzene	2.15	0.250	mg/kg wet	2.500		86	40-140	2	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41605 - 3546										
1,3-Dichlorobenzene	2.14	0.250	mg/kg wet	2.500		86	40-140	4	30	
1,4-Dichlorobenzene	2.23	0.250	mg/kg wet	2.500		89	40-140	3	30	
2,4,5-Trichlorophenol	2.41	0.250	mg/kg wet	2.500		96	30-130	3	30	
2,4,6-Trichlorophenol	2.18	0.250	mg/kg wet	2.500		87	30-130	6	30	
2,4-Dichlorophenol	1.89	0.250	mg/kg wet	2.500		75	30-130	3	30	
2,4-Dimethylphenol	1.86	0.250	mg/kg wet	2.500		74	30-130	0.3	30	
2,4-Dinitrophenol	1.93	1.00	mg/kg wet	2.500		77	15-140	4	30	
2,4-Dinitrotoluene	2.27	0.250	mg/kg wet	2.500		91	40-140	0.7	30	
2,6-Dinitrotoluene	2.27	0.250	mg/kg wet	2.500		91	40-140	2	30	
2-Chloronaphthalene	2.09	0.250	mg/kg wet	2.500		84	40-140	4	30	
2-Chlorophenol	2.14	0.250	mg/kg wet	2.500		86	30-130	3	30	
2-Methylnaphthalene	2.02	0.250	mg/kg wet	2.500		81	40-140	2	30	
2-Methylphenol	2.15	0.250	mg/kg wet	2.500		86	15-140	6	30	
2-Nitrophenol	1.96	0.500	mg/kg wet	2.500		78	30-130	1	30	
3,3´-Dichlorobenzidine	2.16	0.250	mg/kg wet	2.500		86	40-140	0.2	30	
3+4-Methylphenol	4.19	0.250	mg/kg wet	5.000		84	15-140	4	30	
4-Bromophenyl-phenylether	2.62	0.250	mg/kg wet	2.500		105	40-140	6	30	
4-Chloroaniline	1.39	0.250	mg/kg wet	2.500		56	15-140	2	30	
4-Nitrophenol	1.68	1.00	mg/kg wet	2.500		67	15-140	4	30	
Acenaphthene	2.28	0.250	mg/kg wet	2.500		91	40-140	1	30	
Acenaphthylene	2.27	0.250	mg/kg wet	2.500		91	40-140	3	30	
Acetophenone	2.03	0.250	mg/kg wet	2.500		81	40-140	5	30	
Aniline	1.09	0.250	mg/kg wet	2.500		44	40-140	3	30	
Anthracene	2.66	0.250	mg/kg wet	2.500		106	40-140	6	30	
Azobenzene	2.59	0.250	mg/kg wet	2.500		103	40-140	7	30	
Benzo(a)anthracene	2.39	0.250	mg/kg wet	2.500		96	40-140	3	30	
Benzo(a)pyrene	2.56	0.250	mg/kg wet	2.500		103	40-140	2	30	
Benzo(b)fluoranthene	2.28	0.250	mg/kg wet	2.500		91	40-140	5	30	
Benzo(g,h,i)perylene	2.53	0.250	mg/kg wet	2.500		101	40-140	1	30	
Benzo(k)fluoranthene	2.57	0.250	mg/kg wet	2.500		103	40-140	4	30	
bis(2-Chloroethoxy)methane	1.94	0.250	mg/kg wet	2.500		78	40-140	2	30	
bis(2-Chloroethyl)ether	2.07	0.250	mg/kg wet	2.500		83	40-140	5	30	
bis(2-chloroisopropyl)Ether	1.91	0.250	mg/kg wet	2.500		76	40-140	6	30	
bis(2-Ethylhexyl)phthalate	2.44	0.250	mg/kg wet	2.500		98	40-140	5	30	
Butylbenzylphthalate	2.61	0.250	mg/kg wet	2.500		104	40-140	6	30	
Chrysene	2.50	0.250	mg/kg wet	2.500		100	40-140	1	30	
Dibenzo(a,h)Anthracene	2.60	0.250	mg/kg wet	2.500		104	40-140	0.03	30	
Dibenzofuran	2.20	0.250	mg/kg wet	2.500		88	40-140	3	30	
Diethylphthalate	2.31	0.250	mg/kg wet	2.500		92	40-140	5	30	
Dimethylphthalate	2.29	0.250	mg/kg wet	2.500		92	15-140	5	30	
Di-n-butylphthalate	2.59	0.250	mg/kg wet	2.500		104	40-140	6	30	
Di-n-octylphthalate	2.39	0.500	mg/kg wet	2.500		96	40-140	8	30	
Fluoranthene	2.41	0.250	mg/kg wet	2.500		96	40-140	1	30	
Fluorene	2.27	0.250	mg/kg wet	2.500		91	40-140	4	30	
Hexachlorobenzene	2.51	0.250	mg/kg wet	2.500		100	40-140	4	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41605 - 3546										
Hexachlorobutadiene	1.92	0.250	mg/kg wet	2.500		77	40-140	4	30	
Hexachloroethane	2.19	0.250	mg/kg wet	2.500		87	40-140	3	30	
Indeno(1,2,3-cd)Pyrene	2.50	0.250	mg/kg wet	2.500		100	40-140	3	30	
Isophorone	1.79	0.250	mg/kg wet	2.500		72	40-140	3	30	
Naphthalene	1.85	0.250	mg/kg wet	2.500		74	40-140	2	30	
Nitrobenzene	1.89	0.250	mg/kg wet	2.500		76	40-140	1	30	
N-Nitrosodimethylamine	2.05	0.250	mg/kg wet	2.500		82	40-140	2	30	
Pentachlorophenol	2.08	1.00	mg/kg wet	2.500		83	15-140	4	30	
Phenanthrene	2.55	0.250	mg/kg wet	2.500		102	40-140	6	30	
Phenol	2.06	0.250	mg/kg wet	2.500		82	15-140	2	30	
Pyrene	2.74	0.250	mg/kg wet	2.500		110	40-140	6	30	
Surrogate: 1,2-Dichlorobenzene-d4	*2.13*		mg/kg wet	*2.500*		*85*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.90*		mg/kg wet	*3.750*		*104*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.20*		mg/kg wet	*3.750*		*85*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.25*		mg/kg wet	*2.500*		*90*	*30-130*			
Surrogate: 2-Fluorophenol	*3.00*		mg/kg wet	*3.750*		*80*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.81*		mg/kg wet	*2.500*		*72*	*30-130*			
Surrogate: Phenol-d6	*3.19*		mg/kg wet	*3.750*		*85*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.51*		mg/kg wet	*2.500*		*101*	*30-130*			
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL41604 - 3546										
Blank										
C19-C36 Aliphatics1	ND	10.0	mg/kg wet							
C9-C18 Aliphatics1	ND	10.0	mg/kg wet							
Surrogate: 1-Chlorooctadecane	*1.52*		mg/kg wet	*2.000*		*76*	*40-140*			
Blank										
2-Methylnaphthalene	ND	0.20	mg/kg wet							
Acenaphthene	ND	0.40	mg/kg wet							
Acenaphthylene	ND	0.20	mg/kg wet							
Anthracene	ND	0.40	mg/kg wet							
Benzo(a)anthracene	ND	0.40	mg/kg wet							
Benzo(a)pyrene	ND	0.40	mg/kg wet							
Benzo(b)fluoranthene	ND	0.40	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet							
Benzo(k)fluoranthene	ND	0.40	mg/kg wet							
C11-C22 Unadjusted Aromatics1	ND	10.0	mg/kg wet							
Chrysene	ND	0.40	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet							
Fluoranthene	ND	0.40	mg/kg wet							
Fluorene	ND	0.40	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet							
Naphthalene	ND	0.40	mg/kg wet							
Phenanthrene	ND	0.40	mg/kg wet							
Pyrene	ND	0.40	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL41604 - 3546										
Surrogate: 2-Bromonaphthalene	*1.97*		mg/kg wet	*2.000*		*98*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.78*		mg/kg wet	*2.000*		*89*	*40-140*			
Surrogate: O-Terphenyl	*2.14*		mg/kg wet	*2.000*		*107*	*40-140*			
LCS										
C19-C36 Aliphatics1	16.7	10.0	mg/kg wet	16.00		104	40-140			
C9-C18 Aliphatics1	10.4	10.0	mg/kg wet	12.00		87	40-140			
Surrogate: 1-Chlorooctadecane	*2.08*		mg/kg wet	*2.000*		*104*	*40-140*			
LCS										
2-Methylnaphthalene	1.37	0.20	mg/kg wet	2.000		68	40-140			
Acenaphthene	1.57	0.40	mg/kg wet	2.000		78	40-140			
Acenaphthylene	1.57	0.20	mg/kg wet	2.000		78	40-140			
Anthracene	1.98	0.40	mg/kg wet	2.000		99	40-140			
Benzo(a)anthracene	2.00	0.40	mg/kg wet	2.000		100	40-140			
Benzo(a)pyrene	1.83	0.40	mg/kg wet	2.000		91	40-140			
Benzo(b)fluoranthene	1.71	0.40	mg/kg wet	2.000		85	40-140			
Benzo(g,h,i)perylene	1.71	0.40	mg/kg wet	2.000		85	40-140			
Benzo(k)fluoranthene	1.72	0.40	mg/kg wet	2.000		86	40-140			
C11-C22 Unadjusted Aromatics1	29.0	10.0	mg/kg wet	34.00		85	40-140			
Chrysene	1.81	0.40	mg/kg wet	2.000		90	40-140			
Dibenzo(a,h)Anthracene	1.64	0.20	mg/kg wet	2.000		82	40-140			
Fluoranthene	1.85	0.40	mg/kg wet	2.000		92	40-140			
Fluorene	1.65	0.40	mg/kg wet	2.000		83	40-140			
Indeno(1,2,3-cd)Pyrene	1.69	0.40	mg/kg wet	2.000		84	40-140			
Naphthalene	1.34	0.40	mg/kg wet	2.000		67	40-140			
Phenanthrene	1.74	0.40	mg/kg wet	2.000		87	40-140			
Pyrene	1.81	0.40	mg/kg wet	2.000		91	40-140			
Surrogate: 2-Bromonaphthalene	*2.07*		mg/kg wet	*2.000*		*104*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.92*		mg/kg wet	*2.000*		*96*	*40-140*			
Surrogate: O-Terphenyl	*2.27*		mg/kg wet	*2.000*		*114*	*40-140*			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS Dup										
C19-C36 Aliphatics1	13.1	10.0	mg/kg wet	16.00		82	40-140	24	25	
C9-C18 Aliphatics1	9.2	10.0	mg/kg wet	12.00		77	40-140	13	25	
Surrogate: 1-Chlorooctadecane	*1.67*		mg/kg wet	*2.000*		*84*	*40-140*			
LCS Dup										
2-Methylnaphthalene	1.31	0.20	mg/kg wet	2.000		66	40-140	4	30	
Acenaphthene	1.47	0.40	mg/kg wet	2.000		74	40-140	6	30	
Acenaphthylene	1.46	0.20	mg/kg wet	2.000		73	40-140	7	30	
Anthracene	1.94	0.40	mg/kg wet	2.000		97	40-140	2	30	
Benzo(a)anthracene	2.10	0.40	mg/kg wet	2.000		105	40-140	5	30	
Benzo(a)pyrene	1.98	0.40	mg/kg wet	2.000		99	40-140	8	30	
Benzo(b)fluoranthene	1.80	0.40	mg/kg wet	2.000		90	40-140	6	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL41604 - 3546										
Benzo(g,h,i)perylene	1.80	0.40	mg/kg wet	2.000		90	40-140	5	30	
Benzo(k)fluoranthene	1.77	0.40	mg/kg wet	2.000		89	40-140	3	30	
C11-C22 Unadjusted Aromatics1	29.8	10.0	mg/kg wet	34.00		88	40-140	3	25	
Chrysene	1.93	0.40	mg/kg wet	2.000		97	40-140	7	30	
Dibenzo(a,h)Anthracene	1.75	0.20	mg/kg wet	2.000		87	40-140	6	30	
Fluoranthene	1.87	0.40	mg/kg wet	2.000		93	40-140	1	30	
Fluorene	1.59	0.40	mg/kg wet	2.000		80	40-140	4	30	
Indeno(1,2,3-cd)Pyrene	1.83	0.40	mg/kg wet	2.000		91	40-140	8	30	
Naphthalene	1.24	0.40	mg/kg wet	2.000		62	40-140	7	30	
Phenanthrene	1.70	0.40	mg/kg wet	2.000		85	40-140	2	30	
Pyrene	1.83	0.40	mg/kg wet	2.000		92	40-140	1	30	
Surrogate: 2-Bromonaphthalene	*1.96*		mg/kg wet	*2.000*		*98*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.82*		mg/kg wet	*2.000*		*91*	*40-140*			
Surrogate: O-Terphenyl	*2.24*		mg/kg wet	*2.000*		*112*	*40-140*			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	
8082A Polychlorinated Biphenyls (PCB)										
Batch DL41602 - 3540C										
Blank										
Aroclor 1016	ND	0.05	mg/kg wet							
Aroclor 1016 [2C]	ND	0.05	mg/kg wet							
Aroclor 1221	ND	0.05	mg/kg wet							
Aroclor 1221 [2C]	ND	0.05	mg/kg wet							
Aroclor 1232	ND	0.05	mg/kg wet							
Aroclor 1232 [2C]	ND	0.05	mg/kg wet							
Aroclor 1242	ND	0.05	mg/kg wet							
Aroclor 1242 [2C]	ND	0.05	mg/kg wet							
Aroclor 1248	ND	0.05	mg/kg wet							
Aroclor 1248 [2C]	ND	0.05	mg/kg wet							
Aroclor 1254	ND	0.05	mg/kg wet							
Aroclor 1254 [2C]	ND	0.05	mg/kg wet							
Aroclor 1260	ND	0.05	mg/kg wet							
Aroclor 1260 [2C]	ND	0.05	mg/kg wet							
Aroclor 1262	ND	0.05	mg/kg wet							
Aroclor 1262 [2C]	ND	0.05	mg/kg wet							
Aroclor 1268	ND	0.05	mg/kg wet							
Aroclor 1268 [2C]	ND	0.05	mg/kg wet							
Surrogate: Decachlorobiphenyl	*0.0203*		mg/kg wet	*0.02500*		*81*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0187*		mg/kg wet	*0.02500*		*75*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0189*		mg/kg wet	*0.02500*		*76*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0196*		mg/kg wet	*0.02500*		*78*	*30-150*			
LCS										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		81	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082A Polychlorinated Biphenyls (PCB)										
Batch DL41602 - 3540C										
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		80	40-140			
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		82	40-140			
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		80	40-140			
Surrogate: Decachlorobiphenyl	*0.0206*		mg/kg wet	*0.02500*		*82*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0186*		mg/kg wet	*0.02500*		*74*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0194*		mg/kg wet	*0.02500*		*78*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0191*		mg/kg wet	*0.02500*		*77*	*30-150*			
LCS Dup										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		80	40-140	0.3	30	
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		80	40-140	0.02	30	
Aroclor 1260	0.4	0.05	mg/kg wet	0.5000		82	40-140	0.7	30	
Aroclor 1260 [2C]	0.4	0.05	mg/kg wet	0.5000		80	40-140	0.5	30	
Surrogate: Decachlorobiphenyl	*0.0205*		mg/kg wet	*0.02500*		*82*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0182*		mg/kg wet	*0.02500*		*73*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0195*		mg/kg wet	*0.02500*		*78*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0191*		mg/kg wet	*0.02500*		*76*	*30-150*			
Batch DL41603 - 3540C										
Blank										
Aroclor 1016	ND	0.05	mg/kg wet							
Aroclor 1016 [2C]	ND	0.05	mg/kg wet							
Aroclor 1221	ND	0.05	mg/kg wet							
Aroclor 1221 [2C]	ND	0.05	mg/kg wet							
Aroclor 1232	ND	0.05	mg/kg wet							
Aroclor 1232 [2C]	ND	0.05	mg/kg wet							
Aroclor 1242	ND	0.05	mg/kg wet							
Aroclor 1242 [2C]	ND	0.05	mg/kg wet							
Aroclor 1248	ND	0.05	mg/kg wet							
Aroclor 1248 [2C]	ND	0.05	mg/kg wet							
Aroclor 1254	ND	0.05	mg/kg wet							
Aroclor 1254 [2C]	ND	0.05	mg/kg wet							
Aroclor 1260	ND	0.05	mg/kg wet							
Aroclor 1260 [2C]	ND	0.05	mg/kg wet							
Aroclor 1262	ND	0.05	mg/kg wet							
Aroclor 1262 [2C]	ND	0.05	mg/kg wet							
Aroclor 1268	ND	0.05	mg/kg wet							
Aroclor 1268 [2C]	ND	0.05	mg/kg wet							
Surrogate: Decachlorobiphenyl	*0.0199*		mg/kg wet	*0.02500*		*80*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0207*		mg/kg wet	*0.02500*		*83*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0205*		mg/kg wet	*0.02500*		*82*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0221*		mg/kg wet	*0.02500*		*88*	*30-150*			
LCS										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		86	40-140			
Aroclor 1016 [2C]	0.4	0.05	mg/kg wet	0.5000		90	40-140			
Aroclor 1260	0.5	0.05	mg/kg wet	0.5000		91	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0504

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082A Polychlorinated Biphenyls (PCB)										
Batch DL41603 - 3540C										
Aroclor 1260 [2C]	0.5	0.05	mg/kg wet	0.5000		93	40-140			
Surrogate: Decachlorobiphenyl	*0.0199*		mg/kg wet	*0.02500*		*80*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0206*		mg/kg wet	*0.02500*		*82*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0218*		mg/kg wet	*0.02500*		*87*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0220*		mg/kg wet	*0.02500*		*88*	*30-150*			
LCS Dup										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		89	40-140	3	30	
Aroclor 1016 [2C]	0.5	0.05	mg/kg wet	0.5000		92	40-140	3	30	
Aroclor 1260	0.5	0.05	mg/kg wet	0.5000		95	40-140	4	30	
Aroclor 1260 [2C]	0.5	0.05	mg/kg wet	0.5000		97	40-140	4	30	
Surrogate: Decachlorobiphenyl	*0.0203*		mg/kg wet	*0.02500*		*81*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0210*		mg/kg wet	*0.02500*		*84*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0221*		mg/kg wet	*0.02500*		*88*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0223*		mg/kg wet	*0.02500*		*89*	*30-150*			
Classical Chemistry										
Batch DL41655 - General Preparation										
Blank										
Reactive Cyanide	ND	2.0	mg/kg							
Reactive Sulfide	ND	2.0	mg/kg							
LCS										
Reactive Cyanide	4.1	2.0	mg/kg	100.3		4	0.68-5.41			
Reactive Sulfide	2.1	2.0	mg/kg	10.00		21	0-44			
Batch DL41716 - General Preparation										
Reference										
Flashpoint	80		°F	81.00		99	97.9-102.1			
Batch DL41744 - General Preparation										
Blank										
Conductivity	ND	5	umhos/cm							
LCS										
Conductivity	1400		umhos/cm	1410		100	90-110			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0504

Notes and Definitions

Z-04	MeOH - covered
WL	Results obtained from a deionized water leach of the sample.
U	Analyte included in the analysis, but not detected
Q	Calibration required quadratic regression (Q).
ICV-	Initial Calibration Verification recovery is below lower control limit (ICV-).
EL	Elevated Method Reporting Limits due to sample matrix (EL).
D	Diluted.
CD+	Continuing Calibration %Diff/Drift is above control limit (CD+).
CD-	Continuing Calibration %Diff/Drift is below control limit (CD-).
>	Greater than.
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0504

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB

Shipped/Delivered Via: ESS Courier

ESS Project ID: 24L0504
Date Received: 12/13/2024
Project Due Date: 12/20/2024
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 2 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** Yes / No / (NA)
10. Were any analyses received outside of hold time? Yes / (No)

11. Any Subcontracting needed? Yes / (No)
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? (Yes) / No
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? (Yes) / No / NA
13. Are the samples properly preserved? (Yes) / No
    a. If metals preserved upon receipt: Date: Time: By/Acid Lot#:
    b. If dissolved metals are requested, are they: Yes / No Field Filtered Yes / No To Be Lab Filtered
    c. Low Level VOA vials frozen: Date: 12/13/24 Time: 1513 By: TO

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / (No)
    a. Was there a need to contact the client? Yes / No
    Who was contacted: Date: Time: By:

Resolution:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	625732	Yes	N/A	Yes	VOA Vial	MeOH	
1	625733	Yes	N/A	Yes	VOA Vial	MeOH	
1	625736	Yes	N/A	Yes	VOA Vial	DI Water	
1	625737	Yes	N/A	Yes	VOA Vial	DI Water	
1	625740	Yes	N/A	Yes	8 oz jar	NP	
1	625741	Yes	N/A	Yes	8 oz jar	NP	
2	625734	Yes	N/A	Yes	VOA Vial	MeOH	
2	625735	Yes	N/A	Yes	VOA Vial	MeOH	
2	625738	Yes	N/A	Yes	VOA Vial	DI Water	
2	625739	Yes	N/A	Yes	VOA Vial	DI Water	
2	625742	Yes	N/A	Yes	8 oz jar	NP	
2	625743	Yes	N/A	Yes	8 oz jar	NP	

2nd Review
Were all containers scanned into storage/lab? Initials
Are barcode labels on correct containers? (Yes) / No
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA
Are VOA stickers attached if bubbles noted? Yes / No / NA

ESS Laboratory Sample and Cooler Receipt Checklist

Client:	GEI Consultants, Inc. - TB	ESS Project ID:	24L0504
		Date Received:	12/13/2024
Completed By:		Date & Time:	12/13/24 1514
Reviewed By:		Date & Time:	12/13/24 1528.

Chain-of-Custody Record

Laboratory:

Laboratory Job # (Lab use only) 24L0504

GEI Consultants
400 Unicorn Park Drive
Woburn, MA 01801
PH: 781.721.4000

Project Information

Project Name: Drain Line Borings

Project Number: 2300422.1.2.4.1

Project Location: Needham, Massachusetts

Project Manager: Jeanne Lefebvre
JLefebvre@geiconsultants.com + AGrossman@GEIconsultants.com

Page 1 of 1

Send Report to:
labdata@geiconsultants.com
JLefebvre@geiconsultants.com + AGrossman@geiconsultants.com

MCP PRESUMPTIVE CERTAINTY AND MCP ANALYTICAL METHODS REQUIRED: (YES) NO

STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS

State/Federal Program: (MA) 401WQC Other _____ NH RI CT NY ME

MA MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if (GW-1) is required.

Sample Handling

Samples Field Filtered: YES NO (NA)

Sampled Shipped With Ice: (YES) NO

Lab Sample Number	GEI Sample ID	Collection Date	Collection Time	Matrix	No. of Bottles	Sampler(s) Initials	Preservative: MeOH/DI H_2O	Preservative: None	None	None	None	None	None	None	None	Sample Specific Remarks
							Analysis: VOCs via EPA 8260D	SVOCs via EPA 8270D	VPH/EPH (Carbon Fractions Only)	Total MCP 14 Metals	PCBs via EPA 8082A	Conductivity via EPA 9050A	Corrosivity via EPA 9045	Ignitability via EPA 1010A	Reactivity via EPA 7.3.3.2 and 7.3.4.1	TCLP*	
1	B-GSS-467-14.0	12/12/2024	900	SO	6	EW	X	X	X	X	X	X	X	X	X	X	
2	B-GSS-460-14.0	12/13/2024	915	SO	6	EW	X	X	X	X	X	X	X	X	X	X	

	Relinquished by sampler: (signature)	Date:	Time:	Received by: (signature)
1.	Emily Wrant	12/13/2024	10:30	Cole Sistare
2.	Cole Sistare	12/13/2024	13:30	12/13/24 13:30
3.		12/13/24	15:05	
4.				
5.				

Turnaround Time (Business days):

5-Day __X__ 4-Day ____ 3-Day ____
2-Day ____ 1-Day ____ Other ____

Before submitting rush turnaround samples, you **must** notify the laboratory to confirm that the TAT can be achieved.

Additional Requirements/Comments/Remarks:

*Run TCLP if 20x rule has been exceeded.

Ice 2.0

Sample Matrix Abbreviations: SO = Soil GW = Groundwater SW = Surface Water SD = Sediment CO = Concrete PC = Paint Chip CLK = Caulk

ESS Laboratory
DIVISION OF THE RISE GROUP
BAL Laboratory Analytical Balance

CERTIFICATE OF ANALYSIS

Ryan Hoffman
GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801

RE: Drain Line Borings (2300422.1.2.4.1)
ESS Laboratory Work Order Number: 24L0614

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.



Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 6:24 pm, Dec 24, 2024

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0614

SAMPLE RECEIPT

The following samples were received on December 17, 2024 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Low Level VOA vials were frozen by ESS Laboratory on 12/17/24 at 14:51.
Tetrahydrofuran is reported above the MA CAM reporting limit of 0.010 mg/kg.

Lab Number	Sample Name	Matrix	Analysis
24L0614-01	B-GSS-463-18.0	Soil	1010A, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260D Low, 8270E, 9045, 9050A, EPH8270, MADEP-EPH, MA-VPH-2.1
24L0614-02	B-GSS-465-14.0	Soil	1010A, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260D Low, 8270E, 9045, 9050A, EPH8270, MADEP-EPH, MA-VPH-2.1

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0614

PROJECT NARRATIVE

Semi-Volatile Organic Compounds

D4L0328-CCV1	**Calibration required quadratic regression (Q).**
	2,4-Dinitrophenol (69% @ 40-160%)
D4L0328-CCV1	**Continuing Calibration %Diff/Drift is above control limit (CD+).**
	2,4,5-Trichlorophenol (20% @ 20%), Di-n-octylphthalate (20% @ 20%)
D4L0328-CCV1	**Initial Calibration Verification recovery is below lower control limit (ICV-).**
	Aniline
D4L0354-CCV1	**Calibration required quadratic regression (Q).**
	2,4-Dinitrotoluene (110% @ 80-120%)
D4L0354-CCV1	**Initial Calibration Verification recovery is below lower control limit (ICV-).**
	Aniline

Total Metals

24L0614-02	**Elevated Method Reporting Limits due to sample matrix (EL).**
	Arsenic

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0614

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010D - ICP
6020B - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260D - VOA
8270E - SVOA
8270E SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 19-2.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0614

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **24L0614-01 through 24L0614-02**

Matrices: ( ) Ground Water/Surface Water (x) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other:_____

CAM Protocol (check all that apply below):

(x) 8260 VOC CAM II A	(x) 7470/7471 Hg CAM III B	(x) MassDEP VPH (GC/PID/FID) CAM IV A	(x) 8082 PCB CAM V A	( ) 9014 Total Cyanide/PAC CAM VI A	( ) 6860 Perchlorate CAM VIII B
(x) 8270 SVOC CAM II B	( ) 7010 Metals CAM III C	( ) MassDEP VPH (GC/MS) CAM IV C	( ) 8081 Pesticides CAM V B	( ) 7196 Hex Cr CAM VI B	( ) MassDEP APH CAM IX A
(x) 6010 Metals CAM III A	( ) 6020 Metals CAM III D	(x) MassDEP EPH CAM IV B	( ) 8151 Herbicides CAM V C	( ) Explosives CAM VIII A	( ) TO-15 VOC CAM IX B

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (x) No ( )
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (x) No ( )
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (x) No ( )
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (x) No ( )
E	VPH, EPH, APH and TO-15 only: a. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes (x) No ( )
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ( ) No ( )
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (x) No ( )

Responses to Questions G, H and I below are required for '"Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)? ***Data User Note:*** ***Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.***	Yes ( ) No (x)*
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes ( ) No (x)*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes (x) No ( )*

****All negative responses must be addressed in an attached laboratory narrative.***

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: _____ Date: December 24, 2024
Printed Name: Laurel Stoddard Position: Laboratory Director

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-18.0
Date Sampled: 12/16/24 10:00
Percent Solids: 88

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Antimony	ND (4.37)	---	6010D	---	1	KJB	12/18/24 15:36	2.59 100	DL41710
Arsenic	**14.8** (2.19)	---	6010D	---	1	KJB	12/18/24 15:36	2.59 100	DL41710
Barium	**175** (0.87)	---	6010D	---	1	KJB	12/18/24 15:36	2.59 100	DL41710
Beryllium	**0.23** (0.09)	---	6010D	---	1	KJB	12/18/24 15:36	2.59 100	DL41710
Cadmium	ND (0.44)	---	6010D	---	1	KJB	12/18/24 15:36	2.59 100	DL41710
Chromium	**14.0** (0.87)	---	6010D	---	1	KJB	12/18/24 15:36	2.59 100	DL41710
Lead	ND (4.37)	---	6010D	---	1	KJB	12/18/24 15:36	2.59 100	DL41710
Mercury	ND (0.037)	---	7471B	---	1	AFV	12/17/24 20:27	0.6 40	DL41711
Nickel	**10.3** (0.87)	---	6010D	---	1	KJB	12/18/24 15:36	2.59 100	DL41710
Selenium	ND (4.37)	---	6010D	---	1	KJB	12/18/24 15:36	2.59 100	DL41710
Silver	ND (0.44)	---	6010D	---	1	KJB	12/18/24 15:36	2.59 100	DL41710
Thallium	ND (4.37)	---	6010D	---	1	KJB	12/18/24 15:36	2.59 100	DL41710
Vanadium	**14.9** (0.87)	---	6010D	---	1	KJB	12/18/24 15:36	2.59 100	DL41710
Zinc	**31.9** (2.19)	---	6010D	---	1	KJB	12/18/24 15:36	2.59 100	DL41710

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-18.0
Date Sampled: 12/16/24 10:00
Percent Solids: 88
Initial Volume: 5.4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/18/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,1,1-Trichloroethane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,1,2,2-Tetrachloroethane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,1,2-Trichloroethane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,1-Dichloroethane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,1-Dichloroethene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,1-Dichloropropene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,2,3-Trichlorobenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,2,3-Trichloropropane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,2,4-Trichlorobenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,2,4-Trimethylbenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,2-Dibromo-3-Chloropropane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,2-Dibromoethane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,2-Dichlorobenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,2-Dichloroethane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,2-Dichloropropane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,3,5-Trimethylbenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,3-Dichlorobenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,3-Dichloropropane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,4-Dichlorobenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
1,4-Dioxane	ND (0.105)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
2,2-Dichloropropane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
2-Butanone	ND (0.0524)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
2-Chlorotoluene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
2-Hexanone	ND (0.0524)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
4-Chlorotoluene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
4-Isopropyltoluene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-18.0
Date Sampled: 12/16/24 10:00
Percent Solids: 88
Initial Volume: 5.4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/18/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0524)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Acetone	ND (0.0524)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Benzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Bromobenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Bromochloromethane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Bromodichloromethane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Bromoform	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Bromomethane	ND (0.0105)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Carbon Disulfide	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Carbon Tetrachloride	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Chlorobenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Chloroethane	ND (0.0105)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Chloroform	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Chloromethane	ND (0.0105)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
cis-1,2-Dichloroethene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
cis-1,3-Dichloropropene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Dibromochloromethane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Dibromomethane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Dichlorodifluoromethane	ND (0.0105)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Diethyl Ether	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Di-isopropyl ether	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Ethyl tertiary-butyl ether	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Ethylbenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Hexachlorobutadiene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Isopropylbenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Methyl tert-Butyl Ether	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Methylene Chloride	ND (0.0262)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-18.0
Date Sampled: 12/16/24 10:00
Percent Solids: 88
Initial Volume: 5.4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/18/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
n-Butylbenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
n-Propylbenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
sec-Butylbenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Styrene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
tert-Butylbenzene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Tertiary-amyl methyl ether	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Tetrachloroethene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Tetrahydrofuran	ND (0.0210)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Toluene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
trans-1,2-Dichloroethene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
trans-1,3-Dichloropropene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Trichloroethene	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Trichlorofluoromethane	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Vinyl Chloride	ND (0.0105)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Xylene O	ND (0.0052)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Xylene P,M	ND (0.0105)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908
Xylenes (Total)	ND (0.0105)	---	8260D Low	---	1	MEK	12/18/24 11:04	D4L0371	DL41908

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*111 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*90 %*		*70-130*
Surrogate: Dibromofluoromethane	*104 %*		*70-130*
Surrogate: Toluene-d8	*99 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-18.0
Date Sampled: 12/16/24 10:00
Percent Solids: 88
Initial Volume: 17.6g
Final Volume: 15ml
Extraction Method: 5035
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (11.0)	---	MA-VPH-2.1	---	1	12/18/24 7:31	D4L0331	DL41723
C5-C8 Aliphatics1,2	ND (11.5)	---	MA-VPH-2.1	---	1	12/18/24 7:31	---	[CALC]
C9-C12 Aliphatics2,3	ND (22.8)	---	MA-VPH-2.1	---	1	12/18/24 7:31	---	[CALC]
1:1 Methanol/Soil Ratio %D	**17** (N/A)		MA-VPH-2.1			12/17/24 8:00		DL41723
Preservative:	**MeOH - covered**		MA-VPH-2.1					DL41723

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*104 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*109 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*93 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*104 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-18.0
Date Sampled: 12/16/24 10:00
Percent Solids: 88
Initial Volume: 19.7g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/17/24 19:45

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.029)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
1,2,4-Trichlorobenzene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
1,2-Dichlorobenzene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
1,3-Dichlorobenzene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
1,4-Dichlorobenzene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
2,4,5-Trichlorophenol	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
2,4,6-Trichlorophenol	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
2,4-Dichlorophenol	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
2,4-Dimethylphenol	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
2,4-Dinitrophenol	ND (1.15)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
2,4-Dinitrotoluene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
2,6-Dinitrotoluene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
2-Chloronaphthalene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
2-Chlorophenol	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
2-Methylnaphthalene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
2-Methylphenol	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
2-Nitrophenol	ND (0.575)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
3,3′-Dichlorobenzidine	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
3+4-Methylphenol	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
4-Bromophenyl-phenylether	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
4-Chloroaniline	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
4-Nitrophenol	ND (1.15)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Acenaphthene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Acenaphthylene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Acetophenone	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Aniline	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Anthracene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-18.0
Date Sampled: 12/16/24 10:00
Percent Solids: 88
Initial Volume: 19.7g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/17/24 19:45

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Benzo(a)anthracene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Benzo(a)pyrene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Benzo(b)fluoranthene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Benzo(g,h,i)perylene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Benzo(k)fluoranthene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
bis(2-Chloroethoxy)methane	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
bis(2-Chloroethyl)ether	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
bis(2-chloroisopropyl)Ether	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
bis(2-Ethylhexyl)phthalate	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Butylbenzylphthalate	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Chrysene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Dibenzo(a,h)Anthracene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Dibenzofuran	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Diethylphthalate	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Dimethylphthalate	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Di-n-butylphthalate	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Di-n-octylphthalate	ND (0.575)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Fluoranthene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Fluorene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Hexachlorobenzene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Hexachlorobutadiene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Hexachloroethane	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Indeno(1,2,3-cd)Pyrene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Isophorone	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Naphthalene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Nitrobenzene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-18.0
Date Sampled: 12/16/24 10:00
Percent Solids: 88
Initial Volume: 19.7g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/17/24 19:45

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Pentachlorophenol	ND (1.15)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Phenanthrene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Phenol	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705
Pyrene	ND (0.287)	---	8270E	---	1	TJ	12/19/24 1:04	D4L0354	DL41705

	%Recovery	*Qualifier*	*Limits*
Surrogate: 1,2-Dichlorobenzene-d4	*91 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*84 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*98 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*93 %*		*30-130*
Surrogate: 2-Fluorophenol	*104 %*		*30-130*
Surrogate: Nitrobenzene-d5	*84 %*		*30-130*
Surrogate: Phenol-d6	*98 %*		*30-130*
Surrogate: p-Terphenyl-d14	*103 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-18.0
Date Sampled: 12/16/24 10:00
Percent Solids: 88
Initial Volume: 24.9g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-01
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 12/17/24 19:45

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (11.4)	---	MADEP-EPH	---	1	JDN	12/20/24 4:32	D4L0374	DL41703
C19-C36 Aliphatics1	ND (11.4)	---	MADEP-EPH	---	1	JDN	12/20/24 4:32	D4L0374	DL41703
C11-C22 Unadjusted Aromatics1	ND (11.4)	---	EPH8270	---	1	IBM	12/19/24 0:24	D4L0334	DL41703
C11-C22 Aromatics1,2	ND (11.4)	---	EPH8270	---		IBM	12/19/24 0:24	---	[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*75 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*105 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*99 %*		*40-140*
Surrogate: O-Terphenyl	*104 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-18.0
Date Sampled: 12/16/24 10:00
Percent Solids: 88
Initial Volume: 20.4g
Final Volume: 10ml
Extraction Method: 3540C

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JLG
Prepared: 12/18/24 12:00

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.06)	---	8082A	---	1	12/19/24 19:49	---	DL41804
Aroclor 1221	ND (0.06)	---	8082A	---	1	12/19/24 19:49	---	DL41804
Aroclor 1232	ND (0.06)	---	8082A	---	1	12/19/24 19:49	---	DL41804
Aroclor 1242	ND (0.06)	---	8082A	---	1	12/19/24 19:49	---	DL41804
Aroclor 1248	ND (0.06)	---	8082A	---	1	12/19/24 19:49	---	DL41804
Aroclor 1254	ND (0.06)	---	8082A	---	1	12/19/24 19:49	---	DL41804
Aroclor 1260	ND (0.06)	---	8082A	---	1	12/19/24 19:49	---	DL41804
Aroclor 1262	ND (0.06)	---	8082A	---	1	12/19/24 19:49	---	DL41804
Aroclor 1268	ND (0.06)	---	8082A	---	1	12/19/24 19:49	---	DL41804

	%Recovery	*Qualifier*	*Limits*
Surrogate: Decachlorobiphenyl	*69 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*71 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-463-18.0
Date Sampled: 12/16/24 10:00
Percent Solids: 88

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-01
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 208** (5)	---	9050A	---	1	JLK	12/17/24 20:54	umhos/cm	DL41746
Corrosivity (pH)	**6.95** (N/A)	---	9045	---	1	EAM	12/17/24 18:23	S.U.	DL41732
Corrosivity (pH) Sample Temp	**17.6**	---	2550B	---	1	EAM	12/17/24 18:23	°C	DL41732
Flashpoint	**> 200** (N/A)	---	1010A	---	1	CCP	12/19/24 15:38	°F	DL41941
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	12/18/24 20:55	mg/kg	DL41860
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	12/18/24 20:55	mg/kg	DL41860

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-14.0
Date Sampled: 12/17/24 09:00
Percent Solids: 79

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Antimony	ND (5.32)	---	6010D	---	1	KJB	12/18/24 15:39	2.38 100	DL41710
Arsenic	**EL** ND (2.66)	---	6010D	---	1	KJB	12/18/24 15:39	2.38 100	DL41710
Barium	**22.7** (1.06)	---	6010D	---	1	KJB	12/18/24 15:39	2.38 100	DL41710
Beryllium	**0.22** (0.11)	---	6010D	---	1	KJB	12/18/24 15:39	2.38 100	DL41710
Cadmium	ND (0.53)	---	6010D	---	1	KJB	12/18/24 15:39	2.38 100	DL41710
Chromium	**9.73** (1.06)	---	6010D	---	1	KJB	12/18/24 15:39	2.38 100	DL41710
Lead	ND (5.32)	---	6010D	---	1	KJB	12/18/24 15:39	2.38 100	DL41710
Mercury	ND (0.042)	---	7471B	---	1	AFV	12/17/24 20:29	0.6 40	DL41711
Nickel	**7.20** (1.06)	---	6010D	---	1	KJB	12/18/24 15:39	2.38 100	DL41710
Selenium	ND (5.32)	---	6010D	---	1	KJB	12/18/24 15:39	2.38 100	DL41710
Silver	ND (0.53)	---	6010D	---	1	KJB	12/18/24 15:39	2.38 100	DL41710
Thallium	ND (5.32)	---	6010D	---	1	KJB	12/18/24 15:39	2.38 100	DL41710
Vanadium	**15.3** (1.06)	---	6010D	---	1	KJB	12/18/24 15:39	2.38 100	DL41710
Zinc	**19.4** (2.66)	---	6010D	---	1	KJB	12/18/24 15:39	2.38 100	DL41710

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-14.0
Date Sampled: 12/17/24 09:00
Percent Solids: 79
Initial Volume: 5.7g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/18/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,1,1-Trichloroethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,1,2,2-Tetrachloroethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,1,2-Trichloroethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,1-Dichloroethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,1-Dichloroethene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,1-Dichloropropene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,2,3-Trichlorobenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,2,3-Trichloropropane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,2,4-Trichlorobenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,2,4-Trimethylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,2-Dibromo-3-Chloropropane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,2-Dibromoethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,2-Dichlorobenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,2-Dichloroethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,2-Dichloropropane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,3,5-Trimethylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,3-Dichlorobenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,3-Dichloropropane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,4-Dichlorobenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
1,4-Dioxane	ND (0.111)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
2,2-Dichloropropane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
2-Butanone	ND (0.0555)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
2-Chlorotoluene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
2-Hexanone	ND (0.0555)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
4-Chlorotoluene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
4-Isopropyltoluene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-14.0
Date Sampled: 12/17/24 09:00
Percent Solids: 79
Initial Volume: 5.7g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/18/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0555)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Acetone	ND (0.0555)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Benzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Bromobenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Bromochloromethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Bromodichloromethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Bromoform	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Bromomethane	ND (0.0111)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Carbon Disulfide	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Carbon Tetrachloride	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Chlorobenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Chloroethane	ND (0.0111)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Chloroform	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Chloromethane	ND (0.0111)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
cis-1,2-Dichloroethene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
cis-1,3-Dichloropropene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Dibromochloromethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Dibromomethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Dichlorodifluoromethane	ND (0.0111)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Diethyl Ether	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Di-isopropyl ether	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Ethyl tertiary-butyl ether	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Ethylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Hexachlorobutadiene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Isopropylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Methyl tert-Butyl Ether	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Methylene Chloride	ND (0.0278)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-14.0
Date Sampled: 12/17/24 09:00
Percent Solids: 79
Initial Volume: 5.7g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/18/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
n-Butylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
n-Propylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
sec-Butylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Styrene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
tert-Butylbenzene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Tertiary-amyl methyl ether	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Tetrachloroethene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Tetrahydrofuran	ND (0.0222)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Toluene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
trans-1,2-Dichloroethene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
trans-1,3-Dichloropropene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Trichloroethene	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Trichlorofluoromethane	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Vinyl Chloride	ND (0.0111)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Xylene O	ND (0.0056)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Xylene P,M	ND (0.0111)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908
Xylenes (Total)	ND (0.0111)	---	8260D Low	---	1	MEK	12/18/24 11:29	D4L0371	DL41908

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*109 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*90 %*		*70-130*
Surrogate: Dibromofluoromethane	*103 %*		*70-130*
Surrogate: Toluene-d8	*98 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-14.0
Date Sampled: 12/17/24 09:00
Percent Solids: 79
Initial Volume: 22.5g
Final Volume: 15ml
Extraction Method: 5035
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (11.1)	---	MA-VPH-2.1	---	1	12/18/24 8:02	D4L0331	DL41723
C5-C8 Aliphatics1,2	ND (11.6)	---	MA-VPH-2.1	---	1	12/18/24 8:02	---	[CALC]
C9-C12 Aliphatics2,3	ND (23.1)	---	MA-VPH-2.1	---	1	12/18/24 8:02	---	[CALC]
1:1 Methanol/Soil Ratio %D	**50** (N/A)		MA-VPH-2.1			12/17/24 15:30		DL41723
Preservative:	**MeOH - covered**		MA-VPH-2.1					DL41723

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*109 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*115 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*96 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*104 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-14.0
Date Sampled: 12/17/24 09:00
Percent Solids: 79
Initial Volume: 19.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/17/24 19:45

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.033)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
1,2,4-Trichlorobenzene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
1,2-Dichlorobenzene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
1,3-Dichlorobenzene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
1,4-Dichlorobenzene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
2,4,5-Trichlorophenol	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
2,4,6-Trichlorophenol	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
2,4-Dichlorophenol	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
2,4-Dimethylphenol	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
2,4-Dinitrophenol	ND (1.32)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
2,4-Dinitrotoluene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
2,6-Dinitrotoluene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
2-Chloronaphthalene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
2-Chlorophenol	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
2-Methylnaphthalene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
2-Methylphenol	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
2-Nitrophenol	ND (0.659)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
3,3´-Dichlorobenzidine	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
3+4-Methylphenol	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
4-Bromophenyl-phenylether	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
4-Chloroaniline	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
4-Nitrophenol	ND (1.32)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Acenaphthene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Acenaphthylene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Acetophenone	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Aniline	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Anthracene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-14.0
Date Sampled: 12/17/24 09:00
Percent Solids: 79
Initial Volume: 19.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/17/24 19:45

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Benzo(a)anthracene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Benzo(a)pyrene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Benzo(b)fluoranthene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Benzo(g,h,i)perylene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Benzo(k)fluoranthene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
bis(2-Chloroethoxy)methane	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
bis(2-Chloroethyl)ether	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
bis(2-chloroisopropyl)Ether	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
bis(2-Ethylhexyl)phthalate	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Butylbenzylphthalate	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Chrysene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Dibenzo(a,h)Anthracene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Dibenzofuran	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Diethylphthalate	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Dimethylphthalate	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Di-n-butylphthalate	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Di-n-octylphthalate	ND (0.659)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Fluoranthene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Fluorene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Hexachlorobenzene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Hexachlorobutadiene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Hexachloroethane	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Indeno(1,2,3-cd)Pyrene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Isophorone	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Naphthalene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Nitrobenzene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-14.0
Date Sampled: 12/17/24 09:00
Percent Solids: 79
Initial Volume: 19.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/17/24 19:45

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Pentachlorophenol	ND (1.32)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Phenanthrene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Phenol	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705
Pyrene	ND (0.330)	---	8270E	---	1	TJ	12/19/24 1:34	D4L0354	DL41705

	%Recovery	*Qualifier*	*Limits*
Surrogate: 1,2-Dichlorobenzene-d4	*94 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*86 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*100 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*95 %*		*30-130*
Surrogate: 2-Fluorophenol	*105 %*		*30-130*
Surrogate: Nitrobenzene-d5	*84 %*		*30-130*
Surrogate: Phenol-d6	*98 %*		*30-130*
Surrogate: p-Terphenyl-d14	*110 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-14.0
Date Sampled: 12/17/24 09:00
Percent Solids: 79
Initial Volume: 24.9g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-02
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 12/17/24 19:45

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (12.7)	---	MADEP-EPH	---	1	JDN	12/20/24 5:06	D4L0374	DL41703
C19-C36 Aliphatics1	ND (12.7)	---	MADEP-EPH	---	1	JDN	12/20/24 5:06	D4L0374	DL41703
C11-C22 Unadjusted Aromatics1	ND (12.7)	---	EPH8270	---	1	IBM	12/19/24 1:03	D4L0334	DL41703
C11-C22 Aromatics1,2	ND (12.7)	---	EPH8270	---		IBM	12/19/24 1:03	---	[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*65 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*106 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*99 %*		*40-140*
Surrogate: O-Terphenyl	*95 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-14.0
Date Sampled: 12/17/24 09:00
Percent Solids: 79
Initial Volume: 20.9g
Final Volume: 10ml
Extraction Method: 3540C

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-02
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JLG
Prepared: 12/18/24 12:00

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.06)	---	8082A	---	1	12/19/24 20:09	---	DL41804
Aroclor 1221	ND (0.06)	---	8082A	---	1	12/19/24 20:09	---	DL41804
Aroclor 1232	ND (0.06)	---	8082A	---	1	12/19/24 20:09	---	DL41804
Aroclor 1242	ND (0.06)	---	8082A	---	1	12/19/24 20:09	---	DL41804
Aroclor 1248	ND (0.06)	---	8082A	---	1	12/19/24 20:09	---	DL41804
Aroclor 1254	ND (0.06)	---	8082A	---	1	12/19/24 20:09	---	DL41804
Aroclor 1260	ND (0.06)	---	8082A	---	1	12/19/24 20:09	---	DL41804
Aroclor 1262	ND (0.06)	---	8082A	---	1	12/19/24 20:09	---	DL41804
Aroclor 1268	ND (0.06)	---	8082A	---	1	12/19/24 20:09	---	DL41804

	%Recovery	*Qualifier*	*Limits*
Surrogate: Decachlorobiphenyl	*73 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*74 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-465-14.0
Date Sampled: 12/17/24 09:00
Percent Solids: 79

ESS Laboratory Work Order: 24L0614
ESS Laboratory Sample ID: 24L0614-02
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 126** (5)	---	9050A	---	1	JLK	12/17/24 20:54	umhos/cm	DL41746
Corrosivity (pH)	**7.15** (N/A)	---	9045	---	1	EAM	12/17/24 18:23	S.U.	DL41732
Corrosivity (pH) Sample Temp	**17.6**	---	2550B	---	1	EAM	12/17/24 18:23	°C	DL41732
Flashpoint	**> 200** (N/A)	---	1010A	---	1	CCP	12/19/24 15:38	°F	DL41941
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	12/18/24 20:55	mg/kg	DL41860
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	12/18/24 20:55	mg/kg	DL41860

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0614

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DL41710 - 3050B										
Blank										
Antimony	ND	4.57	mg/kg wet							
Arsenic	ND	2.28	mg/kg wet							
Barium	ND	0.91	mg/kg wet							
Beryllium	ND	0.09	mg/kg wet							
Cadmium	ND	0.46	mg/kg wet							
Chromium	ND	0.91	mg/kg wet							
Lead	ND	4.57	mg/kg wet							
Nickel	ND	0.91	mg/kg wet							
Selenium	ND	4.57	mg/kg wet							
Silver	ND	0.46	mg/kg wet							
Thallium	ND	4.57	mg/kg wet							
Vanadium	ND	0.91	mg/kg wet							
Zinc	ND	2.28	mg/kg wet							
LCS										
Antimony	84.1	16.1	mg/kg wet	245.0		34	10-110			
Arsenic	136	8.06	mg/kg wet	280.0		48	32-110			
Barium	342	3.23	mg/kg wet	688.0		50	33-110			
Beryllium	52.2	0.32	mg/kg wet	105.0		50	32-110			
Cadmium	95.6	1.61	mg/kg wet	210.0		46	33-110			
Chromium	160	3.23	mg/kg wet	225.0		71	50-110			
Lead	171	16.1	mg/kg wet	350.0		49	31-110			
Nickel	66.7	3.23	mg/kg wet	95.00		70	48-111			
Selenium	149	16.1	mg/kg wet	320.0		47	29-110			
Silver	45.0	1.61	mg/kg wet	95.00		47	30-111			
Thallium	118	16.1	mg/kg wet	250.0		47	28-110			
Vanadium	159	3.23	mg/kg wet	295.0		54	34-110			
Zinc	239	8.06	mg/kg wet	500.0		48	30-110			
LCS Dup										
Antimony	76.1	14.7	mg/kg wet	245.0		31	10-110	10	30	
Arsenic	125	7.35	mg/kg wet	280.0		45	32-110	8	30	
Barium	311	2.94	mg/kg wet	688.0		45	33-110	9	30	
Beryllium	47.9	0.29	mg/kg wet	105.0		46	32-110	9	30	
Cadmium	89.2	1.47	mg/kg wet	210.0		42	33-110	7	30	
Chromium	151	2.94	mg/kg wet	225.0		67	50-110	6	30	
Lead	159	14.7	mg/kg wet	350.0		45	31-110	8	30	
Nickel	62.4	2.94	mg/kg wet	95.00		66	48-111	7	30	
Selenium	136	14.7	mg/kg wet	320.0		42	29-110	9	30	
Silver	40.7	1.47	mg/kg wet	95.00		43	30-111	10	30	
Thallium	111	14.7	mg/kg wet	250.0		44	28-110	6	30	
Vanadium	142	2.94	mg/kg wet	295.0		48	34-110	11	30	
Zinc	225	7.35	mg/kg wet	500.0		45	30-110	6	30	
Batch DL41711 - 245.1/7470A										

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0614

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DL41711 - 245.1/7470A										
Blank										
Mercury	ND	0.033	mg/kg wet							
LCS										
Mercury	24.1	3.05	mg/kg wet	24.90		97	80-120			
LCS Dup										
Mercury	24.8	3.25	mg/kg wet	24.90		100	80-120	3	30	
Volatile Organics Low Level										
Batch DL41908 - 5035										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0500	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0500	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0500	mg/kg wet							
Acetone	ND	0.0500	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0614

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41908 - 5035										
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0050	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0250	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0200	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*0.0531*		mg/kg wet	*0.05000*		*106*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0454*		mg/kg wet	*0.05000*		*91*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0504*		mg/kg wet	*0.05000*		*101*	*70-130*			
Surrogate: Toluene-d8	*0.0490*		mg/kg wet	*0.05000*		*98*	*70-130*			
LCS										
1,1,1,2-Tetrachloroethane	0.0519	0.0050	mg/kg wet	0.05000		104	70-130			
1,1,1-Trichloroethane	0.0515	0.0050	mg/kg wet	0.05000		103	70-130			
1,1,2,2-Tetrachloroethane	0.0488	0.0050	mg/kg wet	0.05000		98	40-160			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0614

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41908 - 5035										
1,1,2-Trichloroethane	0.0497	0.0050	mg/kg wet	0.05000		99	70-130			
1,1-Dichloroethane	0.0517	0.0050	mg/kg wet	0.05000		103	70-130			
1,1-Dichloroethene	0.0545	0.0050	mg/kg wet	0.05000		109	70-130			
1,1-Dichloropropene	0.0496	0.0050	mg/kg wet	0.05000		99	70-130			
1,2,3-Trichlorobenzene	0.0552	0.0050	mg/kg wet	0.05000		110	70-130			
1,2,3-Trichloropropane	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
1,2,4-Trichlorobenzene	0.0569	0.0050	mg/kg wet	0.05000		114	70-130			
1,2,4-Trimethylbenzene	0.0533	0.0050	mg/kg wet	0.05000		107	70-130			
1,2-Dibromo-3-Chloropropane	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			
1,2-Dibromoethane	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
1,2-Dichlorobenzene	0.0504	0.0050	mg/kg wet	0.05000		101	70-130			
1,2-Dichloroethane	0.0486	0.0050	mg/kg wet	0.05000		97	70-130			
1,2-Dichloropropane	0.0522	0.0050	mg/kg wet	0.05000		104	70-130			
1,3,5-Trimethylbenzene	0.0524	0.0050	mg/kg wet	0.05000		105	70-130			
1,3-Dichlorobenzene	0.0516	0.0050	mg/kg wet	0.05000		103	70-130			
1,3-Dichloropropane	0.0504	0.0050	mg/kg wet	0.05000		101	70-130			
1,4-Dichlorobenzene	0.0516	0.0050	mg/kg wet	0.05000		103	70-130			
1,4-Dioxane	0.942	0.100	mg/kg wet	1.000		94	70-130			
2,2-Dichloropropane	0.0533	0.0050	mg/kg wet	0.05000		107	70-130			
2-Butanone	0.255	0.0500	mg/kg wet	0.2500		102	40-160			
2-Chlorotoluene	0.0508	0.0050	mg/kg wet	0.05000		102	70-130			
2-Hexanone	0.224	0.0500	mg/kg wet	0.2500		89	40-160			
4-Chlorotoluene	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
4-Isopropyltoluene	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
4-Methyl-2-Pentanone	0.220	0.0500	mg/kg wet	0.2500		88	40-160			
Acetone	0.282	0.0500	mg/kg wet	0.2500		113	40-160			
Benzene	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			
Bromobenzene	0.0517	0.0050	mg/kg wet	0.05000		103	70-130			
Bromochloromethane	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			
Bromodichloromethane	0.0542	0.0050	mg/kg wet	0.05000		108	70-130			
Bromoform	0.0455	0.0050	mg/kg wet	0.05000		91	40-160			
Bromomethane	0.0459	0.0100	mg/kg wet	0.05000		92	40-160			
Carbon Disulfide	0.0519	0.0050	mg/kg wet	0.05000		104	70-130			
Carbon Tetrachloride	0.0498	0.0050	mg/kg wet	0.05000		100	70-130			
Chlorobenzene	0.0497	0.0050	mg/kg wet	0.05000		99	70-130			
Chloroethane	0.0568	0.0100	mg/kg wet	0.05000		114	40-160			
Chloroform	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
Chloromethane	0.0416	0.0100	mg/kg wet	0.05000		83	40-160			
cis-1,2-Dichloroethene	0.0508	0.0050	mg/kg wet	0.05000		102	70-130			
cis-1,3-Dichloropropene	0.0489	0.0050	mg/kg wet	0.05000		98	40-160			
Dibromochloromethane	0.0451	0.0050	mg/kg wet	0.05000		90	40-160			
Dibromomethane	0.0496	0.0050	mg/kg wet	0.05000		99	70-130			
Dichlorodifluoromethane	0.0314	0.0100	mg/kg wet	0.05000		63	40-160			
Diethyl Ether	0.0571	0.0050	mg/kg wet	0.05000		114	70-130			
Di-isopropyl ether	0.0547	0.0050	mg/kg wet	0.05000		109	70-130			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0614

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41908 - 5035										
Ethyl tertiary-butyl ether	0.0570	0.0050	mg/kg wet	0.05000		114	70-130			
Ethylbenzene	0.0528	0.0050	mg/kg wet	0.05000		106	70-130			
Hexachlorobutadiene	0.0505	0.0050	mg/kg wet	0.05000		101	40-160			
Isopropylbenzene	0.0599	0.0050	mg/kg wet	0.05000		120	70-130			
Methyl tert-Butyl Ether	0.0550	0.0050	mg/kg wet	0.05000		110	70-130			
Methylene Chloride	0.0476	0.0250	mg/kg wet	0.05000		95	70-130			
Naphthalene	0.0553	0.0050	mg/kg wet	0.05000		111	40-160			
n-Butylbenzene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130			
n-Propylbenzene	0.0524	0.0050	mg/kg wet	0.05000		105	70-130			
sec-Butylbenzene	0.0483	0.0050	mg/kg wet	0.05000		97	70-130			
Styrene	0.0455	0.0050	mg/kg wet	0.05000		91	40-160			
tert-Butylbenzene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
Tertiary-amyl methyl ether	0.0586	0.0050	mg/kg wet	0.05000		117	70-130			
Tetrachloroethene	0.0520	0.0050	mg/kg wet	0.05000		104	70-130			
Tetrahydrofuran	0.0478	0.0200	mg/kg wet	0.05000		96	70-130			
Toluene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130			
trans-1,2-Dichloroethene	0.0535	0.0050	mg/kg wet	0.05000		107	70-130			
trans-1,3-Dichloropropene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
Trichloroethene	0.0501	0.0050	mg/kg wet	0.05000		100	70-130			
Trichlorofluoromethane	0.0454	0.0050	mg/kg wet	0.05000		91	40-160			
Vinyl Chloride	0.0465	0.0100	mg/kg wet	0.05000		93	70-130			
Xylene O	0.0458	0.0050	mg/kg wet	0.05000		92	70-130			
Xylene P,M	0.0933	0.0100	mg/kg wet	0.1000		93	70-130			
Surrogate: 1,2-Dichloroethane-d4	*0.0455*		mg/kg wet	*0.05000*		*91*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0508*		mg/kg wet	*0.05000*		*102*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0470*		mg/kg wet	*0.05000*		*94*	*70-130*			
Surrogate: Toluene-d8	*0.0492*		mg/kg wet	*0.05000*		*98*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	0.0495	0.0050	mg/kg wet	0.05000		99	70-130	5	20	
1,1,1-Trichloroethane	0.0502	0.0050	mg/kg wet	0.05000		100	70-130	3	20	
1,1,2,2-Tetrachloroethane	0.0530	0.0050	mg/kg wet	0.05000		106	40-160	8	20	
1,1,2-Trichloroethane	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	0.6	20	
1,1-Dichloroethane	0.0497	0.0050	mg/kg wet	0.05000		99	70-130	4	20	
1,1-Dichloroethene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130	3	20	
1,1-Dichloropropene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130	3	20	
1,2,3-Trichlorobenzene	0.0594	0.0050	mg/kg wet	0.05000		119	70-130	7	20	
1,2,3-Trichloropropane	0.0504	0.0050	mg/kg wet	0.05000		101	70-130	8	20	
1,2,4-Trichlorobenzene	0.0608	0.0050	mg/kg wet	0.05000		122	70-130	6	20	
1,2,4-Trimethylbenzene	0.0567	0.0050	mg/kg wet	0.05000		113	70-130	6	20	
1,2-Dibromo-3-Chloropropane	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	8	20	
1,2-Dibromoethane	0.0508	0.0050	mg/kg wet	0.05000		102	70-130	4	20	
1,2-Dichlorobenzene	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	7	20	
1,2-Dichloroethane	0.0477	0.0050	mg/kg wet	0.05000		95	70-130	2	20	
1,2-Dichloropropane	0.0508	0.0050	mg/kg wet	0.05000		102	70-130	3	20	
1,3,5-Trimethylbenzene	0.0562	0.0050	mg/kg wet	0.05000		112	70-130	7	20	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0614

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41908 - 5035										
1,3-Dichlorobenzene	0.0527	0.0050	mg/kg wet	0.05000		105	70-130	2	20	
1,3-Dichloropropane	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	3	20	
1,4-Dichlorobenzene	0.0552	0.0050	mg/kg wet	0.05000		110	70-130	7	20	
1,4-Dioxane	0.977	0.100	mg/kg wet	1.000		98	70-130	4	20	
2,2-Dichloropropane	0.0510	0.0050	mg/kg wet	0.05000		102	70-130	4	20	
2-Butanone	0.250	0.0500	mg/kg wet	0.2500		100	40-160	2	20	
2-Chlorotoluene	0.0539	0.0050	mg/kg wet	0.05000		108	70-130	6	20	
2-Hexanone	0.217	0.0500	mg/kg wet	0.2500		87	40-160	3	20	
4-Chlorotoluene	0.0562	0.0050	mg/kg wet	0.05000		112	70-130	7	20	
4-Isopropyltoluene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130	7	20	
4-Methyl-2-Pentanone	0.219	0.0500	mg/kg wet	0.2500		88	40-160	0.1	20	
Acetone	0.277	0.0500	mg/kg wet	0.2500		111	40-160	2	20	
Benzene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130	3	20	
Bromobenzene	0.0553	0.0050	mg/kg wet	0.05000		111	70-130	7	20	
Bromochloromethane	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	2	20	
Bromodichloromethane	0.0524	0.0050	mg/kg wet	0.05000		105	70-130	3	20	
Bromoform	0.0437	0.0050	mg/kg wet	0.05000		87	40-160	4	20	
Bromomethane	0.0448	0.0100	mg/kg wet	0.05000		90	40-160	2	20	
Carbon Disulfide	0.0502	0.0050	mg/kg wet	0.05000		100	70-130	3	20	
Carbon Tetrachloride	0.0486	0.0050	mg/kg wet	0.05000		97	70-130	2	20	
Chlorobenzene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130	5	20	
Chloroethane	0.0556	0.0100	mg/kg wet	0.05000		111	40-160	2	20	
Chloroform	0.0478	0.0050	mg/kg wet	0.05000		96	70-130	3	20	
Chloromethane	0.0412	0.0100	mg/kg wet	0.05000		82	40-160	1	20	
cis-1,2-Dichloroethene	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	4	20	
cis-1,3-Dichloropropene	0.0476	0.0050	mg/kg wet	0.05000		95	40-160	3	20	
Dibromochloromethane	0.0437	0.0050	mg/kg wet	0.05000		87	40-160	3	20	
Dibromomethane	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	2	20	
Dichlorodifluoromethane	0.0307	0.0100	mg/kg wet	0.05000		61	40-160	2	20	
Diethyl Ether	0.0559	0.0050	mg/kg wet	0.05000		112	70-130	2	20	
Di-isopropyl ether	0.0535	0.0050	mg/kg wet	0.05000		107	70-130	2	20	
Ethyl tertiary-butyl ether	0.0555	0.0050	mg/kg wet	0.05000		111	70-130	3	20	
Ethylbenzene	0.0504	0.0050	mg/kg wet	0.05000		101	70-130	5	20	
Hexachlorobutadiene	0.0539	0.0050	mg/kg wet	0.05000		108	40-160	7	20	
Isopropylbenzene	0.0638	0.0050	mg/kg wet	0.05000		128	70-130	6	20	
Methyl tert-Butyl Ether	0.0541	0.0050	mg/kg wet	0.05000		108	70-130	2	20	
Methylene Chloride	0.0463	0.0250	mg/kg wet	0.05000		93	70-130	3	20	
Naphthalene	0.0591	0.0050	mg/kg wet	0.05000		118	40-160	7	20	
n-Butylbenzene	0.0558	0.0050	mg/kg wet	0.05000		112	70-130	6	20	
n-Propylbenzene	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	5	20	
sec-Butylbenzene	0.0514	0.0050	mg/kg wet	0.05000		103	70-130	6	20	
Styrene	0.0434	0.0050	mg/kg wet	0.05000		87	40-160	5	20	
tert-Butylbenzene	0.0559	0.0050	mg/kg wet	0.05000		112	70-130	7	20	
Tertiary-amyl methyl ether	0.0572	0.0050	mg/kg wet	0.05000		114	70-130	2	20	
Tetrachloroethene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130	7	20	

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Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0614

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL41908 - 5035										
Tetrahydrofuran	0.0476	0.0200	mg/kg wet	0.05000		95	70-130	0.3	20	
Toluene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	3	20	
trans-1,2-Dichloroethene	0.0520	0.0050	mg/kg wet	0.05000		104	70-130	3	20	
trans-1,3-Dichloropropene	0.0467	0.0050	mg/kg wet	0.05000		93	70-130	2	20	
Trichloroethene	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	4	20	
Trichlorofluoromethane	0.0441	0.0050	mg/kg wet	0.05000		88	40-160	3	20	
Vinyl Chloride	0.0458	0.0100	mg/kg wet	0.05000		92	70-130	1	20	
Xylene O	0.0438	0.0050	mg/kg wet	0.05000		88	70-130	5	20	
Xylene P,M	0.0887	0.0100	mg/kg wet	0.1000		89	70-130	5	20	
Surrogate: 1,2-Dichloroethane-d4	*0.0454*		mg/kg wet	*0.05000*		*91*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0490*		mg/kg wet	*0.05000*		*98*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0467*		mg/kg wet	*0.05000*		*93*	*70-130*			
Surrogate: Toluene-d8	*0.0478*		mg/kg wet	*0.05000*		*96*	*70-130*			
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch DL41723 - 5035										
Blank										
1,2,4-Trimethylbenzene	ND	0.2	mg/kg wet							
2,2,4-Trimethylpentane	ND	5.0	mg/kg wet							
2-Methylpentane	ND	5.0	mg/kg wet							
Benzene	ND	0.2	mg/kg wet							
C5-C8 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
C9-C10 Aromatics	ND	10.0	mg/kg wet							
C9-C12 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
Ethylbenzene	ND	0.2	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.05	mg/kg wet							
Naphthalene	ND	0.2	mg/kg wet							
n-Butylcyclohexane	ND	5.0	mg/kg wet							
n-Decane	ND	5.0	mg/kg wet							
Nonane (C9)	ND	5.0	mg/kg wet							
Pentane	ND	5.0	mg/kg wet							
Toluene	ND	0.2	mg/kg wet							
Xylene O	ND	0.2	mg/kg wet							
Xylene P,M	ND	0.4	mg/kg wet							
Surrogate: 2,5-Dibromotoluene - FID	*5.18*		mg/kg wet	*5.000*		*104*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*5.04*		mg/kg wet	*5.000*		*101*	*70-130*			
Surrogate: Trifluorotoluene - FID	*4.76*		mg/kg wet	*5.333*		*89*	*70-130*			
Surrogate: Trifluorotoluene - PID	*4.83*		mg/kg wet	*5.333*		*91*	*70-130*			
LCS										
1,2,4-Trimethylbenzene	9.2	0.2	mg/kg wet	10.00		92	70-130			
2,2,4-Trimethylpentane	15.2	5.0	mg/kg wet	15.00		101	70-130			
2-Methylpentane	13.9	5.0	mg/kg wet	15.00		93	70-130			
Benzene	4.7	0.2	mg/kg wet	5.000		94	70-130			
C5-C8 Unadjusted Aliphatics	39.5	10.0	mg/kg wet	40.00		99	70-130			
C9-C10 Aromatics	9.2	10.0	mg/kg wet	10.00		92	70-130			

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch DL41723 - 5035										
C9-C12 Unadjusted Aliphatics	22.3	10.0	mg/kg wet	30.00		74	70-130			
Ethylbenzene	4.7	0.2	mg/kg wet	5.000		95	70-130			
Methyl tert-Butyl Ether	13.2	0.05	mg/kg wet	15.00		88	70-130			
Naphthalene	9.5	0.2	mg/kg wet	10.00		95	70-130			
n-Butylcyclohexane	9.4	5.0	mg/kg wet	10.00		94	70-130			
n-Decane	8.7	5.0	mg/kg wet	10.00		87	70-130			
Nonane (C9)	9.4	5.0	mg/kg wet	10.00		94	30-130			
Pentane	10.1	5.0	mg/kg wet	10.00		101	70-130			
Toluene	13.6	0.2	mg/kg wet	15.00		91	70-130			
Xylene O	9.0	0.2	mg/kg wet	10.00		90	70-130			
Xylene P,M	18.1	0.4	mg/kg wet	20.00		90	70-130			
Surrogate: 2,5-Dibromotoluene - FID	*5.11*		mg/kg wet	*5.000*		*102*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*5.20*		mg/kg wet	*5.000*		*104*	*70-130*			
Surrogate: Trifluorotoluene - FID	*5.07*		mg/kg wet	*5.333*		*95*	*70-130*			
Surrogate: Trifluorotoluene - PID	*5.35*		mg/kg wet	*5.333*		*100*	*70-130*			
LCS Dup										
1,2,4-Trimethylbenzene	9.5	0.2	mg/kg wet	10.00		95	70-130	3	25	
2,2,4-Trimethylpentane	14.0	5.0	mg/kg wet	15.00		94	70-130	8	25	
2-Methylpentane	12.7	5.0	mg/kg wet	15.00		85	70-130	9	25	
Benzene	4.4	0.2	mg/kg wet	5.000		89	70-130	6	25	
C5-C8 Unadjusted Aliphatics	35.2	10.0	mg/kg wet	40.00		88	70-130	12	25	
C9-C10 Aromatics	9.5	10.0	mg/kg wet	10.00		95	70-130	3	25	
C9-C12 Unadjusted Aliphatics	21.9	10.0	mg/kg wet	30.00		73	70-130	2	25	
Ethylbenzene	4.6	0.2	mg/kg wet	5.000		92	70-130	3	25	
Methyl tert-Butyl Ether	12.5	0.05	mg/kg wet	15.00		84	70-130	5	25	
Naphthalene	10.1	0.2	mg/kg wet	10.00		101	70-130	6	25	
n-Butylcyclohexane	9.3	5.0	mg/kg wet	10.00		93	70-130	1	25	
n-Decane	8.6	5.0	mg/kg wet	10.00		86	70-130	0.8	25	
Nonane (C9)	9.1	5.0	mg/kg wet	10.00		91	30-130	3	25	
Pentane	8.1	5.0	mg/kg wet	10.00		81	70-130	22	25	
Toluene	13.0	0.2	mg/kg wet	15.00		87	70-130	5	25	
Xylene O	9.0	0.2	mg/kg wet	10.00		90	70-130	0.2	25	
Xylene P,M	17.9	0.4	mg/kg wet	20.00		89	70-130	1	25	
Surrogate: 2,5-Dibromotoluene - FID	*5.56*		mg/kg wet	*5.000*		*111*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*5.55*		mg/kg wet	*5.000*		*111*	*70-130*			
Surrogate: Trifluorotoluene - FID	*4.87*		mg/kg wet	*5.333*		*91*	*70-130*			
Surrogate: Trifluorotoluene - PID	*5.09*		mg/kg wet	*5.333*		*95*	*70-130*			
Semi-Volatile Organic Compounds										
Batch DL41705 - 3546										
Blank										
1,1-Biphenyl	ND	0.025	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.250	mg/kg wet							
1,2-Dichlorobenzene	ND	0.250	mg/kg wet							
1,3-Dichlorobenzene	ND	0.250	mg/kg wet							

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41705 - 3546										
1,4-Dichlorobenzene	ND	0.250	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.250	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.250	mg/kg wet							
2,4-Dichlorophenol	ND	0.250	mg/kg wet							
2,4-Dimethylphenol	ND	0.250	mg/kg wet							
2,4-Dinitrophenol	ND	1.00	mg/kg wet							
2,4-Dinitrotoluene	ND	0.250	mg/kg wet							
2,6-Dinitrotoluene	ND	0.250	mg/kg wet							
2-Chloronaphthalene	ND	0.250	mg/kg wet							
2-Chlorophenol	ND	0.250	mg/kg wet							
2-Methylnaphthalene	ND	0.250	mg/kg wet							
2-Methylphenol	ND	0.250	mg/kg wet							
2-Nitrophenol	ND	0.500	mg/kg wet							
3,3´-Dichlorobenzidine	ND	0.250	mg/kg wet							
3+4-Methylphenol	ND	0.250	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.250	mg/kg wet							
4-Chloroaniline	ND	0.250	mg/kg wet							
4-Nitrophenol	ND	1.00	mg/kg wet							
Acenaphthene	ND	0.250	mg/kg wet							
Acenaphthylene	ND	0.250	mg/kg wet							
Acetophenone	ND	0.250	mg/kg wet							
Aniline	ND	0.250	mg/kg wet							
Anthracene	ND	0.250	mg/kg wet							
Azobenzene	ND	0.250	mg/kg wet							
Benzo(a)anthracene	ND	0.250	mg/kg wet							
Benzo(a)pyrene	ND	0.250	mg/kg wet							
Benzo(b)fluoranthene	ND	0.250	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.250	mg/kg wet							
Benzo(k)fluoranthene	ND	0.250	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.250	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.250	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.250	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.250	mg/kg wet							
Butylbenzylphthalate	ND	0.250	mg/kg wet							
Chrysene	ND	0.250	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.250	mg/kg wet							
Dibenzofuran	ND	0.250	mg/kg wet							
Diethylphthalate	ND	0.250	mg/kg wet							
Dimethylphthalate	ND	0.250	mg/kg wet							
Di-n-butylphthalate	ND	0.250	mg/kg wet							
Di-n-octylphthalate	ND	0.500	mg/kg wet							
Fluoranthene	ND	0.250	mg/kg wet							
Fluorene	ND	0.250	mg/kg wet							
Hexachlorobenzene	ND	0.250	mg/kg wet							
Hexachlorobutadiene	ND	0.250	mg/kg wet							

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41705 - 3546										
Hexachloroethane	ND	0.250	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.250	mg/kg wet							
Isophorone	ND	0.250	mg/kg wet							
Naphthalene	ND	0.250	mg/kg wet							
Nitrobenzene	ND	0.250	mg/kg wet							
N-Nitrosodimethylamine	ND	0.250	mg/kg wet							
Pentachlorophenol	ND	1.00	mg/kg wet							
Phenanthrene	ND	0.250	mg/kg wet							
Phenol	ND	0.250	mg/kg wet							
Pyrene	ND	0.250	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	*2.12*		mg/kg wet	*2.500*		*85*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.18*		mg/kg wet	*3.750*		*85*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.28*		mg/kg wet	*3.750*		*87*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.09*		mg/kg wet	*2.500*		*84*	*30-130*			
Surrogate: 2-Fluorophenol	*2.97*		mg/kg wet	*3.750*		*79*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.05*		mg/kg wet	*2.500*		*82*	*30-130*			
Surrogate: Phenol-d6	*3.27*		mg/kg wet	*3.750*		*87*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.37*		mg/kg wet	*2.500*		*95*	*30-130*			
LCS										
1,1-Biphenyl	2.09	0.025	mg/kg wet	2.500		84	40-140			
1,2,4-Trichlorobenzene	1.78	0.250	mg/kg wet	2.500		71	40-140			
1,2-Dichlorobenzene	2.02	0.250	mg/kg wet	2.500		81	40-140			
1,3-Dichlorobenzene	1.97	0.250	mg/kg wet	2.500		79	40-140			
1,4-Dichlorobenzene	2.03	0.250	mg/kg wet	2.500		81	40-140			
2,4,5-Trichlorophenol	2.33	0.250	mg/kg wet	2.500		93	30-130			
2,4,6-Trichlorophenol	2.14	0.250	mg/kg wet	2.500		86	30-130			
2,4-Dichlorophenol	1.80	0.250	mg/kg wet	2.500		72	30-130			
2,4-Dimethylphenol	1.77	0.250	mg/kg wet	2.500		71	30-130			
2,4-Dinitrophenol	1.38	1.00	mg/kg wet	2.500		55	15-140			
2,4-Dinitrotoluene	2.33	0.250	mg/kg wet	2.500		93	40-140			
2,6-Dinitrotoluene	2.24	0.250	mg/kg wet	2.500		90	40-140			
2-Chloronaphthalene	1.96	0.250	mg/kg wet	2.500		79	40-140			
2-Chlorophenol	2.06	0.250	mg/kg wet	2.500		83	30-130			
2-Methylnaphthalene	1.89	0.250	mg/kg wet	2.500		76	40-140			
2-Methylphenol	2.10	0.250	mg/kg wet	2.500		84	15-140			
2-Nitrophenol	1.89	0.500	mg/kg wet	2.500		76	30-130			
3,3´-Dichlorobenzidine	2.21	0.250	mg/kg wet	2.500		89	40-140			
3+4-Methylphenol	4.12	0.250	mg/kg wet	5.000		82	15-140			
4-Bromophenyl-phenylether	2.34	0.250	mg/kg wet	2.500		93	40-140			
4-Chloroaniline	1.68	0.250	mg/kg wet	2.500		67	15-140			
4-Nitrophenol	1.89	1.00	mg/kg wet	2.500		75	15-140			
Acenaphthene	2.21	0.250	mg/kg wet	2.500		88	40-140			
Acenaphthylene	2.17	0.250	mg/kg wet	2.500		87	40-140			
Acetophenone	2.00	0.250	mg/kg wet	2.500		80	40-140			
Aniline	1.59	0.250	mg/kg wet	2.500		63	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0614

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41705 - 3546										
Anthracene	2.46	0.250	mg/kg wet	2.500		98	40-140			
Azobenzene	2.30	0.250	mg/kg wet	2.500		92	40-140			
Benzo(a)anthracene	2.29	0.250	mg/kg wet	2.500		92	40-140			
Benzo(a)pyrene	2.45	0.250	mg/kg wet	2.500		98	40-140			
Benzo(b)fluoranthene	2.22	0.250	mg/kg wet	2.500		89	40-140			
Benzo(g,h,i)perylene	2.04	0.250	mg/kg wet	2.500		82	40-140			
Benzo(k)fluoranthene	2.43	0.250	mg/kg wet	2.500		97	40-140			
bis(2-Chloroethoxy)methane	1.85	0.250	mg/kg wet	2.500		74	40-140			
bis(2-Chloroethyl)ether	1.99	0.250	mg/kg wet	2.500		80	40-140			
bis(2-chloroisopropyl)Ether	1.81	0.250	mg/kg wet	2.500		72	40-140			
bis(2-Ethylhexyl)phthalate	2.43	0.250	mg/kg wet	2.500		97	40-140			
Butylbenzylphthalate	2.54	0.250	mg/kg wet	2.500		102	40-140			
Chrysene	2.36	0.250	mg/kg wet	2.500		94	40-140			
Dibenzo(a,h)Anthracene	2.23	0.250	mg/kg wet	2.500		89	40-140			
Dibenzofuran	2.10	0.250	mg/kg wet	2.500		84	40-140			
Diethylphthalate	2.29	0.250	mg/kg wet	2.500		92	40-140			
Dimethylphthalate	2.23	0.250	mg/kg wet	2.500		89	15-140			
Di-n-butylphthalate	2.52	0.250	mg/kg wet	2.500		101	40-140			
Di-n-octylphthalate	2.58	0.500	mg/kg wet	2.500		103	40-140			
Fluoranthene	2.37	0.250	mg/kg wet	2.500		95	40-140			
Fluorene	2.20	0.250	mg/kg wet	2.500		88	40-140			
Hexachlorobenzene	2.26	0.250	mg/kg wet	2.500		90	40-140			
Hexachlorobutadiene	1.77	0.250	mg/kg wet	2.500		71	40-140			
Hexachloroethane	2.00	0.250	mg/kg wet	2.500		80	40-140			
Indeno(1,2,3-cd)Pyrene	2.09	0.250	mg/kg wet	2.500		84	40-140			
Isophorone	1.71	0.250	mg/kg wet	2.500		69	40-140			
Naphthalene	1.72	0.250	mg/kg wet	2.500		69	40-140			
Nitrobenzene	1.77	0.250	mg/kg wet	2.500		71	40-140			
N-Nitrosodimethylamine	1.85	0.250	mg/kg wet	2.500		74	40-140			
Pentachlorophenol	1.74	1.00	mg/kg wet	2.500		69	15-140			
Phenanthrene	2.34	0.250	mg/kg wet	2.500		94	40-140			
Phenol	1.95	0.250	mg/kg wet	2.500		78	15-140			
Pyrene	2.47	0.250	mg/kg wet	2.500		99	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*2.09*		mg/kg wet	*2.500*		*84*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.85*		mg/kg wet	*3.750*		*103*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.30*		mg/kg wet	*3.750*		*88*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.19*		mg/kg wet	*2.500*		*88*	*30-130*			
Surrogate: 2-Fluorophenol	*2.93*		mg/kg wet	*3.750*		*78*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.79*		mg/kg wet	*2.500*		*72*	*30-130*			
Surrogate: Phenol-d6	*3.30*		mg/kg wet	*3.750*		*88*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.51*		mg/kg wet	*2.500*		*100*	*30-130*			
LCS Dup										
1,1-Biphenyl	2.17	0.025	mg/kg wet	2.500		87	40-140	4	30	
1,2,4-Trichlorobenzene	1.84	0.250	mg/kg wet	2.500		74	40-140	3	30	
1,2-Dichlorobenzene	2.08	0.250	mg/kg wet	2.500		83	40-140	3	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0614

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41705 - 3546										
1,3-Dichlorobenzene	2.06	0.250	mg/kg wet	2.500		82	40-140	4	30	
1,4-Dichlorobenzene	2.12	0.250	mg/kg wet	2.500		85	40-140	4	30	
2,4,5-Trichlorophenol	2.41	0.250	mg/kg wet	2.500		96	30-130	3	30	
2,4,6-Trichlorophenol	2.20	0.250	mg/kg wet	2.500		88	30-130	3	30	
2,4-Dichlorophenol	1.92	0.250	mg/kg wet	2.500		77	30-130	6	30	
2,4-Dimethylphenol	1.85	0.250	mg/kg wet	2.500		74	30-130	5	30	
2,4-Dinitrophenol	1.78	1.00	mg/kg wet	2.500		71	15-140	25	30	
2,4-Dinitrotoluene	2.45	0.250	mg/kg wet	2.500		98	40-140	5	30	
2,6-Dinitrotoluene	2.41	0.250	mg/kg wet	2.500		96	40-140	7	30	
2-Chloronaphthalene	1.99	0.250	mg/kg wet	2.500		80	40-140	1	30	
2-Chlorophenol	2.19	0.250	mg/kg wet	2.500		88	30-130	6	30	
2-Methylnaphthalene	2.00	0.250	mg/kg wet	2.500		80	40-140	5	30	
2-Methylphenol	2.25	0.250	mg/kg wet	2.500		90	15-140	7	30	
2-Nitrophenol	2.01	0.500	mg/kg wet	2.500		80	30-130	6	30	
3,3´-Dichlorobenzidine	2.15	0.250	mg/kg wet	2.500		86	40-140	3	30	
3+4-Methylphenol	4.44	0.250	mg/kg wet	5.000		89	15-140	7	30	
4-Bromophenyl-phenylether	2.41	0.250	mg/kg wet	2.500		97	40-140	3	30	
4-Chloroaniline	1.77	0.250	mg/kg wet	2.500		71	15-140	5	30	
4-Nitrophenol	1.96	1.00	mg/kg wet	2.500		78	15-140	4	30	
Acenaphthene	2.27	0.250	mg/kg wet	2.500		91	40-140	3	30	
Acenaphthylene	2.22	0.250	mg/kg wet	2.500		89	40-140	2	30	
Acetophenone	2.13	0.250	mg/kg wet	2.500		85	40-140	6	30	
Aniline	1.74	0.250	mg/kg wet	2.500		70	40-140	9	30	
Anthracene	2.47	0.250	mg/kg wet	2.500		99	40-140	0.2	30	
Azobenzene	2.32	0.250	mg/kg wet	2.500		93	40-140	0.7	30	
Benzo(a)anthracene	2.30	0.250	mg/kg wet	2.500		92	40-140	0.2	30	
Benzo(a)pyrene	2.46	0.250	mg/kg wet	2.500		99	40-140	0.8	30	
Benzo(b)fluoranthene	2.25	0.250	mg/kg wet	2.500		90	40-140	1	30	
Benzo(g,h,i)perylene	1.99	0.250	mg/kg wet	2.500		80	40-140	3	30	
Benzo(k)fluoranthene	2.50	0.250	mg/kg wet	2.500		100	40-140	3	30	
bis(2-Chloroethoxy)methane	1.93	0.250	mg/kg wet	2.500		77	40-140	4	30	
bis(2-Chloroethyl)ether	2.20	0.250	mg/kg wet	2.500		88	40-140	10	30	
bis(2-chloroisopropyl)Ether	1.90	0.250	mg/kg wet	2.500		76	40-140	5	30	
bis(2-Ethylhexyl)phthalate	2.57	0.250	mg/kg wet	2.500		103	40-140	6	30	
Butylbenzylphthalate	2.68	0.250	mg/kg wet	2.500		107	40-140	5	30	
Chrysene	2.32	0.250	mg/kg wet	2.500		93	40-140	2	30	
Dibenzo(a,h)Anthracene	2.19	0.250	mg/kg wet	2.500		88	40-140	2	30	
Dibenzofuran	2.16	0.250	mg/kg wet	2.500		86	40-140	3	30	
Diethylphthalate	2.41	0.250	mg/kg wet	2.500		96	40-140	5	30	
Dimethylphthalate	2.35	0.250	mg/kg wet	2.500		94	15-140	5	30	
Di-n-butylphthalate	2.63	0.250	mg/kg wet	2.500		105	40-140	4	30	
Di-n-octylphthalate	2.81	0.500	mg/kg wet	2.500		112	40-140	8	30	
Fluoranthene	2.38	0.250	mg/kg wet	2.500		95	40-140	0.5	30	
Fluorene	2.29	0.250	mg/kg wet	2.500		92	40-140	4	30	
Hexachlorobenzene	2.26	0.250	mg/kg wet	2.500		90	40-140	0.2	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0614

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL41705 - 3546										
Hexachlorobutadiene	1.83	0.250	mg/kg wet	2.500		73	40-140	3	30	
Hexachloroethane	2.18	0.250	mg/kg wet	2.500		87	40-140	8	30	
Indeno(1,2,3-cd)Pyrene	2.04	0.250	mg/kg wet	2.500		81	40-140	3	30	
Isophorone	1.81	0.250	mg/kg wet	2.500		72	40-140	6	30	
Naphthalene	1.76	0.250	mg/kg wet	2.500		71	40-140	3	30	
Nitrobenzene	1.82	0.250	mg/kg wet	2.500		73	40-140	2	30	
N-Nitrosodimethylamine	1.85	0.250	mg/kg wet	2.500		74	40-140	0.3	30	
Pentachlorophenol	1.86	1.00	mg/kg wet	2.500		75	15-140	7	30	
Phenanthrene	2.36	0.250	mg/kg wet	2.500		94	40-140	1	30	
Phenol	2.07	0.250	mg/kg wet	2.500		83	15-140	6	30	
Pyrene	2.63	0.250	mg/kg wet	2.500		105	40-140	6	30	
Surrogate: 1,2-Dichlorobenzene-d4	*2.10*		mg/kg wet	*2.500*		*84*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.76*		mg/kg wet	*3.750*		*100*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.34*		mg/kg wet	*3.750*		*89*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.16*		mg/kg wet	*2.500*		*86*	*30-130*			
Surrogate: 2-Fluorophenol	*2.97*		mg/kg wet	*3.750*		*79*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.81*		mg/kg wet	*2.500*		*72*	*30-130*			
Surrogate: Phenol-d6	*3.38*		mg/kg wet	*3.750*		*90*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.58*		mg/kg wet	*2.500*		*103*	*30-130*			
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL41703 - 3546										
Blank										
C19-C36 Aliphatics1	ND	10.0	mg/kg wet							
C9-C18 Aliphatics1	ND	10.0	mg/kg wet							
Surrogate: 1-Chlorooctadecane	*1.52*		mg/kg wet	*2.000*		*76*	*40-140*			
Blank										
2-Methylnaphthalene	ND	0.20	mg/kg wet							
Acenaphthene	ND	0.40	mg/kg wet							
Acenaphthylene	ND	0.20	mg/kg wet							
Anthracene	ND	0.40	mg/kg wet							
Benzo(a)anthracene	ND	0.40	mg/kg wet							
Benzo(a)pyrene	ND	0.40	mg/kg wet							
Benzo(b)fluoranthene	ND	0.40	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet							
Benzo(k)fluoranthene	ND	0.40	mg/kg wet							
C11-C22 Unadjusted Aromatics1	ND	10.0	mg/kg wet							
Chrysene	ND	0.40	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet							
Fluoranthene	ND	0.40	mg/kg wet							
Fluorene	ND	0.40	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet							
Naphthalene	ND	0.40	mg/kg wet							
Phenanthrene	ND	0.40	mg/kg wet							
Pyrene	ND	0.40	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0614

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL41703 - 3546										
Surrogate: 2-Bromonaphthalene	*1.80*		mg/kg wet	*2.000*		*90*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.79*		mg/kg wet	*2.000*		*90*	*40-140*			
Surrogate: O-Terphenyl	*2.06*		mg/kg wet	*2.000*		*103*	*40-140*			
LCS										
C19-C36 Aliphatics1	11.7	10.0	mg/kg wet	16.00		73	40-140			
C9-C18 Aliphatics1	8.3	10.0	mg/kg wet	12.00		69	40-140			
Surrogate: 1-Chlorooctadecane	*1.60*		mg/kg wet	*2.000*		*80*	*40-140*			
LCS										
2-Methylnaphthalene	1.33	0.20	mg/kg wet	2.000		67	40-140			
Acenaphthene	1.45	0.40	mg/kg wet	2.000		72	40-140			
Acenaphthylene	1.43	0.20	mg/kg wet	2.000		71	40-140			
Anthracene	1.61	0.40	mg/kg wet	2.000		81	40-140			
Benzo(a)anthracene	1.53	0.40	mg/kg wet	2.000		76	40-140			
Benzo(a)pyrene	1.52	0.40	mg/kg wet	2.000		76	40-140			
Benzo(b)fluoranthene	1.42	0.40	mg/kg wet	2.000		71	40-140			
Benzo(g,h,i)perylene	1.05	0.40	mg/kg wet	2.000		53	40-140			
Benzo(k)fluoranthene	1.56	0.40	mg/kg wet	2.000		78	40-140			
C11-C22 Unadjusted Aromatics1	26.8	10.0	mg/kg wet	34.00		79	40-140			
Chrysene	1.55	0.40	mg/kg wet	2.000		78	40-140			
Dibenzo(a,h)Anthracene	1.19	0.20	mg/kg wet	2.000		60	40-140			
Fluoranthene	1.62	0.40	mg/kg wet	2.000		81	40-140			
Fluorene	1.46	0.40	mg/kg wet	2.000		73	40-140			
Indeno(1,2,3-cd)Pyrene	1.09	0.40	mg/kg wet	2.000		54	40-140			
Naphthalene	1.22	0.40	mg/kg wet	2.000		61	40-140			
Phenanthrene	1.54	0.40	mg/kg wet	2.000		77	40-140			
Pyrene	1.59	0.40	mg/kg wet	2.000		79	40-140			
Surrogate: 2-Bromonaphthalene	*1.76*		mg/kg wet	*2.000*		*88*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.92*		mg/kg wet	*2.000*		*96*	*40-140*			
Surrogate: O-Terphenyl	*2.14*		mg/kg wet	*2.000*		*107*	*40-140*			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS Dup										
C19-C36 Aliphatics1	10.4	10.0	mg/kg wet	16.00		65	40-140	12	25	
C9-C18 Aliphatics1	7.6	10.0	mg/kg wet	12.00		63	40-140	9	25	
Surrogate: 1-Chlorooctadecane	*1.36*		mg/kg wet	*2.000*		*68*	*40-140*			
LCS Dup										
2-Methylnaphthalene	1.19	0.20	mg/kg wet	2.000		60	40-140	11	30	
Acenaphthene	1.33	0.40	mg/kg wet	2.000		67	40-140	8	30	
Acenaphthylene	1.31	0.20	mg/kg wet	2.000		66	40-140	8	30	
Anthracene	1.50	0.40	mg/kg wet	2.000		75	40-140	7	30	
Benzo(a)anthracene	1.35	0.40	mg/kg wet	2.000		68	40-140	12	30	
Benzo(a)pyrene	1.37	0.40	mg/kg wet	2.000		68	40-140	11	30	
Benzo(b)fluoranthene	1.29	0.40	mg/kg wet	2.000		64	40-140	9	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0614

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL41703 - 3546										
Benzo(g,h,i)perylene	0.92	0.40	mg/kg wet	2.000		46	40-140	14	30	
Benzo(k)fluoranthene	1.37	0.40	mg/kg wet	2.000		68	40-140	13	30	
C11-C22 Unadjusted Aromatics1	24.4	10.0	mg/kg wet	34.00		72	40-140	9	25	
Chrysene	1.42	0.40	mg/kg wet	2.000		71	40-140	9	30	
Dibenzo(a,h)Anthracene	1.04	0.20	mg/kg wet	2.000		52	40-140	14	30	
Fluoranthene	1.49	0.40	mg/kg wet	2.000		75	40-140	8	30	
Fluorene	1.33	0.40	mg/kg wet	2.000		67	40-140	9	30	
Indeno(1,2,3-cd)Pyrene	0.93	0.40	mg/kg wet	2.000		47	40-140	15	30	
Naphthalene	1.10	0.40	mg/kg wet	2.000		55	40-140	11	30	
Phenanthrene	1.39	0.40	mg/kg wet	2.000		70	40-140	10	30	
Pyrene	1.45	0.40	mg/kg wet	2.000		72	40-140	9	30	
Surrogate: 2-Bromonaphthalene	*1.68*		mg/kg wet	*2.000*		*84*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.87*		mg/kg wet	*2.000*		*94*	*40-140*			
Surrogate: O-Terphenyl	*1.98*		mg/kg wet	*2.000*		*99*	*40-140*			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	
8082A Polychlorinated Biphenyls (PCB)										
Batch DL41804 - 3540C										
Blank										
Aroclor 1016	ND	0.02	mg/kg wet							
Aroclor 1016 [2C]	ND	0.02	mg/kg wet							
Aroclor 1221	ND	0.02	mg/kg wet							
Aroclor 1221 [2C]	ND	0.02	mg/kg wet							
Aroclor 1232	ND	0.02	mg/kg wet							
Aroclor 1232 [2C]	ND	0.02	mg/kg wet							
Aroclor 1242	ND	0.02	mg/kg wet							
Aroclor 1242 [2C]	ND	0.02	mg/kg wet							
Aroclor 1248	ND	0.02	mg/kg wet							
Aroclor 1248 [2C]	ND	0.02	mg/kg wet							
Aroclor 1254	ND	0.02	mg/kg wet							
Aroclor 1254 [2C]	ND	0.02	mg/kg wet							
Aroclor 1260	ND	0.02	mg/kg wet							
Aroclor 1260 [2C]	ND	0.02	mg/kg wet							
Aroclor 1262	ND	0.02	mg/kg wet							
Aroclor 1262 [2C]	ND	0.02	mg/kg wet							
Aroclor 1268	ND	0.02	mg/kg wet							
Aroclor 1268 [2C]	ND	0.02	mg/kg wet							
Surrogate: Decachlorobiphenyl	*0.0130*		mg/kg wet	*0.02500*		*52*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0120*		mg/kg wet	*0.02500*		*48*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0116*		mg/kg wet	*0.02500*		*47*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0109*		mg/kg wet	*0.02500*		*44*	*30-150*			
LCS										
Aroclor 1016	0.4	0.02	mg/kg wet	0.5000		79	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0614

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082A Polychlorinated Biphenyls (PCB)										
Batch DL41804 - 3540C										
Aroclor 1016 [2C]	0.4	0.02	mg/kg wet	0.5000		78	40-140			
Aroclor 1260	0.4	0.02	mg/kg wet	0.5000		81	40-140			
Aroclor 1260 [2C]	0.4	0.02	mg/kg wet	0.5000		79	40-140			
Surrogate: Decachlorobiphenyl	*0.0205*		mg/kg wet	*0.02500*		*82*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0186*		mg/kg wet	*0.02500*		*74*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0191*		mg/kg wet	*0.02500*		*76*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0184*		mg/kg wet	*0.02500*		*74*	*30-150*			
LCS Dup										
Aroclor 1016	0.4	0.02	mg/kg wet	0.5000		81	40-140	3	30	
Aroclor 1016 [2C]	0.4	0.02	mg/kg wet	0.5000		80	40-140	3	30	
Aroclor 1260	0.4	0.02	mg/kg wet	0.5000		84	40-140	3	30	
Aroclor 1260 [2C]	0.4	0.02	mg/kg wet	0.5000		82	40-140	4	30	
Surrogate: Decachlorobiphenyl	*0.0207*		mg/kg wet	*0.02500*		*83*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0188*		mg/kg wet	*0.02500*		*75*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0191*		mg/kg wet	*0.02500*		*76*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0185*		mg/kg wet	*0.02500*		*74*	*30-150*			
Classical Chemistry										
Batch DL41746 - General Preparation										
Blank										
Conductivity	ND	5	umhos/cm							
LCS										
Conductivity	1390		umhos/cm	1410		99	90-110			
Batch DL41860 - General Preparation										
Blank										
Reactive Cyanide	ND	2.0	mg/kg							
Reactive Sulfide	ND	2.0	mg/kg							
LCS										
Reactive Cyanide	4.2	2.0	mg/kg	100.3		4	0.68-5.41			
Reactive Sulfide	2.2	2.0	mg/kg	10.00		22	0-44			
Batch DL41941 - General Preparation										
Reference										
Flashpoint	80		°F	81.00		98	97.9-102.1			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0614

Notes and Definitions

Z-04	MeOH - covered
WL	Results obtained from a deionized water leach of the sample.
U	Analyte included in the analysis, but not detected
Q	Calibration required quadratic regression (Q).
ICV-	Initial Calibration Verification recovery is below lower control limit (ICV-).
EL	Elevated Method Reporting Limits due to sample matrix (EL).
D	Diluted.
CD+	Continuing Calibration %Diff/Drift is above control limit (CD+).
>	Greater than.
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0614

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB

Shipped/Delivered Via: ESS Courier

ESS Project ID: 24L0614
Date Received: 12/17/2024
Project Due Date: 12/24/2024
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 3.5 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** Yes / No / NA
10. Were any analyses received outside of hold time? Yes / No

11. Any Subcontracting needed? Yes / No
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? Yes / No
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? Yes / No / NA
13. Are the samples properly preserved? Yes / No
    a. If metals preserved upon receipt: Date: Time: By/Acid Lot#:
    b. If dissolved metals are requested, are they: Yes / No Field Filtered Yes / No To Be Lab Filtered
    c. Low Level VOA vials frozen: Date: 12/17/24 Time: 1451 By: NA 12/18/24

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / No
    a. Was there a need to contact the client? Yes / No
    Who was contacted? Date: Time: By:

Resolution:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	626642	Yes	N/A	Yes	VOA Vial	MeOH	
1	626643	Yes	N/A	Yes	VOA Vial	MeOH	
1	626646	Yes	N/A	Yes	VOA Vial	DI Water	
1	626647	Yes	N/A	Yes	VOA Vial	DI Water	
1	626650	Yes	N/A	Yes	8 oz jar	NP	
1	626654	Yes	N/A	Yes	4 oz. Jar	NP	
2	626644	Yes	N/A	Yes	VOA Vial	MeOH	
2	626645	Yes	N/A	Yes	VOA Vial	MeOH	
2	626648	Yes	N/A	Yes	VOA Vial	DI Water	
2	626649	Yes	N/A	Yes	VOA Vial	DI Water	
2	626652	Yes	N/A	Yes	8 oz jar	NP	
2	626655	Yes	N/A	Yes	4 oz. Jar	NP	

2nd Review
Were all containers scanned into storage/lab? Initials TD Yes / No
Are barcode labels on correct containers? Yes / No / NA
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA
Are VOA stickers attached if bubbles noted? Yes / No / NA

ESS Laboratory Sample and Cooler Receipt Checklist

Client:	GEI Consultants, Inc. - TB	ESS Project ID:	24L0614
		Date Received:	12/17/2024
Completed By:	Taylor Davis	Date & Time:	12/17/24 1443
Reviewed By:		Date & Time:	12/17/24 1451

Chain-of-Custody Record

Laboratory:

Laboratory Job # (Lab use only) 24LD014.

GEI Consultants
400 Unicorn Park Drive
Woburn, MA 01801
PH: 781.721.4000

Project Information

Project Name: Drain Line Borings
Project Number: 2300422.1.2.4.1
Project Location: Needham, Massachusetts
Project Manager: Jeanne Lefebvre
JLefebvre@geiconsultants.com

Page 1 of 1

Send Report to:
labdata@geiconsultants.com
JLefebvre@geiconsultants.com

MCP PRESUMPTIVE CERTAINTY AND MCP ANALYTICAL METHODS REQUIRED: (YES) NO

STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS
State/Federal Program: (MA) 401WQC Other _____ NH RI CT NY ME
MA MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if (GW-1) is required.

Sample Handling
Samples Field Filtered: YES NO (NA)
Sampled Shipped With Ice: (YES) NO

Lab Sample Number	GEI Sample ID	Collection Date	Collection Time	Matrix	No. of Bottles	Sampler(s) Initials	VOCs via EPA 8260D	SVOCs via EPA 8270D	VPH/EPH (Carbon Fractions Only)	Total MCP 14 Metals	PCBs via EPA 8082A	Conductivity via EPA 9050A	Corrosivity via EPA 9045	Ignitability via EPA 1010A	Reactivity via EPA 7.3.3.2 and 7.3.4.1	TCLP*	Sample Specific Remarks
Preservative							MeOH/DI H_2O	None	None	None	None	None	None	None	None	None	
							Analysis										
1	B-GSS-463-18.0	12/10/2024	1000	SO	6	EW	X	X	X	X	X	X	X	X	X	X	
2	B-GSS-465-14.0	12/11/2024	900	SO	6	EW	X	X	X	X	X	X	X	X	X	X	

Relinquished by sampler: (signature) 1. Emily Wu	Date: 12/11/2024	Time: 940 AM	Received by: (signature) 1. Cole Sitter		
Relinquished by sampler: (signature) 2. Cole Sitter	Date: 12/17/24	Time: 13:20	Received by: (signature) 2.		
Relinquished by: (signature) 3.	Date: 12/17/24	Time: 14:27	Received by: (signature) 3.		
Relinquished by: (signature) 4.	Date:	Time:	Received by: (signature) 4.		
Relinquished by: (signature) 5.	Date:	Time:	Received by: (signature) 5.		

Turnaround Time (Business days):
5-Day __X__ 4-Day ____ 3-Day ____
2-Day ____ 1-Day ____ Other ____

Before submitting rush turnaround samples, you **must** notify the laboratory to confirm that the TAT can be achieved.

Additional Requirements/Comments/Remarks:

*Run TCLP if 20x rule has been exceeded.

3.5 ICE

Sample Matrix Abbreviations: SO = Soil GW = Groundwater SW = Surface Water SD = Sediment CO = Concrete PC = Paint Chip CLK = Caulk

CERTIFICATE OF ANALYSIS

Jeanne Lefebvre
GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801

RE: Drain Line Borings (2300422.1.2.4.1)
ESS Laboratory Work Order Number: 24L0732

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.



Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 7:47 pm, Dec 27, 2024

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0732

SAMPLE RECEIPT

The following samples were received on December 19, 2024 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Low Level VOA vials were frozen by ESS Laboratory on December 19, 2024 at 17:49.
Tetrahydrofuran is reported above the MA CAM reporting limit of 0.010 mg/kg.

Lab Number	Sample Name	Matrix	Analysis
24L0732-01	B-GSS-464-14.0	Soil	1010A, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260D Low, 8270E, 9045, 9050A, EPH8270, MADEP-EPH, MA-VPH-2.1

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0732

PROJECT NARRATIVE

Semi-Volatile Organic Compounds

D4L0414-CCV1	**Calibration required quadratic regression (Q).**
	2,4-Dinitrophenol (77% @ 40-160%)
D4L0414-CCV1	**Continuing Calibration %Diff/Drift is above control limit (CD+).**
	2,4,5-Trichlorophenol (22% @ 20%)
D4L0414-CCV1	**Continuing Calibration %Diff/Drift is below control limit (CD-).**
	Pyridine (23% @ 20%)
D4L0414-CCV1	**Initial Calibration Verification recovery is above upper control limit (ICV+).**
	Pyridine
D4L0414-CCV1	**Initial Calibration Verification recovery is below lower control limit (ICV-).**
	Aniline
D4L0414-TUN1	**Benzidine tailing factor >2.**
D4L0422-CCV1	**Calibration required quadratic regression (Q).**
	2,4-Dinitrophenol (93% @ 40-160%)
D4L0422-CCV1	**Continuing Calibration %Diff/Drift is above control limit (CD+).**
	bis(2-Ethylhexyl)phthalate (28% @ 20%), Butylbenzylphthalate (31% @ 20%)
D4L0422-CCV1	**Initial Calibration Verification recovery is below lower control limit (ICV-).**
	Aniline

Total Metals

24L0732-01	**Elevated Method Reporting Limits due to sample matrix (EL).**
	Arsenic

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0732

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010D - ICP
6020B - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260D - VOA
8270E - SVOA
8270E SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 19-2.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0732

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **24L0732-01**

Matrices: ( ) Ground Water/Surface Water (X) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other:_____

CAM Protocol (check all that apply below):

(X) 8260 VOC CAM II A	(X) 7470/7471 Hg CAM III B	(X) MassDEP VPH (GC/PID/FID) CAM IV A	(X) 8082 PCB CAM V A	( ) 9014 Total Cyanide/PAC CAM VI A	( ) 6860 Perchlorate CAM VIII B
(X) 8270 SVOC CAM II B	( ) 7010 Metals CAM III C	( ) MassDEP VPH (GC/MS) CAM IV C	( ) 8081 Pesticides CAM V B	( ) 7196 Hex Cr CAM VI B	( ) MassDEP APH CAM IX A
(X) 6010 Metals CAM III A	( ) 6020 Metals CAM III D	(X) MassDEP EPH CAM IV B	( ) 8151 Herbicides CAM V C	( ) Explosives CAM VIII A	( ) TO-15 VOC CAM IX B

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (X) No ( )
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (X) No ( )
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (X) No ( )
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (X) No ( )
E	VPH, EPH, APH and TO-15 only: a. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes (X) No ( )
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ( ) No ( )
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (X) No ( )

Responses to Questions G, H and I below are required for '"Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)?	Yes ( ) No (X)*
	***Data User Note:* Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**	
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes ( ) No (X)*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes (X) No ( )*

****All negative responses must be addressed in an attached laboratory narrative.***

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: _____ Date: December 27, 2024
Printed Name: Laurel Stoddard Position: Laboratory Director

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-14.0
Date Sampled: 12/18/24 09:30
Percent Solids: 84

ESS Laboratory Work Order: 24L0732
ESS Laboratory Sample ID: 24L0732-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Antimony	ND (5.77)	---	6010D	---	1	KJB	12/20/24 16:14	2.07 100	DL42017
Arsenic	**EL** ND (2.89)	---	6010D	---	1	KJB	12/20/24 16:14	2.07 100	DL42017
Barium	**17.1** (1.15)	---	6010D	---	1	KJB	12/20/24 16:14	2.07 100	DL42017
Beryllium	**0.17** (0.12)	---	6010D	---	1	KJB	12/20/24 16:14	2.07 100	DL42017
Cadmium	ND (0.58)	---	6010D	---	1	KJB	12/20/24 16:14	2.07 100	DL42017
Chromium	**9.93** (1.15)	---	6010D	---	1	KJB	12/20/24 16:14	2.07 100	DL42017
Lead	ND (5.77)	---	6010D	---	1	KJB	12/20/24 16:14	2.07 100	DL42017
Mercury	ND (0.038)	---	7471B	---	1	AFV	12/20/24 21:05	0.63 40	DL42018
Nickel	**7.58** (1.15)	---	6010D	---	1	KJB	12/20/24 16:14	2.07 100	DL42017
Selenium	ND (5.77)	---	6010D	---	1	KJB	12/20/24 16:14	2.07 100	DL42017
Silver	ND (0.58)	---	6010D	---	1	KJB	12/20/24 16:14	2.07 100	DL42017
Thallium	ND (5.77)	---	6010D	---	1	KJB	12/20/24 16:14	2.07 100	DL42017
Vanadium	**16.1** (1.15)	---	6010D	---	1	KJB	12/20/24 16:14	2.07 100	DL42017
Zinc	**19.8** (2.89)	---	6010D	---	1	KJB	12/20/24 16:14	2.07 100	DL42017

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-14.0
Date Sampled: 12/18/24 09:30
Percent Solids: 84
Initial Volume: 4.4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0732
ESS Laboratory Sample ID: 24L0732-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/20/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,1,1-Trichloroethane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,1,2,2-Tetrachloroethane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,1,2-Trichloroethane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,1-Dichloroethane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,1-Dichloroethene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,1-Dichloropropene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,2,3-Trichlorobenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,2,3-Trichloropropane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,2,4-Trichlorobenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,2,4-Trimethylbenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,2-Dibromo-3-Chloropropane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,2-Dibromoethane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,2-Dichlorobenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,2-Dichloroethane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,2-Dichloropropane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,3,5-Trimethylbenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,3-Dichlorobenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,3-Dichloropropane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,4-Dichlorobenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
1,4-Dioxane	ND (0.136)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
2,2-Dichloropropane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
2-Butanone	ND (0.0679)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
2-Chlorotoluene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
2-Hexanone	ND (0.0679)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
4-Chlorotoluene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
4-Isopropyltoluene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-14.0
Date Sampled: 12/18/24 09:30
Percent Solids: 84
Initial Volume: 4.4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0732
ESS Laboratory Sample ID: 24L0732-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/20/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0679)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Acetone	ND (0.0679)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Benzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Bromobenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Bromochloromethane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Bromodichloromethane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Bromoform	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Bromomethane	ND (0.0136)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Carbon Disulfide	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Carbon Tetrachloride	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Chlorobenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Chloroethane	ND (0.0136)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Chloroform	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Chloromethane	ND (0.0136)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
cis-1,2-Dichloroethene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
cis-1,3-Dichloropropene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Dibromochloromethane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Dibromomethane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Dichlorodifluoromethane	ND (0.0136)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Diethyl Ether	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Di-isopropyl ether	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Ethyl tertiary-butyl ether	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Ethylbenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Hexachlorobutadiene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Isopropylbenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Methyl tert-Butyl Ether	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Methylene Chloride	ND (0.0340)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-14.0
Date Sampled: 12/18/24 09:30
Percent Solids: 84
Initial Volume: 4.4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0732
ESS Laboratory Sample ID: 24L0732-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/20/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
n-Butylbenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
n-Propylbenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
sec-Butylbenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Styrene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
tert-Butylbenzene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Tertiary-amyl methyl ether	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Tetrachloroethene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Tetrahydrofuran	ND (0.0272)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Toluene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
trans-1,2-Dichloroethene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
trans-1,3-Dichloropropene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Trichloroethene	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Trichlorofluoromethane	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Vinyl Chloride	ND (0.0136)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Xylene O	ND (0.0068)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Xylene P,M	ND (0.0136)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025
Xylenes (Total)	ND (0.0136)	---	8260D Low	---	1	MEK	12/20/24 10:57	D4L0417	DL42025

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*110 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*93 %*		*70-130*
Surrogate: Dibromofluoromethane	*105 %*		*70-130*
Surrogate: Toluene-d8	*95 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-14.0
Date Sampled: 12/18/24 09:30
Percent Solids: 84
Initial Volume: 18.4g
Final Volume: 15ml
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 24L0732
ESS Laboratory Sample ID: 24L0732-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (11.7)	---	MA-VPH-2.1	---	1	12/20/24 7:33	D4L0384	DL41928
C5-C8 Aliphatics1,2	ND (12.2)	---	MA-VPH-2.1	---	1	12/20/24 7:33	---	[CALC]
C9-C12 Aliphatics2,3	ND (24.3)	---	MA-VPH-2.1	---	1	12/20/24 7:33	---	[CALC]
1:1 Methanol/Soil Ratio %D	**23** (N/A)		MA-VPH-2.1			12/19/24 8:00		DL41928
Preservative:	**MeOH - covered**		MA-VPH-2.1					DL41928

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*102 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*105 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*104 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*103 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-14.0
Date Sampled: 12/18/24 09:30
Percent Solids: 84
Initial Volume: 20.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0732
ESS Laboratory Sample ID: 24L0732-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/20/24 10:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.029)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
1,2,4-Trichlorobenzene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
1,2-Dichlorobenzene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
1,3-Dichlorobenzene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
1,4-Dichlorobenzene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
2,4,5-Trichlorophenol	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
2,4,6-Trichlorophenol	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
2,4-Dichlorophenol	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
2,4-Dimethylphenol	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
2,4-Dinitrophenol	ND (1.17)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
2,4-Dinitrotoluene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
2,6-Dinitrotoluene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
2-Chloronaphthalene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
2-Chlorophenol	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
2-Methylnaphthalene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
2-Methylphenol	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
2-Nitrophenol	ND (0.586)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
3,3′-Dichlorobenzidine	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
3+4-Methylphenol	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
4-Bromophenyl-phenylether	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
4-Chloroaniline	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
4-Nitrophenol	ND (1.17)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Acenaphthene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Acenaphthylene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Acetophenone	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Aniline	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Anthracene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-14.0
Date Sampled: 12/18/24 09:30
Percent Solids: 84
Initial Volume: 20.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0732
ESS Laboratory Sample ID: 24L0732-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/20/24 10:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Benzo(a)anthracene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Benzo(a)pyrene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Benzo(b)fluoranthene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Benzo(g,h,i)perylene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Benzo(k)fluoranthene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
bis(2-Chloroethoxy)methane	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
bis(2-Chloroethyl)ether	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
bis(2-chloroisopropyl)Ether	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
bis(2-Ethylhexyl)phthalate	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Butylbenzylphthalate	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Chrysene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Dibenzo(a,h)Anthracene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Dibenzofuran	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Diethylphthalate	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Dimethylphthalate	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Di-n-butylphthalate	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Di-n-octylphthalate	ND (0.586)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Fluoranthene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Fluorene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Hexachlorobenzene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Hexachlorobutadiene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Hexachloroethane	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Indeno(1,2,3-cd)Pyrene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Isophorone	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Naphthalene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Nitrobenzene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-14.0
Date Sampled: 12/18/24 09:30
Percent Solids: 84
Initial Volume: 20.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0732
ESS Laboratory Sample ID: 24L0732-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/20/24 10:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Pentachlorophenol	ND (1.17)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Phenanthrene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Phenol	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003
Pyrene	ND (0.293)	---	8270E	---	1	TJ	12/21/24 3:56	D4L0414	DL42003

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*83 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*87 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*84 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*84 %*		*30-130*
Surrogate: 2-Fluorophenol	*73 %*		*30-130*
Surrogate: Nitrobenzene-d5	*73 %*		*30-130*
Surrogate: Phenol-d6	*78 %*		*30-130*
Surrogate: p-Terphenyl-d14	*108 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-14.0
Date Sampled: 12/18/24 09:30
Percent Solids: 84
Initial Volume: 25.5g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0732
ESS Laboratory Sample ID: 24L0732-01
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 12/20/24 10:25

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (11.7)	---	MADEP-EPH	---	1	JDN	12/23/24 18:28	D4L0448	DL42001
C19-C36 Aliphatics1	ND (11.7)	---	MADEP-EPH	---	1	JDN	12/23/24 18:28	D4L0448	DL42001
C11-C22 Unadjusted Aromatics1	ND (11.7)	---	EPH8270	---	1	IBM	12/23/24 17:20	D4L0434	DL42001
C11-C22 Aromatics1,2	ND (11.7)	---	EPH8270	---		IBM	12/23/24 17:20	---	[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*79 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*97 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*92 %*		*40-140*
Surrogate: O-Terphenyl	*104 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-14.0
Date Sampled: 12/18/24 09:30
Percent Solids: 84
Initial Volume: 19.3g
Final Volume: 10ml
Extraction Method: 3540C

ESS Laboratory Work Order: 24L0732
ESS Laboratory Sample ID: 24L0732-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JLG
Prepared: 12/20/24 10:50

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.06)	---	8082A	---	1	12/23/24 14:31	---	DL41902
Aroclor 1221	ND (0.06)	---	8082A	---	1	12/23/24 14:31	---	DL41902
Aroclor 1232	ND (0.06)	---	8082A	---	1	12/23/24 14:31	---	DL41902
Aroclor 1242	ND (0.06)	---	8082A	---	1	12/23/24 14:31	---	DL41902
Aroclor 1248	ND (0.06)	---	8082A	---	1	12/23/24 14:31	---	DL41902
Aroclor 1254	ND (0.06)	---	8082A	---	1	12/23/24 14:31	---	DL41902
Aroclor 1260	ND (0.06)	---	8082A	---	1	12/23/24 14:31	---	DL41902
Aroclor 1262	ND (0.06)	---	8082A	---	1	12/23/24 14:31	---	DL41902
Aroclor 1268	ND (0.06)	---	8082A	---	1	12/23/24 14:31	---	DL41902

	%Recovery	*Qualifier*	*Limits*
Surrogate: Decachlorobiphenyl	*71 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*79 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-464-14.0
Date Sampled: 12/18/24 09:30
Percent Solids: 84

ESS Laboratory Work Order: 24L0732
ESS Laboratory Sample ID: 24L0732-01
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 693** (5)	---	9050A	---	1	CCP	12/20/24 18:30	umhos/cm	DL42041
Corrosivity (pH)	**7.84** (N/A)	---	9045	---	1	JLK	12/19/24 20:10	S.U.	DL41947
Corrosivity (pH) Sample Temp	**20.3**	---	2550B	---	1	JLK	12/19/24 20:10	°C	DL41947
Flashpoint	**> 200** (N/A)	---	1010A	---	1	LAB	12/20/24 11:54	°F	DL42020
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	12/19/24 19:03	mg/kg	DL41860
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	12/19/24 19:03	mg/kg	DL41860

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0732

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DL42017 - 3050B										
Blank										
Antimony	ND	4.98	mg/kg wet							
Arsenic	ND	2.49	mg/kg wet							
Barium	ND	1.00	mg/kg wet							
Beryllium	ND	0.10	mg/kg wet							
Cadmium	ND	0.50	mg/kg wet							
Chromium	ND	1.00	mg/kg wet							
Lead	ND	4.98	mg/kg wet							
Nickel	ND	1.00	mg/kg wet							
Selenium	ND	4.98	mg/kg wet							
Silver	ND	0.50	mg/kg wet							
Thallium	ND	4.98	mg/kg wet							
Vanadium	ND	1.00	mg/kg wet							
Zinc	ND	2.49	mg/kg wet							
LCS										
Antimony	74.6	15.9	mg/kg wet	245.0		30	10-110			
Arsenic	120	7.94	mg/kg wet	280.0		43	32-110			
Barium	309	3.17	mg/kg wet	688.0		45	33-110			
Beryllium	47.3	0.32	mg/kg wet	105.0		45	32-110			
Cadmium	88.2	1.59	mg/kg wet	210.0		42	33-110			
Chromium	153	3.17	mg/kg wet	225.0		68	50-110			
Lead	157	15.9	mg/kg wet	350.0		45	31-110			
Nickel	63.1	3.17	mg/kg wet	95.00		66	48-111			
Selenium	136	15.9	mg/kg wet	320.0		43	29-110			
Silver	41.0	1.59	mg/kg wet	95.00		43	30-111			
Thallium	110	15.9	mg/kg wet	250.0		44	28-110			
Vanadium	140	3.17	mg/kg wet	295.0		47	34-110			
Zinc	216	7.94	mg/kg wet	500.0		43	30-110			
LCS Dup										
Antimony	78.5	16.1	mg/kg wet	245.0		32	10-110	5	30	
Arsenic	126	8.06	mg/kg wet	280.0		45	32-110	5	30	
Barium	330	3.23	mg/kg wet	688.0		48	33-110	7	30	
Beryllium	48.3	0.32	mg/kg wet	105.0		46	32-110	2	30	
Cadmium	90.1	1.61	mg/kg wet	210.0		43	33-110	2	30	
Chromium	152	3.23	mg/kg wet	225.0		68	50-110	0.7	30	
Lead	160	16.1	mg/kg wet	350.0		46	31-110	1	30	
Nickel	63.5	3.23	mg/kg wet	95.00		67	48-111	0.7	30	
Selenium	141	16.1	mg/kg wet	320.0		44	29-110	4	30	
Silver	42.1	1.61	mg/kg wet	95.00		44	30-111	3	30	
Thallium	111	16.1	mg/kg wet	250.0		45	28-110	1	30	
Vanadium	144	3.23	mg/kg wet	295.0		49	34-110	3	30	
Zinc	220	8.06	mg/kg wet	500.0		44	30-110	2	30	
Batch DL42018 - 245.1/7470A										

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0732

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DL42018 - 245.1/7470A										
Blank										
Mercury	ND	0.031	mg/kg wet							
LCS										
Mercury	22.2	3.30	mg/kg wet	24.90		89	80-120			
LCS Dup										
Mercury	25.4	3.30	mg/kg wet	24.90		102	80-120	13	30	
Volatile Organics Low Level										
Batch DL42025 - 5035										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0500	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0500	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0500	mg/kg wet							
Acetone	ND	0.0500	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0732

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL42025 - 5035										
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0050	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0250	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0200	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*0.0564*		mg/kg wet	*0.05000*		*113*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0478*		mg/kg wet	*0.05000*		*96*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0533*		mg/kg wet	*0.05000*		*107*	*70-130*			
Surrogate: Toluene-d8	*0.0485*		mg/kg wet	*0.05000*		*97*	*70-130*			
LCS										
1,1,1,2-Tetrachloroethane	0.0501	0.0050	mg/kg wet	0.05000		100	70-130			
1,1,1-Trichloroethane	0.0512	0.0050	mg/kg wet	0.05000		102	70-130			
1,1,2,2-Tetrachloroethane	0.0479	0.0050	mg/kg wet	0.05000		96	40-160			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0732

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL42025 - 5035										
1,1,2-Trichloroethane	0.0512	0.0050	mg/kg wet	0.05000		102	70-130			
1,1-Dichloroethane	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
1,1-Dichloroethene	0.0531	0.0050	mg/kg wet	0.05000		106	70-130			
1,1-Dichloropropene	0.0493	0.0050	mg/kg wet	0.05000		99	70-130			
1,2,3-Trichlorobenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
1,2,3-Trichloropropane	0.0453	0.0050	mg/kg wet	0.05000		91	70-130			
1,2,4-Trichlorobenzene	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			
1,2,4-Trimethylbenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
1,2-Dibromo-3-Chloropropane	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
1,2-Dibromoethane	0.0507	0.0050	mg/kg wet	0.05000		101	70-130			
1,2-Dichlorobenzene	0.0469	0.0050	mg/kg wet	0.05000		94	70-130			
1,2-Dichloroethane	0.0502	0.0050	mg/kg wet	0.05000		100	70-130			
1,2-Dichloropropane	0.0520	0.0050	mg/kg wet	0.05000		104	70-130			
1,3,5-Trimethylbenzene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
1,3-Dichlorobenzene	0.0453	0.0050	mg/kg wet	0.05000		91	70-130			
1,3-Dichloropropane	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			
1,4-Dichlorobenzene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
1,4-Dioxane	0.937	0.100	mg/kg wet	1.000		94	70-130			
2,2-Dichloropropane	0.0525	0.0050	mg/kg wet	0.05000		105	70-130			
2-Butanone	0.268	0.0500	mg/kg wet	0.2500		107	40-160			
2-Chlorotoluene	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			
2-Hexanone	0.229	0.0500	mg/kg wet	0.2500		92	40-160			
4-Chlorotoluene	0.0493	0.0050	mg/kg wet	0.05000		99	70-130			
4-Isopropyltoluene	0.0452	0.0050	mg/kg wet	0.05000		90	70-130			
4-Methyl-2-Pentanone	0.233	0.0500	mg/kg wet	0.2500		93	40-160			
Acetone	0.311	0.0500	mg/kg wet	0.2500		124	40-160			
Benzene	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			
Bromobenzene	0.0473	0.0050	mg/kg wet	0.05000		95	70-130			
Bromochloromethane	0.0500	0.0050	mg/kg wet	0.05000		100	70-130			
Bromodichloromethane	0.0545	0.0050	mg/kg wet	0.05000		109	70-130			
Bromoform	0.0443	0.0050	mg/kg wet	0.05000		89	40-160			
Bromomethane	0.0456	0.0100	mg/kg wet	0.05000		91	40-160			
Carbon Disulfide	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
Carbon Tetrachloride	0.0498	0.0050	mg/kg wet	0.05000		100	70-130			
Chlorobenzene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
Chloroethane	0.0555	0.0100	mg/kg wet	0.05000		111	40-160			
Chloroform	0.0493	0.0050	mg/kg wet	0.05000		99	70-130			
Chloromethane	0.0423	0.0100	mg/kg wet	0.05000		85	40-160			
cis-1,2-Dichloroethene	0.0504	0.0050	mg/kg wet	0.05000		101	70-130			
cis-1,3-Dichloropropene	0.0483	0.0050	mg/kg wet	0.05000		97	40-160			
Dibromochloromethane	0.0442	0.0050	mg/kg wet	0.05000		88	40-160			
Dibromomethane	0.0502	0.0050	mg/kg wet	0.05000		100	70-130			
Dichlorodifluoromethane	0.0321	0.0100	mg/kg wet	0.05000		64	40-160			
Diethyl Ether	0.0579	0.0050	mg/kg wet	0.05000		116	70-130			
Di-isopropyl ether	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0732

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL42025 - 5035										
Ethyl tertiary-butyl ether	0.0566	0.0050	mg/kg wet	0.05000		113	70-130			
Ethylbenzene	0.0508	0.0050	mg/kg wet	0.05000		102	70-130			
Hexachlorobutadiene	0.0452	0.0050	mg/kg wet	0.05000		90	40-160			
Isopropylbenzene	0.0554	0.0050	mg/kg wet	0.05000		111	70-130			
Methyl tert-Butyl Ether	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			
Methylene Chloride	0.0479	0.0250	mg/kg wet	0.05000		96	70-130			
Naphthalene	0.0490	0.0050	mg/kg wet	0.05000		98	40-160			
n-Butylbenzene	0.0484	0.0050	mg/kg wet	0.05000		97	70-130			
n-Propylbenzene	0.0485	0.0050	mg/kg wet	0.05000		97	70-130			
sec-Butylbenzene	0.0450	0.0050	mg/kg wet	0.05000		90	70-130			
Styrene	0.0431	0.0050	mg/kg wet	0.05000		86	40-160			
tert-Butylbenzene	0.0485	0.0050	mg/kg wet	0.05000		97	70-130			
Tertiary-amyl methyl ether	0.0583	0.0050	mg/kg wet	0.05000		117	70-130			
Tetrachloroethene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
Tetrahydrofuran	0.0492	0.0200	mg/kg wet	0.05000		98	70-130			
Toluene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130			
trans-1,2-Dichloroethene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
trans-1,3-Dichloropropene	0.0473	0.0050	mg/kg wet	0.05000		95	70-130			
Trichloroethene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
Trichlorofluoromethane	0.0459	0.0050	mg/kg wet	0.05000		92	40-160			
Vinyl Chloride	0.0470	0.0100	mg/kg wet	0.05000		94	70-130			
Xylene O	0.0439	0.0050	mg/kg wet	0.05000		88	70-130			
Xylene P,M	0.0893	0.0100	mg/kg wet	0.1000		89	70-130			
Surrogate: 1,2-Dichloroethane-d4	*0.0480*		mg/kg wet	*0.05000*		*96*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0539*		mg/kg wet	*0.05000*		*108*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0488*		mg/kg wet	*0.05000*		*98*	*70-130*			
Surrogate: Toluene-d8	*0.0487*		mg/kg wet	*0.05000*		*97*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	3	20	
1,1,1-Trichloroethane	0.0551	0.0050	mg/kg wet	0.05000		110	70-130	7	20	
1,1,2,2-Tetrachloroethane	0.0507	0.0050	mg/kg wet	0.05000		101	40-160	6	20	
1,1,2-Trichloroethane	0.0529	0.0050	mg/kg wet	0.05000		106	70-130	3	20	
1,1-Dichloroethane	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	7	20	
1,1-Dichloroethene	0.0577	0.0050	mg/kg wet	0.05000		115	70-130	8	20	
1,1-Dichloropropene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130	7	20	
1,2,3-Trichlorobenzene	0.0549	0.0050	mg/kg wet	0.05000		110	70-130	11	20	
1,2,3-Trichloropropane	0.0473	0.0050	mg/kg wet	0.05000		95	70-130	4	20	
1,2,4-Trichlorobenzene	0.0558	0.0050	mg/kg wet	0.05000		112	70-130	11	20	
1,2,4-Trimethylbenzene	0.0545	0.0050	mg/kg wet	0.05000		109	70-130	10	20	
1,2-Dibromo-3-Chloropropane	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	0.8	20	
1,2-Dibromoethane	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	1	20	
1,2-Dichlorobenzene	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	9	20	
1,2-Dichloroethane	0.0524	0.0050	mg/kg wet	0.05000		105	70-130	4	20	
1,2-Dichloropropane	0.0549	0.0050	mg/kg wet	0.05000		110	70-130	5	20	
1,3,5-Trimethylbenzene	0.0541	0.0050	mg/kg wet	0.05000		108	70-130	10	20	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0732

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL42025 - 5035										
1,3-Dichlorobenzene	0.0500	0.0050	mg/kg wet	0.05000		100	70-130	10	20	
1,3-Dichloropropane	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	0.9	20	
1,4-Dichlorobenzene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	9	20	
1,4-Dioxane	0.936	0.100	mg/kg wet	1.000		94	70-130	0.1	20	
2,2-Dichloropropane	0.0563	0.0050	mg/kg wet	0.05000		113	70-130	7	20	
2-Butanone	0.263	0.0500	mg/kg wet	0.2500		105	40-160	2	20	
2-Chlorotoluene	0.0518	0.0050	mg/kg wet	0.05000		104	70-130	9	20	
2-Hexanone	0.215	0.0500	mg/kg wet	0.2500		86	40-160	6	20	
4-Chlorotoluene	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	9	20	
4-Isopropyltoluene	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	11	20	
4-Methyl-2-Pentanone	0.227	0.0500	mg/kg wet	0.2500		91	40-160	3	20	
Acetone	0.288	0.0500	mg/kg wet	0.2500		115	40-160	7	20	
Benzene	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	6	20	
Bromobenzene	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	10	20	
Bromochloromethane	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	4	20	
Bromodichloromethane	0.0575	0.0050	mg/kg wet	0.05000		115	70-130	5	20	
Bromoform	0.0446	0.0050	mg/kg wet	0.05000		89	40-160	0.6	20	
Bromomethane	0.0493	0.0100	mg/kg wet	0.05000		99	40-160	8	20	
Carbon Disulfide	0.0555	0.0050	mg/kg wet	0.05000		111	70-130	8	20	
Carbon Tetrachloride	0.0535	0.0050	mg/kg wet	0.05000		107	70-130	7	20	
Chlorobenzene	0.0496	0.0050	mg/kg wet	0.05000		99	70-130	4	20	
Chloroethane	0.0606	0.0100	mg/kg wet	0.05000		121	40-160	9	20	
Chloroform	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	6	20	
Chloromethane	0.0452	0.0100	mg/kg wet	0.05000		90	40-160	7	20	
cis-1,2-Dichloroethene	0.0539	0.0050	mg/kg wet	0.05000		108	70-130	7	20	
cis-1,3-Dichloropropene	0.0506	0.0050	mg/kg wet	0.05000		101	40-160	5	20	
Dibromochloromethane	0.0451	0.0050	mg/kg wet	0.05000		90	40-160	2	20	
Dibromomethane	0.0520	0.0050	mg/kg wet	0.05000		104	70-130	4	20	
Dichlorodifluoromethane	0.0343	0.0100	mg/kg wet	0.05000		69	40-160	7	20	
Diethyl Ether	0.0597	0.0050	mg/kg wet	0.05000		119	70-130	3	20	
Di-isopropyl ether	0.0579	0.0050	mg/kg wet	0.05000		116	70-130	5	20	
Ethyl tertiary-butyl ether	0.0593	0.0050	mg/kg wet	0.05000		119	70-130	5	20	
Ethylbenzene	0.0526	0.0050	mg/kg wet	0.05000		105	70-130	3	20	
Hexachlorobutadiene	0.0510	0.0050	mg/kg wet	0.05000		102	40-160	12	20	
Isopropylbenzene	0.0619	0.0050	mg/kg wet	0.05000		124	70-130	11	20	
Methyl tert-Butyl Ether	0.0569	0.0050	mg/kg wet	0.05000		114	70-130	3	20	
Methylene Chloride	0.0506	0.0250	mg/kg wet	0.05000		101	70-130	6	20	
Naphthalene	0.0540	0.0050	mg/kg wet	0.05000		108	40-160	10	20	
n-Butylbenzene	0.0539	0.0050	mg/kg wet	0.05000		108	70-130	11	20	
n-Propylbenzene	0.0538	0.0050	mg/kg wet	0.05000		108	70-130	10	20	
sec-Butylbenzene	0.0500	0.0050	mg/kg wet	0.05000		100	70-130	10	20	
Styrene	0.0445	0.0050	mg/kg wet	0.05000		89	40-160	3	20	
tert-Butylbenzene	0.0536	0.0050	mg/kg wet	0.05000		107	70-130	10	20	
Tertiary-amyl methyl ether	0.0601	0.0050	mg/kg wet	0.05000		120	70-130	3	20	
Tetrachloroethene	0.0504	0.0050	mg/kg wet	0.05000		101	70-130	3	20	

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Client Name: GEI Consultants, Inc.
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL42025 - 5035										
Tetrahydrofuran	0.0475	0.0200	mg/kg wet	0.05000		95	70-130	3	20	
Toluene	0.0535	0.0050	mg/kg wet	0.05000		107	70-130	6	20	
trans-1,2-Dichloroethene	0.0561	0.0050	mg/kg wet	0.05000		112	70-130	7	20	
trans-1,3-Dichloropropene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	3	20	
Trichloroethene	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	7	20	
Trichlorofluoromethane	0.0491	0.0050	mg/kg wet	0.05000		98	40-160	7	20	
Vinyl Chloride	0.0507	0.0100	mg/kg wet	0.05000		101	70-130	8	20	
Xylene O	0.0454	0.0050	mg/kg wet	0.05000		91	70-130	3	20	
Xylene P,M	0.0931	0.0100	mg/kg wet	0.1000		93	70-130	4	20	
Surrogate: 1,2-Dichloroethane-d4	*0.0489*		mg/kg wet	*0.05000*		*98*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0506*		mg/kg wet	*0.05000*		*101*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0498*		mg/kg wet	*0.05000*		*100*	*70-130*			
Surrogate: Toluene-d8	*0.0490*		mg/kg wet	*0.05000*		*98*	*70-130*			
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch DL41928 - 5030B										
Blank										
1,2,4-Trimethylbenzene	ND	0.2	mg/kg wet							
2,2,4-Trimethylpentane	ND	5.0	mg/kg wet							
2-Methylpentane	ND	5.0	mg/kg wet							
Benzene	ND	0.2	mg/kg wet							
C5-C8 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
C9-C10 Aromatics	ND	10.0	mg/kg wet							
C9-C12 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
Ethylbenzene	ND	0.2	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.05	mg/kg wet							
Naphthalene	ND	0.2	mg/kg wet							
n-Butylcyclohexane	ND	5.0	mg/kg wet							
n-Decane	ND	5.0	mg/kg wet							
Nonane (C9)	ND	5.0	mg/kg wet							
Pentane	ND	5.0	mg/kg wet							
Toluene	ND	0.2	mg/kg wet							
Xylene O	ND	0.2	mg/kg wet							
Xylene P,M	ND	0.4	mg/kg wet							
Surrogate: 2,5-Dibromotoluene - FID	*4.15*		mg/kg wet	*5.000*		*83*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*4.22*		mg/kg wet	*5.000*		*84*	*70-130*			
Surrogate: Trifluorotoluene - FID	*4.41*		mg/kg wet	*5.333*		*83*	*70-130*			
Surrogate: Trifluorotoluene - PID	*4.53*		mg/kg wet	*5.333*		*85*	*70-130*			
LCS										
1,2,4-Trimethylbenzene	8.6	0.2	mg/kg wet	10.00		86	70-130			
2,2,4-Trimethylpentane	13.8	5.0	mg/kg wet	15.00		92	70-130			
2-Methylpentane	12.5	5.0	mg/kg wet	15.00		84	70-130			
Benzene	4.2	0.2	mg/kg wet	5.000		85	70-130			
C5-C8 Unadjusted Aliphatics	35.3	10.0	mg/kg wet	40.00		88	70-130			
C9-C10 Aromatics	8.6	10.0	mg/kg wet	10.00		86	70-130			

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Client Name: GEI Consultants, Inc.
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch DL41928 - 5030B										
C9-C12 Unadjusted Aliphatics	26.8	10.0	mg/kg wet	30.00		89	70-130			
Ethylbenzene	4.5	0.2	mg/kg wet	5.000		90	70-130			
Methyl tert-Butyl Ether	10.8	0.05	mg/kg wet	15.00		72	70-130			
Naphthalene	8.6	0.2	mg/kg wet	10.00		86	70-130			
n-Butylcyclohexane	10.7	5.0	mg/kg wet	10.00		107	70-130			
n-Decane	10.9	5.0	mg/kg wet	10.00		109	70-130			
Nonane (C9)	10.8	5.0	mg/kg wet	10.00		108	30-130			
Pentane	9.2	5.0	mg/kg wet	10.00		92	70-130			
Toluene	12.9	0.2	mg/kg wet	15.00		86	70-130			
Xylene O	7.9	0.2	mg/kg wet	10.00		79	70-130			
Xylene P,M	17.3	0.4	mg/kg wet	20.00		87	70-130			
Surrogate: 2,5-Dibromotoluene - FID	*4.91*		mg/kg wet	*5.000*		*98*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*4.98*		mg/kg wet	*5.000*		*100*	*70-130*			
Surrogate: Trifluorotoluene - FID	*4.84*		mg/kg wet	*5.333*		*91*	*70-130*			
Surrogate: Trifluorotoluene - PID	*4.87*		mg/kg wet	*5.333*		*91*	*70-130*			
LCS Dup										
1,2,4-Trimethylbenzene	8.7	0.2	mg/kg wet	10.00		87	70-130	0.7	25	
2,2,4-Trimethylpentane	13.5	5.0	mg/kg wet	15.00		90	70-130	3	25	
2-Methylpentane	12.4	5.0	mg/kg wet	15.00		82	70-130	1	25	
Benzene	4.3	0.2	mg/kg wet	5.000		86	70-130	2	25	
C5-C8 Unadjusted Aliphatics	34.7	10.0	mg/kg wet	40.00		87	70-130	2	25	
C9-C10 Aromatics	8.7	10.0	mg/kg wet	10.00		87	70-130	0.7	25	
C9-C12 Unadjusted Aliphatics	27.3	10.0	mg/kg wet	30.00		91	70-130	2	25	
Ethylbenzene	4.5	0.2	mg/kg wet	5.000		91	70-130	0.8	25	
Methyl tert-Butyl Ether	11.7	0.05	mg/kg wet	15.00		78	70-130	8	25	
Naphthalene	9.0	0.2	mg/kg wet	10.00		90	70-130	5	25	
n-Butylcyclohexane	10.7	5.0	mg/kg wet	10.00		107	70-130	0.4	25	
n-Decane	11.3	5.0	mg/kg wet	10.00		113	70-130	4	25	
Nonane (C9)	10.8	5.0	mg/kg wet	10.00		108	30-130	0.2	25	
Pentane	9.1	5.0	mg/kg wet	10.00		91	70-130	0.9	25	
Toluene	13.1	0.2	mg/kg wet	15.00		87	70-130	1	25	
Xylene O	8.0	0.2	mg/kg wet	10.00		80	70-130	1	25	
Xylene P,M	17.5	0.4	mg/kg wet	20.00		87	70-130	0.8	25	
Surrogate: 2,5-Dibromotoluene - FID	*4.38*		mg/kg wet	*5.000*		*88*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*4.44*		mg/kg wet	*5.000*		*89*	*70-130*			
Surrogate: Trifluorotoluene - FID	*4.87*		mg/kg wet	*5.333*		*91*	*70-130*			
Surrogate: Trifluorotoluene - PID	*4.80*		mg/kg wet	*5.333*		*90*	*70-130*			
Semi-Volatile Organic Compounds										
Batch DL42003 - 3546										
Blank										
1,1-Biphenyl	ND	0.025	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.250	mg/kg wet							
1,2-Dichlorobenzene	ND	0.250	mg/kg wet							
1,3-Dichlorobenzene	ND	0.250	mg/kg wet							

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL42003 - 3546										
1,4-Dichlorobenzene	ND	0.250	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.250	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.250	mg/kg wet							
2,4-Dichlorophenol	ND	0.250	mg/kg wet							
2,4-Dimethylphenol	ND	0.250	mg/kg wet							
2,4-Dinitrophenol	ND	1.00	mg/kg wet							
2,4-Dinitrotoluene	ND	0.250	mg/kg wet							
2,6-Dinitrotoluene	ND	0.250	mg/kg wet							
2-Chloronaphthalene	ND	0.250	mg/kg wet							
2-Chlorophenol	ND	0.250	mg/kg wet							
2-Methylnaphthalene	ND	0.250	mg/kg wet							
2-Methylphenol	ND	0.250	mg/kg wet							
2-Nitrophenol	ND	0.500	mg/kg wet							
3,3´-Dichlorobenzidine	ND	0.250	mg/kg wet							
3+4-Methylphenol	ND	0.250	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.250	mg/kg wet							
4-Chloroaniline	ND	0.250	mg/kg wet							
4-Nitrophenol	ND	1.00	mg/kg wet							
Acenaphthene	ND	0.250	mg/kg wet							
Acenaphthylene	ND	0.250	mg/kg wet							
Acetophenone	ND	0.250	mg/kg wet							
Aniline	ND	0.250	mg/kg wet							
Anthracene	ND	0.250	mg/kg wet							
Azobenzene	ND	0.250	mg/kg wet							
Benzo(a)anthracene	ND	0.250	mg/kg wet							
Benzo(a)pyrene	ND	0.250	mg/kg wet							
Benzo(b)fluoranthene	ND	0.250	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.250	mg/kg wet							
Benzo(k)fluoranthene	ND	0.250	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.250	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.250	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.250	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.250	mg/kg wet							
Butylbenzylphthalate	ND	0.250	mg/kg wet							
Chrysene	ND	0.250	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.250	mg/kg wet							
Dibenzofuran	ND	0.250	mg/kg wet							
Diethylphthalate	ND	0.250	mg/kg wet							
Dimethylphthalate	ND	0.250	mg/kg wet							
Di-n-butylphthalate	ND	0.250	mg/kg wet							
Di-n-octylphthalate	ND	0.500	mg/kg wet							
Fluoranthene	ND	0.250	mg/kg wet							
Fluorene	ND	0.250	mg/kg wet							
Hexachlorobenzene	ND	0.250	mg/kg wet							
Hexachlorobutadiene	ND	0.250	mg/kg wet							

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL42003 - 3546										
Hexachloroethane	ND	0.250	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.250	mg/kg wet							
Isophorone	ND	0.250	mg/kg wet							
Naphthalene	ND	0.250	mg/kg wet							
Nitrobenzene	ND	0.250	mg/kg wet							
N-Nitrosodimethylamine	ND	0.250	mg/kg wet							
Pentachlorophenol	ND	1.00	mg/kg wet							
Phenanthrene	ND	0.250	mg/kg wet							
Phenol	ND	0.250	mg/kg wet							
Pyrene	ND	0.250	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	*2.08*		mg/kg wet	*2.500*		*83*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.46*		mg/kg wet	*3.750*		*92*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.52*		mg/kg wet	*3.750*		*94*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.30*		mg/kg wet	*2.500*		*92*	*30-130*			
Surrogate: 2-Fluorophenol	*3.67*		mg/kg wet	*3.750*		*98*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.13*		mg/kg wet	*2.500*		*85*	*30-130*			
Surrogate: Phenol-d6	*3.44*		mg/kg wet	*3.750*		*92*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.86*		mg/kg wet	*2.500*		*114*	*30-130*			
LCS										
1,1-Biphenyl	2.37	0.025	mg/kg wet	2.500		95	40-140			
1,2,4-Trichlorobenzene	1.93	0.250	mg/kg wet	2.500		77	40-140			
1,2-Dichlorobenzene	2.21	0.250	mg/kg wet	2.500		88	40-140			
1,3-Dichlorobenzene	2.30	0.250	mg/kg wet	2.500		92	40-140			
1,4-Dichlorobenzene	2.29	0.250	mg/kg wet	2.500		92	40-140			
2,4,5-Trichlorophenol	2.45	0.250	mg/kg wet	2.500		98	30-130			
2,4,6-Trichlorophenol	2.28	0.250	mg/kg wet	2.500		91	30-130			
2,4-Dichlorophenol	2.07	0.250	mg/kg wet	2.500		83	30-130			
2,4-Dimethylphenol	1.97	0.250	mg/kg wet	2.500		79	30-130			
2,4-Dinitrophenol	2.09	1.00	mg/kg wet	2.500		83	15-140			
2,4-Dinitrotoluene	2.50	0.250	mg/kg wet	2.500		100	40-140			
2,6-Dinitrotoluene	2.46	0.250	mg/kg wet	2.500		98	40-140			
2-Chloronaphthalene	2.30	0.250	mg/kg wet	2.500		92	40-140			
2-Chlorophenol	2.39	0.250	mg/kg wet	2.500		96	30-130			
2-Methylnaphthalene	2.15	0.250	mg/kg wet	2.500		86	40-140			
2-Methylphenol	2.24	0.250	mg/kg wet	2.500		90	15-140			
2-Nitrophenol	2.12	0.500	mg/kg wet	2.500		85	30-130			
3,3´-Dichlorobenzidine	2.25	0.250	mg/kg wet	2.500		90	40-140			
3+4-Methylphenol	4.56	0.250	mg/kg wet	5.000		91	15-140			
4-Bromophenyl-phenylether	2.17	0.250	mg/kg wet	2.500		87	40-140			
4-Chloroaniline	1.75	0.250	mg/kg wet	2.500		70	15-140			
4-Nitrophenol	2.11	1.00	mg/kg wet	2.500		85	15-140			
Acenaphthene	2.36	0.250	mg/kg wet	2.500		94	40-140			
Acenaphthylene	2.33	0.250	mg/kg wet	2.500		93	40-140			
Acetophenone	2.24	0.250	mg/kg wet	2.500		90	40-140			
Aniline	1.78	0.250	mg/kg wet	2.500		71	40-140			

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ESS Laboratory Work Order: 24L0732

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL42003 - 3546										
Anthracene	2.48	0.250	mg/kg wet	2.500		99	40-140			
Azobenzene	2.29	0.250	mg/kg wet	2.500		91	40-140			
Benzo(a)anthracene	2.47	0.250	mg/kg wet	2.500		99	40-140			
Benzo(a)pyrene	2.58	0.250	mg/kg wet	2.500		103	40-140			
Benzo(b)fluoranthene	2.28	0.250	mg/kg wet	2.500		91	40-140			
Benzo(g,h,i)perylene	2.31	0.250	mg/kg wet	2.500		92	40-140			
Benzo(k)fluoranthene	2.45	0.250	mg/kg wet	2.500		98	40-140			
bis(2-Chloroethoxy)methane	2.15	0.250	mg/kg wet	2.500		86	40-140			
bis(2-Chloroethyl)ether	2.06	0.250	mg/kg wet	2.500		82	40-140			
bis(2-chloroisopropyl)Ether	1.95	0.250	mg/kg wet	2.500		78	40-140			
bis(2-Ethylhexyl)phthalate	3.07	0.250	mg/kg wet	2.500		123	40-140			
Butylbenzylphthalate	3.06	0.250	mg/kg wet	2.500		123	40-140			
Chrysene	2.54	0.250	mg/kg wet	2.500		101	40-140			
Dibenzo(a,h)Anthracene	2.43	0.250	mg/kg wet	2.500		97	40-140			
Dibenzofuran	2.26	0.250	mg/kg wet	2.500		90	40-140			
Diethylphthalate	2.55	0.250	mg/kg wet	2.500		102	40-140			
Dimethylphthalate	2.46	0.250	mg/kg wet	2.500		98	15-140			
Di-n-butylphthalate	2.62	0.250	mg/kg wet	2.500		105	40-140			
Di-n-octylphthalate	2.76	0.500	mg/kg wet	2.500		110	40-140			
Fluoranthene	2.33	0.250	mg/kg wet	2.500		93	40-140			
Fluorene	2.28	0.250	mg/kg wet	2.500		91	40-140			
Hexachlorobenzene	2.07	0.250	mg/kg wet	2.500		83	40-140			
Hexachlorobutadiene	1.69	0.250	mg/kg wet	2.500		68	40-140			
Hexachloroethane	2.16	0.250	mg/kg wet	2.500		86	40-140			
Indeno(1,2,3-cd)Pyrene	2.28	0.250	mg/kg wet	2.500		91	40-140			
Isophorone	1.81	0.250	mg/kg wet	2.500		72	40-140			
Naphthalene	1.99	0.250	mg/kg wet	2.500		80	40-140			
Nitrobenzene	1.88	0.250	mg/kg wet	2.500		75	40-140			
N-Nitrosodimethylamine	2.02	0.250	mg/kg wet	2.500		81	40-140			
Pentachlorophenol	1.82	1.00	mg/kg wet	2.500		73	15-140			
Phenanthrene	2.39	0.250	mg/kg wet	2.500		96	40-140			
Phenol	2.29	0.250	mg/kg wet	2.500		92	15-140			
Pyrene	2.80	0.250	mg/kg wet	2.500		112	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*2.26*		mg/kg wet	*2.500*		*91*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.35*		mg/kg wet	*3.750*		*89*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.78*		mg/kg wet	*3.750*		*101*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.45*		mg/kg wet	*2.500*		*98*	*30-130*			
Surrogate: 2-Fluorophenol	*3.87*		mg/kg wet	*3.750*		*103*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.98*		mg/kg wet	*2.500*		*79*	*30-130*			
Surrogate: Phenol-d6	*3.68*		mg/kg wet	*3.750*		*98*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.81*		mg/kg wet	*2.500*		*112*	*30-130*			
LCS Dup										
1,1-Biphenyl	2.35	0.025	mg/kg wet	2.500		94	40-140	1	30	
1,2,4-Trichlorobenzene	1.89	0.250	mg/kg wet	2.500		76	40-140	2	30	
1,2-Dichlorobenzene	2.19	0.250	mg/kg wet	2.500		87	40-140	0.9	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0732

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL42003 - 3546										
1,3-Dichlorobenzene	2.22	0.250	mg/kg wet	2.500		89	40-140	4	30	
1,4-Dichlorobenzene	2.28	0.250	mg/kg wet	2.500		91	40-140	0.4	30	
2,4,5-Trichlorophenol	2.36	0.250	mg/kg wet	2.500		94	30-130	4	30	
2,4,6-Trichlorophenol	2.20	0.250	mg/kg wet	2.500		88	30-130	3	30	
2,4-Dichlorophenol	1.95	0.250	mg/kg wet	2.500		78	30-130	6	30	
2,4-Dimethylphenol	1.85	0.250	mg/kg wet	2.500		74	30-130	6	30	
2,4-Dinitrophenol	2.05	1.00	mg/kg wet	2.500		82	15-140	2	30	
2,4-Dinitrotoluene	2.45	0.250	mg/kg wet	2.500		98	40-140	2	30	
2,6-Dinitrotoluene	2.38	0.250	mg/kg wet	2.500		95	40-140	3	30	
2-Chloronaphthalene	2.23	0.250	mg/kg wet	2.500		89	40-140	3	30	
2-Chlorophenol	2.31	0.250	mg/kg wet	2.500		93	30-130	3	30	
2-Methylnaphthalene	2.12	0.250	mg/kg wet	2.500		85	40-140	1	30	
2-Methylphenol	2.22	0.250	mg/kg wet	2.500		89	15-140	1	30	
2-Nitrophenol	2.08	0.500	mg/kg wet	2.500		83	30-130	2	30	
3,3´-Dichlorobenzidine	2.12	0.250	mg/kg wet	2.500		85	40-140	6	30	
3+4-Methylphenol	4.38	0.250	mg/kg wet	5.000		88	15-140	4	30	
4-Bromophenyl-phenylether	2.17	0.250	mg/kg wet	2.500		87	40-140	0.09	30	
4-Chloroaniline	1.81	0.250	mg/kg wet	2.500		72	15-140	4	30	
4-Nitrophenol	2.13	1.00	mg/kg wet	2.500		85	15-140	0.8	30	
Acenaphthene	2.34	0.250	mg/kg wet	2.500		93	40-140	0.9	30	
Acenaphthylene	2.33	0.250	mg/kg wet	2.500		93	40-140	0.4	30	
Acetophenone	2.17	0.250	mg/kg wet	2.500		87	40-140	3	30	
Aniline	1.66	0.250	mg/kg wet	2.500		66	40-140	7	30	
Anthracene	2.40	0.250	mg/kg wet	2.500		96	40-140	3	30	
Azobenzene	2.19	0.250	mg/kg wet	2.500		88	40-140	4	30	
Benzo(a)anthracene	2.33	0.250	mg/kg wet	2.500		93	40-140	6	30	
Benzo(a)pyrene	2.45	0.250	mg/kg wet	2.500		98	40-140	5	30	
Benzo(b)fluoranthene	2.13	0.250	mg/kg wet	2.500		85	40-140	7	30	
Benzo(g,h,i)perylene	2.18	0.250	mg/kg wet	2.500		87	40-140	6	30	
Benzo(k)fluoranthene	2.33	0.250	mg/kg wet	2.500		93	40-140	5	30	
bis(2-Chloroethoxy)methane	2.09	0.250	mg/kg wet	2.500		84	40-140	3	30	
bis(2-Chloroethyl)ether	2.00	0.250	mg/kg wet	2.500		80	40-140	3	30	
bis(2-chloroisopropyl)Ether	2.01	0.250	mg/kg wet	2.500		80	40-140	3	30	
bis(2-Ethylhexyl)phthalate	2.87	0.250	mg/kg wet	2.500		115	40-140	7	30	
Butylbenzylphthalate	2.93	0.250	mg/kg wet	2.500		117	40-140	4	30	
Chrysene	2.40	0.250	mg/kg wet	2.500		96	40-140	5	30	
Dibenzo(a,h)Anthracene	2.27	0.250	mg/kg wet	2.500		91	40-140	7	30	
Dibenzofuran	2.22	0.250	mg/kg wet	2.500		89	40-140	2	30	
Diethylphthalate	2.45	0.250	mg/kg wet	2.500		98	40-140	4	30	
Dimethylphthalate	2.38	0.250	mg/kg wet	2.500		95	15-140	3	30	
Di-n-butylphthalate	2.54	0.250	mg/kg wet	2.500		101	40-140	3	30	
Di-n-octylphthalate	2.60	0.500	mg/kg wet	2.500		104	40-140	6	30	
Fluoranthene	2.25	0.250	mg/kg wet	2.500		90	40-140	4	30	
Fluorene	2.22	0.250	mg/kg wet	2.500		89	40-140	3	30	
Hexachlorobenzene	2.01	0.250	mg/kg wet	2.500		81	40-140	3	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0732

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL42003 - 3546										
Hexachlorobutadiene	1.73	0.250	mg/kg wet	2.500		69	40-140	2	30	
Hexachloroethane	2.13	0.250	mg/kg wet	2.500		85	40-140	1	30	
Indeno(1,2,3-cd)Pyrene	2.12	0.250	mg/kg wet	2.500		85	40-140	7	30	
Isophorone	1.76	0.250	mg/kg wet	2.500		70	40-140	3	30	
Naphthalene	1.98	0.250	mg/kg wet	2.500		79	40-140	0.8	30	
Nitrobenzene	1.94	0.250	mg/kg wet	2.500		77	40-140	3	30	
N-Nitrosodimethylamine	2.03	0.250	mg/kg wet	2.500		81	40-140	0.4	30	
Pentachlorophenol	1.77	1.00	mg/kg wet	2.500		71	15-140	3	30	
Phenanthrene	2.31	0.250	mg/kg wet	2.500		92	40-140	3	30	
Phenol	2.19	0.250	mg/kg wet	2.500		88	15-140	4	30	
Pyrene	2.68	0.250	mg/kg wet	2.500		107	40-140	4	30	
Surrogate: 1,2-Dichlorobenzene-d4	*2.18*		mg/kg wet	*2.500*		*87*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.13*		mg/kg wet	*3.750*		*84*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.66*		mg/kg wet	*3.750*		*97*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.35*		mg/kg wet	*2.500*		*94*	*30-130*			
Surrogate: 2-Fluorophenol	*3.80*		mg/kg wet	*3.750*		*101*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.94*		mg/kg wet	*2.500*		*78*	*30-130*			
Surrogate: Phenol-d6	*3.52*		mg/kg wet	*3.750*		*94*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.63*		mg/kg wet	*2.500*		*105*	*30-130*			
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL42001 - 3546										
Blank										
C19-C36 Aliphatics1	ND	10.0	mg/kg wet							
C9-C18 Aliphatics1	ND	10.0	mg/kg wet							
Surrogate: 1-Chlorooctadecane	*1.77*		mg/kg wet	*2.000*		*88*	*40-140*			
Blank										
2-Methylnaphthalene	ND	0.20	mg/kg wet							
Acenaphthene	ND	0.40	mg/kg wet							
Acenaphthylene	ND	0.20	mg/kg wet							
Anthracene	ND	0.40	mg/kg wet							
Benzo(a)anthracene	ND	0.40	mg/kg wet							
Benzo(a)pyrene	ND	0.40	mg/kg wet							
Benzo(b)fluoranthene	ND	0.40	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet							
Benzo(k)fluoranthene	ND	0.40	mg/kg wet							
C11-C22 Unadjusted Aromatics1	ND	10.0	mg/kg wet							
Chrysene	ND	0.40	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet							
Fluoranthene	ND	0.40	mg/kg wet							
Fluorene	ND	0.40	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet							
Naphthalene	ND	0.40	mg/kg wet							
Phenanthrene	ND	0.40	mg/kg wet							
Pyrene	ND	0.40	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0732

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL42001 - 3546										
Surrogate: 2-Bromonaphthalene	*1.98*		mg/kg wet	*2.000*		*99*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.83*		mg/kg wet	*2.000*		*92*	*40-140*			
Surrogate: O-Terphenyl	*2.32*		mg/kg wet	*2.000*		*116*	*40-140*			
LCS										
C19-C36 Aliphatics1	12.9	10.0	mg/kg wet	16.00		81	40-140			
C9-C18 Aliphatics1	9.4	10.0	mg/kg wet	12.00		79	40-140			
Surrogate: 1-Chlorooctadecane	*1.78*		mg/kg wet	*2.000*		*89*	*40-140*			
LCS										
2-Methylnaphthalene	1.40	0.20	mg/kg wet	2.000		70	40-140			
Acenaphthene	1.58	0.40	mg/kg wet	2.000		79	40-140			
Acenaphthylene	1.58	0.20	mg/kg wet	2.000		79	40-140			
Anthracene	2.02	0.40	mg/kg wet	2.000		101	40-140			
Benzo(a)anthracene	2.22	0.40	mg/kg wet	2.000		111	40-140			
Benzo(a)pyrene	2.30	0.40	mg/kg wet	2.000		115	40-140			
Benzo(b)fluoranthene	2.36	0.40	mg/kg wet	2.000		118	40-140			
Benzo(g,h,i)perylene	2.18	0.40	mg/kg wet	2.000		109	40-140			
Benzo(k)fluoranthene	1.83	0.40	mg/kg wet	2.000		92	40-140			
C11-C22 Unadjusted Aromatics1	31.8	10.0	mg/kg wet	34.00		94	40-140			
Chrysene	1.97	0.40	mg/kg wet	2.000		99	40-140			
Dibenzo(a,h)Anthracene	2.13	0.20	mg/kg wet	2.000		107	40-140			
Fluoranthene	1.92	0.40	mg/kg wet	2.000		96	40-140			
Fluorene	1.69	0.40	mg/kg wet	2.000		85	40-140			
Indeno(1,2,3-cd)Pyrene	2.08	0.40	mg/kg wet	2.000		104	40-140			
Naphthalene	1.36	0.40	mg/kg wet	2.000		68	40-140			
Phenanthrene	1.82	0.40	mg/kg wet	2.000		91	40-140			
Pyrene	1.87	0.40	mg/kg wet	2.000		94	40-140			
Surrogate: 2-Bromonaphthalene	*2.01*		mg/kg wet	*2.000*		*100*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.87*		mg/kg wet	*2.000*		*94*	*40-140*			
Surrogate: O-Terphenyl	*2.42*		mg/kg wet	*2.000*		*121*	*40-140*			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS Dup										
C19-C36 Aliphatics1	13.2	10.0	mg/kg wet	16.00		82	40-140	2	25	
C9-C18 Aliphatics1	9.5	10.0	mg/kg wet	12.00		80	40-140	1	25	
Surrogate: 1-Chlorooctadecane	*1.78*		mg/kg wet	*2.000*		*89*	*40-140*			
LCS Dup										
2-Methylnaphthalene	1.32	0.20	mg/kg wet	2.000		66	40-140	6	30	
Acenaphthene	1.49	0.40	mg/kg wet	2.000		75	40-140	6	30	
Acenaphthylene	1.51	0.20	mg/kg wet	2.000		75	40-140	5	30	
Anthracene	1.93	0.40	mg/kg wet	2.000		96	40-140	5	30	
Benzo(a)anthracene	2.14	0.40	mg/kg wet	2.000		107	40-140	4	30	
Benzo(a)pyrene	2.19	0.40	mg/kg wet	2.000		110	40-140	5	30	
Benzo(b)fluoranthene	2.08	0.40	mg/kg wet	2.000		104	40-140	13	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0732

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL42001 - 3546										
Benzo(g,h,i)perylene	2.06	0.40	mg/kg wet	2.000		103	40-140	6	30	
Benzo(k)fluoranthene	1.94	0.40	mg/kg wet	2.000		97	40-140	6	30	
C11-C22 Unadjusted Aromatics1	30.2	10.0	mg/kg wet	34.00		89	40-140	5	25	
Chrysene	1.89	0.40	mg/kg wet	2.000		94	40-140	5	30	
Dibenzo(a,h)Anthracene	2.04	0.20	mg/kg wet	2.000		102	40-140	4	30	
Fluoranthene	1.83	0.40	mg/kg wet	2.000		92	40-140	4	30	
Fluorene	1.64	0.40	mg/kg wet	2.000		82	40-140	3	30	
Indeno(1,2,3-cd)Pyrene	2.05	0.40	mg/kg wet	2.000		102	40-140	2	30	
Naphthalene	1.31	0.40	mg/kg wet	2.000		66	40-140	3	30	
Phenanthrene	1.68	0.40	mg/kg wet	2.000		84	40-140	8	30	
Pyrene	1.81	0.40	mg/kg wet	2.000		91	40-140	3	30	
Surrogate: 2-Bromonaphthalene	*1.90*		mg/kg wet	*2.000*		*95*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.75*		mg/kg wet	*2.000*		*87*	*40-140*			
Surrogate: O-Terphenyl	*2.30*		mg/kg wet	*2.000*		*115*	*40-140*			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	
8082A Polychlorinated Biphenyls (PCB)										
Batch DL41902 - 3540C										
Blank										
Aroclor 1016	ND	0.02	mg/kg wet							
Aroclor 1016 [2C]	ND	0.02	mg/kg wet							
Aroclor 1221	ND	0.02	mg/kg wet							
Aroclor 1221 [2C]	ND	0.02	mg/kg wet							
Aroclor 1232	ND	0.02	mg/kg wet							
Aroclor 1232 [2C]	ND	0.02	mg/kg wet							
Aroclor 1242	ND	0.02	mg/kg wet							
Aroclor 1242 [2C]	ND	0.02	mg/kg wet							
Aroclor 1248	ND	0.02	mg/kg wet							
Aroclor 1248 [2C]	ND	0.02	mg/kg wet							
Aroclor 1254	ND	0.02	mg/kg wet							
Aroclor 1254 [2C]	ND	0.02	mg/kg wet							
Aroclor 1260	ND	0.02	mg/kg wet							
Aroclor 1260 [2C]	ND	0.02	mg/kg wet							
Aroclor 1262	ND	0.02	mg/kg wet							
Aroclor 1262 [2C]	ND	0.02	mg/kg wet							
Aroclor 1268	ND	0.02	mg/kg wet							
Aroclor 1268 [2C]	ND	0.02	mg/kg wet							
Surrogate: Decachlorobiphenyl	*0.0204*		mg/kg wet	*0.02500*		*82*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0215*		mg/kg wet	*0.02500*		*86*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0215*		mg/kg wet	*0.02500*		*86*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0236*		mg/kg wet	*0.02500*		*94*	*30-150*			
LCS										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		87	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0732

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082A Polychlorinated Biphenyls (PCB)										
Batch DL41902 - 3540C										
Aroclor 1016 [2C]	0.5	0.05	mg/kg wet	0.5000		92	40-140			
Aroclor 1260	0.5	0.05	mg/kg wet	0.5000		92	40-140			
Aroclor 1260 [2C]	0.5	0.05	mg/kg wet	0.5000		94	40-140			
Surrogate: Decachlorobiphenyl	*0.0202*		mg/kg wet	*0.02500*		*81*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0210*		mg/kg wet	*0.02500*		*84*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0225*		mg/kg wet	*0.02500*		*90*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0232*		mg/kg wet	*0.02500*		*93*	*30-150*			
LCS Dup										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		89	40-140	2	30	
Aroclor 1016 [2C]	0.5	0.05	mg/kg wet	0.5000		94	40-140	2	30	
Aroclor 1260	0.5	0.05	mg/kg wet	0.5000		94	40-140	2	30	
Aroclor 1260 [2C]	0.5	0.05	mg/kg wet	0.5000		96	40-140	2	30	
Surrogate: Decachlorobiphenyl	*0.0200*		mg/kg wet	*0.02500*		*80*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0209*		mg/kg wet	*0.02500*		*84*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0225*		mg/kg wet	*0.02500*		*90*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0232*		mg/kg wet	*0.02500*		*93*	*30-150*			
Classical Chemistry										
Batch DL41860 - General Preparation										
Blank										
Reactive Cyanide	ND	2.0	mg/kg							
Reactive Sulfide	ND	2.0	mg/kg							
LCS										
Reactive Cyanide	4.2	2.0	mg/kg	100.3		4	0.68-5.41			
Reactive Sulfide	2.2	2.0	mg/kg	10.00		22	0-44			
Batch DL42020 - General Preparation										
Reference										
Flashpoint	80		°F	81.00		99	97.9-102.1			
Batch DL42041 - General Preparation										
Blank										
Conductivity	ND	5	umhos/cm							
LCS										
Conductivity	1320		umhos/cm	1410		94	90-110			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0732

Notes and Definitions

Z-04	MeOH - covered
WL	Results obtained from a deionized water leach of the sample.
U	Analyte included in the analysis, but not detected
Q	Calibration required quadratic regression (Q).
ICV+	Initial Calibration Verification recovery is above upper control limit (ICV+).
ICV-	Initial Calibration Verification recovery is below lower control limit (ICV-).
EL	Elevated Method Reporting Limits due to sample matrix (EL).
D	Diluted.
CD+	Continuing Calibration %Diff/Drift is above control limit (CD+).
CD-	Continuing Calibration %Diff/Drift is below control limit (CD-).
BT	Benzidine tailing factor >2.
>	Greater than.
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0732

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB

Shipped/Delivered Via: ESS Courier

ESS Project ID: 24L0732
Date Received: 12/19/2024
Project Due Date: 12/27/2024
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 2.7 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** (Yes) / No / NA
10. Were any analyses received outside of hold time? Yes / (No)

11. Any Subcontracting needed? Yes / (No)
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? (Yes) / No
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? (Yes) / No / NA
13. Are the samples properly preserved? (Yes) / No
    a. If metals preserved upon receipt: Date: Time: By/Acid Lot#:
    b. If dissolved metals are requested, are they: Yes / No Field Filtered
    c. Low Level VOA vials frozen: Date: 12/19/24 Time: 1749 By: TD

Yes / No To Be Lab Filtered

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / (No)
    a. Was there a need to contact the client? Yes / No
    Who was contacted? Date: Time: By:

Resolution:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	627464	Yes	N/A	Yes	VOA Vial	MeOH	
1	627465	Yes	N/A	Yes	VOA Vial	MeOH	
1	627466	Yes	N/A	Yes	VOA Vial	DI Water	
1	627467	Yes	N/A	Yes	VOA Vial	DI Water	
1	627468	Yes	N/A	Yes	8 oz jar	NP	
1	627469	Yes	N/A	Yes	4 oz. Jar	NP	

2nd Review

Were all containers scanned into storage/lab? Initials MC
Are barcode labels on correct containers? (Yes) / No
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA
Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: Date & Time: 12/19/24 1647
Reviewed By: Date & Time: 12/19/24 1749

Chain-of-Custody Record

Laboratory:

Laboratory Job # (Lab use only) 2410732

GEI Consultants
400 Unicorn Park Drive
Woburn, MA 01801
PH: 781.721.4000

Project Information

Project Name: Drain Line Borings

Project Number: 2300422.1.2.4.1

Project Location: Needham, Massachusetts

Project Manager: Jeanne Lefebvre + Adam Grossman

JLefebvre@geiconsultants.com + AGROSSMAN@GEICONSULTANTS.com

Page 1 of 1

Send Report to:

labdata@geiconsultants.com + AGROSSMAN@GEICONSULTANTS.com

JLefebvre@geiconsultants.com

MCP PRESUMPTIVE CERTAINTY AND MCP ANALYTICAL METHODS REQUIRED: (YES) NO

STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS

State/Federal Program: (MA) 401WQC Other _____ NH RI CT NY ME

MA MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if GW-1 is required.

Lab Sample Number	GEI Sample ID	Collection Date	Collection Time	Matrix	No. of Bottles	Sampler(s) Initials	Preservative	VOCs via EPA 8260D	SVOCs via EPA 8270D	VPH/EPH (Carbon Fractions Only)	Total MCP 14 Metals	PCBs via EPA 8082A	Conductivity via EPA 9050A	Corrosivity via EPA 9045	Ignitability via EPA 1010A	Reactivity via EPA 7.3.3.2 and 7.3.4.1	TCLP*	Sample Specific Remarks
							MeOH/DI H_2O	None	None	None	None	None	None	None	None	None		
1	B-GSS-464-14.0	12/18/2024	930	SO	6	EW		X	X	X	X	X	X	X	X	X	X	

Sample Handling

Samples Field Filtered: YES NO (NA)

Sampled Shipped With Ice: (YES) NO

Relinquished by sampler: (signature)	Date:	Time:	Received by: (signature)
1.	12/19/24	915	1.
2.	12/19/24	14:05	2.
3.	12/19/24	16:20	3.
4.			4.
5.			5.

Turnaround Time (Business days):

5-Day __X__ 4-Day _____ 3-Day _____

2-Day _____ 1-Day _____ Other _____

Before submitting rush turnaround samples, you **must** notify the laboratory to confirm that the TAT can be achieved.

Additional Requirements/Comments/Remarks:

*Run TCLP if 20x rule has been exceeded.

2.7 IQ

Sample Matrix Abbreviations: SO = Soil GW = Groundwater SW = Surface Water SD = Sediment CO = Concrete PC = Paint Chip CLK = Caulk

CERTIFICATE OF ANALYSIS

Jeanne Lefebvre
GEI Consultants, Inc.
400 Unicorn Park Drive
Woburn, MA 01801

RE: Drain Line Borings (2300422.1.2.4.1)
ESS Laboratory Work Order Number: 24L0733

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 7:54 pm, Dec 27, 2024

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0733

SAMPLE RECEIPT

The following samples were received on December 19, 2024 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Low Level VOA vials were frozen by ESS Laboratory on December 19, 2024 at 17:50.
Tetrahydrofuran is reported above the MA CAM reporting limit of 0.010 mg/kg.

Lab Number	Sample Name	Matrix	Analysis
24L0733-01	B-GSS-461-16.0-18.0	Soil	1010A, 2550B, 6010D, 6020B, 7.3.3.2, 7.3.4.1, 7471B, 8082A, 8260D Low, 8270E, 9045, 9050A, EPH8270, MADEP-EPH, MA-VPH-2.1

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0733

PROJECT NARRATIVE

Semi-Volatile Organic Compounds

D4L0414-CCV1	**Calibration required quadratic regression (Q).**
	2,4-Dinitrophenol (77% @ 40-160%)
D4L0414-CCV1	**Continuing Calibration %Diff/Drift is above control limit (CD+).**
	2,4,5-Trichlorophenol (22% @ 20%)
D4L0414-CCV1	**Continuing Calibration %Diff/Drift is below control limit (CD-).**
	Pyridine (23% @ 20%)
D4L0414-CCV1	**Initial Calibration Verification recovery is above upper control limit (ICV+).**
	Pyridine
D4L0414-CCV1	**Initial Calibration Verification recovery is below lower control limit (ICV-).**
	Aniline
D4L0414-TUN1	**Benzidine tailing factor >2.**
D4L0422-CCV1	**Calibration required quadratic regression (Q).**
	2,4-Dinitrophenol (93% @ 40-160%)
D4L0422-CCV1	**Continuing Calibration %Diff/Drift is above control limit (CD+).**
	bis(2-Ethylhexyl)phthalate (28% @ 20%), Butylbenzylphthalate (31% @ 20%)
D4L0422-CCV1	**Initial Calibration Verification recovery is below lower control limit (ICV-).**
	Aniline

Total Metals

24L0733-01	**Elevated Method Reporting Limits due to sample matrix (EL).**
	Arsenic

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0733

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010D - ICP
6020B - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260D - VOA
8270E - SVOA
8270E SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 19-2.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0733

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **24L0733-01**

Matrices: ( ) Ground Water/Surface Water (x) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other:_____

CAM Protocol (check all that apply below):

(x) 8260 VOC CAM II A	(x) 7470/7471 Hg CAM III B	(x) MassDEP VPH (GC/PID/FID) CAM IV A	(x) 8082 PCB CAM V A	( ) 9014 Total Cyanide/PAC CAM VI A	( ) 6860 Perchlorate CAM VIII B
(x) 8270 SVOC CAM II B	( ) 7010 Metals CAM III C	( ) MassDEP VPH (GC/MS) CAM IV C	( ) 8081 Pesticides CAM V B	( ) 7196 Hex Cr CAM VI B	( ) MassDEP APH CAM IX A
(x) 6010 Metals CAM III A	(x) 6020 Metals CAM III D	(x) MassDEP EPH CAM IV B	( ) 8151 Herbicides CAM V C	( ) Explosives CAM VIII A	( ) TO-15 VOC CAM IX B

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (x) No ( )
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (x) No ( )
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (x) No ( )
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (x) No ( )
E	VPH, EPH, APH and TO-15 only: a. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes (x) No ( )
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ( ) No ( )
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (x) No ( )

Responses to Questions G, H and I below are required for '"Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)? ***Data User Note:*** ***Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.***	Yes ( ) No (x)*
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes ( ) No (x)*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes (x) No ( )*

****All negative responses must be addressed in an attached laboratory narrative.***

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: _____ Date: December 27, 2024
Printed Name: Laurel Stoddard Position: Laboratory Director

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-16.0-18.0
Date Sampled: 12/19/24 10:30
Percent Solids: 87

ESS Laboratory Work Order: 24L0733
ESS Laboratory Sample ID: 24L0733-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Antimony	ND (5.64)	---	6010D	---	1	KJB	12/20/24 16:17	2.03 100	DL42017
Arsenic	**EL** ND (2.82)	---	6010D	---	1	KJB	12/20/24 16:17	2.03 100	DL42017
Barium	**75.9** (1.13)	---	6010D	---	1	KJB	12/20/24 16:17	2.03 100	DL42017
Beryllium	**0.34** (0.11)	---	6010D	---	1	KJB	12/20/24 16:17	2.03 100	DL42017
Cadmium	ND (0.56)	---	6010D	---	1	KJB	12/20/24 16:17	2.03 100	DL42017
Chromium	**11.5** (1.13)	---	6010D	---	1	KJB	12/20/24 16:17	2.03 100	DL42017
Lead	ND (5.64)	---	6010D	---	1	KJB	12/20/24 16:17	2.03 100	DL42017
Mercury	ND (0.035)	---	7471B	---	1	AFV	12/20/24 21:07	0.65 40	DL42018
Nickel	**13.9** (1.13)	---	6010D	---	1	KJB	12/20/24 16:17	2.03 100	DL42017
Selenium	ND (5.64)	---	6010D	---	1	KJB	12/20/24 16:17	2.03 100	DL42017
Silver	ND (0.56)	---	6010D	---	1	KJB	12/20/24 16:17	2.03 100	DL42017
Thallium	ND (2.26)	---	6020B	---	20	BJV	12/23/24 12:52	2.03 100	DL42017
Vanadium	**29.7** (1.13)	---	6010D	---	1	KJB	12/20/24 16:17	2.03 100	DL42017
Zinc	**52.1** (2.82)	---	6010D	---	1	KJB	12/20/24 16:17	2.03 100	DL42017

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-16.0-18.0
Date Sampled: 12/19/24 10:30
Percent Solids: 87
Initial Volume: 3.3g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0733
ESS Laboratory Sample ID: 24L0733-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/20/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,1,1-Trichloroethane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,1,2,2-Tetrachloroethane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,1,2-Trichloroethane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,1-Dichloroethane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,1-Dichloroethene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,1-Dichloropropene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,2,3-Trichlorobenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,2,3-Trichloropropane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,2,4-Trichlorobenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,2,4-Trimethylbenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,2-Dibromo-3-Chloropropane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,2-Dibromoethane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,2-Dichlorobenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,2-Dichloroethane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,2-Dichloropropane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,3,5-Trimethylbenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,3-Dichlorobenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,3-Dichloropropane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,4-Dichlorobenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
1,4-Dioxane	ND (0.174)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
2,2-Dichloropropane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
2-Butanone	ND (0.0868)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
2-Chlorotoluene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
2-Hexanone	ND (0.0868)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
4-Chlorotoluene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
4-Isopropyltoluene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-16.0-18.0
Date Sampled: 12/19/24 10:30
Percent Solids: 87
Initial Volume: 3.3g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0733
ESS Laboratory Sample ID: 24L0733-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/20/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0868)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Acetone	ND (0.0868)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Benzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Bromobenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Bromochloromethane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Bromodichloromethane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Bromoform	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Bromomethane	ND (0.0174)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Carbon Disulfide	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Carbon Tetrachloride	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Chlorobenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Chloroethane	ND (0.0174)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Chloroform	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Chloromethane	ND (0.0174)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
cis-1,2-Dichloroethene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
cis-1,3-Dichloropropene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Dibromochloromethane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Dibromomethane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Dichlorodifluoromethane	ND (0.0174)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Diethyl Ether	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Di-isopropyl ether	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Ethyl tertiary-butyl ether	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Ethylbenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Hexachlorobutadiene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Isopropylbenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Methyl tert-Butyl Ether	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Methylene Chloride	ND (0.0434)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-16.0-18.0
Date Sampled: 12/19/24 10:30
Percent Solids: 87
Initial Volume: 3.3g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 24L0733
ESS Laboratory Sample ID: 24L0733-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Prepared: 12/20/24 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
n-Butylbenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
n-Propylbenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
sec-Butylbenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Styrene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
tert-Butylbenzene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Tertiary-amyl methyl ether	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Tetrachloroethene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Tetrahydrofuran	ND (0.0347)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Toluene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
trans-1,2-Dichloroethene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
trans-1,3-Dichloropropene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Trichloroethene	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Trichlorofluoromethane	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Vinyl Chloride	ND (0.0174)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Xylene O	ND (0.0087)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Xylene P,M	ND (0.0174)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025
Xylenes (Total)	ND (0.0174)	---	8260D Low	---	1	MEK	12/20/24 11:22	D4L0417	DL42025

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*113 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*89 %*		*70-130*
Surrogate: Dibromofluoromethane	*106 %*		*70-130*
Surrogate: Toluene-d8	*99 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-16.0-18.0
Date Sampled: 12/19/24 10:30
Percent Solids: 87
Initial Volume: 14.8g
Final Volume: 15ml
Extraction Method: 5030B
Column Type: Restek RTX-502.2 - 3µ film thickness 0.53mm X 105m

ESS Laboratory Work Order: 24L0733
ESS Laboratory Sample ID: 24L0733-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: MEK
Trap Type: Supelco K Vocarb 3000 Trap

MADEP-VPH Volatile Petroleum Hydrocarbon

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
C9-C10 Aromatics	ND (13.1)	---	MA-VPH-2.1	---	1	12/20/24 8:08	D4L0384	DL41928
C5-C8 Aliphatics1,2	ND (13.7)	---	MA-VPH-2.1	---	1	12/20/24 8:08	---	[CALC]
C9-C12 Aliphatics2,3	ND (27.2)	---	MA-VPH-2.1	---	1	12/20/24 8:08	---	[CALC]
1:1 Methanol/Soil Ratio %D	**1** (N/A)		MA-VPH-2.1			12/19/24 10:30		DL41928
Preservative:	**MeOH - covered**		MA-VPH-2.1					DL41928

	%Recovery	Qualifier	Limits
Surrogate: 2,5-Dibromotoluene - FID	*87 %*		*70-130*
Surrogate: 2,5-Dibromotoluene - PID	*88 %*		*70-130*
Surrogate: Trifluorotoluene - FID	*98 %*		*70-130*
Surrogate: Trifluorotoluene - PID	*96 %*		*70-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-16.0-18.0
Date Sampled: 12/19/24 10:30
Percent Solids: 87
Initial Volume: 20.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0733
ESS Laboratory Sample ID: 24L0733-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/20/24 10:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.028)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
1,2,4-Trichlorobenzene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
1,2-Dichlorobenzene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
1,3-Dichlorobenzene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
1,4-Dichlorobenzene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
2,4,5-Trichlorophenol	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
2,4,6-Trichlorophenol	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
2,4-Dichlorophenol	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
2,4-Dimethylphenol	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
2,4-Dinitrophenol	ND (1.13)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
2,4-Dinitrotoluene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
2,6-Dinitrotoluene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
2-Chloronaphthalene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
2-Chlorophenol	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
2-Methylnaphthalene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
2-Methylphenol	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
2-Nitrophenol	ND (0.567)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
3,3´-Dichlorobenzidine	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
3+4-Methylphenol	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
4-Bromophenyl-phenylether	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
4-Chloroaniline	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
4-Nitrophenol	ND (1.13)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Acenaphthene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Acenaphthylene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Acetophenone	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Aniline	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Anthracene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-16.0-18.0
Date Sampled: 12/19/24 10:30
Percent Solids: 87
Initial Volume: 20.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0733
ESS Laboratory Sample ID: 24L0733-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/20/24 10:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Benzo(a)anthracene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Benzo(a)pyrene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Benzo(b)fluoranthene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Benzo(g,h,i)perylene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Benzo(k)fluoranthene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
bis(2-Chloroethoxy)methane	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
bis(2-Chloroethyl)ether	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
bis(2-chloroisopropyl)Ether	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
bis(2-Ethylhexyl)phthalate	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Butylbenzylphthalate	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Chrysene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Dibenzo(a,h)Anthracene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Dibenzofuran	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Diethylphthalate	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Dimethylphthalate	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Di-n-butylphthalate	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Di-n-octylphthalate	ND (0.567)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Fluoranthene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Fluorene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Hexachlorobenzene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Hexachlorobutadiene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Hexachloroethane	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Indeno(1,2,3-cd)Pyrene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Isophorone	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Naphthalene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Nitrobenzene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-16.0-18.0
Date Sampled: 12/19/24 10:30
Percent Solids: 87
Initial Volume: 20.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0733
ESS Laboratory Sample ID: 24L0733-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: TJ
Prepared: 12/20/24 10:15

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Pentachlorophenol	ND (1.13)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Phenanthrene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Phenol	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003
Pyrene	ND (0.284)	---	8270E	---	1	TJ	12/21/24 4:26	D4L0414	DL42003

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*91 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*84 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*90 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*86 %*		*30-130*
Surrogate: 2-Fluorophenol	*76 %*		*30-130*
Surrogate: Nitrobenzene-d5	*76 %*		*30-130*
Surrogate: Phenol-d6	*87 %*		*30-130*
Surrogate: p-Terphenyl-d14	*111 %*		*30-130*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-16.0-18.0
Date Sampled: 12/19/24 10:30
Percent Solids: 87
Initial Volume: 24g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 24L0733
ESS Laboratory Sample ID: 24L0733-01
Sample Matrix: Soil
Units: mg/kg dry

Prepared: 12/20/24 10:25

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (11.9)	---	MADEP-EPH	---	1	JDN	12/23/24 20:11	D4L0448	DL42001
C19-C36 Aliphatics1	ND (11.9)	---	MADEP-EPH	---	1	JDN	12/23/24 20:11	D4L0448	DL42001
C11-C22 Unadjusted Aromatics1	ND (11.9)	---	EPH8270	---	1	IBM	12/23/24 19:16	D4L0434	DL42001
C11-C22 Aromatics1,2	ND (11.9)	---	EPH8270	---		IBM	12/23/24 19:16	---	[CALC]

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*77 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*98 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*97 %*		*40-140*
Surrogate: O-Terphenyl	*115 %*		*40-140*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-16.0-18.0
Date Sampled: 12/19/24 10:30
Percent Solids: 87
Initial Volume: 19.7g
Final Volume: 10ml
Extraction Method: 3540C

ESS Laboratory Work Order: 24L0733
ESS Laboratory Sample ID: 24L0733-01
Sample Matrix: Soil
Units: mg/kg dry
Analyst: JLG
Prepared: 12/20/24 10:50

8082A Polychlorinated Biphenyls (PCB)

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Aroclor 1016	ND (0.06)	---	8082A	---	1	12/23/24 14:50	---	DL41902
Aroclor 1221	ND (0.06)	---	8082A	---	1	12/23/24 14:50	---	DL41902
Aroclor 1232	ND (0.06)	---	8082A	---	1	12/23/24 14:50	---	DL41902
Aroclor 1242	ND (0.06)	---	8082A	---	1	12/23/24 14:50	---	DL41902
Aroclor 1248	ND (0.06)	---	8082A	---	1	12/23/24 14:50	---	DL41902
Aroclor 1254	ND (0.06)	---	8082A	---	1	12/23/24 14:50	---	DL41902
Aroclor 1260	ND (0.06)	---	8082A	---	1	12/23/24 14:50	---	DL41902
Aroclor 1262	ND (0.06)	---	8082A	---	1	12/23/24 14:50	---	DL41902
Aroclor 1268	ND (0.06)	---	8082A	---	1	12/23/24 14:50	---	DL41902

	%Recovery	*Qualifier*	*Limits*
Surrogate: Decachlorobiphenyl	*71 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*79 %*		*30-150*

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings
Client Sample ID: B-GSS-461-16.0-18.0
Date Sampled: 12/19/24 10:30
Percent Solids: 87

ESS Laboratory Work Order: 24L0733
ESS Laboratory Sample ID: 24L0733-01
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 103** (5)	---	9050A	---	1	CCP	12/20/24 18:30	umhos/cm	DL42041
Corrosivity (pH)	**6.40** (N/A)	---	9045	---	1	JLK	12/19/24 20:10	S.U.	DL41947
Corrosivity (pH) Sample Temp	**20.3**	---	2550B	---	1	JLK	12/19/24 20:10	°C	DL41947
Flashpoint	**> 200** (N/A)	---	1010A	---	1	LAB	12/20/24 11:54	°F	DL42020
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	12/19/24 19:03	mg/kg	DL41860
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	12/19/24 19:03	mg/kg	DL41860

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0733

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DL42017 - 3050B										
Blank										
Antimony	ND	4.98	mg/kg wet							
Arsenic	ND	2.49	mg/kg wet							
Barium	ND	1.00	mg/kg wet							
Beryllium	ND	0.10	mg/kg wet							
Cadmium	ND	0.50	mg/kg wet							
Chromium	ND	1.00	mg/kg wet							
Lead	ND	4.98	mg/kg wet							
Nickel	ND	1.00	mg/kg wet							
Selenium	ND	4.98	mg/kg wet							
Silver	ND	0.50	mg/kg wet							
Vanadium	ND	1.00	mg/kg wet							
Zinc	ND	2.49	mg/kg wet							
Blank										
Thallium	ND	2.00	mg/kg wet							
LCS										
Antimony	74.6	15.9	mg/kg wet	245.0		30	10-110			
Arsenic	120	7.94	mg/kg wet	280.0		43	32-110			
Barium	309	3.17	mg/kg wet	688.0		45	33-110			
Beryllium	47.3	0.32	mg/kg wet	105.0		45	32-110			
Cadmium	88.2	1.59	mg/kg wet	210.0		42	33-110			
Chromium	153	3.17	mg/kg wet	225.0		68	50-110			
Lead	157	15.9	mg/kg wet	350.0		45	31-110			
Nickel	63.1	3.17	mg/kg wet	95.00		66	48-111			
Selenium	136	15.9	mg/kg wet	320.0		43	29-110			
Silver	41.0	1.59	mg/kg wet	95.00		43	30-111			
Vanadium	140	3.17	mg/kg wet	295.0		47	34-110			
Zinc	216	7.94	mg/kg wet	500.0		43	30-110			
LCS										
Thallium	119	15.9	mg/kg wet	250.0		48	33-110			
LCS Dup										
Antimony	78.5	16.1	mg/kg wet	245.0		32	10-110	5	30	
Arsenic	126	8.06	mg/kg wet	280.0		45	32-110	5	30	
Barium	330	3.23	mg/kg wet	688.0		48	33-110	7	30	
Beryllium	48.3	0.32	mg/kg wet	105.0		46	32-110	2	30	
Cadmium	90.1	1.61	mg/kg wet	210.0		43	33-110	2	30	
Chromium	152	3.23	mg/kg wet	225.0		68	50-110	0.7	30	
Lead	160	16.1	mg/kg wet	350.0		46	31-110	1	30	
Nickel	63.5	3.23	mg/kg wet	95.00		67	48-111	0.7	30	
Selenium	141	16.1	mg/kg wet	320.0		44	29-110	4	30	
Silver	42.1	1.61	mg/kg wet	95.00		44	30-111	3	30	
Vanadium	144	3.23	mg/kg wet	295.0		49	34-110	3	30	
Zinc	220	8.06	mg/kg wet	500.0		44	30-110	2	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0733

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DL42017 - 3050B										
LCS Dup										
Thallium	123	16.1	mg/kg wet	250.0		49	33-110	3	30	
Batch DL42018 - 245.1/7470A										
Blank										
Mercury	ND	0.031	mg/kg wet							
LCS										
Mercury	22.2	3.30	mg/kg wet	24.90		89	80-120			
LCS Dup										
Mercury	25.4	3.30	mg/kg wet	24.90		102	80-120	13	30	
Volatile Organics Low Level										
Batch DL42025 - 5035										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0500	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0500	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0500	mg/kg wet							
Acetone	ND	0.0500	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0733

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL42025 - 5035										
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0050	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0250	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0200	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*0.0564*		mg/kg wet	*0.05000*		*113*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0478*		mg/kg wet	*0.05000*		*96*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0533*		mg/kg wet	*0.05000*		*107*	*70-130*			
Surrogate: Toluene-d8	*0.0485*		mg/kg wet	*0.05000*		*97*	*70-130*			
LCS										

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0733

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL42025 - 5035										
1,1,1,2-Tetrachloroethane	0.0501	0.0050	mg/kg wet	0.05000		100	70-130			
1,1,1-Trichloroethane	0.0512	0.0050	mg/kg wet	0.05000		102	70-130			
1,1,2,2-Tetrachloroethane	0.0479	0.0050	mg/kg wet	0.05000		96	40-160			
1,1,2-Trichloroethane	0.0512	0.0050	mg/kg wet	0.05000		102	70-130			
1,1-Dichloroethane	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
1,1-Dichloroethene	0.0531	0.0050	mg/kg wet	0.05000		106	70-130			
1,1-Dichloropropene	0.0493	0.0050	mg/kg wet	0.05000		99	70-130			
1,2,3-Trichlorobenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
1,2,3-Trichloropropane	0.0453	0.0050	mg/kg wet	0.05000		91	70-130			
1,2,4-Trichlorobenzene	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			
1,2,4-Trimethylbenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
1,2-Dibromo-3-Chloropropane	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
1,2-Dibromoethane	0.0507	0.0050	mg/kg wet	0.05000		101	70-130			
1,2-Dichlorobenzene	0.0469	0.0050	mg/kg wet	0.05000		94	70-130			
1,2-Dichloroethane	0.0502	0.0050	mg/kg wet	0.05000		100	70-130			
1,2-Dichloropropane	0.0520	0.0050	mg/kg wet	0.05000		104	70-130			
1,3,5-Trimethylbenzene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
1,3-Dichlorobenzene	0.0453	0.0050	mg/kg wet	0.05000		91	70-130			
1,3-Dichloropropane	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			
1,4-Dichlorobenzene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
1,4-Dioxane	0.937	0.100	mg/kg wet	1.000		94	70-130			
2,2-Dichloropropane	0.0525	0.0050	mg/kg wet	0.05000		105	70-130			
2-Butanone	0.268	0.0500	mg/kg wet	0.2500		107	40-160			
2-Chlorotoluene	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			
2-Hexanone	0.229	0.0500	mg/kg wet	0.2500		92	40-160			
4-Chlorotoluene	0.0493	0.0050	mg/kg wet	0.05000		99	70-130			
4-Isopropyltoluene	0.0452	0.0050	mg/kg wet	0.05000		90	70-130			
4-Methyl-2-Pentanone	0.233	0.0500	mg/kg wet	0.2500		93	40-160			
Acetone	0.311	0.0500	mg/kg wet	0.2500		124	40-160			
Benzene	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			
Bromobenzene	0.0473	0.0050	mg/kg wet	0.05000		95	70-130			
Bromochloromethane	0.0500	0.0050	mg/kg wet	0.05000		100	70-130			
Bromodichloromethane	0.0545	0.0050	mg/kg wet	0.05000		109	70-130			
Bromoform	0.0443	0.0050	mg/kg wet	0.05000		89	40-160			
Bromomethane	0.0456	0.0100	mg/kg wet	0.05000		91	40-160			
Carbon Disulfide	0.0514	0.0050	mg/kg wet	0.05000		103	70-130			
Carbon Tetrachloride	0.0498	0.0050	mg/kg wet	0.05000		100	70-130			
Chlorobenzene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
Chloroethane	0.0555	0.0100	mg/kg wet	0.05000		111	40-160			
Chloroform	0.0493	0.0050	mg/kg wet	0.05000		99	70-130			
Chloromethane	0.0423	0.0100	mg/kg wet	0.05000		85	40-160			
cis-1,2-Dichloroethene	0.0504	0.0050	mg/kg wet	0.05000		101	70-130			
cis-1,3-Dichloropropene	0.0483	0.0050	mg/kg wet	0.05000		97	40-160			
Dibromochloromethane	0.0442	0.0050	mg/kg wet	0.05000		88	40-160			
Dibromomethane	0.0502	0.0050	mg/kg wet	0.05000		100	70-130			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0733

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL42025 - 5035										
Dichlorodifluoromethane	0.0321	0.0100	mg/kg wet	0.05000		64	40-160			
Diethyl Ether	0.0579	0.0050	mg/kg wet	0.05000		116	70-130			
Di-isopropyl ether	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			
Ethyl tertiary-butyl ether	0.0566	0.0050	mg/kg wet	0.05000		113	70-130			
Ethylbenzene	0.0508	0.0050	mg/kg wet	0.05000		102	70-130			
Hexachlorobutadiene	0.0452	0.0050	mg/kg wet	0.05000		90	40-160			
Isopropylbenzene	0.0554	0.0050	mg/kg wet	0.05000		111	70-130			
Methyl tert-Butyl Ether	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			
Methylene Chloride	0.0479	0.0250	mg/kg wet	0.05000		96	70-130			
Naphthalene	0.0490	0.0050	mg/kg wet	0.05000		98	40-160			
n-Butylbenzene	0.0484	0.0050	mg/kg wet	0.05000		97	70-130			
n-Propylbenzene	0.0485	0.0050	mg/kg wet	0.05000		97	70-130			
sec-Butylbenzene	0.0450	0.0050	mg/kg wet	0.05000		90	70-130			
Styrene	0.0431	0.0050	mg/kg wet	0.05000		86	40-160			
tert-Butylbenzene	0.0485	0.0050	mg/kg wet	0.05000		97	70-130			
Tertiary-amyl methyl ether	0.0583	0.0050	mg/kg wet	0.05000		117	70-130			
Tetrachloroethene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130			
Tetrahydrofuran	0.0492	0.0200	mg/kg wet	0.05000		98	70-130			
Toluene	0.0505	0.0050	mg/kg wet	0.05000		101	70-130			
trans-1,2-Dichloroethene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
trans-1,3-Dichloropropene	0.0473	0.0050	mg/kg wet	0.05000		95	70-130			
Trichloroethene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130			
Trichlorofluoromethane	0.0459	0.0050	mg/kg wet	0.05000		92	40-160			
Vinyl Chloride	0.0470	0.0100	mg/kg wet	0.05000		94	70-130			
Xylene O	0.0439	0.0050	mg/kg wet	0.05000		88	70-130			
Xylene P,M	0.0893	0.0100	mg/kg wet	0.1000		89	70-130			
Surrogate: 1,2-Dichloroethane-d4	*0.0480*		mg/kg wet	*0.05000*		*96*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0539*		mg/kg wet	*0.05000*		*108*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0488*		mg/kg wet	*0.05000*		*98*	*70-130*			
Surrogate: Toluene-d8	*0.0487*		mg/kg wet	*0.05000*		*97*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	3	20	
1,1,1-Trichloroethane	0.0551	0.0050	mg/kg wet	0.05000		110	70-130	7	20	
1,1,2,2-Tetrachloroethane	0.0507	0.0050	mg/kg wet	0.05000		101	40-160	6	20	
1,1,2-Trichloroethane	0.0529	0.0050	mg/kg wet	0.05000		106	70-130	3	20	
1,1-Dichloroethane	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	7	20	
1,1-Dichloroethene	0.0577	0.0050	mg/kg wet	0.05000		115	70-130	8	20	
1,1-Dichloropropene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130	7	20	
1,2,3-Trichlorobenzene	0.0549	0.0050	mg/kg wet	0.05000		110	70-130	11	20	
1,2,3-Trichloropropane	0.0473	0.0050	mg/kg wet	0.05000		95	70-130	4	20	
1,2,4-Trichlorobenzene	0.0558	0.0050	mg/kg wet	0.05000		112	70-130	11	20	
1,2,4-Trimethylbenzene	0.0545	0.0050	mg/kg wet	0.05000		109	70-130	10	20	
1,2-Dibromo-3-Chloropropane	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	0.8	20	
1,2-Dibromoethane	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	1	20	
1,2-Dichlorobenzene	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	9	20	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0733

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL42025 - 5035										
1,2-Dichloroethane	0.0524	0.0050	mg/kg wet	0.05000		105	70-130	4	20	
1,2-Dichloropropane	0.0549	0.0050	mg/kg wet	0.05000		110	70-130	5	20	
1,3,5-Trimethylbenzene	0.0541	0.0050	mg/kg wet	0.05000		108	70-130	10	20	
1,3-Dichlorobenzene	0.0500	0.0050	mg/kg wet	0.05000		100	70-130	10	20	
1,3-Dichloropropane	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	0.9	20	
1,4-Dichlorobenzene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	9	20	
1,4-Dioxane	0.936	0.100	mg/kg wet	1.000		94	70-130	0.1	20	
2,2-Dichloropropane	0.0563	0.0050	mg/kg wet	0.05000		113	70-130	7	20	
2-Butanone	0.263	0.0500	mg/kg wet	0.2500		105	40-160	2	20	
2-Chlorotoluene	0.0518	0.0050	mg/kg wet	0.05000		104	70-130	9	20	
2-Hexanone	0.215	0.0500	mg/kg wet	0.2500		86	40-160	6	20	
4-Chlorotoluene	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	9	20	
4-Isopropyltoluene	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	11	20	
4-Methyl-2-Pentanone	0.227	0.0500	mg/kg wet	0.2500		91	40-160	3	20	
Acetone	0.288	0.0500	mg/kg wet	0.2500		115	40-160	7	20	
Benzene	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	6	20	
Bromobenzene	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	10	20	
Bromochloromethane	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	4	20	
Bromodichloromethane	0.0575	0.0050	mg/kg wet	0.05000		115	70-130	5	20	
Bromoform	0.0446	0.0050	mg/kg wet	0.05000		89	40-160	0.6	20	
Bromomethane	0.0493	0.0100	mg/kg wet	0.05000		99	40-160	8	20	
Carbon Disulfide	0.0555	0.0050	mg/kg wet	0.05000		111	70-130	8	20	
Carbon Tetrachloride	0.0535	0.0050	mg/kg wet	0.05000		107	70-130	7	20	
Chlorobenzene	0.0496	0.0050	mg/kg wet	0.05000		99	70-130	4	20	
Chloroethane	0.0606	0.0100	mg/kg wet	0.05000		121	40-160	9	20	
Chloroform	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	6	20	
Chloromethane	0.0452	0.0100	mg/kg wet	0.05000		90	40-160	7	20	
cis-1,2-Dichloroethene	0.0539	0.0050	mg/kg wet	0.05000		108	70-130	7	20	
cis-1,3-Dichloropropene	0.0506	0.0050	mg/kg wet	0.05000		101	40-160	5	20	
Dibromochloromethane	0.0451	0.0050	mg/kg wet	0.05000		90	40-160	2	20	
Dibromomethane	0.0520	0.0050	mg/kg wet	0.05000		104	70-130	4	20	
Dichlorodifluoromethane	0.0343	0.0100	mg/kg wet	0.05000		69	40-160	7	20	
Diethyl Ether	0.0597	0.0050	mg/kg wet	0.05000		119	70-130	3	20	
Di-isopropyl ether	0.0579	0.0050	mg/kg wet	0.05000		116	70-130	5	20	
Ethyl tertiary-butyl ether	0.0593	0.0050	mg/kg wet	0.05000		119	70-130	5	20	
Ethylbenzene	0.0526	0.0050	mg/kg wet	0.05000		105	70-130	3	20	
Hexachlorobutadiene	0.0510	0.0050	mg/kg wet	0.05000		102	40-160	12	20	
Isopropylbenzene	0.0619	0.0050	mg/kg wet	0.05000		124	70-130	11	20	
Methyl tert-Butyl Ether	0.0569	0.0050	mg/kg wet	0.05000		114	70-130	3	20	
Methylene Chloride	0.0506	0.0250	mg/kg wet	0.05000		101	70-130	6	20	
Naphthalene	0.0540	0.0050	mg/kg wet	0.05000		108	40-160	10	20	
n-Butylbenzene	0.0539	0.0050	mg/kg wet	0.05000		108	70-130	11	20	
n-Propylbenzene	0.0538	0.0050	mg/kg wet	0.05000		108	70-130	10	20	
sec-Butylbenzene	0.0500	0.0050	mg/kg wet	0.05000		100	70-130	10	20	
Styrene	0.0445	0.0050	mg/kg wet	0.05000		89	40-160	3	20	

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Client Name: GEI Consultants, Inc.
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DL42025 - 5035										
tert-Butylbenzene	0.0536	0.0050	mg/kg wet	0.05000		107	70-130	10	20	
Tertiary-amyl methyl ether	0.0601	0.0050	mg/kg wet	0.05000		120	70-130	3	20	
Tetrachloroethene	0.0504	0.0050	mg/kg wet	0.05000		101	70-130	3	20	
Tetrahydrofuran	0.0475	0.0200	mg/kg wet	0.05000		95	70-130	3	20	
Toluene	0.0535	0.0050	mg/kg wet	0.05000		107	70-130	6	20	
trans-1,2-Dichloroethene	0.0561	0.0050	mg/kg wet	0.05000		112	70-130	7	20	
trans-1,3-Dichloropropene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	3	20	
Trichloroethene	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	7	20	
Trichlorofluoromethane	0.0491	0.0050	mg/kg wet	0.05000		98	40-160	7	20	
Vinyl Chloride	0.0507	0.0100	mg/kg wet	0.05000		101	70-130	8	20	
Xylene O	0.0454	0.0050	mg/kg wet	0.05000		91	70-130	3	20	
Xylene P,M	0.0931	0.0100	mg/kg wet	0.1000		93	70-130	4	20	
Surrogate: 1,2-Dichloroethane-d4	*0.0489*		mg/kg wet	*0.05000*		*98*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0506*		mg/kg wet	*0.05000*		*101*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0498*		mg/kg wet	*0.05000*		*100*	*70-130*			
Surrogate: Toluene-d8	*0.0490*		mg/kg wet	*0.05000*		*98*	*70-130*			
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch DL41928 - 5030B										
Blank										
1,2,4-Trimethylbenzene	ND	0.2	mg/kg wet							
2,2,4-Trimethylpentane	ND	5.0	mg/kg wet							
2-Methylpentane	ND	5.0	mg/kg wet							
Benzene	ND	0.2	mg/kg wet							
C5-C8 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
C9-C10 Aromatics	ND	10.0	mg/kg wet							
C9-C12 Unadjusted Aliphatics	ND	10.0	mg/kg wet							
Ethylbenzene	ND	0.2	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.05	mg/kg wet							
Naphthalene	ND	0.2	mg/kg wet							
n-Butylcyclohexane	ND	5.0	mg/kg wet							
n-Decane	ND	5.0	mg/kg wet							
Nonane (C9)	ND	5.0	mg/kg wet							
Pentane	ND	5.0	mg/kg wet							
Toluene	ND	0.2	mg/kg wet							
Xylene O	ND	0.2	mg/kg wet							
Xylene P,M	ND	0.4	mg/kg wet							
Surrogate: 2,5-Dibromotoluene - FID	*4.15*		mg/kg wet	*5.000*		*83*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*4.22*		mg/kg wet	*5.000*		*84*	*70-130*			
Surrogate: Trifluorotoluene - FID	*4.41*		mg/kg wet	*5.333*		*83*	*70-130*			
Surrogate: Trifluorotoluene - PID	*4.53*		mg/kg wet	*5.333*		*85*	*70-130*			
LCS										
1,2,4-Trimethylbenzene	8.6	0.2	mg/kg wet	10.00		86	70-130			
2,2,4-Trimethylpentane	13.8	5.0	mg/kg wet	15.00		92	70-130			
2-Methylpentane	12.5	5.0	mg/kg wet	15.00		84	70-130			

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-VPH Volatile Petroleum Hydrocarbon										
Batch DL41928 - 5030B										
Benzene	4.2	0.2	mg/kg wet	5.000		85	70-130			
C5-C8 Unadjusted Aliphatics	35.3	10.0	mg/kg wet	40.00		88	70-130			
C9-C10 Aromatics	8.6	10.0	mg/kg wet	10.00		86	70-130			
C9-C12 Unadjusted Aliphatics	26.8	10.0	mg/kg wet	30.00		89	70-130			
Ethylbenzene	4.5	0.2	mg/kg wet	5.000		90	70-130			
Methyl tert-Butyl Ether	10.8	0.05	mg/kg wet	15.00		72	70-130			
Naphthalene	8.6	0.2	mg/kg wet	10.00		86	70-130			
n-Butylcyclohexane	10.7	5.0	mg/kg wet	10.00		107	70-130			
n-Decane	10.9	5.0	mg/kg wet	10.00		109	70-130			
Nonane (C9)	10.8	5.0	mg/kg wet	10.00		108	30-130			
Pentane	9.2	5.0	mg/kg wet	10.00		92	70-130			
Toluene	12.9	0.2	mg/kg wet	15.00		86	70-130			
Xylene O	7.9	0.2	mg/kg wet	10.00		79	70-130			
Xylene P,M	17.3	0.4	mg/kg wet	20.00		87	70-130			
Surrogate: 2,5-Dibromotoluene - FID	*4.91*		mg/kg wet	*5.000*		*98*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*4.98*		mg/kg wet	*5.000*		*100*	*70-130*			
Surrogate: Trifluorotoluene - FID	*4.84*		mg/kg wet	*5.333*		*91*	*70-130*			
Surrogate: Trifluorotoluene - PID	*4.87*		mg/kg wet	*5.333*		*91*	*70-130*			
LCS Dup										
1,2,4-Trimethylbenzene	8.7	0.2	mg/kg wet	10.00		87	70-130	0.7	25	
2,2,4-Trimethylpentane	13.5	5.0	mg/kg wet	15.00		90	70-130	3	25	
2-Methylpentane	12.4	5.0	mg/kg wet	15.00		82	70-130	1	25	
Benzene	4.3	0.2	mg/kg wet	5.000		86	70-130	2	25	
C5-C8 Unadjusted Aliphatics	34.7	10.0	mg/kg wet	40.00		87	70-130	2	25	
C9-C10 Aromatics	8.7	10.0	mg/kg wet	10.00		87	70-130	0.7	25	
C9-C12 Unadjusted Aliphatics	27.3	10.0	mg/kg wet	30.00		91	70-130	2	25	
Ethylbenzene	4.5	0.2	mg/kg wet	5.000		91	70-130	0.8	25	
Methyl tert-Butyl Ether	11.7	0.05	mg/kg wet	15.00		78	70-130	8	25	
Naphthalene	9.0	0.2	mg/kg wet	10.00		90	70-130	5	25	
n-Butylcyclohexane	10.7	5.0	mg/kg wet	10.00		107	70-130	0.4	25	
n-Decane	11.3	5.0	mg/kg wet	10.00		113	70-130	4	25	
Nonane (C9)	10.8	5.0	mg/kg wet	10.00		108	30-130	0.2	25	
Pentane	9.1	5.0	mg/kg wet	10.00		91	70-130	0.9	25	
Toluene	13.1	0.2	mg/kg wet	15.00		87	70-130	1	25	
Xylene O	8.0	0.2	mg/kg wet	10.00		80	70-130	1	25	
Xylene P,M	17.5	0.4	mg/kg wet	20.00		87	70-130	0.8	25	
Surrogate: 2,5-Dibromotoluene - FID	*4.38*		mg/kg wet	*5.000*		*88*	*70-130*			
Surrogate: 2,5-Dibromotoluene - PID	*4.44*		mg/kg wet	*5.000*		*89*	*70-130*			
Surrogate: Trifluorotoluene - FID	*4.87*		mg/kg wet	*5.333*		*91*	*70-130*			
Surrogate: Trifluorotoluene - PID	*4.80*		mg/kg wet	*5.333*		*90*	*70-130*			
Semi-Volatile Organic Compounds										
Batch DL42003 - 3546										
Blank										
1,1-Biphenyl	ND	0.025	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL42003 - 3546										
1,2,4-Trichlorobenzene	ND	0.250	mg/kg wet							
1,2-Dichlorobenzene	ND	0.250	mg/kg wet							
1,3-Dichlorobenzene	ND	0.250	mg/kg wet							
1,4-Dichlorobenzene	ND	0.250	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.250	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.250	mg/kg wet							
2,4-Dichlorophenol	ND	0.250	mg/kg wet							
2,4-Dimethylphenol	ND	0.250	mg/kg wet							
2,4-Dinitrophenol	ND	1.00	mg/kg wet							
2,4-Dinitrotoluene	ND	0.250	mg/kg wet							
2,6-Dinitrotoluene	ND	0.250	mg/kg wet							
2-Chloronaphthalene	ND	0.250	mg/kg wet							
2-Chlorophenol	ND	0.250	mg/kg wet							
2-Methylnaphthalene	ND	0.250	mg/kg wet							
2-Methylphenol	ND	0.250	mg/kg wet							
2-Nitrophenol	ND	0.500	mg/kg wet							
3,3´-Dichlorobenzidine	ND	0.250	mg/kg wet							
3+4-Methylphenol	ND	0.250	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.250	mg/kg wet							
4-Chloroaniline	ND	0.250	mg/kg wet							
4-Nitrophenol	ND	1.00	mg/kg wet							
Acenaphthene	ND	0.250	mg/kg wet							
Acenaphthylene	ND	0.250	mg/kg wet							
Acetophenone	ND	0.250	mg/kg wet							
Aniline	ND	0.250	mg/kg wet							
Anthracene	ND	0.250	mg/kg wet							
Azobenzene	ND	0.250	mg/kg wet							
Benzo(a)anthracene	ND	0.250	mg/kg wet							
Benzo(a)pyrene	ND	0.250	mg/kg wet							
Benzo(b)fluoranthene	ND	0.250	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.250	mg/kg wet							
Benzo(k)fluoranthene	ND	0.250	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.250	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.250	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.250	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.250	mg/kg wet							
Butylbenzylphthalate	ND	0.250	mg/kg wet							
Chrysene	ND	0.250	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.250	mg/kg wet							
Dibenzofuran	ND	0.250	mg/kg wet							
Diethylphthalate	ND	0.250	mg/kg wet							
Dimethylphthalate	ND	0.250	mg/kg wet							
Di-n-butylphthalate	ND	0.250	mg/kg wet							
Di-n-octylphthalate	ND	0.500	mg/kg wet							
Fluoranthene	ND	0.250	mg/kg wet							

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL42003 - 3546										
Fluorene	ND	0.250	mg/kg wet							
Hexachlorobenzene	ND	0.250	mg/kg wet							
Hexachlorobutadiene	ND	0.250	mg/kg wet							
Hexachloroethane	ND	0.250	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.250	mg/kg wet							
Isophorone	ND	0.250	mg/kg wet							
Naphthalene	ND	0.250	mg/kg wet							
Nitrobenzene	ND	0.250	mg/kg wet							
N-Nitrosodimethylamine	ND	0.250	mg/kg wet							
Pentachlorophenol	ND	1.00	mg/kg wet							
Phenanthrene	ND	0.250	mg/kg wet							
Phenol	ND	0.250	mg/kg wet							
Pyrene	ND	0.250	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	*2.08*		mg/kg wet	*2.500*		*83*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.46*		mg/kg wet	*3.750*		*92*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.52*		mg/kg wet	*3.750*		*94*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.30*		mg/kg wet	*2.500*		*92*	*30-130*			
Surrogate: 2-Fluorophenol	*3.67*		mg/kg wet	*3.750*		*98*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.13*		mg/kg wet	*2.500*		*85*	*30-130*			
Surrogate: Phenol-d6	*3.44*		mg/kg wet	*3.750*		*92*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.86*		mg/kg wet	*2.500*		*114*	*30-130*			
LCS										
1,1-Biphenyl	2.37	0.025	mg/kg wet	2.500		95	40-140			
1,2,4-Trichlorobenzene	1.93	0.250	mg/kg wet	2.500		77	40-140			
1,2-Dichlorobenzene	2.21	0.250	mg/kg wet	2.500		88	40-140			
1,3-Dichlorobenzene	2.30	0.250	mg/kg wet	2.500		92	40-140			
1,4-Dichlorobenzene	2.29	0.250	mg/kg wet	2.500		92	40-140			
2,4,5-Trichlorophenol	2.45	0.250	mg/kg wet	2.500		98	30-130			
2,4,6-Trichlorophenol	2.28	0.250	mg/kg wet	2.500		91	30-130			
2,4-Dichlorophenol	2.07	0.250	mg/kg wet	2.500		83	30-130			
2,4-Dimethylphenol	1.97	0.250	mg/kg wet	2.500		79	30-130			
2,4-Dinitrophenol	2.09	1.00	mg/kg wet	2.500		83	15-140			
2,4-Dinitrotoluene	2.50	0.250	mg/kg wet	2.500		100	40-140			
2,6-Dinitrotoluene	2.46	0.250	mg/kg wet	2.500		98	40-140			
2-Chloronaphthalene	2.30	0.250	mg/kg wet	2.500		92	40-140			
2-Chlorophenol	2.39	0.250	mg/kg wet	2.500		96	30-130			
2-Methylnaphthalene	2.15	0.250	mg/kg wet	2.500		86	40-140			
2-Methylphenol	2.24	0.250	mg/kg wet	2.500		90	15-140			
2-Nitrophenol	2.12	0.500	mg/kg wet	2.500		85	30-130			
3,3´-Dichlorobenzidine	2.25	0.250	mg/kg wet	2.500		90	40-140			
3+4-Methylphenol	4.56	0.250	mg/kg wet	5.000		91	15-140			
4-Bromophenyl-phenylether	2.17	0.250	mg/kg wet	2.500		87	40-140			
4-Chloroaniline	1.75	0.250	mg/kg wet	2.500		70	15-140			
4-Nitrophenol	2.11	1.00	mg/kg wet	2.500		85	15-140			
Acenaphthene	2.36	0.250	mg/kg wet	2.500		94	40-140			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL42003 - 3546										
Acenaphthylene	2.33	0.250	mg/kg wet	2.500		93	40-140			
Acetophenone	2.24	0.250	mg/kg wet	2.500		90	40-140			
Aniline	1.78	0.250	mg/kg wet	2.500		71	40-140			
Anthracene	2.48	0.250	mg/kg wet	2.500		99	40-140			
Azobenzene	2.29	0.250	mg/kg wet	2.500		91	40-140			
Benzo(a)anthracene	2.47	0.250	mg/kg wet	2.500		99	40-140			
Benzo(a)pyrene	2.58	0.250	mg/kg wet	2.500		103	40-140			
Benzo(b)fluoranthene	2.28	0.250	mg/kg wet	2.500		91	40-140			
Benzo(g,h,i)perylene	2.31	0.250	mg/kg wet	2.500		92	40-140			
Benzo(k)fluoranthene	2.45	0.250	mg/kg wet	2.500		98	40-140			
bis(2-Chloroethoxy)methane	2.15	0.250	mg/kg wet	2.500		86	40-140			
bis(2-Chloroethyl)ether	2.06	0.250	mg/kg wet	2.500		82	40-140			
bis(2-chloroisopropyl)Ether	1.95	0.250	mg/kg wet	2.500		78	40-140			
bis(2-Ethylhexyl)phthalate	3.07	0.250	mg/kg wet	2.500		123	40-140			
Butylbenzylphthalate	3.06	0.250	mg/kg wet	2.500		123	40-140			
Chrysene	2.54	0.250	mg/kg wet	2.500		101	40-140			
Dibenzo(a,h)Anthracene	2.43	0.250	mg/kg wet	2.500		97	40-140			
Dibenzofuran	2.26	0.250	mg/kg wet	2.500		90	40-140			
Diethylphthalate	2.55	0.250	mg/kg wet	2.500		102	40-140			
Dimethylphthalate	2.46	0.250	mg/kg wet	2.500		98	15-140			
Di-n-butylphthalate	2.62	0.250	mg/kg wet	2.500		105	40-140			
Di-n-octylphthalate	2.76	0.500	mg/kg wet	2.500		110	40-140			
Fluoranthene	2.33	0.250	mg/kg wet	2.500		93	40-140			
Fluorene	2.28	0.250	mg/kg wet	2.500		91	40-140			
Hexachlorobenzene	2.07	0.250	mg/kg wet	2.500		83	40-140			
Hexachlorobutadiene	1.69	0.250	mg/kg wet	2.500		68	40-140			
Hexachloroethane	2.16	0.250	mg/kg wet	2.500		86	40-140			
Indeno(1,2,3-cd)Pyrene	2.28	0.250	mg/kg wet	2.500		91	40-140			
Isophorone	1.81	0.250	mg/kg wet	2.500		72	40-140			
Naphthalene	1.99	0.250	mg/kg wet	2.500		80	40-140			
Nitrobenzene	1.88	0.250	mg/kg wet	2.500		75	40-140			
N-Nitrosodimethylamine	2.02	0.250	mg/kg wet	2.500		81	40-140			
Pentachlorophenol	1.82	1.00	mg/kg wet	2.500		73	15-140			
Phenanthrene	2.39	0.250	mg/kg wet	2.500		96	40-140			
Phenol	2.29	0.250	mg/kg wet	2.500		92	15-140			
Pyrene	2.80	0.250	mg/kg wet	2.500		112	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*2.26*		mg/kg wet	*2.500*		*91*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.35*		mg/kg wet	*3.750*		*89*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.78*		mg/kg wet	*3.750*		*101*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.45*		mg/kg wet	*2.500*		*98*	*30-130*			
Surrogate: 2-Fluorophenol	*3.87*		mg/kg wet	*3.750*		*103*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.98*		mg/kg wet	*2.500*		*79*	*30-130*			
Surrogate: Phenol-d6	*3.68*		mg/kg wet	*3.750*		*98*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.81*		mg/kg wet	*2.500*		*112*	*30-130*			
LCS Dup										

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0733

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL42003 - 3546										
1,1-Biphenyl	2.35	0.025	mg/kg wet	2.500		94	40-140	1	30	
1,2,4-Trichlorobenzene	1.89	0.250	mg/kg wet	2.500		76	40-140	2	30	
1,2-Dichlorobenzene	2.19	0.250	mg/kg wet	2.500		87	40-140	0.9	30	
1,3-Dichlorobenzene	2.22	0.250	mg/kg wet	2.500		89	40-140	4	30	
1,4-Dichlorobenzene	2.28	0.250	mg/kg wet	2.500		91	40-140	0.4	30	
2,4,5-Trichlorophenol	2.36	0.250	mg/kg wet	2.500		94	30-130	4	30	
2,4,6-Trichlorophenol	2.20	0.250	mg/kg wet	2.500		88	30-130	3	30	
2,4-Dichlorophenol	1.95	0.250	mg/kg wet	2.500		78	30-130	6	30	
2,4-Dimethylphenol	1.85	0.250	mg/kg wet	2.500		74	30-130	6	30	
2,4-Dinitrophenol	2.05	1.00	mg/kg wet	2.500		82	15-140	2	30	
2,4-Dinitrotoluene	2.45	0.250	mg/kg wet	2.500		98	40-140	2	30	
2,6-Dinitrotoluene	2.38	0.250	mg/kg wet	2.500		95	40-140	3	30	
2-Chloronaphthalene	2.23	0.250	mg/kg wet	2.500		89	40-140	3	30	
2-Chlorophenol	2.31	0.250	mg/kg wet	2.500		93	30-130	3	30	
2-Methylnaphthalene	2.12	0.250	mg/kg wet	2.500		85	40-140	1	30	
2-Methylphenol	2.22	0.250	mg/kg wet	2.500		89	15-140	1	30	
2-Nitrophenol	2.08	0.500	mg/kg wet	2.500		83	30-130	2	30	
3,3´-Dichlorobenzidine	2.12	0.250	mg/kg wet	2.500		85	40-140	6	30	
3+4-Methylphenol	4.38	0.250	mg/kg wet	5.000		88	15-140	4	30	
4-Bromophenyl-phenylether	2.17	0.250	mg/kg wet	2.500		87	40-140	0.09	30	
4-Chloroaniline	1.81	0.250	mg/kg wet	2.500		72	15-140	4	30	
4-Nitrophenol	2.13	1.00	mg/kg wet	2.500		85	15-140	0.8	30	
Acenaphthene	2.34	0.250	mg/kg wet	2.500		93	40-140	0.9	30	
Acenaphthylene	2.33	0.250	mg/kg wet	2.500		93	40-140	0.4	30	
Acetophenone	2.17	0.250	mg/kg wet	2.500		87	40-140	3	30	
Aniline	1.66	0.250	mg/kg wet	2.500		66	40-140	7	30	
Anthracene	2.40	0.250	mg/kg wet	2.500		96	40-140	3	30	
Azobenzene	2.19	0.250	mg/kg wet	2.500		88	40-140	4	30	
Benzo(a)anthracene	2.33	0.250	mg/kg wet	2.500		93	40-140	6	30	
Benzo(a)pyrene	2.45	0.250	mg/kg wet	2.500		98	40-140	5	30	
Benzo(b)fluoranthene	2.13	0.250	mg/kg wet	2.500		85	40-140	7	30	
Benzo(g,h,i)perylene	2.18	0.250	mg/kg wet	2.500		87	40-140	6	30	
Benzo(k)fluoranthene	2.33	0.250	mg/kg wet	2.500		93	40-140	5	30	
bis(2-Chloroethoxy)methane	2.09	0.250	mg/kg wet	2.500		84	40-140	3	30	
bis(2-Chloroethyl)ether	2.00	0.250	mg/kg wet	2.500		80	40-140	3	30	
bis(2-chloroisopropyl)Ether	2.01	0.250	mg/kg wet	2.500		80	40-140	3	30	
bis(2-Ethylhexyl)phthalate	2.87	0.250	mg/kg wet	2.500		115	40-140	7	30	
Butylbenzylphthalate	2.93	0.250	mg/kg wet	2.500		117	40-140	4	30	
Chrysene	2.40	0.250	mg/kg wet	2.500		96	40-140	5	30	
Dibenzo(a,h)Anthracene	2.27	0.250	mg/kg wet	2.500		91	40-140	7	30	
Dibenzofuran	2.22	0.250	mg/kg wet	2.500		89	40-140	2	30	
Diethylphthalate	2.45	0.250	mg/kg wet	2.500		98	40-140	4	30	
Dimethylphthalate	2.38	0.250	mg/kg wet	2.500		95	15-140	3	30	
Di-n-butylphthalate	2.54	0.250	mg/kg wet	2.500		101	40-140	3	30	
Di-n-octylphthalate	2.60	0.500	mg/kg wet	2.500		104	40-140	6	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0733

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DL42003 - 3546										
Fluoranthene	2.25	0.250	mg/kg wet	2.500		90	40-140	4	30	
Fluorene	2.22	0.250	mg/kg wet	2.500		89	40-140	3	30	
Hexachlorobenzene	2.01	0.250	mg/kg wet	2.500		81	40-140	3	30	
Hexachlorobutadiene	1.73	0.250	mg/kg wet	2.500		69	40-140	2	30	
Hexachloroethane	2.13	0.250	mg/kg wet	2.500		85	40-140	1	30	
Indeno(1,2,3-cd)Pyrene	2.12	0.250	mg/kg wet	2.500		85	40-140	7	30	
Isophorone	1.76	0.250	mg/kg wet	2.500		70	40-140	3	30	
Naphthalene	1.98	0.250	mg/kg wet	2.500		79	40-140	0.8	30	
Nitrobenzene	1.94	0.250	mg/kg wet	2.500		77	40-140	3	30	
N-Nitrosodimethylamine	2.03	0.250	mg/kg wet	2.500		81	40-140	0.4	30	
Pentachlorophenol	1.77	1.00	mg/kg wet	2.500		71	15-140	3	30	
Phenanthrene	2.31	0.250	mg/kg wet	2.500		92	40-140	3	30	
Phenol	2.19	0.250	mg/kg wet	2.500		88	15-140	4	30	
Pyrene	2.68	0.250	mg/kg wet	2.500		107	40-140	4	30	
Surrogate: 1,2-Dichlorobenzene-d4	*2.18*		mg/kg wet	*2.500*		*87*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.13*		mg/kg wet	*3.750*		*84*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.66*		mg/kg wet	*3.750*		*97*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.35*		mg/kg wet	*2.500*		*94*	*30-130*			
Surrogate: 2-Fluorophenol	*3.80*		mg/kg wet	*3.750*		*101*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.94*		mg/kg wet	*2.500*		*78*	*30-130*			
Surrogate: Phenol-d6	*3.52*		mg/kg wet	*3.750*		*94*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.63*		mg/kg wet	*2.500*		*105*	*30-130*			
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL42001 - 3546										
Blank										
C19-C36 Aliphatics1	ND	10.0	mg/kg wet							
C9-C18 Aliphatics1	ND	10.0	mg/kg wet							
Surrogate: 1-Chlorooctadecane	*1.77*		mg/kg wet	*2.000*		*88*	*40-140*			
Blank										
2-Methylnaphthalene	ND	0.20	mg/kg wet							
Acenaphthene	ND	0.40	mg/kg wet							
Acenaphthylene	ND	0.20	mg/kg wet							
Anthracene	ND	0.40	mg/kg wet							
Benzo(a)anthracene	ND	0.40	mg/kg wet							
Benzo(a)pyrene	ND	0.40	mg/kg wet							
Benzo(b)fluoranthene	ND	0.40	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.40	mg/kg wet							
Benzo(k)fluoranthene	ND	0.40	mg/kg wet							
C11-C22 Unadjusted Aromatics1	ND	10.0	mg/kg wet							
Chrysene	ND	0.40	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.20	mg/kg wet							
Fluoranthene	ND	0.40	mg/kg wet							
Fluorene	ND	0.40	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.40	mg/kg wet							

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings

ESS Laboratory Work Order: 24L0733

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL42001 - 3546										
Naphthalene	ND	0.40	mg/kg wet							
Phenanthrene	ND	0.40	mg/kg wet							
Pyrene	ND	0.40	mg/kg wet							
Surrogate: 2-Bromonaphthalene	*1.98*		mg/kg wet	*2.000*		*99*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.83*		mg/kg wet	*2.000*		*92*	*40-140*			
Surrogate: O-Terphenyl	*2.32*		mg/kg wet	*2.000*		*116*	*40-140*			
LCS										
C19-C36 Aliphatics1	12.9	10.0	mg/kg wet	16.00		81	40-140			
C9-C18 Aliphatics1	9.4	10.0	mg/kg wet	12.00		79	40-140			
Surrogate: 1-Chlorooctadecane	*1.78*		mg/kg wet	*2.000*		*89*	*40-140*			
LCS										
2-Methylnaphthalene	1.40	0.20	mg/kg wet	2.000		70	40-140			
Acenaphthene	1.58	0.40	mg/kg wet	2.000		79	40-140			
Acenaphthylene	1.58	0.20	mg/kg wet	2.000		79	40-140			
Anthracene	2.02	0.40	mg/kg wet	2.000		101	40-140			
Benzo(a)anthracene	2.22	0.40	mg/kg wet	2.000		111	40-140			
Benzo(a)pyrene	2.30	0.40	mg/kg wet	2.000		115	40-140			
Benzo(b)fluoranthene	2.36	0.40	mg/kg wet	2.000		118	40-140			
Benzo(g,h,i)perylene	2.18	0.40	mg/kg wet	2.000		109	40-140			
Benzo(k)fluoranthene	1.83	0.40	mg/kg wet	2.000		92	40-140			
C11-C22 Unadjusted Aromatics1	31.8	10.0	mg/kg wet	34.00		94	40-140			
Chrysene	1.97	0.40	mg/kg wet	2.000		99	40-140			
Dibenzo(a,h)Anthracene	2.13	0.20	mg/kg wet	2.000		107	40-140			
Fluoranthene	1.92	0.40	mg/kg wet	2.000		96	40-140			
Fluorene	1.69	0.40	mg/kg wet	2.000		85	40-140			
Indeno(1,2,3-cd)Pyrene	2.08	0.40	mg/kg wet	2.000		104	40-140			
Naphthalene	1.36	0.40	mg/kg wet	2.000		68	40-140			
Phenanthrene	1.82	0.40	mg/kg wet	2.000		91	40-140			
Pyrene	1.87	0.40	mg/kg wet	2.000		94	40-140			
Surrogate: 2-Bromonaphthalene	*2.01*		mg/kg wet	*2.000*		*100*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.87*		mg/kg wet	*2.000*		*94*	*40-140*			
Surrogate: O-Terphenyl	*2.42*		mg/kg wet	*2.000*		*121*	*40-140*			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS Dup										
C19-C36 Aliphatics1	13.2	10.0	mg/kg wet	16.00		82	40-140	2	25	
C9-C18 Aliphatics1	9.5	10.0	mg/kg wet	12.00		80	40-140	1	25	
Surrogate: 1-Chlorooctadecane	*1.78*		mg/kg wet	*2.000*		*89*	*40-140*			
LCS Dup										
2-Methylnaphthalene	1.32	0.20	mg/kg wet	2.000		66	40-140	6	30	
Acenaphthene	1.49	0.40	mg/kg wet	2.000		75	40-140	6	30	
Acenaphthylene	1.51	0.20	mg/kg wet	2.000		75	40-140	5	30	
Anthracene	1.93	0.40	mg/kg wet	2.000		96	40-140	5	30	

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0733

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DL42001 - 3546										
Benzo(a)anthracene	2.14	0.40	mg/kg wet	2.000		107	40-140	4	30	
Benzo(a)pyrene	2.19	0.40	mg/kg wet	2.000		110	40-140	5	30	
Benzo(b)fluoranthene	2.08	0.40	mg/kg wet	2.000		104	40-140	13	30	
Benzo(g,h,i)perylene	2.06	0.40	mg/kg wet	2.000		103	40-140	6	30	
Benzo(k)fluoranthene	1.94	0.40	mg/kg wet	2.000		97	40-140	6	30	
C11-C22 Unadjusted Aromatics1	30.2	10.0	mg/kg wet	34.00		89	40-140	5	25	
Chrysene	1.89	0.40	mg/kg wet	2.000		94	40-140	5	30	
Dibenzo(a,h)Anthracene	2.04	0.20	mg/kg wet	2.000		102	40-140	4	30	
Fluoranthene	1.83	0.40	mg/kg wet	2.000		92	40-140	4	30	
Fluorene	1.64	0.40	mg/kg wet	2.000		82	40-140	3	30	
Indeno(1,2,3-cd)Pyrene	2.05	0.40	mg/kg wet	2.000		102	40-140	2	30	
Naphthalene	1.31	0.40	mg/kg wet	2.000		66	40-140	3	30	
Phenanthrene	1.68	0.40	mg/kg wet	2.000		84	40-140	8	30	
Pyrene	1.81	0.40	mg/kg wet	2.000		91	40-140	3	30	
Surrogate: 2-Bromonaphthalene	*1.90*		mg/kg wet	*2.000*		*95*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.75*		mg/kg wet	*2.000*		*87*	*40-140*			
Surrogate: O-Terphenyl	*2.30*		mg/kg wet	*2.000*		*115*	*40-140*			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	
8082A Polychlorinated Biphenyls (PCB)										
Batch DL41902 - 3540C										
Blank										
Aroclor 1016	ND	0.02	mg/kg wet							
Aroclor 1016 [2C]	ND	0.02	mg/kg wet							
Aroclor 1221	ND	0.02	mg/kg wet							
Aroclor 1221 [2C]	ND	0.02	mg/kg wet							
Aroclor 1232	ND	0.02	mg/kg wet							
Aroclor 1232 [2C]	ND	0.02	mg/kg wet							
Aroclor 1242	ND	0.02	mg/kg wet							
Aroclor 1242 [2C]	ND	0.02	mg/kg wet							
Aroclor 1248	ND	0.02	mg/kg wet							
Aroclor 1248 [2C]	ND	0.02	mg/kg wet							
Aroclor 1254	ND	0.02	mg/kg wet							
Aroclor 1254 [2C]	ND	0.02	mg/kg wet							
Aroclor 1260	ND	0.02	mg/kg wet							
Aroclor 1260 [2C]	ND	0.02	mg/kg wet							
Aroclor 1262	ND	0.02	mg/kg wet							
Aroclor 1262 [2C]	ND	0.02	mg/kg wet							
Aroclor 1268	ND	0.02	mg/kg wet							
Aroclor 1268 [2C]	ND	0.02	mg/kg wet							
Surrogate: Decachlorobiphenyl	*0.0204*		mg/kg wet	*0.02500*		*82*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0215*		mg/kg wet	*0.02500*		*86*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0215*		mg/kg wet	*0.02500*		*86*	*30-150*			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0733

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082A Polychlorinated Biphenyls (PCB)										
Batch DL41902 - 3540C										
Surrogate: Tetrachloro-m-xylene [2C]	*0.0236*		mg/kg wet	*0.02500*		*94*	*30-150*			
LCS										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		87	40-140			
Aroclor 1016 [2C]	0.5	0.05	mg/kg wet	0.5000		92	40-140			
Aroclor 1260	0.5	0.05	mg/kg wet	0.5000		92	40-140			
Aroclor 1260 [2C]	0.5	0.05	mg/kg wet	0.5000		94	40-140			
Surrogate: Decachlorobiphenyl	*0.0202*		mg/kg wet	*0.02500*		*81*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0210*		mg/kg wet	*0.02500*		*84*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0225*		mg/kg wet	*0.02500*		*90*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0232*		mg/kg wet	*0.02500*		*93*	*30-150*			
LCS Dup										
Aroclor 1016	0.4	0.05	mg/kg wet	0.5000		89	40-140	2	30	
Aroclor 1016 [2C]	0.5	0.05	mg/kg wet	0.5000		94	40-140	2	30	
Aroclor 1260	0.5	0.05	mg/kg wet	0.5000		94	40-140	2	30	
Aroclor 1260 [2C]	0.5	0.05	mg/kg wet	0.5000		96	40-140	2	30	
Surrogate: Decachlorobiphenyl	*0.0200*		mg/kg wet	*0.02500*		*80*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0209*		mg/kg wet	*0.02500*		*84*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0225*		mg/kg wet	*0.02500*		*90*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0232*		mg/kg wet	*0.02500*		*93*	*30-150*			
Classical Chemistry										
Batch DL41860 - General Preparation										
Blank										
Reactive Cyanide	ND	2.0	mg/kg							
Reactive Sulfide	ND	2.0	mg/kg							
LCS										
Reactive Cyanide	4.2	2.0	mg/kg	100.3		4	0.68-5.41			
Reactive Sulfide	2.2	2.0	mg/kg	10.00		22	0-44			
Batch DL42020 - General Preparation										
Reference										
Flashpoint	80		°F	81.00		99	97.9-102.1			
Batch DL42041 - General Preparation										
Blank										
Conductivity	ND	5	umhos/cm							
LCS										
Conductivity	1320		umhos/cm	1410		94	90-110			

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0733

Notes and Definitions

Z-04	MeOH - covered
WL	Results obtained from a deionized water leach of the sample.
U	Analyte included in the analysis, but not detected
Q	Calibration required quadratic regression (Q).
ICV+	Initial Calibration Verification recovery is above upper control limit (ICV+).
ICV-	Initial Calibration Verification recovery is below lower control limit (ICV-).
EL	Elevated Method Reporting Limits due to sample matrix (EL).
D	Diluted.
CD+	Continuing Calibration %Diff/Drift is above control limit (CD+).
CD-	Continuing Calibration %Diff/Drift is below control limit (CD-).
BT	Benzidine tailing factor >2.
>	Greater than.
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: GEI Consultants, Inc.
Client Project ID: Drain Line Borings ESS Laboratory Work Order: 24L0733

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GEI Consultants, Inc. - TB

Shipped/Delivered Via: ESS Courier

ESS Project ID: 24L0733
Date Received: 12/19/2024
Project Due Date: 12/27/2024
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 2.7 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** (Yes) / No / NA
10. Were any analyses received outside of hold time? Yes / (No)

11. Any Subcontracting needed? Yes / (No)
    ESS Sample IDs:
    Analysis:
    TAT:
12. Were VOAs received? (Yes) / No
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? (Yes) / No / NA
13. Are the samples properly preserved? (Yes) / No
    a. If metals preserved upon receipt: Date: Time: By/Acid Lot#:
    b. If dissolved metals are requested, are they: Yes / No Field Filtered Yes / No To Be Lab Filtered
    c. Low Level VOA vials frozen: Date: 12/19/24 Time: 1750 By: [illegible]

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / (No)
    a. Was there a need to contact the client? Yes / No
    Who was contacted? Date: Time: By:

Resolution:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	627471	Yes	N/A	Yes	VOA Vial	MeOH	
1	627472	Yes	N/A	Yes	VOA Vial	MeOH	
1	627473	Yes	N/A	Yes	VOA Vial	DI Water	
1	627474	Yes	N/A	Yes	VOA Vial	DI Water	
1	627475	Yes	N/A	Yes	8 oz jar	NP	
1	627476	Yes	N/A	Yes	4 oz. Jar	NP	

2nd Review
Were all containers scanned into storage/lab? Initials: [illegible]
Are barcode labels on correct containers? (Yes) / No
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA
Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: [signature] Date & Time: 12/19/24 1648
Reviewed By: [signature] Date & Time: 12/19/24 1750

Chain-of-Custody Record

Laboratory:

Laboratory Job # (Lab use only) 2460733

GEI Consultants
400 Unicorn Park Drive
Woburn, MA 01801
PH: 781.721.4000

Project Information

Project Name: Drain Line Borings

Project Number: 2300422.1.2.4.1

Project Location: Needham, Massachusetts

Project Manager: Jeanne Lefebvre
JLefebvre@geiconsultants.com

Page 1 of

Send Report to:
labdata@geiconsultants.com ; AGROSSMAN@GEICONSULTANTS.COM
JLefebvre@geiconsultants.com

MCP PRESUMPTIVE CERTAINTY AND MCP ANALYTICAL METHODS REQUIRED: (YES) NO

STATE AND FEDERAL REGULATORY REQUIREMENTS/REPORT LIMITS
State/Federal Program: (MA) 401WQC Other _____ NH RI CT NY ME
MA MCP Criteria are Method 1 S-1 and GW-2/GW-3. Circle if (GW-1) is required.

Preservative

MeOH/ DI H_2O	None	None	None	None	None	None	None	None	None

Analysis

Lab Sample Number	GEI Sample ID	Collection Date	Collection Time	Matrix	No. of Bottles	Sampler(s) Initials	VOCs via EPA 8260D	SVOCs via EPA 8270D	VPH/EPH (Carbon Fractions Only)	Total MCP 14 Metals	PCBs via EPA 8082A	Conductivity via EPA 9050A	Corrosivity via EPA 9045	Ignitability via EPA 1010A	Reactivity via EPA 7.3.3.2 and 7.3.4.1	TCLP*	Sample Specific Remarks
1	B-GSS-461-16.0-18.0	12/19/2024	1030	SO	6	EW	X	X	X	X	X	X	X	X	X	X	

Sample Handling
Samples Field Filtered: YES NO (NA)
Sampled Shipped With Ice: (YES) NO

Relinquished by sampler: (signature)	Date:	Time:	Received by: (signature)
1.	12/19/24	1200 PM	1. MVKA Cooler
2.	12/19/24	14:05	2. 12/19/24 19:05
3.	12/19/24	18:20	3.
4.			4.
5.			5.

Turnaround Time (Business days):
5-Day __X__ 4-Day _____ 3-Day _____
2-Day _____ 1-Day _____ Other _____

Before submitting rush turnaround samples, you **must** notify the laboratory to confirm that the TAT can be achieved.

Additional Requirements/Comments/Remarks:

*Run TCLP if 20x rule has been exceeded.

2.7 Ca

Sample Matrix Abbreviations: SO = Soil GW = Groundwater SW = Surface Water SD = Sediment CO = Concrete PC = Paint Chip CLK = Caulk

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

WSP USA Environment & Infrastructure Inc

MWRA Water Tunnel

US004105.1397; PO# P1353L445001

SGS Job Number: JE23346

Sampling Date: 11/14/25



Report to:

WSP USA Inc.
100 Summer Street, 13th Floor
Boston, MA 02110
dan.martin@wsp.com; andrew.k.nelson@wsp.com

ATTN: Dan Martin

Total number of pages in report: 31

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Olga Azarian
Technical Director

Client Service contact: Victoria Pushkova 732-329-0200
Certifications: NJ(12129),NY(10983),CA,CO,CT,FL,HI,IL,IN,KY,LA (120428),MA,MD,ME,MN,NC,NH,NV, AK (UST-103),AZ (AZ0786),PA(68-00408),RI,SC,TX (T104704234),UT,VA,WA,WV

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Test results relate only to samples analyzed.

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Your feedback helps us improve our service and takes less than a minute to complete.
START SURVEY

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EHS.US.CustomerCare@sgs.com

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Sample Summary

WSP USA Environment & Infrastructure Inc

Job No: JE23346

MWRA Water Tunnel
Project No: US004105.1397; PO# P1353L445001

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JE23346-1	11/14/25	12:19	LMP	11/14/25	SO	Soil	SB-FD-542-A(MW) 12-14'

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: WSP USA Environment & Infrastructure Inc **Job No:** JE23346

Site: MWRA Water Tunnel **Report Date** 11/30/2025 3:03:28 P

On 11/14/2025, 1 sample(s), 0 Trip Blank(s), 0 Equip. Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 0.2 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of JE23346 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

Metals Analysis By Method SW846 6010D

Matrix: SO **Batch ID:** MP58819

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JE23623-1PS, JE23623-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Arsenic, Cadmium, Copper are outside control limits. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- MP58819-SD1 for Lead: Serial dilution indicates possible matrix interference.
- Only client's requested metals reported.

Metals Analysis By Method SW846 7471B

Matrix: SO **Batch ID:** MP58815

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method ASTM D1498-76M

Matrix: SO **Batch ID:** GN76319

- The data for ASTM D1498-76M meets quality control requirements.

General Chemistry By Method SM2540 G 18TH ED MOD

Matrix: SO **Batch ID:** GN76245

- The data for SM2540 G 18TH ED MOD meets quality control requirements.

General Chemistry By Method SW846 1010B/ASTM D93

Matrix: SO **Batch ID:** GN76320

- The data for SW846 1010B/ASTM D93 meets quality control requirements.

General Chemistry By Method SW846 3060A/7196A

Matrix: SO **Batch ID:** GP65698

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SW846 9045D

Matrix: SO **Batch ID:** GN76317

- The data for SW846 9045D meets quality control requirements.
- JE23346-1 for pH: Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.4 Deg. C

General Chemistry By Method SW846 CHAP7/9012 B

Matrix: SO **Batch ID:** GP65644

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SW846 CHAP7/9034

Matrix: SO **Batch ID:** GP65643

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

Summary of Hits

Job Number: JE23346
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 11/14/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE23346-1	SB-FD-542-A(MW) 12-14'					
Beryllium		0.17	0.17		mg/kg	SW846 6010D
Chromium		5.3	0.85		mg/kg	SW846 6010D
Copper		8.2	2.1		mg/kg	SW846 6010D
Lead		2.4	1.7		mg/kg	SW846 6010D
Nickel		5.0	3.4		mg/kg	SW846 6010D
Zinc		14.2	4.2		mg/kg	SW846 6010D
Ignitability (Flashpoint)		> 200			Deg. F	SW846 1010B/ASTM D93
Redox Potential Vs H2		300			mv	ASTM D1498-76M
Specific Conductivity @ 25 C		186	7.5		umhos/cm	SM2510 B-11/SW 9050A
pH [a]		7.47			su	SW846 9045D

(a) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.4 Deg. C

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SB-FD-542-A(MW) 12-14'		
Lab Sample ID:	JE23346-1	**Date Sampled:**	11/14/25
Matrix:	SO - Soil	**Date Received:**	11/14/25
		Percent Solids:	78.1
Project:	MWRA Water Tunnel		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	< 1.7	1.7	mg/kg	1	11/20/25	11/20/25	MM	SW846 6010D [2]	SW846 3050B [5]
Arsenic	< 1.7	1.7	mg/kg	1	11/20/25	11/21/25	MM	SW846 6010D [3]	SW846 3050B [5]
Beryllium	0.17	0.17	mg/kg	1	11/20/25	11/20/25	MM	SW846 6010D [2]	SW846 3050B [5]
Cadmium	< 0.42	0.42	mg/kg	1	11/20/25	11/20/25	MM	SW846 6010D [2]	SW846 3050B [5]
Chromium	5.3	0.85	mg/kg	1	11/20/25	11/20/25	MM	SW846 6010D [2]	SW846 3050B [5]
Copper	8.2	2.1	mg/kg	1	11/20/25	11/20/25	MM	SW846 6010D [2]	SW846 3050B [5]
Lead	2.4	1.7	mg/kg	1	11/20/25	11/20/25	MM	SW846 6010D [2]	SW846 3050B [5]
Mercury	< 0.034	0.034	mg/kg	1	11/19/25	11/20/25	MK	SW846 7471B [1]	SW846 7471B [4]
Nickel	5.0	3.4	mg/kg	1	11/20/25	11/20/25	MM	SW846 6010D [2]	SW846 3050B [5]
Selenium	< 1.7	1.7	mg/kg	1	11/20/25	11/20/25	MM	SW846 6010D [2]	SW846 3050B [5]
Silver	< 0.42	0.42	mg/kg	1	11/20/25	11/20/25	MM	SW846 6010D [2]	SW846 3050B [5]
Thallium	< 0.85	0.85	mg/kg	1	11/20/25	11/20/25	MM	SW846 6010D [2]	SW846 3050B [5]
Zinc	14.2	4.2	mg/kg	1	11/20/25	11/20/25	MM	SW846 6010D [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA59793
(2) Instrument QC Batch: MA59803
(3) Instrument QC Batch: MA59812
(4) Prep QC Batch: MP58815
(5) Prep QC Batch: MP58819

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SB-FD-542-A(MW) 12-14'		
Lab Sample ID:	JE23346-1	**Date Sampled:**	11/14/25
Matrix:	SO - Soil	**Date Received:**	11/14/25
		Percent Solids:	78.1
Project:	MWRA Water Tunnel		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.50	0.50	mg/kg	1	11/25/25 17:17	RI	SW846 3060A/7196A
Cyanide Reactivity	< 12	12	mg/kg	1	11/20/25 21:20	JD	SW846 CHAP7/9012 B
Ignitability (Flashpoint)	> 200		Deg. F	1	11/20/25 16:19	DB	SW846 1010B/ASTM D93
Redox Potential Vs H2	300		mv	1	11/20/25 17:08	DB	ASTM D1498-76M
Solids, Percent	78.1		%	1	11/19/25 10:00	RB	SM2540 G 18TH ED MOD
Specific Conductivity @ 25 C	186	7.5	umhos/cm	1	11/21/25 13:23	MS	SM2510 B-11/SW 9050A
Sulfide Reactivity	< 120	120	mg/kg	1	11/21/25 16:56	GT	SW846 CHAP7/9034
pH [a]	7.47		su	1	11/20/25 16:16	DB	SW846 9045D

(a) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.4 Deg. C

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- **Certification Exceptions**
- **Chain of Custody**
- **MCP Form**
- **Sample Tracking Chronicle**
- **QC Evaluation: MA MCP Limits**

Parameter Certification Exceptions

Job Number: JE23346
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

The following parameters included in this report are exceptions to NELAC certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
Cyanide Reactivity		SW846 CHAP7/9012 B	SO	SGS is not certified for this parameter. [a]
Redox Potential Vs H2		ASTM D1498-76M	SO	SGS is not certified for this parameter. [b]
Specific Conductivity @ 25 C		SM2510 B-11/SW 9050A	SO	SGS is not certified for this parameter. [b]
Sulfide Reactivity		SW846 CHAP7/9034	SO	SGS is not certified for this parameter. [a]

(a) Reactivity analyzed following SW846 Chapter 7 is no longer recognized by regulatory agencies. Use of results should be verified through the program to which the data is being submitted.
(b) Lab cert for analyte not supported by NJDEP, OQA. Only methods/analytes required for reporting by the State of NJ can be certified in NJ. Use of this analyte for compliance must be verified through the appropriate regulatory office.

Certification exceptions shown are based on the New Jersey DEP certifications. Applicability in other states may vary. Please contact your laboratory representative if additional information is required for a specific regulatory program.

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200
www.sgs.com/ehsusa

Page 1 of 1

SO

FED-EX Tracking #:
Bottle Order Control #: TF-101625-SO
SGS Quote #:
SGS Job #: JE23346

Client / Reporting Information

Company Name: WSP
Street Address: 100 Summer ST, 13th Floor
City: Boston State: MA Zip: 02116
Project Contact: Dan Martin E-mail: dan.martin@wsp.com
Phone #: 973-407-1394
Sampler(s) Name(s): Tina Pon Phone #: 2294432987

Project Information

Project Name: Metropolitan Water Tunnel Program MWRA Contract No 7556
Street: 116 Gould St
City: Needham State: MA
Project #: 05009105.1397
Client Purchase Order #: P135 32 445001
Project Manager:
Attention:

Billing Information (If different from Report to)

Company Name:
Street Address:
City: State: Zip:

Analysis Requested

1GH, SCON, SPLEAC
#M13, XXCQ, CPLEAC, (EH/PHTEMP)

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED - Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB-Equipment Blank
RB - Rinse Blank
TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Source Chlorinated (Y/N)	Matrix	# of bottles	HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	pH Check (Lab Use Only)			LAB USE ONLY
1	SB-FD-542-A(MW) G 12-14'		11/14/25	12:19	LMP	G	N	S	1									X	X	X	D5

Initial Assessment NPZB
Level 3 Verification

Turn Around Time (Business Days)

Approved By (SGS PM) / Date:

- [x] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via SGS Engage
* Approval needed for 1-3 BD TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NJGW Criteria 2025 *new*
- [ ] NYASP Category A
- [ ] NYASP Category B
- [x] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

XXCEA - includes EH & pH 24hr hold.

SGS Courier

11/14 SGS Service Center Northborough, MA

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished By:	Date / Time:	Received By:
1	LMP	11/14/25 1304	1
2			2
3		11/14/25 2330	3
4			4
5			5

Custody Seal # ☐ Intact ☐ Not Intact ☐ Absent
Therm ID: See Sample Receipt Summary
On Ice: X
Cooler Temp. °C: 0.1

Ref No: G140222989

1200

SGS Sample Receipt Summary

Job Number: JE23346 **Client:** ENVIROTRAC LTD **Project:** ENVMAS: 0005-2746, SUNOCO CANTON

Date / Time Received: 11/14/2025 11:30:00 PM **Delivery Method:** SGS COURIER **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (0.1);

Cooler Temps (Corrected) °C: Cooler 1: (0.2);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR-50		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservatio	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☑	☐
2. Trip Blank listed on COC:	☐		☑	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JE23346: Chain of Custody
Page 2 of 2

Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup	WSC-CAM	Exhibit VII A
	July 1, 2010	Revision No. 1
	Final	

Exhibit VII A-2: MassDEP Analytical Protocol Certification Form

MassDEP Analytical Protocol Certification Form

Laboratory Name:	SGS North America Inc. - Dayton	Project #:	JE23346
Project Location:	MWRA Water Tunnel	MADEP RTN	None

This form provides certifications for the following data set: list Laboratory Sample ID Numbers(s)

JE23346-1

Matrices: Groundwater/Surface Water ( ) Soil/Sediment (X) Drinking Water ( ) Air ( ) Other ( )

CAM Protocol (check all that apply below):

8260 VOC ( ) CAM IIA	7470/7471 Hg (X) CAM III B	MassDEP VPH ( ) CAM IV A	8081 Pesticides ( ) CAM V B	7196 Hex Cr (X) CAM VI B	Mass DEP APH ( ) CAM IX A
8270 SVOC ( ) CAM II B	7010 Metals ( ) CAM III C	MassDEP EPH ( ) CAM IV B	8151 Herbicides ( ) CAM V C	8330 Explosives ( ) CAM VIII A	TO-15 VOC ( ) CAM IX B
6010 Metals (X) CAM III A	6020 Metals ( ) CAM III D	8082 PCB ( ) CAM V A	9014 Total Cyanide/PAC ( ) CAM VI A	6860 Perchlorate ( ) CAM VIII B	

Affirmative Responses to Questions A Through F are required for "Presumptive Certainty status

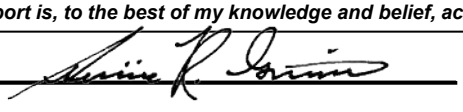
A	Were all samples received in a condition consistent with those described on the Chain-of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☐ Yes	☑ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes	☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes	☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑ Yes	☐ No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☐ Yes	☐ No
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes	☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☑ Yes	☐ No

Responses to questions G, H, and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols	☑ Yes	☐ No [1]
	Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data useability and representativeness requirements described in 310 CMR 40.1056(2)(k) and WSC-07-350.		
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	☑ Yes	☐ No [1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes	☑ No [1]

[1] ***All Negative responses must be addressed in an attached Environmental Laboratory case narrative.***

I the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature:  **Position:** **Technical Director**

Printed Name: Olga Azarian **Date:** **30-Nov-25**

Internal Sample Tracking Chronicle

WSP USA Environment & Infrastructure Inc

Job No: JE23346

MWRA Water Tunnel
Project No: US004105.1397; PO# P1353L445001

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JE23346-1	Collected: 14-NOV-25 12:19 By: LMP		Received: 14-NOV-25 By: JW			
SB-FD-542-A(MW) 12-14'						
JE23346-1	SM2540 G 18TH ED MOD	19-NOV-25 10:00	RB			SOL104
JE23346-1	SW846 7471B	20-NOV-25 11:47	MK	19-NOV-25	MK	HG
JE23346-1	SW846 9045D	20-NOV-25 16:16	DB			PHTEMP
JE23346-1	SW846 1010B/ASTM D93	20-NOV-25 16:19	DB			IGN
JE23346-1	ASTM D1498-76M	20-NOV-25 17:08	DB			EH
JE23346-1	SW846 6010D	20-NOV-25 19:38	MM	20-NOV-25	MG	AG,BE,CD,CR,CU,NI,PB,SB,SE,TL,ZN
JE23346-1	SW846 CHAP7/9012 B	20-NOV-25 21:20	JD	19-NOV-25	BV	CREAC
JE23346-1	SM2510 B-11/SW 9050A	21-NOV-25 13:23	MS			SCON
JE23346-1	SW846 CHAP7/9034	21-NOV-25 16:56	GT	19-NOV-25	BV	SREAC
JE23346-1	SW846 6010D	21-NOV-25 20:30	MM	20-NOV-25	MG	AS
JE23346-1	SW846 3060A/7196A	25-NOV-25 17:17	RI	20-NOV-25	LV	XCRA

QC Evaluation: MA MCP Limits

Job Number: JE23346
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 11/14/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits

No MA MCP Limits found for methods in this job.

*** Sample used for QC is not from job JE23346**

Metals Analysis

6

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Blank Spike and Lab Control Sample Summaries**
- **Serial Dilution Summaries**

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE23346
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58815 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 11/19/25

Metal	RL	IDL	MDL	MB raw	MB final
Mercury	0.033	.006	.015	-0.0017	<0.033

Associated samples MP58815: JE23346-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE23346
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58815 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 11/19/25

Metal	BSP Result	Spikelot HGPWS1	% Rec	QC Limits
Mercury	0.34	0.333	102.0	80-120

Associated samples MP58815: JE23346-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE23346
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58819
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 11/20/25

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	2.7	8.1		
Antimony	2.0	.22	.41	-0.080	<2.0
Arsenic	2.0	.13	.28	-0.050	<2.0
Barium	20	.1	1.9		
Beryllium	0.20	.02	.08	0.0	<0.20
Bismuth	2.0	.21	.52		
Boron	10	.1	3.7		
Cadmium	0.50	.02	.07	0.0	<0.50
Calcium	500	.77	21		
Chromium	1.0	.05	.37	0.090	<1.0
Cobalt	5.0	.04	.28		
Copper	2.5	.68	.84	0.050	<2.5
Iron	50	1.5	19		
Lead	2.0	.16	.41	-0.010	<2.0
Lithium	5.0	.37	.92		
Magnesium	500	5.4	14		
Manganese	1.5	.01	.41		
Molybdenum	2.0	.05	.32		
Nickel	4.0	.03	.35	0.020	<4.0
Phosphorus	20	.18	3.3		
Potassium	1000	7.7	32		
Selenium	2.0	.2	.65	0.14	<2.0
Silicon	20	.13	11		
Silver	0.50	.09	.17	0.0	<0.50
Sodium	1000	2.3	78		
Strontium	5.0	.04	.18		
Sulfur	10	.41	3.9		
Thallium	1.0	.16	.58	-0.11	<1.0
Tin	20	.09	3.8		
Titanium	1.0	.09	.34		
Tungsten	5.0	.2	1.8		
Vanadium	5.0	.08	.19		
Zinc	5.0	.02	2.3	0.28	<5.0

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE23346
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58819 Methods: SW846 6010D
Matrix Type: SOLID Units: mg/kg

Prep Date: 11/20/25

Metal	RL	IDL	MDL	MB raw	final
Zirconium	2.0	.05	.54		

Associated samples MP58819: JE23346-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE23346
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58819
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date:			11/20/25				11/20/25	
Metal	LCS Result	Spikelot MPLC681022% Rec		QC Limits	LCS Result	Spikelot MPLC681022% Rec		QC Limits
Aluminum								
Antimony	76.6	276	27.8	2-110	79.5	276	28.8	2-110
Arsenic	159	223	71.3	70-102	158	223	70.9	70-102
Barium	anr							
Beryllium	109	131	83.2	76-108	109	131	83.2	76-108
Bismuth								
Boron								
Cadmium	167	226	73.9	74-105	172	226	76.1	74-105
Calcium								
Chromium	177	230	77.0	73-107	179	230	77.8	73-107
Cobalt								
Copper	188	239	78.7	75-106	192	239	80.3	75-106
Iron								
Lead	223	275	81.1	74-108	228	275	82.9	74-108
Lithium								
Magnesium								
Manganese								
Molybdenum								
Nickel	92.9	118	78.7	72-104	95.0	118	80.5	72-104
Phosphorus								
Potassium								
Selenium	102	137	74.5	71-109	106	137	77.4	71-109
Silicon								
Silver	56.2	75.3	74.6	72-110	57.8	75.3	76.8	72-110
Sodium								
Strontium								
Sulfur								
Thallium	137	165	83.0	71-107	140	165	84.8	71-107
Tin								
Titanium								
Tungsten								
Vanadium								
Zinc	218	286	76.2	76-112	224	286	78.3	76-112

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE23346
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58819 Methods: SW846 6010D
Matrix Type: SOLID Units: mg/kg

Prep Date: 11/20/25 11/20/25

Metal	LCS Result	Spikelot MPLC681022% Rec	QC Limits	LCS Result	Spikelot MPLC681022% Rec	QC Limits
Zirconium						

Associated samples MP58819: JE23346-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE23346
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58819
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 11/20/25

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum				
Antimony	197	200	98.5	80-120
Arsenic	200	200	100.0	80-120
Barium	anr			
Beryllium	196	200	98.0	80-120
Bismuth				
Boron				
Cadmium	196	200	98.0	80-120
Calcium				
Chromium	193	200	96.5	80-120
Cobalt				
Copper	199	200	99.5	80-120
Iron				
Lead	195	200	97.5	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	197	200	98.5	80-120
Phosphorus				
Potassium				
Selenium	194	200	97.0	80-120
Silicon				
Silver	24.3	25	97.2	80-120
Sodium				
Strontium				
Sulfur				
Thallium	200	200	100.0	80-120
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc	199	200	99.5	80-120

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE23346
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58819 Methods: SW846 6010D
Matrix Type: SOLID Units: mg/kg

Prep Date: 11/20/25

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Zirconium				

Associated samples MP58819: JE23346-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE23346
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58819
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 11/20/25

Metal	JE23623-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	0.00	35.1	NC	0-10
Arsenic	35.9	28.5	20.6 (a)	0-10
Barium	anr			
Beryllium	4.30	4.20	2.3	0-10
Bismuth				
Boron				
Cadmium	2.10	6.30	200.0(a)	0-10
Calcium				
Chromium	63.3	67.9	5.8	0-10
Cobalt				
Copper	80.4	71.8	10.7 (a)	0-10
Iron				
Lead	207	225	13.4*(b)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	81.1	86.2	6.3	0-10
Phosphorus				
Potassium				
Selenium	0.00	22.7	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Sulfur				
Thallium	0.00	10.7	NC	0-10
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc	710	749	5.4	0-10

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE23346
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58819 Methods: SW846 6010D
Matrix Type: SOLID Units: ug/l

Prep Date: 11/20/25

	JE23623-1		QC
Metal	Original SDL 1:5	%DIF	Limits
Zirconium			

Associated samples MP58819: JE23346-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
(b) Serial dilution indicates possible matrix interference.

POST DIGESTATE SPIKE SUMMARY

Login Number: JE23346
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58819 Methods: SW846 6010D
Matrix Type: SOLID Units: ug/l

Prep Date: 11/20/25

Metal	Sample ml	Final ml	JE23623-1 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony	19.25	20			1847	0.2	200	2000	92.4	80-120
Arsenic										
Barium										
Beryllium										
Bismuth										
Boron										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper										
Iron										
Lead										
Lithium										
Magnesium										
Manganese										
Molybdenum										
Nickel										
Phosphorus										
Potassium										
Selenium										
Silicon										
Silver										
Sodium										
Strontium										
Sulfur										
Thallium										
Tin										
Titanium										
Tungsten										
Vanadium										
Zinc										

POST DIGESTATE SPIKE SUMMARY

Login Number: JE23346
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58819 Methods: SW846 6010D
Matrix Type: SOLID Units: ug/l

Prep Date: 11/20/25

Metal	Sample ml	Final ml	JE23623-1 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Zirconium										

Associated samples MP58819: JE23346-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested

General Chemistry

QC Data Summaries

Includes the following where applicable:

- **Method Blank and Blank Spike Summaries**
- **Duplicate Summaries**
- **Matrix Spike Summaries**

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: JE23346
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP65698/GN76526			mg/kg	40	39.3	98.3	80-120%
Chromium, Hexavalent	GP65698/GN76526	0.40	0.0	mg/kg	1068.317	959	89.8	80-120%
Cyanide Reactivity	GP65644/GN76341	10	0.0	mg/kg	100	5.15	5.2	.25-27%
Specific Conductivity @ 25 C	GN76352			umhos/cm	1412	1400	99.2	95-105%
Sulfide Reactivity	GP65643/GN76380	100	0.0	mg/kg	430	230	53.5	42-107%

Associated Samples:
Batch GN76352: JE23346-1
Batch GP65643: JE23346-1
Batch GP65644: JE23346-1
Batch GP65698: JE23346-1
(*) Outside of QC limits

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

WSP USA Environment & Infrastructure Inc

MWRA Water Tunnel

US004105.1397 PO# P13532445001

SGS Job Number: JE24521

Sampling Date: 12/04/25



Report to:

WSP USA Inc.
100 Summer Street, 13th Floor
Boston, MA 02110
dan.martin@wsp.com; andrew.k.nelson@wsp.com

ATTN: Dan Martin

Total number of pages in report: 91

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Olga Azarian
Technical Director

Client Service contact: Victoria Pushkova 732-329-0200
Certifications: NJ(12129),NY(10983),CA,CO,CT,FL,HI,IL,IN,KY,LA (120428),MA,MD,ME,MN,NC,NH,NV, AK (UST-103),AZ (AZ0786),PA(68-00408),RI,SC,TX (T104704234),UT,VA,WA,WV

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Test results relate only to samples analyzed.

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SGS North America Inc.

Sample Summary

WSP USA Environment & Infrastructure Inc

Job No: JE24521

MWRA Water Tunnel
Project No: US004105.1397 PO# P13532445001

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
JE24521-1	12/04/25	12:05	LMD	12/05/25	SO	Soil	SB-FD-543-A(MW)_10-14

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	WSP USA Environment & Infrastructure Inc	**Job No:**	JE24521
Site:	MWRA Water Tunnel	**Report Date**	12/15/2025 12:05:34 P

On 12/05/2025, 1 sample(s), 0 Trip Blank(s), 0 Equip. Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 0.6 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of JE24521 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: SO **Batch ID:** V1C9104

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- V1C9104-BSD for 1,2,4-Trimethylbenzene: Outside in house control limits.
- V1C9104-BSD for Di-Isopropyl ether: Outside in house control limits.
- V1C9104-BSD for cis-1,3-Dichloropropene: Outside in house control limits.
- V1C9104-BSD for cis-1,2-Dichloroethene: Outside in house control limits.
- V1C9104-BSD for Acetone: Outside in house control limits.
- V1C9104-BSD for 1,3,5-Trimethylbenzene: Outside in house control limits.
- V1C9104-BSD for Hexachlorobutadiene: Outside in house control limits.
- V1C9104-BSD for 1,2-Dibromo-3-chloropropane: Outside in house control limits.
- V1C9104-BSD for Bromomethane: Outside in house control limits.
- V1C9104-BSD for 1,2,4-Trichlorobenzene: Outside in house control limits.
- V1C9104-BSD for 1,2,3-Trichlorobenzene: Outside in house control limits.
- V1C9104-BSD for 1,1-Dichloropropene: Outside in house control limits.
- V1C9104-BSD for 1,1,2,2-Tetrachloroethane: Outside in house control limits.
- V1C9104-BSD for Carbon disulfide: Outside control limits.
- JE24521-1 for Ethyl Ether: This compound is outside the MCP limits in the associated BSD biased high.
- V1C9104-BSD for 1,2-Dichlorobenzene: Outside in house control limits.
- V1C9104-BSD for Vinyl chloride: Outside in house control limits.
- JE24521-1 for Carbon disulfide: This compound is outside the MCP limits in the associated BSD biased high.
- JE24521-1 for Acetone: Response factor for this compound is below 0.05 in the initial and continuing calibrations.
- V1C9104-BSD for 4-Methyl-2-pentanone(MIBK): Outside in house control limits.
- JE24521-1 for Chloroethane: Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.
- V1C9104-BSD for Methyl Tert Butyl Ether: Outside in house control limits.
- V1C9104-BSD for trans-1,2-Dichloroethene: Outside in house control limits.
- V1C9104-BSD for Toluene: Outside in house control limits.
- V1C9104-BSD for Tetrahydrofuran: Outside in house control limits.
- V1C9104-BSD for Naphthalene: Outside in house control limits.
- V1C9104-BSD for sec-Butylbenzene: Outside in house control limits.

MS Volatiles By Method SW846 8260D

Matrix: SO **Batch ID:** V1C9104

- V1C9104-BSD for p-Isopropyltoluene: Outside in house control limits.
- V1C9104-BSD for p-Chlorotoluene: Outside in house control limits.
- V1C9104-BSD for o-Chlorotoluene: Outside in house control limits.
- V1C9104-BSD for n-Butylbenzene: Outside in house control limits.
- V1C9104-BSD for tert-Butyl Ethyl Ether: Outside in house control limits.
- JE24521-1 for 2-Butanone (MEK): Response factor for this compound is below 0.05 in the initial and continuing calibrations.
- V1C9104-BSD for Methylene chloride: Outside in house control limits.
- Not all RLs meet MCP requirement.

MS Semi-volatiles By Method SW846 8270E

Matrix: SO **Batch ID:** OP69554

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- JE24521-1 for n-Nitrosodimethylamine: Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

GC Volatiles By Method MADEP VPH REV 2.1

Matrix: SO **Batch ID:** GBH1985

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JE24521-1 have compounds reported with “E” qualifiers indicating estimated value exceeding calibration range.

GC Volatiles By Method SW846 8015D

Matrix: SO **Batch ID:** GKM633

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

GC/LC Semi-volatiles By Method MADEP EPH REV 2.1

Matrix: SO **Batch ID:** OP69599

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Only report ranges.

GC/LC Semi-volatiles By Method SW846 8015D

Matrix: SO **Batch ID:** OP69568

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

GC/LC Semi-volatiles By Method SW846 8082A

Matrix: SO **Batch ID:** OP69558

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- OP69558-BS1 for Aroclor 1016: Reported from the 2nd signal. The %D of the CCV on the 1st signal exceeds the method criteria of 20%, so it being used for confirmation only.
- OP69558-BS1 for Aroclor 1260: Reported from the 2nd signal. The %D of the CCV on the 1st signal exceeds the method criteria of 20%, so it being used for confirmation only.

Metals Analysis By Method SW846 6010D

Matrix: SO **Batch ID:** MP59133

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JE24521-1PS, JE24521-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Antimony, Arsenic are outside control limits for sample MP59133-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- Only client's requested metals reported.

Metals Analysis By Method SW846 7471B

Matrix: SO **Batch ID:** MP59193

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method ASTM D1498-76M

Matrix: SO **Batch ID:** GN76882

- The data for ASTM D1498-76M meets quality control requirements.

General Chemistry By Method SM2540 G 18TH ED MOD

Matrix: SO **Batch ID:** GN76842

- The data for SM2540 G 18TH ED MOD meets quality control requirements.

General Chemistry By Method SW846 1010B/ASTM D93

Matrix: SO **Batch ID:** GN77053

- The data for SW846 1010B/ASTM D93 meets quality control requirements.

General Chemistry By Method SW846 3060A/7196A

Matrix: SO **Batch ID:** GP66139

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SW846 9045D

Matrix:	SO	Batch ID:	GN76881

- The data for SW846 9045D meets quality control requirements.
- JE24521-1 for pH: Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 18.9 Deg. C

General Chemistry By Method SW846 CHAP7/9012 B

Matrix:	SO	Batch ID:	GP66057

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SW846 CHAP7/9034

Matrix:	SO	Batch ID:	GP66056

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

Summary of Hits

Job Number: JE24521
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/04/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE24521-1	SB-FD-543-A(MW)_10-14					
Acetone [a]		8.3 J	11	4.6	ug/kg	SW846 8260D
n-Butylbenzene		2.0 J	2.2	0.45	ug/kg	SW846 8260D
sec-Butylbenzene		1.3 J	2.2	0.48	ug/kg	SW846 8260D
Ethylbenzene		1.4	1.1	0.51	ug/kg	SW846 8260D
p-Isopropyltoluene		1.1 J	2.2	0.44	ug/kg	SW846 8260D
Naphthalene		2.8 J	5.6	2.8	ug/kg	SW846 8260D
n-Propylbenzene		2.6	2.2	0.52	ug/kg	SW846 8260D
1,2,4-Trimethylbenzene		10.2	2.2	0.56	ug/kg	SW846 8260D
1,3,5-Trimethylbenzene		5.8	2.2	0.48	ug/kg	SW846 8260D
m,p-Xylene		2.8	1.1	1.0	ug/kg	SW846 8260D
o-Xylene		4.1	1.1	0.51	ug/kg	SW846 8260D
Xylene (total)		6.9	1.1	0.51	ug/kg	SW846 8260D
bis(2-Ethylhexyl)phthalate		11.7 J	80	9.3	ug/kg	SW846 8270E
Isophorone		14.9 J	80	8.5	ug/kg	SW846 8270E
2-Methylnaphthalene		35.8 J	40	9.0	ug/kg	SW846 8270E
Naphthalene		15.6 J	40	11	ug/kg	SW846 8270E
C9- C12 Aliphatics (Unadj.)		32900 E	7000	3500	ug/kg	MADEP VPH REV 2.1
C9- C12 Aliphatics		22400 E	7000	3500	ug/kg	MADEP VPH REV 2.1
C9- C10 Aromatics		10500	7000	3500	ug/kg	MADEP VPH REV 2.1
TPH-GRO (C6-C10)		15.5	14	7.0	mg/kg	SW846 8015D
C11-C22 Aromatics (Unadj.)		21700	8200	710	ug/kg	MADEP EPH REV 2.1
C9-C18 Aliphatics		22200	8200	230	ug/kg	MADEP EPH REV 2.1
C11-C22 Aromatics		21700	8200	710	ug/kg	MADEP EPH REV 2.1
C19-C36 Aliphatics		24500	8200	560	ug/kg	MADEP EPH REV 2.1
TPH-DRO (C10-C28)		8.08	4.9	3.2	mg/kg	SW846 8015D
Arsenic		2.1	1.6		mg/kg	SW846 6010D
Beryllium		0.27	0.16		mg/kg	SW846 6010D
Chromium		9.2	0.81		mg/kg	SW846 6010D
Copper		9.6	2.0		mg/kg	SW846 6010D
Lead		2.5	1.6		mg/kg	SW846 6010D
Nickel		7.9	3.2		mg/kg	SW846 6010D
Zinc		22.1	4.0		mg/kg	SW846 6010D
Ignitability (Flashpoint)		> 200			Deg. F	SW846 1010B/ASTM D93
Redox Potential Vs H2		456			mv	ASTM D1498-76M
Specific Conductivity @ 25 C		40.1	7.5		umhos/cm	SM2510 B-11/SW 9050A
pH [b]		6.71			su	SW846 9045D

(a) Response factor for this compound is below 0.05 in the initial and continuing calibrations.
(b) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 18.9 Deg. C

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SB-FD-543-A(MW)_10-14		
Lab Sample ID:	JE24521-1	**Date Sampled:**	12/04/25
Matrix:	SO - Soil	**Date Received:**	12/05/25
Method:	SW846 8260D	**Percent Solids:**	80.0
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1C211974.D	1	12/09/25 14:07	JN	n/a	n/a	V1C9104
Run #2							

	Initial Weight
Run #1	5.6 g
Run #2	

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	8.3	11	4.6	ug/kg	J
71-43-2	Benzene	ND	0.56	0.51	ug/kg	
108-86-1	Bromobenzene	ND	5.6	0.62	ug/kg	
74-97-5	Bromochloromethane	ND	5.6	0.62	ug/kg	
75-27-4	Bromodichloromethane	ND	2.2	0.48	ug/kg	
75-25-2	Bromoform	ND	5.6	1.5	ug/kg	
74-83-9	Bromomethane	ND	5.6	0.85	ug/kg	
78-93-3	2-Butanone (MEK) [a]	ND	11	2.7	ug/kg	
104-51-8	n-Butylbenzene	2.0	2.2	0.45	ug/kg	J
135-98-8	sec-Butylbenzene	1.3	2.2	0.48	ug/kg	J
98-06-6	tert-Butylbenzene	ND	2.2	0.56	ug/kg	
75-15-0	Carbon disulfide [b]	ND	2.2	0.60	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.2	0.69	ug/kg	
108-90-7	Chlorobenzene	ND	2.2	0.51	ug/kg	
75-00-3	Chloroethane [c]	ND	5.6	0.66	ug/kg	
67-66-3	Chloroform	ND	2.2	1.1	ug/kg	
74-87-3	Chloromethane	ND	5.6	2.2	ug/kg	
95-49-8	o-Chlorotoluene	ND	2.2	0.60	ug/kg	
106-43-4	p-Chlorotoluene	ND	2.2	0.49	ug/kg	
108-20-3	Di-Isopropyl ether	ND	2.2	0.56	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.2	0.77	ug/kg	
124-48-1	Dibromochloromethane	ND	2.2	0.62	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.1	0.47	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.61	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.55	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.55	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.6	0.81	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.55	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.52	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.73	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	0.94	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.68	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A(MW)_10-14		
Lab Sample ID:	JE24521-1	**Date Sampled:**	12/04/25
Matrix:	SO - Soil	**Date Received:**	12/05/25
Method:	SW846 8260D	**Percent Solids:**	80.0
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.2	0.53	ug/kg	
142-28-9	1,3-Dichloropropane	ND	2.2	0.58	ug/kg	
594-20-7	2,2-Dichloropropane	ND	2.2	0.48	ug/kg	
563-58-6	1,1-Dichloropropene	ND	2.2	0.52	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.2	0.53	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.2	0.51	ug/kg	
123-91-1	1,4-Dioxane	ND	140	41	ug/kg	
60-29-7	Ethyl Ether [b]	ND	2.2	0.51	ug/kg	
100-41-4	Ethylbenzene	1.4	1.1	0.51	ug/kg	
87-68-3	Hexachlorobutadiene	ND	5.6	0.73	ug/kg	
591-78-6	2-Hexanone	ND	5.6	2.4	ug/kg	
98-82-8	Isopropylbenzene	ND	2.2	1.6	ug/kg	
99-87-6	p-Isopropyltoluene	1.1	2.2	0.44	ug/kg	J
1634-04-4	Methyl Tert Butyl Ether	ND	1.1	0.52	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.6	2.5	ug/kg	
74-95-3	Methylene bromide	ND	5.6	0.59	ug/kg	
75-09-2	Methylene chloride	ND	5.6	2.9	ug/kg	
91-20-3	Naphthalene	2.8	5.6	2.8	ug/kg	J
103-65-1	n-Propylbenzene	2.6	2.2	0.52	ug/kg	
100-42-5	Styrene	ND	2.2	0.45	ug/kg	
994-05-8	tert-Amyl Methyl Ether	ND	2.2	0.56	ug/kg	
637-92-3	tert-Butyl Ethyl Ether	ND	2.2	0.54	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	2.2	0.47	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.2	0.67	ug/kg	
127-18-4	Tetrachloroethene	ND	2.2	0.65	ug/kg	
109-99-9	Tetrahydrofuran	ND	11	3.3	ug/kg	
108-88-3	Toluene	ND	1.1	0.59	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.6	2.8	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.6	2.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.2	0.54	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.2	0.62	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.85	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.6	0.76	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	5.6	0.62	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	10.2	2.2	0.56	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	5.8	2.2	0.48	ug/kg	
75-01-4	Vinyl chloride	ND	2.2	0.54	ug/kg	
	m,p-Xylene	2.8	1.1	1.0	ug/kg	
95-47-6	o-Xylene	4.1	1.1	0.51	ug/kg	
1330-20-7	Xylene (total)	6.9	1.1	0.51	ug/kg	

ND = Not detected **MDL = Method Detection Limit**
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A(MW)_10-14		
Lab Sample ID:	JE24521-1	**Date Sampled:**	12/04/25
Matrix:	SO - Soil	**Date Received:**	12/05/25
Method:	SW846 8260D	**Percent Solids:**	80.0
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	117%		80-124%
17060-07-0	1,2-Dichloroethane-D4	113%		75-133%
2037-26-5	Toluene-D8	108%		79-125%
460-00-4	4-Bromofluorobenzene	99%		58-148%

(a) Response factor for this compound is below 0.05 in the initial and continuing calibrations.
(b) This compound is outside the MCP limits in the associated BSD biased high.
(c) Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A(MW)_10-14		
Lab Sample ID:	JE24521-1	**Date Sampled:**	12/04/25
Matrix:	SO - Soil	**Date Received:**	12/05/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	80.0
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4P699484.D	1	12/07/25 22:22	TL	12/06/25 11:40	OP69554	E4P3931
Run #2							

	Initial Weight	Final Volume
Run #1	31.4 g	1.0 ml
Run #2		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	800	66	ug/kg	
95-57-8	2-Chlorophenol	ND	80	20	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	71	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	43	ug/kg	
95-48-7	2-Methylphenol	ND	80	25	ug/kg	
	3&4-Methylphenol	ND	80	33	ug/kg	
88-75-5	2-Nitrophenol	ND	200	26	ug/kg	
100-02-7	4-Nitrophenol	ND	400	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	37	ug/kg	
108-95-2	Phenol	ND	80	21	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	30	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	24	ug/kg	
83-32-9	Acenaphthene	ND	40	14	ug/kg	
208-96-8	Acenaphthylene	ND	40	20	ug/kg	
98-86-2	Acetophenone	ND	200	8.6	ug/kg	
62-53-3	Aniline	ND	80	18	ug/kg	
120-12-7	Anthracene	ND	40	24	ug/kg	
56-55-3	Benzo(a)anthracene	ND	40	11	ug/kg	
50-32-8	Benzo(a)pyrene	ND	40	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	40	18	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	40	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	40	19	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	80	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	80	9.7	ug/kg	
91-58-7	2-Chloronaphthalene	ND	80	9.5	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
218-01-9	Chrysene	ND	40	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	80	8.5	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	80	17	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A(MW)_10-14		
Lab Sample ID:	JE24521-1	**Date Sampled:**	12/04/25
Matrix:	SO - Soil	**Date Received:**	12/05/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	80.0
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	80	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	80	13	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	80	12	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	80	9.0	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	80	8.5	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	80	9.7	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	40	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	40	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	80	33	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	40	18	ug/kg	
132-64-9	Dibenzofuran	ND	80	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	80	6.5	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	80	9.9	ug/kg	
84-66-2	Diethyl phthalate	ND	80	8.5	ug/kg	
131-11-3	Dimethyl phthalate	ND	80	7.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	11.7	80	9.3	ug/kg	J
206-44-0	Fluoranthene	ND	40	18	ug/kg	
86-73-7	Fluorene	ND	40	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	80	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	40	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	400	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	20	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	40	19	ug/kg	
78-59-1	Isophorone	14.9	80	8.5	ug/kg	J
91-57-6	2-Methylnaphthalene	35.8	40	9.0	ug/kg	J
91-20-3	Naphthalene	15.6	40	11	ug/kg	J
98-95-3	Nitrobenzene	ND	80	15	ug/kg	
62-75-9	n-Nitrosodimethylamine [a]	ND	80	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	80	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	15	ug/kg	
85-01-8	Phenanthrene	ND	40	13	ug/kg	
129-00-0	Pyrene	ND	40	13	ug/kg	
110-86-1	Pyridine	ND	80	14	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	80	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	61%		10-99%
4165-62-2	Phenol-d5	62%		10-96%
118-79-6	2,4,6-Tribromophenol	76%		10-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A(MW)_10-14		
Lab Sample ID:	JE24521-1	**Date Sampled:**	12/04/25
Matrix:	SO - Soil	**Date Received:**	12/05/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	80.0
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	55%		10-109%
321-60-8	2-Fluorobiphenyl	73%		11-109%
1718-51-0	Terphenyl-d14	70%		10-120%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A(MW)_10-14		
Lab Sample ID:	JE24521-1	**Date Sampled:**	12/04/25
Matrix:	SO - Soil	**Date Received:**	12/05/25
Method:	MADEP VPH REV 2.1	**Percent Solids:**	80.0
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BH55456.D	1	12/09/25 22:38	JN	n/a	n/a	GBH1985
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	10.8 g	10.0 ml	100 ul
Run #2			

MADEP VPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	7000	3500	ug/kg	
	C9- C12 Aliphatics (Unadj.)	32900	7000	3500	ug/kg	E
	C5- C8 Aliphatics	ND	7000	3500	ug/kg	
	C9- C12 Aliphatics	22400	7000	3500	ug/kg	E
	C9- C10 Aromatics	10500	7000	3500	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	2,3,4-Trifluorotoluene	94%		70-130%
	2,3,4-Trifluorotoluene	92%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A(MW)_10-14		
Lab Sample ID:	JE24521-1	**Date Sampled:**	12/04/25
Matrix:	SO - Soil	**Date Received:**	12/05/25
Method:	SW846 8015D	**Percent Solids:**	80.0
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KM15044.D	1	12/08/25 20:55	JN	n/a	n/a	GKM633
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	10.8 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	15.5	14	7.0	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	84%		70-116%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A(MW)_10-14		
Lab Sample ID:	JE24521-1	**Date Sampled:**	12/04/25
Matrix:	SO - Soil	**Date Received:**	12/05/25
Method:	MADEP EPH REV 2.1 SW846 3546	**Percent Solids:**	80.0
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Y83231.D	1	12/09/25 12:42	CB	12/08/25 10:15	OP69599	G5Y4098
Run #2							

	Initial Weight	Final Volume
Run #1	15.3 g	2.0 ml
Run #2		

MAEPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	21700	8200	710	ug/kg	
	C9-C18 Aliphatics	22200	8200	230	ug/kg	
	C19-C36 Aliphatics	24500	8200	560	ug/kg	
	C11-C22 Aromatics	21700	8200	710	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3386-33-2	1-Chlorooctadecane	49%		40-140%
84-15-1	o-Terphenyl	66%		40-140%
321-60-8	2-Fluorobiphenyl	91%		40-140%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A(MW)_10-14		
Lab Sample ID:	JE24521-1	**Date Sampled:**	12/04/25
Matrix:	SO - Soil	**Date Received:**	12/05/25
Method:	SW846 8082A SW846 3570	**Percent Solids:**	80.0
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	RL32873.D	1	12/08/25 16:37	EA	12/07/25 10:30	OP69558	GRL848
Run #2							

	Initial Weight	Final Volume
Run #1	5.3 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	24	10	ug/kg	
11104-28-2	Aroclor 1221	ND	24	7.9	ug/kg	
11141-16-5	Aroclor 1232	ND	24	20	ug/kg	
53469-21-9	Aroclor 1242	ND	24	14	ug/kg	
12672-29-6	Aroclor 1248	ND	24	5.1	ug/kg	
11097-69-1	Aroclor 1254	ND	24	2.5	ug/kg	
11096-82-5	Aroclor 1260	ND	24	8.1	ug/kg	
11100-14-4	Aroclor 1268	ND	24	2.4	ug/kg	
37324-23-5	Aroclor 1262	ND	24	2.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		35-154%
877-09-8	Tetrachloro-m-xylene	76%		35-154%
2051-24-3	Decachlorobiphenyl	88%		24-176%
2051-24-3	Decachlorobiphenyl	86%		24-176%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A(MW)_10-14		
Lab Sample ID:	JE24521-1	**Date Sampled:**	12/04/25
Matrix:	SO - Soil	**Date Received:**	12/05/25
Method:	SW846 8015D SW846 3570	**Percent Solids:**	80.0
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Y98333.D	1	12/08/25 12:26	CB	12/06/25 16:30	OP69568	G3Y3785
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	8.08	4.9	3.2	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	110%		50-150%
438-22-2	5a-Androstane	98%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A(MW)_10-14		
Lab Sample ID:	JE24521-1	**Date Sampled:**	12/04/25
Matrix:	SO - Soil	**Date Received:**	12/05/25
		Percent Solids:	80.0
Project:	MWRA Water Tunnel		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	< 1.6	1.6	mg/kg	1	12/05/25	12/09/25	MM	SW846 6010D [2]	SW846 3050B [3]
Arsenic	2.1	1.6	mg/kg	1	12/05/25	12/09/25	MM	SW846 6010D [2]	SW846 3050B [3]
Beryllium	0.27	0.16	mg/kg	1	12/05/25	12/09/25	MM	SW846 6010D [2]	SW846 3050B [3]
Cadmium	< 0.40	0.40	mg/kg	1	12/05/25	12/09/25	MM	SW846 6010D [2]	SW846 3050B [3]
Chromium	9.2	0.81	mg/kg	1	12/05/25	12/09/25	MM	SW846 6010D [2]	SW846 3050B [3]
Copper	9.6	2.0	mg/kg	1	12/05/25	12/09/25	MM	SW846 6010D [2]	SW846 3050B [3]
Lead	2.5	1.6	mg/kg	1	12/05/25	12/09/25	MM	SW846 6010D [2]	SW846 3050B [3]
Mercury	< 0.034	0.034	mg/kg	1	12/08/25	12/09/25	MK	SW846 7471B [1]	SW846 7471B [4]
Nickel	7.9	3.2	mg/kg	1	12/05/25	12/09/25	MM	SW846 6010D [2]	SW846 3050B [3]
Selenium	< 1.6	1.6	mg/kg	1	12/05/25	12/09/25	MM	SW846 6010D [2]	SW846 3050B [3]
Silver	< 0.40	0.40	mg/kg	1	12/05/25	12/09/25	MM	SW846 6010D [2]	SW846 3050B [3]
Thallium	< 0.81	0.81	mg/kg	1	12/05/25	12/09/25	MM	SW846 6010D [2]	SW846 3050B [3]
Zinc	22.1	4.0	mg/kg	1	12/05/25	12/09/25	MM	SW846 6010D [2]	SW846 3050B [3]

(1) Instrument QC Batch: MA59901
(2) Instrument QC Batch: MA59905
(3) Prep QC Batch: MP59133
(4) Prep QC Batch: MP59193

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SB-FD-543-A(MW)_10-14		
Lab Sample ID:	JE24521-1	**Date Sampled:**	12/04/25
Matrix:	SO - Soil	**Date Received:**	12/05/25
		Percent Solids:	80.0
Project:	MWRA Water Tunnel		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.50	0.50	mg/kg	1	12/11/25 16:00	RI	SW846 3060A/7196A
Cyanide Reactivity	< 12	12	mg/kg	1	12/08/25 21:20	JD	SW846 CHAP7/9012 B
Ignitability (Flashpoint)	> 200		Deg. F	1	12/10/25 14:00	KG	SW846 1010B/ASTM D93
Redox Potential Vs H2	456		mv	1	12/05/25 21:53	DB	ASTM D1498-76M
Solids, Percent	80		%	1	12/05/25 12:30	RB	SM2540 G 18TH ED MOD
Specific Conductivity @ 25 C	40.1	7.5	umhos/cm	1	12/10/25 19:14	GTT	SM2510 B-11/SW 9050A
Sulfide Reactivity	< 120	120	mg/kg	1	12/09/25 12:40	GT	SW846 CHAP7/9034
pH [a]	6.71		su	1	12/05/25 19:24	DB	SW846 9045D

(a) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 18.9 Deg. C

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- **Certification Exceptions**
- **Chain of Custody**
- **MCP Form**
- **EPH Form**
- **VPH Form**
- **Sample Tracking Chronicle**
- **QC Evaluation: MA MCP Limits**

Parameter Certification Exceptions

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

The following parameters included in this report are exceptions to NELAC certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
Cyanide Reactivity		SW846 CHAP7/9012 B	SO	SGS is not certified for this parameter.[a]
Redox Potential Vs H2		ASTM D1498-76M	SO	SGS is not certified for this parameter.[b]
Specific Conductivity @ 25 C		SM2510 B-11/SW 9050A	SO	SGS is not certified for this parameter.[b]
Sulfide Reactivity		SW846 CHAP7/9034	SO	SGS is not certified for this parameter.[a]

(a) Reactivity analyzed following SW846 Chapter 7 is no longer recognized by regulatory agencies. Use of results should be verified through the program to which the data is being submitted.
(b) Lab cert for analyte not supported by NJDEP, OQA. Only methods/analytes required for reporting by the State of NJ can be certified in NJ. Use of this analyte for compliance must be verified through the appropriate regulatory office.

Certification exceptions shown are based on the New Jersey DEP certifications. Applicability in other states may vary. Please contact your laboratory representative if additional information is required for a specific regulatory program.

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200
www.sgs.com/ehsusa

SO

Page 1 of 1

FED-EX Tracking #:
Bottle Order Control #: TP-1011025-160
SGS Quote #:
SGS Job #: JE24521

Client / Reporting Information

Company Name: WSP
Street Address: 100 Summer ST, 13th Floor
City: Boston State: MA Zip: 02116
Project Contact: Dan Mallin E-mail: dan.mallin@wsp.com
Phone #: 973-407-1394
Sampler(s) Name(s): Phone #:

Project Information

Project Name: Metropolitan Water Tunnel Program MWRA Contract No 7556
Street: 116 Gould ST
City: Needham State: MA
Project #: US004105.1397
Client Purchase Order #: P135324450001
Project Manager:
Attention:

Billing Information (If different from Report to)

Company Name:
Street Address:
City State Zip:

Analysis Requested

B8015 DRO, B8260 MTBE PAH
P8082 PCB, A8270 MSSV
TAL Metals, Hg, V8260 MSVOA
VPH, VFAC
8015 GRO
IGN, SGNOS, PAC
PMO 3KSIM, CREAC
(EH) Pb, Cu (Acid) pH
TI 1/4
1/4

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Source Chlorinated (Y/N)	Matrix	# of bottles	HCl	HNO3	NaOH	H2SO4	NONE	DI Water	MEOH	ENCORE	pH Check (Lab Use Only)	LAB USE ONLY
1	SB-FD-543-A-(14) 10-14		12/4/25	12:05	LHD	G	N	S	9						1	1		Y Y X Y Y Y X X	D23 D49 TI 1/4 A5 4928

Turn Around Time (Business Days)

Approved By (SGS PM) / Date:

- [ ] 10 Business Days
- [ ] 5 Business Days
- [x] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

RUSH!

All data available via SGS Engage

* Approval needed for 1-3 BD TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NJGW Criteria 2025 *new*
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria ____
- [ ] CT RCP Criteria ____
- [ ] State Forms
- [ ] EDD Format ____

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

* MCP pH/EH 24hr hold

SGS Color

12/4 SGS Service Center Northborough, MA 12/4

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished By:	Date / Time:	Received By:
1	Lina Ng	12/4/25 1300	1
2		12/4/25 1630	2 FedEx
3	FedEx	12/5/25 9:53	3
4			4
5			5 A

Custody Seal # SAH 05099 ☐ Intact ☐ Not Intact ☐ Absent

Therm ID: See Sample Receipt Summary On Ice: X Cooler Temp.: 0.5

CHP No: 11880

JE24521: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: JE24521 **Client:** WSP USA INC. **Project:** MWRA WATER TUNNEL

Date / Time Received: 12/5/2025 7:50:00 AM **Delivery Method:** fedex **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (0.5);

Cooler Temps (Corrected) °C: Cooler 1: (0.6);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR-50		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservatio	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☑	☐
2. Trip Blank listed on COC:	☐		☑	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JE24521: Chain of Custody
Page 2 of 2

Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup	WSC-CAM	Exhibit VII A
	July 1, 2010	Revision No. 1
	Final	

Exhibit VII A-2: MassDEP Analytical Protocol Certification Form

MassDEP Analytical Protocol Certification Form

Laboratory Name:	SGS North America Inc. - Dayton	Project #:	JE24521
Project Location:	MWRA Water Tunnel	MADEP RTN	None

This form provides certifications for the following data set: list Laboratory Sample ID Numbers(s)

JE24521-1

Matrices: Groundwater/Surface Water ( ) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other (X)

CAM Protocol (check all that apply below):

8260 VOC (X) CAM IIA	7470/7471 Hg (X) CAM III B	MassDEP VPH (X) CAM IV A	8081 Pesticides ( ) CAM V B	7196 Hex Cr (X) CAM VI B	Mass DEP APH ( ) CAM IX A
8270 SVOC (X) CAM II B	7010 Metals ( ) CAM III C	MassDEP EPH (X) CAM IV B	8151 Herbicides ( ) CAM V C	8330 Explosives ( ) CAM VIII A	TO-15 VOC ( ) CAM IX B
6010 Metals (X) CAM III A	6020 Metals ( ) CAM III D	8082 PCB (X) CAM V A	9014 Total Cyanide/PAC ( ) CAM VI A	6860 Perchlorate ( ) CAM VIII B	

Affirmative Responses to Questions A Through F are required for "Presumptive Certainty status

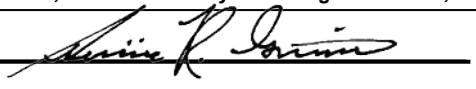
A	Were all samples received in a condition consistent with those described on the Chain-of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☐ Yes	☑ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes	☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes	☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑ Yes	☐ No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☑ Yes ☐ Yes	☐ No ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☑ Yes	☐ No

Responses to questions G, H, and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols	☐ Yes	☑ No [1]
	Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data useability and representativeness requirements described in 310 CMR 40.1056(2)(k) and WSC-07-350.		
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	☐ Yes	☑ No [1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☑ Yes	☑ No [1]

[1] ***All Negative responses must be addressed in an attached Environmental Laboratory case narrative.***

I the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature:  **Position:** **Technical Director**

Printed Name: Olga Azarian **Date:** **15-Dec-25**

MADEP EPH FORM

Matrix	**Aqueous** ☐	**Soil** ☑	**Sediment** ☐	**Other** ☐			
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐				
Aqueous Preservatives	**N/A** ☑	**pH <= 2** ☐	**pH > 2** ☐				
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☐	**Other** ☑	Rec'd at .6 Deg. C			
Extraction Method	**SW846 3546**						

Method for Ranges: MADEP EPH REV 2.1
Method for Targets: MADEP EPH REV 2.1
EPH Surrogate Stds. Aliphatic: 1-Chlorooctadecane
Aromatic: o-Terphenyl
EPH Fractionation Surrogate Standards. 2-Fluorobiphenyl

Client ID: SB-FD-543-A(MW)_10-14 **Lab ID:** JE24521-1
Date Collected: 12/4/2025 **Date Received:** 12/5/2025
Date Extracted: 12/8/2025 10:15:00 AM
First Date Run: 12/9/2025
Last Date Run: N/A
% Solids: 80
Low Dilution: 1
High Dilution: N/A

Unadjusted Ranges	CAS #	Units	Result		RDL	Q
C11-C22 Aromatics (Unadj.)		ug/kg	21700	A	8200	

Adjusted Ranges				
C9-C18 Aliphatics	ug/kg	22200	A	8200
C19-C36 Aliphatics	ug/kg	24500	A	8200
C11-C22 Aromatics	ug/kg	21700	C	8200

Surrogate Recoveries			Acceptance Range
1-Chlorooctadecane	%	49	40-140 %
o-Terphenyl	%	66	40-140 %
2-Fluorobiphenyl	%	91	40-140 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

C Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the EPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the EPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtainig the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** General Managerr

Printed Name David Chastain **Date** 12/15/2025

MADEP VPH FORM

Matrix	**Aqueous** ☐	**Soil** ☑	**Sediment** ☐	**Other** ☐				
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐					
Aqueous Preservatives	**N/A** ☑	**pH <= 2** ☐	**pH > 2** ☐					
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☐	**Other** ☑	Rec'd at .6 Deg. C				
Methanol	**Methanol Covering Soil. (mL Methanol/g soil: 1:1 +/- 25%)**							

Method for Ranges: MADEP VPH REV 2.1
Method for Target Analytes: MADEP VPH REV 2.1
VPH Surrogate Standards
PID:
FID:

Client ID: SB-FD-543-A(MW)_10-14 **Lab ID:** JE24521-1
Date Collected: 12/4/2025 **Date Received:** 12/5/2025

Date Extracted:	First Date Run:	Last Date Run:
N/A	12/9/2025	N/A
% Solids:	**Low Dilution:**	**High Dilution:**
80	1	N/A

Unadjusted Ranges	CAS #	Elution Range	Units	Result		RDL	Q
C5- C8 Aliphatics (Unadj.)		N/A	ug/kg	ND	A	7000	
C9- C12 Aliphatics (Unadj.)		N/A	ug/kg	32900	A	7000	E
Adjusted Ranges							
C5- C8 Aliphatics		N/A	ug/kg	ND	B	7000	
C9- C12 Aliphatics		N/A	ug/kg	22400	D	7000	E
C9- C10 Aromatics			ug/kg	10500		7000	

Surrogate Recoveries			Acceptance Range
FID:2,3,4-Trifluorotoluene	%	92	70-130 %
PID:2,3,4-Trifluorotoluene	%	94	70-130 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

B Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range.

D Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C9-C12 aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the VPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the VPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** **General Managerr**

Printed Name **David Chastain** **Date** **12/15/2025**

Internal Sample Tracking Chronicle

WSP USA Environment & Infrastructure Inc

Job No: JE24521

MWRA Water Tunnel
Project No: US004105.1397 PO# P13532445001

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JE24521-1	Collected: 04-DEC-25 12:05 By: LMD		Received: 05-DEC-25 By: EC			
SB-FD-543-A(MW)_10-14						
JE24521-1	SM2540 G 18TH ED MOD	09-DEC-25 12:30	RB			SOL104
JE24521-1	SW846 9045D	05-DEC-25 19:24	DB			PHTEMP
JE24521-1	ASTM D1498-76M	05-DEC-25 21:53	DB			EH
JE24521-1	SW846 8270E	07-DEC-25 22:22	TL	06-DEC-25	IS	AB8270MCP
JE24521-1	SW846 8015D	08-DEC-25 12:26	CB	06-DEC-25	SGC	B8015DRO
JE24521-1	SW846 8082A	08-DEC-25 16:37	EA	07-DEC-25	SGC	P8082MCP
JE24521-1	SW846 8015D	08-DEC-25 20:55	JN			V8015GRO
JE24521-1	SW846 CHAP7/9012 B	08-DEC-25 21:20	JD	07-DEC-25	BV	CREAC
JE24521-1	SW846 6010D	09-DEC-25 06:03	MM	05-DEC-25	MG	AG,AS,BE,CD,CR,CU,NI,PB,SB,SE,TL,ZN
JE24521-1	SW846 7471B	09-DEC-25 11:12	MK	08-DEC-25	MK	HG
JE24521-1	SW846 CHAP7/9034	09-DEC-25 12:40	GT	07-DEC-25	BV	SREAC
JE24521-1	MADEP EPH REV 2.1	09-DEC-25 12:42	CB	08-DEC-25	ZR	BMAEPHR
JE24521-1	SW846 8260D	09-DEC-25 14:07	JN			V8260MCP
JE24521-1	MADEP VPH REV 2.1	09-DEC-25 22:38	JN			VMAVPHR
JE24521-1	SW846 1010B/ASTM D93	10-DEC-25 14:00	KG			IGN
JE24521-1	SM2510 B-11/SW 9050A	10-DEC-25 19:14	GTT			SCON
JE24521-1	SW846 3060A/7196A	11-DEC-25 16:00	RI	10-DEC-25	AT	XCRA

QC Evaluation: MA MCP Limits

Job Number: JE24521
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/04/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V1C9104	**SW846 8260D**						
V1C9104-BS	67-64-1	Acetone	BSP	REC	84	%	70-130
V1C9104-BS	71-43-2	Benzene	BSP	REC	109	%	70-130
V1C9104-BS	108-86-1	Bromobenzene	BSP	REC	92	%	70-130
V1C9104-BS	74-97-5	Bromochloromethane	BSP	REC	104	%	70-130
V1C9104-BS	75-27-4	Bromodichloromethane	BSP	REC	113	%	70-130
V1C9104-BS	75-25-2	Bromoform	BSP	REC	104	%	70-130
V1C9104-BS	74-83-9	Bromomethane	BSP	REC	79	%	70-130
V1C9104-BS	78-93-3	2-Butanone (MEK)	BSP	REC	101	%	70-130
V1C9104-BS	104-51-8	n-Butylbenzene	BSP	REC	89	%	70-130
V1C9104-BS	135-98-8	sec-Butylbenzene	BSP	REC	92	%	70-130
V1C9104-BS	98-06-6	tert-Butylbenzene	BSP	REC	89	%	70-130
V1C9104-BS	75-15-0	Carbon disulfide	BSP	REC	120	%	70-130
V1C9104-BS	56-23-5	Carbon tetrachloride	BSP	REC	113	%	70-130
V1C9104-BS	108-90-7	Chlorobenzene	BSP	REC	102	%	70-130
V1C9104-BS	75-00-3	Chloroethane	BSP	REC	72	%	70-130
V1C9104-BS	67-66-3	Chloroform	BSP	REC	106	%	70-130
V1C9104-BS	74-87-3	Chloromethane	BSP	REC	102	%	70-130
V1C9104-BS	95-49-8	o-Chlorotoluene	BSP	REC	90	%	70-130
V1C9104-BS	106-43-4	p-Chlorotoluene	BSP	REC	88	%	70-130
V1C9104-BS	108-20-3	Di-Isopropyl ether	BSP	REC	102	%	70-130
V1C9104-BS	96-12-8	1,2-Dibromo-3-chloropropane	BSP	REC	95	%	70-130
V1C9104-BS	124-48-1	Dibromochloromethane	BSP	REC	103	%	70-130
V1C9104-BS	106-93-4	1,2-Dibromoethane	BSP	REC	99	%	70-130
V1C9104-BS	95-50-1	1,2-Dichlorobenzene	BSP	REC	88	%	70-130
V1C9104-BS	541-73-1	1,3-Dichlorobenzene	BSP	REC	91	%	70-130
V1C9104-BS	106-46-7	1,4-Dichlorobenzene	BSP	REC	91	%	70-130
V1C9104-BS	75-71-8	Dichlorodifluoromethane	BSP	REC	115	%	70-130
V1C9104-BS	75-34-3	1,1-Dichloroethane	BSP	REC	104	%	70-130
V1C9104-BS	107-06-2	1,2-Dichloroethane	BSP	REC	104	%	70-130
V1C9104-BS	75-35-4	1,1-Dichloroethene	BSP	REC	101	%	70-130
V1C9104-BS	156-59-2	cis-1,2-Dichloroethene	BSP	REC	99	%	70-130
V1C9104-BS	156-60-5	trans-1,2-Dichloroethene	BSP	REC	101	%	70-130
V1C9104-BS	78-87-5	1,2-Dichloropropane	BSP	REC	105	%	70-130
V1C9104-BS	142-28-9	1,3-Dichloropropane	BSP	REC	108	%	70-130
V1C9104-BS	594-20-7	2,2-Dichloropropane	BSP	REC	111	%	70-130
V1C9104-BS	563-58-6	1,1-Dichloropropene	BSP	REC	107	%	70-130
V1C9104-BS	10061-01-5	cis-1,3-Dichloropropene	BSP	REC	102	%	70-130
V1C9104-BS	10061-02-6	trans-1,3-Dichloropropene	BSP	REC	109	%	70-130
V1C9104-BS	123-91-1	1,4-Dioxane	BSP	REC	109	%	70-130
V1C9104-BS	60-29-7	Ethyl Ether	BSP	REC	124	%	70-130
V1C9104-BS	100-41-4	Ethylbenzene	BSP	REC	103	%	70-130
V1C9104-BS	87-68-3	Hexachlorobutadiene	BSP	REC	105	%	70-130

*** Sample used for QC is not from job JE24521**

QC Evaluation: MA MCP Limits

Job Number: JE24521
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/04/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V1C9104-BS	591-78-6	2-Hexanone	BSP	REC	96	%	70-130
V1C9104-BS	98-82-8	Isopropylbenzene	BSP	REC	98	%	70-130
V1C9104-BS	99-87-6	p-Isopropyltoluene	BSP	REC	92	%	70-130
V1C9104-BS	1634-04-4	Methyl Tert Butyl Ether	BSP	REC	107	%	70-130
V1C9104-BS	108-10-1	4-Methyl-2-pentanone(MIBK)	BSP	REC	91	%	70-130
V1C9104-BS	74-95-3	Methylene bromide	BSP	REC	104	%	70-130
V1C9104-BS	75-09-2	Methylene chloride	BSP	REC	105	%	70-130
V1C9104-BS	91-20-3	Naphthalene	BSP	REC	91	%	70-130
V1C9104-BS	103-65-1	n-Propylbenzene	BSP	REC	95	%	70-130
V1C9104-BS	100-42-5	Styrene	BSP	REC	100	%	70-130
V1C9104-BS	994-05-8	tert-Amyl Methyl Ether	BSP	REC	105	%	70-130
V1C9104-BS	637-92-3	tert-Butyl Ethyl Ether	BSP	REC	105	%	70-130
V1C9104-BS	630-20-6	1,1,1,2-Tetrachloroethane	BSP	REC	107	%	70-130
V1C9104-BS	79-34-5	1,1,2,2-Tetrachloroethane	BSP	REC	86	%	70-130
V1C9104-BS	127-18-4	Tetrachloroethene	BSP	REC	107	%	70-130
V1C9104-BS	109-99-9	Tetrahydrofuran	BSP	REC	91	%	70-130
V1C9104-BS	108-88-3	Toluene	BSP	REC	104	%	70-130
V1C9104-BS	87-61-6	1,2,3-Trichlorobenzene	BSP	REC	96	%	70-130
V1C9104-BS	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	95	%	70-130
V1C9104-BS	71-55-6	1,1,1-Trichloroethane	BSP	REC	112	%	70-130
V1C9104-BS	79-00-5	1,1,2-Trichloroethane	BSP	REC	104	%	70-130
V1C9104-BS	79-01-6	Trichloroethene	BSP	REC	106	%	70-130
V1C9104-BS	75-69-4	Trichlorofluoromethane	BSP	REC	99	%	70-130
V1C9104-BS	96-18-4	1,2,3-Trichloropropane	BSP	REC	89	%	70-130
V1C9104-BS	95-63-6	1,2,4-Trimethylbenzene	BSP	REC	93	%	70-130
V1C9104-BS	108-67-8	1,3,5-Trimethylbenzene	BSP	REC	95	%	70-130
V1C9104-BS	75-01-4	Vinyl chloride	BSP	REC	93	%	70-130
V1C9104-BS		m,p-Xylene	BSP	REC	103	%	70-130
V1C9104-BS	95-47-6	o-Xylene	BSP	REC	98	%	70-130
V1C9104-BS	1330-20-7	Xylene (total)	BSP	REC	101	%	70-130
V1C9104-BS	1868-53-7	Dibromofluoromethane	BSP	SURR	107	%	70-130
V1C9104-BS	2037-26-5	Toluene-D8	BSP	SURR	104	%	70-130
V1C9104-BS	460-00-4	4-Bromofluorobenzene	BSP	SURR	89	%	70-130
V1C9104-BSD	67-64-1	Acetone	BSD	REC	99	%	70-130
V1C9104-BSD	67-64-1	Acetone	BSD	RPD	16 [a]	%	20
V1C9104-BSD	71-43-2	Benzene	BSD	REC	115	%	70-130
V1C9104-BSD	71-43-2	Benzene	BSD	RPD	6	%	20
V1C9104-BSD	108-86-1	Bromobenzene	BSD	REC	100	%	70-130
V1C9104-BSD	108-86-1	Bromobenzene	BSD	RPD	9	%	20
V1C9104-BSD	74-97-5	Bromochloromethane	BSD	REC	112	%	70-130
V1C9104-BSD	74-97-5	Bromochloromethane	BSD	RPD	7	%	20
V1C9104-BSD	75-27-4	Bromodichloromethane	BSD	REC	116	%	70-130
V1C9104-BSD	75-27-4	Bromodichloromethane	BSD	RPD	3	%	20
V1C9104-BSD	75-25-2	Bromoform	BSD	REC	110	%	70-130
V1C9104-BSD	75-25-2	Bromoform	BSD	RPD	5	%	20

*** Sample used for QC is not from job JE24521**

QC Evaluation: MA MCP Limits

Job Number: JE24521
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/04/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V1C9104-BSD	74-83-9	Bromomethane	BSD	REC	91	%	70-130
V1C9104-BSD	74-83-9	Bromomethane	BSD	RPD	14 [a]	%	20
V1C9104-BSD	78-93-3	2-Butanone (MEK)	BSD	REC	109	%	70-130
V1C9104-BSD	78-93-3	2-Butanone (MEK)	BSD	RPD	8	%	20
V1C9104-BSD	104-51-8	n-Butylbenzene	BSD	REC	107	%	70-130
V1C9104-BSD	104-51-8	n-Butylbenzene	BSD	RPD	19 [a]	%	20
V1C9104-BSD	135-98-8	sec-Butylbenzene	BSD	REC	106	%	70-130
V1C9104-BSD	135-98-8	sec-Butylbenzene	BSD	RPD	14 [a]	%	20
V1C9104-BSD	98-06-6	tert-Butylbenzene	BSD	REC	97	%	70-130
V1C9104-BSD	98-06-6	tert-Butylbenzene	BSD	RPD	9	%	20
V1C9104-BSD	75-15-0	Carbon disulfide	BSD	REC	135 [b]	%	70-130
V1C9104-BSD	75-15-0	Carbon disulfide	BSD	RPD	12 [c]	%	20
V1C9104-BSD	56-23-5	Carbon tetrachloride	BSD	REC	122	%	70-130
V1C9104-BSD	56-23-5	Carbon tetrachloride	BSD	RPD	8	%	20
V1C9104-BSD	108-90-7	Chlorobenzene	BSD	REC	102	%	70-130
V1C9104-BSD	108-90-7	Chlorobenzene	BSD	RPD	0	%	20
V1C9104-BSD	75-00-3	Chloroethane	BSD	REC	77	%	70-130
V1C9104-BSD	75-00-3	Chloroethane	BSD	RPD	7	%	20
V1C9104-BSD	67-66-3	Chloroform	BSD	REC	114	%	70-130
V1C9104-BSD	67-66-3	Chloroform	BSD	RPD	7	%	20
V1C9104-BSD	74-87-3	Chloromethane	BSD	REC	113	%	70-130
V1C9104-BSD	74-87-3	Chloromethane	BSD	RPD	10	%	20
V1C9104-BSD	95-49-8	o-Chlorotoluene	BSD	REC	105	%	70-130
V1C9104-BSD	95-49-8	o-Chlorotoluene	BSD	RPD	15 [a]	%	20
V1C9104-BSD	106-43-4	p-Chlorotoluene	BSD	REC	104	%	70-130
V1C9104-BSD	106-43-4	p-Chlorotoluene	BSD	RPD	17 [a]	%	20
V1C9104-BSD	108-20-3	Di-Isopropyl ether	BSD	REC	114	%	70-130
V1C9104-BSD	108-20-3	Di-Isopropyl ether	BSD	RPD	11 [a]	%	20
V1C9104-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	REC	109	%	70-130
V1C9104-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	RPD	14 [a]	%	20
V1C9104-BSD	124-48-1	Dibromochloromethane	BSD	REC	106	%	70-130
V1C9104-BSD	124-48-1	Dibromochloromethane	BSD	RPD	2	%	20
V1C9104-BSD	106-93-4	1,2-Dibromoethane	BSD	REC	109	%	70-130
V1C9104-BSD	106-93-4	1,2-Dibromoethane	BSD	RPD	10	%	20
V1C9104-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	100	%	70-130
V1C9104-BSD	95-50-1	1,2-Dichlorobenzene	BSD	RPD	13 [a]	%	20
V1C9104-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	100	%	70-130
V1C9104-BSD	541-73-1	1,3-Dichlorobenzene	BSD	RPD	9	%	20
V1C9104-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	94	%	70-130
V1C9104-BSD	106-46-7	1,4-Dichlorobenzene	BSD	RPD	4	%	20
V1C9104-BSD	75-71-8	Dichlorodifluoromethane	BSD	REC	127	%	70-130
V1C9104-BSD	75-71-8	Dichlorodifluoromethane	BSD	RPD	10	%	20
V1C9104-BSD	75-34-3	1,1-Dichloroethane	BSD	REC	114	%	70-130
V1C9104-BSD	75-34-3	1,1-Dichloroethane	BSD	RPD	9	%	20
V1C9104-BSD	107-06-2	1,2-Dichloroethane	BSD	REC	111	%	70-130

*** Sample used for QC is not from job JE24521**

QC Evaluation: MA MCP Limits

Job Number: JE24521
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/04/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V1C9104-BSD	107-06-2	1,2-Dichloroethane	BSD	RPD	6	%	20
V1C9104-BSD	75-35-4	1,1-Dichloroethene	BSD	REC	107	%	70-130
V1C9104-BSD	75-35-4	1,1-Dichloroethene	BSD	RPD	6	%	20
V1C9104-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	REC	111	%	70-130
V1C9104-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	RPD	11 [a]	%	20
V1C9104-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	REC	117	%	70-130
V1C9104-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	RPD	14 [a]	%	20
V1C9104-BSD	78-87-5	1,2-Dichloropropane	BSD	REC	106	%	70-130
V1C9104-BSD	78-87-5	1,2-Dichloropropane	BSD	RPD	2	%	20
V1C9104-BSD	142-28-9	1,3-Dichloropropane	BSD	REC	114	%	70-130
V1C9104-BSD	142-28-9	1,3-Dichloropropane	BSD	RPD	6	%	20
V1C9104-BSD	594-20-7	2,2-Dichloropropane	BSD	REC	120	%	70-130
V1C9104-BSD	594-20-7	2,2-Dichloropropane	BSD	RPD	8	%	20
V1C9104-BSD	563-58-6	1,1-Dichloropropene	BSD	REC	120	%	70-130
V1C9104-BSD	563-58-6	1,1-Dichloropropene	BSD	RPD	11 [a]	%	20
V1C9104-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	REC	114	%	70-130
V1C9104-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	RPD	11 [a]	%	20
V1C9104-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	REC	113	%	70-130
V1C9104-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	RPD	3	%	20
V1C9104-BSD	123-91-1	1,4-Dioxane	BSD	REC	114	%	70-130
V1C9104-BSD	123-91-1	1,4-Dioxane	BSD	RPD	4	%	20
V1C9104-BSD	60-29-7	Ethyl Ether	BSD	REC	131	%	70-130
V1C9104-BSD	60-29-7	Ethyl Ether	BSD	RPD	6	%	20
V1C9104-BSD	100-41-4	Ethylbenzene	BSD	REC	110	%	70-130
V1C9104-BSD	100-41-4	Ethylbenzene	BSD	RPD	6	%	20
V1C9104-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	119	%	70-130
V1C9104-BSD	87-68-3	Hexachlorobutadiene	BSD	RPD	12 [a]	%	20
V1C9104-BSD	591-78-6	2-Hexanone	BSD	REC	106	%	70-130
V1C9104-BSD	591-78-6	2-Hexanone	BSD	RPD	10	%	20
V1C9104-BSD	98-82-8	Isopropylbenzene	BSD	REC	105	%	70-130
V1C9104-BSD	98-82-8	Isopropylbenzene	BSD	RPD	7	%	20
V1C9104-BSD	99-87-6	p-Isopropyltoluene	BSD	REC	107	%	70-130
V1C9104-BSD	99-87-6	p-Isopropyltoluene	BSD	RPD	15 [a]	%	20
V1C9104-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	REC	125	%	70-130
V1C9104-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	RPD	15 [a]	%	20
V1C9104-BSD	108-10-1	4-Methyl-2-pentanone(MIBK)	BSD	REC	106	%	70-130
V1C9104-BSD	108-10-1	4-Methyl-2-pentanone(MIBK)	BSD	RPD	15 [a]	%	20
V1C9104-BSD	74-95-3	Methylene bromide	BSD	REC	113	%	70-130
V1C9104-BSD	74-95-3	Methylene bromide	BSD	RPD	8	%	20
V1C9104-BSD	75-09-2	Methylene chloride	BSD	REC	119	%	70-130
V1C9104-BSD	75-09-2	Methylene chloride	BSD	RPD	13 [a]	%	20
V1C9104-BSD	91-20-3	Naphthalene	BSD	REC	108	%	70-130
V1C9104-BSD	91-20-3	Naphthalene	BSD	RPD	17 [a]	%	20
V1C9104-BSD	103-65-1	n-Propylbenzene	BSD	REC	105	%	70-130
V1C9104-BSD	103-65-1	n-Propylbenzene	BSD	RPD	10	%	20

*** Sample used for QC is not from job JE24521**

QC Evaluation: MA MCP Limits

Job Number: JE24521
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/04/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V1C9104-BSD	100-42-5	Styrene	BSD	REC	106	%	70-130
V1C9104-BSD	100-42-5	Styrene	BSD	RPD	6	%	20
V1C9104-BSD	994-05-8	tert-Amyl Methyl Ether	BSD	REC	110	%	70-130
V1C9104-BSD	994-05-8	tert-Amyl Methyl Ether	BSD	RPD	5	%	20
V1C9104-BSD	637-92-3	tert-Butyl Ethyl Ether	BSD	REC	120	%	70-130
V1C9104-BSD	637-92-3	tert-Butyl Ethyl Ether	BSD	RPD	14 [a]	%	20
V1C9104-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	REC	113	%	70-130
V1C9104-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	RPD	6	%	20
V1C9104-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	REC	103	%	70-130
V1C9104-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	RPD	18 [a]	%	20
V1C9104-BSD	127-18-4	Tetrachloroethene	BSD	REC	114	%	70-130
V1C9104-BSD	127-18-4	Tetrachloroethene	BSD	RPD	6	%	20
V1C9104-BSD	109-99-9	Tetrahydrofuran	BSD	REC	105	%	70-130
V1C9104-BSD	109-99-9	Tetrahydrofuran	BSD	RPD	15 [a]	%	20
V1C9104-BSD	108-88-3	Toluene	BSD	REC	116	%	70-130
V1C9104-BSD	108-88-3	Toluene	BSD	RPD	11 [a]	%	20
V1C9104-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	REC	115	%	70-130
V1C9104-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	RPD	18 [a]	%	20
V1C9104-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	112	%	70-130
V1C9104-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	RPD	16 [a]	%	20
V1C9104-BSD	71-55-6	1,1,1-Trichloroethane	BSD	REC	123	%	70-130
V1C9104-BSD	71-55-6	1,1,1-Trichloroethane	BSD	RPD	9	%	20
V1C9104-BSD	79-00-5	1,1,2-Trichloroethane	BSD	REC	114	%	70-130
V1C9104-BSD	79-00-5	1,1,2-Trichloroethane	BSD	RPD	9	%	20
V1C9104-BSD	79-01-6	Trichloroethene	BSD	REC	107	%	70-130
V1C9104-BSD	79-01-6	Trichloroethene	BSD	RPD	2	%	20
V1C9104-BSD	75-69-4	Trichlorofluoromethane	BSD	REC	107	%	70-130
V1C9104-BSD	75-69-4	Trichlorofluoromethane	BSD	RPD	8	%	20
V1C9104-BSD	96-18-4	1,2,3-Trichloropropane	BSD	REC	95	%	70-130
V1C9104-BSD	96-18-4	1,2,3-Trichloropropane	BSD	RPD	6	%	20
V1C9104-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	REC	105	%	70-130
V1C9104-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	RPD	12 [a]	%	20
V1C9104-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	REC	111	%	70-130
V1C9104-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	RPD	15 [a]	%	20
V1C9104-BSD	75-01-4	Vinyl chloride	BSD	REC	107	%	70-130
V1C9104-BSD	75-01-4	Vinyl chloride	BSD	RPD	14 [a]	%	20
V1C9104-BSD		m,p-Xylene	BSD	REC	106	%	70-130
V1C9104-BSD		m,p-Xylene	BSD	RPD	3	%	20
V1C9104-BSD	95-47-6	o-Xylene	BSD	REC	101	%	70-130
V1C9104-BSD	95-47-6	o-Xylene	BSD	RPD	4	%	20
V1C9104-BSD	1330-20-7	Xylene (total)	BSD	REC	105	%	70-130
V1C9104-BSD	1330-20-7	Xylene (total)	BSD	RPD	3	%	20
V1C9104-BSD	1868-53-7	Dibromofluoromethane	BSD	SURR	113	%	70-130
V1C9104-BSD	2037-26-5	Toluene-D8	BSD	SURR	115	%	70-130
V1C9104-BSD	460-00-4	4-Bromofluorobenzene	BSD	SURR	98	%	70-130

*** Sample used for QC is not from job JE24521**

QC Evaluation: MA MCP Limits

Job Number: JE24521
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/04/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V1C9104-MB	1868-53-7	Dibromofluoromethane	MB	SURR	113	%	70-130
V1C9104-MB	2037-26-5	Toluene-D8	MB	SURR	109	%	70-130
V1C9104-MB	460-00-4	4-Bromofluorobenzene	MB	SURR	101	%	70-130
JE24521-1	1868-53-7	Dibromofluoromethane	SAMP	SURR	117	%	70-130
JE24521-1	2037-26-5	Toluene-D8	SAMP	SURR	108	%	70-130
JE24521-1	460-00-4	4-Bromofluorobenzene	SAMP	SURR	99	%	70-130
OP69554	SW846 8270E						
OP69554-BS1	65-85-0	Benzoic acid	BSP	REC	67	%	30-130
OP69554-BS1	95-57-8	2-Chlorophenol	BSP	REC	75	%	30-130
OP69554-BS1	59-50-7	4-Chloro-3-methyl phenol	BSP	REC	85	%	30-130
OP69554-BS1	120-83-2	2,4-Dichlorophenol	BSP	REC	85	%	30-130
OP69554-BS1	105-67-9	2,4-Dimethylphenol	BSP	REC	81	%	30-130
OP69554-BS1	51-28-5	2,4-Dinitrophenol	BSP	REC	77	%	30-130
OP69554-BS1	534-52-1	4,6-Dinitro-o-cresol	BSP	REC	93	%	30-130
OP69554-BS1	95-48-7	2-Methylphenol	BSP	REC	76	%	30-130
OP69554-BS1		3&4-Methylphenol	BSP	REC	75	%	30-130
OP69554-BS1	88-75-5	2-Nitrophenol	BSP	REC	81	%	30-130
OP69554-BS1	100-02-7	4-Nitrophenol	BSP	REC	77	%	30-130
OP69554-BS1	87-86-5	Pentachlorophenol	BSP	REC	91	%	30-130
OP69554-BS1	108-95-2	Phenol	BSP	REC	70	%	30-130
OP69554-BS1	95-95-4	2,4,5-Trichlorophenol	BSP	REC	87	%	30-130
OP69554-BS1	88-06-2	2,4,6-Trichlorophenol	BSP	REC	86	%	30-130
OP69554-BS1	83-32-9	Acenaphthene	BSP	REC	79	%	40-140
OP69554-BS1	208-96-8	Acenaphthylene	BSP	REC	80	%	40-140
OP69554-BS1	98-86-2	Acetophenone	BSP	REC	71	%	40-140
OP69554-BS1	62-53-3	Aniline	BSP	REC	75	%	40-140
OP69554-BS1	120-12-7	Anthracene	BSP	REC	83	%	40-140
OP69554-BS1	56-55-3	Benzo(a)anthracene	BSP	REC	83	%	40-140
OP69554-BS1	50-32-8	Benzo(a)pyrene	BSP	REC	85	%	40-140
OP69554-BS1	205-99-2	Benzo(b)fluoranthene	BSP	REC	86	%	40-140
OP69554-BS1	191-24-2	Benzo(g,h,i)perylene	BSP	REC	92	%	40-140
OP69554-BS1	207-08-9	Benzo(k)fluoranthene	BSP	REC	82	%	40-140
OP69554-BS1	101-55-3	4-Bromophenyl phenyl ether	BSP	REC	92	%	40-140
OP69554-BS1	85-68-7	Butyl benzyl phthalate	BSP	REC	83	%	40-140
OP69554-BS1	91-58-7	2-Chloronaphthalene	BSP	REC	80	%	40-140
OP69554-BS1	106-47-8	4-Chloroaniline	BSP	REC	40	%	40-140
OP69554-BS1	218-01-9	Chrysene	BSP	REC	86	%	40-140
OP69554-BS1	111-91-1	bis(2-Chloroethoxy)methane	BSP	REC	76	%	40-140
OP69554-BS1	111-44-4	bis(2-Chloroethyl)ether	BSP	REC	68	%	40-140
OP69554-BS1	108-60-1	2,2'-Oxybis(1-chloropropane)	BSP	REC	71	%	40-140
OP69554-BS1	7005-72-3	4-Chlorophenyl phenyl ether	BSP	REC	89	%	40-140
OP69554-BS1	95-50-1	1,2-Dichlorobenzene	BSP	REC	70	%	40-140
OP69554-BS1	122-66-7	1,2-Diphenylhydrazine	BSP	REC	74	%	40-140

*** Sample used for QC is not from job JE24521**

QC Evaluation: MA MCP Limits

Job Number: JE24521
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/04/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP69554-BS1	541-73-1	1,3-Dichlorobenzene	BSP	REC	67	%	40-140
OP69554-BS1	106-46-7	1,4-Dichlorobenzene	BSP	REC	68	%	40-140
OP69554-BS1	121-14-2	2,4-Dinitrotoluene	BSP	REC	94	%	40-140
OP69554-BS1	606-20-2	2,6-Dinitrotoluene	BSP	REC	95	%	40-140
OP69554-BS1	91-94-1	3,3'-Dichlorobenzidine	BSP	REC	59	%	40-140
OP69554-BS1	53-70-3	Dibenzo(a,h)anthracene	BSP	REC	92	%	40-140
OP69554-BS1	132-64-9	Dibenzofuran	BSP	REC	82	%	40-140
OP69554-BS1	84-74-2	Di-n-butyl phthalate	BSP	REC	82	%	40-140
OP69554-BS1	117-84-0	Di-n-octyl phthalate	BSP	REC	78	%	40-140
OP69554-BS1	84-66-2	Diethyl phthalate	BSP	REC	83	%	40-140
OP69554-BS1	131-11-3	Dimethyl phthalate	BSP	REC	85	%	40-140
OP69554-BS1	117-81-7	bis(2-Ethylhexyl)phthalate	BSP	REC	82	%	40-140
OP69554-BS1	206-44-0	Fluoranthene	BSP	REC	79	%	40-140
OP69554-BS1	86-73-7	Fluorene	BSP	REC	82	%	40-140
OP69554-BS1	118-74-1	Hexachlorobenzene	BSP	REC	91	%	40-140
OP69554-BS1	87-68-3	Hexachlorobutadiene	BSP	REC	86	%	40-140
OP69554-BS1	77-47-4	Hexachlorocyclopentadiene	BSP	REC	90	%	40-140
OP69554-BS1	67-72-1	Hexachloroethane	BSP	REC	77	%	40-140
OP69554-BS1	193-39-5	Indeno(1,2,3-cd)pyrene	BSP	REC	91	%	40-140
OP69554-BS1	78-59-1	Isophorone	BSP	REC	72	%	40-140
OP69554-BS1	91-57-6	2-Methylnaphthalene	BSP	REC	78	%	40-140
OP69554-BS1	91-20-3	Naphthalene	BSP	REC	76	%	40-140
OP69554-BS1	98-95-3	Nitrobenzene	BSP	REC	70	%	40-140
OP69554-BS1	62-75-9	n-Nitrosodimethylamine	BSP	REC	58	%	40-140
OP69554-BS1	621-64-7	N-Nitroso-di-n-propylamine	BSP	REC	70	%	40-140
OP69554-BS1	86-30-6	N-Nitrosodiphenylamine	BSP	REC	92	%	40-140
OP69554-BS1	85-01-8	Phenanthrene	BSP	REC	81	%	40-140
OP69554-BS1	129-00-0	Pyrene	BSP	REC	93	%	40-140
OP69554-BS1	110-86-1	Pyridine	BSP	REC	45	%	40-140
OP69554-BS1	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	79	%	40-140
OP69554-BS1	367-12-4	2-Fluorophenol	BSP	SURR	77	%	30-130
OP69554-BS1	4165-62-2	Phenol-d5	BSP	SURR	76	%	30-130
OP69554-BS1	118-79-6	2,4,6-Tribromophenol	BSP	SURR	98	%	30-130
OP69554-BS1	4165-60-0	Nitrobenzene-d5	BSP	SURR	73	%	30-130
OP69554-BS1	321-60-8	2-Fluorobiphenyl	BSP	SURR	86	%	30-130
OP69554-BS1	1718-51-0	Terphenyl-d14	BSP	SURR	94	%	30-130
OP69554-BSD	65-85-0	Benzoic acid	BSD	REC	71	%	30-130
OP69554-BSD	65-85-0	Benzoic acid	BSD	RPD	6	%	30
OP69554-BSD	95-57-8	2-Chlorophenol	BSD	REC	78	%	30-130
OP69554-BSD	95-57-8	2-Chlorophenol	BSD	RPD	4	%	30
OP69554-BSD	59-50-7	4-Chloro-3-methyl phenol	BSD	REC	86	%	30-130
OP69554-BSD	59-50-7	4-Chloro-3-methyl phenol	BSD	RPD	2	%	30
OP69554-BSD	120-83-2	2,4-Dichlorophenol	BSD	REC	88	%	30-130
OP69554-BSD	120-83-2	2,4-Dichlorophenol	BSD	RPD	3	%	30
OP69554-BSD	105-67-9	2,4-Dimethylphenol	BSD	REC	83	%	30-130

*** Sample used for QC is not from job JE24521**

QC Evaluation: MA MCP Limits

Job Number: JE24521
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/04/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP69554-BSD	105-67-9	2,4-Dimethylphenol	BSD	RPD	2	%	30
OP69554-BSD	51-28-5	2,4-Dinitrophenol	BSD	REC	80	%	30-130
OP69554-BSD	51-28-5	2,4-Dinitrophenol	BSD	RPD	4	%	30
OP69554-BSD	534-52-1	4,6-Dinitro-o-cresol	BSD	REC	97	%	30-130
OP69554-BSD	534-52-1	4,6-Dinitro-o-cresol	BSD	RPD	4	%	30
OP69554-BSD	95-48-7	2-Methylphenol	BSD	REC	79	%	30-130
OP69554-BSD	95-48-7	2-Methylphenol	BSD	RPD	5	%	30
OP69554-BSD		3&4-Methylphenol	BSD	REC	80	%	30-130
OP69554-BSD		3&4-Methylphenol	BSD	RPD	6	%	30
OP69554-BSD	88-75-5	2-Nitrophenol	BSD	REC	86	%	30-130
OP69554-BSD	88-75-5	2-Nitrophenol	BSD	RPD	6	%	30
OP69554-BSD	100-02-7	4-Nitrophenol	BSD	REC	82	%	30-130
OP69554-BSD	100-02-7	4-Nitrophenol	BSD	RPD	6	%	30
OP69554-BSD	87-86-5	Pentachlorophenol	BSD	REC	92	%	30-130
OP69554-BSD	87-86-5	Pentachlorophenol	BSD	RPD	2	%	30
OP69554-BSD	108-95-2	Phenol	BSD	REC	73	%	30-130
OP69554-BSD	108-95-2	Phenol	BSD	RPD	3	%	30
OP69554-BSD	95-95-4	2,4,5-Trichlorophenol	BSD	REC	90	%	30-130
OP69554-BSD	95-95-4	2,4,5-Trichlorophenol	BSD	RPD	3	%	30
OP69554-BSD	88-06-2	2,4,6-Trichlorophenol	BSD	REC	89	%	30-130
OP69554-BSD	88-06-2	2,4,6-Trichlorophenol	BSD	RPD	3	%	30
OP69554-BSD	83-32-9	Acenaphthene	BSD	REC	83	%	40-140
OP69554-BSD	83-32-9	Acenaphthene	BSD	RPD	5	%	30
OP69554-BSD	208-96-8	Acenaphthylene	BSD	REC	82	%	40-140
OP69554-BSD	208-96-8	Acenaphthylene	BSD	RPD	2	%	30
OP69554-BSD	98-86-2	Acetophenone	BSD	REC	74	%	40-140
OP69554-BSD	98-86-2	Acetophenone	BSD	RPD	4	%	30
OP69554-BSD	62-53-3	Aniline	BSD	REC	76	%	40-140
OP69554-BSD	62-53-3	Aniline	BSD	RPD	1	%	30
OP69554-BSD	120-12-7	Anthracene	BSD	REC	86	%	40-140
OP69554-BSD	120-12-7	Anthracene	BSD	RPD	4	%	30
OP69554-BSD	56-55-3	Benzo(a)anthracene	BSD	REC	85	%	40-140
OP69554-BSD	56-55-3	Benzo(a)anthracene	BSD	RPD	1	%	30
OP69554-BSD	50-32-8	Benzo(a)pyrene	BSD	REC	88	%	40-140
OP69554-BSD	50-32-8	Benzo(a)pyrene	BSD	RPD	3	%	30
OP69554-BSD	205-99-2	Benzo(b)fluoranthene	BSD	REC	87	%	40-140
OP69554-BSD	205-99-2	Benzo(b)fluoranthene	BSD	RPD	1	%	30
OP69554-BSD	191-24-2	Benzo(g,h,i)perylene	BSD	REC	92	%	40-140
OP69554-BSD	191-24-2	Benzo(g,h,i)perylene	BSD	RPD	1	%	30
OP69554-BSD	207-08-9	Benzo(k)fluoranthene	BSD	REC	86	%	40-140
OP69554-BSD	207-08-9	Benzo(k)fluoranthene	BSD	RPD	4	%	30
OP69554-BSD	101-55-3	4-Bromophenyl phenyl ether	BSD	REC	94	%	40-140
OP69554-BSD	101-55-3	4-Bromophenyl phenyl ether	BSD	RPD	3	%	30
OP69554-BSD	85-68-7	Butyl benzyl phthalate	BSD	REC	85	%	40-140
OP69554-BSD	85-68-7	Butyl benzyl phthalate	BSD	RPD	2	%	30

*** Sample used for QC is not from job JE24521**

QC Evaluation: MA MCP Limits

Job Number: JE24521
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/04/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP69554-BSD	91-58-7	2-Chloronaphthalene	BSD	REC	83	%	40-140
OP69554-BSD	91-58-7	2-Chloronaphthalene	BSD	RPD	4	%	30
OP69554-BSD	106-47-8	4-Chloroaniline	BSD	REC	51	%	40-140
OP69554-BSD	106-47-8	4-Chloroaniline	BSD	RPD	25	%	30
OP69554-BSD	218-01-9	Chrysene	BSD	REC	86	%	40-140
OP69554-BSD	218-01-9	Chrysene	BSD	RPD	0	%	30
OP69554-BSD	111-91-1	bis(2-Chloroethoxy)methane	BSD	REC	77	%	40-140
OP69554-BSD	111-91-1	bis(2-Chloroethoxy)methane	BSD	RPD	2	%	30
OP69554-BSD	111-44-4	bis(2-Chloroethyl)ether	BSD	REC	70	%	40-140
OP69554-BSD	111-44-4	bis(2-Chloroethyl)ether	BSD	RPD	3	%	30
OP69554-BSD	108-60-1	2,2'-Oxybis(1-chloropropane)	BSD	REC	73	%	40-140
OP69554-BSD	108-60-1	2,2'-Oxybis(1-chloropropane)	BSD	RPD	2	%	30
OP69554-BSD	7005-72-3	4-Chlorophenyl phenyl ether	BSD	REC	94	%	40-140
OP69554-BSD	7005-72-3	4-Chlorophenyl phenyl ether	BSD	RPD	5	%	30
OP69554-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	70	%	40-140
OP69554-BSD	95-50-1	1,2-Dichlorobenzene	BSD	RPD	0	%	30
OP69554-BSD	122-66-7	1,2-Diphenylhydrazine	BSD	REC	76	%	40-140
OP69554-BSD	122-66-7	1,2-Diphenylhydrazine	BSD	RPD	3	%	30
OP69554-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	67	%	40-140
OP69554-BSD	541-73-1	1,3-Dichlorobenzene	BSD	RPD	1	%	30
OP69554-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	70	%	40-140
OP69554-BSD	106-46-7	1,4-Dichlorobenzene	BSD	RPD	2	%	30
OP69554-BSD	121-14-2	2,4-Dinitrotoluene	BSD	REC	100	%	40-140
OP69554-BSD	121-14-2	2,4-Dinitrotoluene	BSD	RPD	6	%	30
OP69554-BSD	606-20-2	2,6-Dinitrotoluene	BSD	REC	98	%	40-140
OP69554-BSD	606-20-2	2,6-Dinitrotoluene	BSD	RPD	3	%	30
OP69554-BSD	91-94-1	3,3'-Dichlorobenzidine	BSD	REC	62	%	40-140
OP69554-BSD	91-94-1	3,3'-Dichlorobenzidine	BSD	RPD	5	%	30
OP69554-BSD	53-70-3	Dibenzo(a,h)anthracene	BSD	REC	92	%	40-140
OP69554-BSD	53-70-3	Dibenzo(a,h)anthracene	BSD	RPD	1	%	30
OP69554-BSD	132-64-9	Dibenzofuran	BSD	REC	84	%	40-140
OP69554-BSD	132-64-9	Dibenzofuran	BSD	RPD	3	%	30
OP69554-BSD	84-74-2	Di-n-butyl phthalate	BSD	REC	85	%	40-140
OP69554-BSD	84-74-2	Di-n-butyl phthalate	BSD	RPD	4	%	30
OP69554-BSD	117-84-0	Di-n-octyl phthalate	BSD	REC	80	%	40-140
OP69554-BSD	117-84-0	Di-n-octyl phthalate	BSD	RPD	3	%	30
OP69554-BSD	84-66-2	Diethyl phthalate	BSD	REC	86	%	40-140
OP69554-BSD	84-66-2	Diethyl phthalate	BSD	RPD	4	%	30
OP69554-BSD	131-11-3	Dimethyl phthalate	BSD	REC	88	%	40-140
OP69554-BSD	131-11-3	Dimethyl phthalate	BSD	RPD	3	%	30
OP69554-BSD	117-81-7	bis(2-Ethylhexyl)phthalate	BSD	REC	83	%	40-140
OP69554-BSD	117-81-7	bis(2-Ethylhexyl)phthalate	BSD	RPD	1	%	30
OP69554-BSD	206-44-0	Fluoranthene	BSD	REC	81	%	40-140
OP69554-BSD	206-44-0	Fluoranthene	BSD	RPD	2	%	30
OP69554-BSD	86-73-7	Fluorene	BSD	REC	86	%	40-140

*** Sample used for QC is not from job JE24521**

QC Evaluation: MA MCP Limits

Job Number: JE24521
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/04/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP69554-BSD	86-73-7	Fluorene	BSD	RPD	4	%	30
OP69554-BSD	118-74-1	Hexachlorobenzene	BSD	REC	92	%	40-140
OP69554-BSD	118-74-1	Hexachlorobenzene	BSD	RPD	1	%	30
OP69554-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	88	%	40-140
OP69554-BSD	87-68-3	Hexachlorobutadiene	BSD	RPD	2	%	30
OP69554-BSD	77-47-4	Hexachlorocyclopentadiene	BSD	REC	94	%	40-140
OP69554-BSD	77-47-4	Hexachlorocyclopentadiene	BSD	RPD	4	%	30
OP69554-BSD	67-72-1	Hexachloroethane	BSD	REC	76	%	40-140
OP69554-BSD	67-72-1	Hexachloroethane	BSD	RPD	1	%	30
OP69554-BSD	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	REC	92	%	40-140
OP69554-BSD	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	RPD	1	%	30
OP69554-BSD	78-59-1	Isophorone	BSD	REC	75	%	40-140
OP69554-BSD	78-59-1	Isophorone	BSD	RPD	4	%	30
OP69554-BSD	91-57-6	2-Methylnaphthalene	BSD	REC	80	%	40-140
OP69554-BSD	91-57-6	2-Methylnaphthalene	BSD	RPD	2	%	30
OP69554-BSD	91-20-3	Naphthalene	BSD	REC	76	%	40-140
OP69554-BSD	91-20-3	Naphthalene	BSD	RPD	1	%	30
OP69554-BSD	98-95-3	Nitrobenzene	BSD	REC	71	%	40-140
OP69554-BSD	98-95-3	Nitrobenzene	BSD	RPD	2	%	30
OP69554-BSD	62-75-9	n-Nitrosodimethylamine	BSD	REC	56	%	40-140
OP69554-BSD	62-75-9	n-Nitrosodimethylamine	BSD	RPD	4	%	30
OP69554-BSD	621-64-7	N-Nitroso-di-n-propylamine	BSD	REC	74	%	40-140
OP69554-BSD	621-64-7	N-Nitroso-di-n-propylamine	BSD	RPD	6	%	30
OP69554-BSD	86-30-6	N-Nitrosodiphenylamine	BSD	REC	92	%	40-140
OP69554-BSD	86-30-6	N-Nitrosodiphenylamine	BSD	RPD	1	%	30
OP69554-BSD	85-01-8	Phenanthrene	BSD	REC	83	%	40-140
OP69554-BSD	85-01-8	Phenanthrene	BSD	RPD	2	%	30
OP69554-BSD	129-00-0	Pyrene	BSD	REC	93	%	40-140
OP69554-BSD	129-00-0	Pyrene	BSD	RPD	0	%	30
OP69554-BSD	110-86-1	Pyridine	BSD	REC	42	%	40-140
OP69554-BSD	110-86-1	Pyridine	BSD	RPD	7	%	30
OP69554-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	81	%	40-140
OP69554-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	RPD	2	%	30
OP69554-BSD	367-12-4	2-Fluorophenol	BSD	SURR	78	%	30-130
OP69554-BSD	4165-62-2	Phenol-d5	BSD	SURR	78	%	30-130
OP69554-BSD	118-79-6	2,4,6-Tribromophenol	BSD	SURR	98	%	30-130
OP69554-BSD	4165-60-0	Nitrobenzene-d5	BSD	SURR	72	%	30-130
OP69554-BSD	321-60-8	2-Fluorobiphenyl	BSD	SURR	88	%	30-130
OP69554-BSD	1718-51-0	Terphenyl-d14	BSD	SURR	93	%	30-130
OP69554-MB1	367-12-4	2-Fluorophenol	MB	SURR	64	%	30-130
OP69554-MB1	4165-62-2	Phenol-d5	MB	SURR	66	%	30-130
OP69554-MB1	118-79-6	2,4,6-Tribromophenol	MB	SURR	80	%	30-130
OP69554-MB1	4165-60-0	Nitrobenzene-d5	MB	SURR	58	%	30-130
OP69554-MB1	321-60-8	2-Fluorobiphenyl	MB	SURR	77	%	30-130
OP69554-MB1	1718-51-0	Terphenyl-d14	MB	SURR	93	%	30-130

*** Sample used for QC is not from job JE24521**

QC Evaluation: MA MCP Limits

Job Number: JE24521
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/04/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
JE24521-1	367-12-4	2-Fluorophenol	SAMP	SURR	61	%	30-130
JE24521-1	4165-62-2	Phenol-d5	SAMP	SURR	62	%	30-130
JE24521-1	118-79-6	2,4,6-Tribromophenol	SAMP	SURR	76	%	30-130
JE24521-1	4165-60-0	Nitrobenzene-d5	SAMP	SURR	55	%	30-130
JE24521-1	321-60-8	2-Fluorobiphenyl	SAMP	SURR	73	%	30-130
JE24521-1	1718-51-0	Terphenyl-d14	SAMP	SURR	70	%	30-130

(a) Outside in house control limits.
(b) Outside of in house control limits, but within the marginal exceedance limits.
(c) Outside control limits.

* Sample used for QC is not from job JE24521

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Internal Standard Area Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1C9104-MB	1C211973.D	1	12/09/25	JN	n/a	n/a	V1C9104

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE24521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.1	ug/kg	
71-43-2	Benzene	ND	0.50	0.46	ug/kg	
108-86-1	Bromobenzene	ND	5.0	0.55	ug/kg	
74-97-5	Bromochloromethane	ND	5.0	0.56	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.43	ug/kg	
75-25-2	Bromoform	ND	5.0	1.4	ug/kg	
74-83-9	Bromomethane	ND	5.0	0.76	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	2.4	ug/kg	
104-51-8	n-Butylbenzene	ND	2.0	0.41	ug/kg	
135-98-8	sec-Butylbenzene	ND	2.0	0.43	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.0	0.50	ug/kg	
75-15-0	Carbon disulfide	ND	2.0	0.54	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.62	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.46	ug/kg	
75-00-3	Chloroethane	ND	5.0	0.59	ug/kg	
67-66-3	Chloroform	ND	2.0	1.0	ug/kg	
74-87-3	Chloromethane	ND	5.0	2.0	ug/kg	
95-49-8	o-Chlorotoluene	ND	2.0	0.54	ug/kg	
106-43-4	p-Chlorotoluene	ND	2.0	0.44	ug/kg	
108-20-3	Di-Isopropyl ether	ND	2.0	0.50	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.56	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.42	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.55	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.49	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.0	0.73	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.47	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.66	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.84	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.61	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.47	ug/kg	
142-28-9	1,3-Dichloropropane	ND	2.0	0.52	ug/kg	
594-20-7	2,2-Dichloropropane	ND	2.0	0.43	ug/kg	
563-58-6	1,1-Dichloropropene	ND	2.0	0.47	ug/kg	

Method Blank Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1C9104-MB	1C211973.D	1	12/09/25	JN	n/a	n/a	V1C9104

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE24521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.48	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.46	ug/kg	
123-91-1	1,4-Dioxane	ND	130	37	ug/kg	
60-29-7	Ethyl Ether	ND	2.0	0.46	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.45	ug/kg	
87-68-3	Hexachlorobutadiene	ND	5.0	0.66	ug/kg	
591-78-6	2-Hexanone	ND	5.0	2.1	ug/kg	
98-82-8	Isopropylbenzene	ND	2.0	1.4	ug/kg	
99-87-6	p-Isopropyltoluene	ND	2.0	0.40	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.47	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	2.3	ug/kg	
74-95-3	Methylene bromide	ND	5.0	0.53	ug/kg	
75-09-2	Methylene chloride	ND	5.0	2.6	ug/kg	
91-20-3	Naphthalene	ND	5.0	2.5	ug/kg	
103-65-1	n-Propylbenzene	ND	2.0	0.47	ug/kg	
100-42-5	Styrene	ND	2.0	0.40	ug/kg	
994-05-8	tert-Amyl Methyl Ether	ND	2.0	0.50	ug/kg	
637-92-3	tert-Butyl Ethyl Ether	ND	2.0	0.49	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	2.0	0.42	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.60	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.58	ug/kg	
109-99-9	Tetrahydrofuran	ND	10	3.0	ug/kg	
108-88-3	Toluene	ND	1.0	0.53	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	2.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	2.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.48	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.55	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.76	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.0	0.68	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.56	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.50	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.43	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.48	ug/kg	
	m,p-Xylene	ND	1.0	0.90	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.46	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.46	ug/kg	

Method Blank Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1C9104-MB	1C211973.D	1	12/09/25	JN	n/a	n/a	V1C9104

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE24521-1

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	113%	80-124%
17060-07-0	1,2-Dichloroethane-D4	106%	75-133%
2037-26-5	Toluene-D8	109%	79-125%
460-00-4	4-Bromofluorobenzene	101%	58-148%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1C9104-BS	1C211970.D	1	12/09/25	JN	n/a	n/a	V1C9104
V1C9104-BSD	1C211971.D	1	12/09/25	JN	n/a	n/a	V1C9104

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE24521-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	200	168	84	198	99	16* [a]	52-156/12
71-43-2	Benzene	50	54.6	109	57.7	115	6	82-119/10
108-86-1	Bromobenzene	50	45.9	92	50.1	100	9	82-115/10
74-97-5	Bromochloromethane	50	51.8	104	55.8	112	7	82-123/10
75-27-4	Bromodichloromethane	50	56.3	113	58.0	116	3	83-121/10
75-25-2	Bromoform	50	52.0	104	54.9	110	5	74-138/10
74-83-9	Bromomethane	50	39.3	79	45.3	91	14* [a]	56-150/12
78-93-3	2-Butanone (MEK)	200	201	101	218	109	8	72-138/10
104-51-8	n-Butylbenzene	50	44.4	89	53.7	107	19* [a]	81-124/11
135-98-8	sec-Butylbenzene	50	46.1	92	53.2	106	14* [a]	78-120/10
98-06-6	tert-Butylbenzene	50	44.3	89	48.4	97	9	78-121/10
75-15-0	Carbon disulfide	50	59.8	120	67.4	135* [b]	12* [c]	67-131/11
56-23-5	Carbon tetrachloride	50	56.6	113	61.2	122	8	72-130/11
108-90-7	Chlorobenzene	50	51.2	102	51.2	102	0	83-114/10
75-00-3	Chloroethane	50	36.0	72	38.7	77	7	67-141/12
67-66-3	Chloroform	50	53.2	106	57.1	114	7	76-115/10
74-87-3	Chloromethane	50	51.0	102	56.6	113	10	57-141/13
95-49-8	o-Chlorotoluene	50	45.0	90	52.5	105	15* [a]	81-118/10
106-43-4	p-Chlorotoluene	50	43.8	88	52.0	104	17* [a]	78-117/10
108-20-3	Di-Isopropyl ether	50	51.1	102	57.0	114	11* [a]	66-138/10
96-12-8	1,2-Dibromo-3-chloropropane	50	47.3	95	54.3	109	14* [a]	72-131/11
124-48-1	Dibromochloromethane	50	51.6	103	52.9	106	2	80-128/10
106-93-4	1,2-Dibromoethane	50	49.6	99	54.7	109	10	58-145/10
95-50-1	1,2-Dichlorobenzene	50	43.9	88	50.1	100	13* [a]	83-117/10
541-73-1	1,3-Dichlorobenzene	50	45.5	91	49.9	100	9	82-114/10
106-46-7	1,4-Dichlorobenzene	50	45.4	91	47.2	94	4	79-114/10
75-71-8	Dichlorodifluoromethane	50	57.4	115	63.3	127	10	49-146/13
75-34-3	1,1-Dichloroethane	50	52.0	104	56.8	114	9	76-126/10
107-06-2	1,2-Dichloroethane	50	52.1	104	55.4	111	6	76-118/10
75-35-4	1,1-Dichloroethene	50	50.7	101	53.7	107	6	72-125/11
156-59-2	cis-1,2-Dichloroethene	50	49.3	99	55.3	111	11* [a]	80-118/10
156-60-5	trans-1,2-Dichloroethene	50	50.6	101	58.4	117	14* [a]	76-122/10
78-87-5	1,2-Dichloropropane	50	52.4	105	53.2	106	2	82-123/10
142-28-9	1,3-Dichloropropane	50	53.9	108	57.0	114	6	84-120/10
594-20-7	2,2-Dichloropropane	50	55.4	111	59.9	120	8	66-130/11
563-58-6	1,1-Dichloropropene	50	53.5	107	60.0	120	11* [a]	78-122/10

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1C9104-BS	1C211970.D	1	12/09/25	JN	n/a	n/a	V1C9104
V1C9104-BSD	1C211971.D	1	12/09/25	JN	n/a	n/a	V1C9104

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE24521-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	50	50.9	102	56.8	114	11* [a]	83-123/10
10061-02-6	trans-1,3-Dichloropropene	50	54.7	109	56.6	113	3	83-123/10
123-91-1	1,4-Dioxane	1250	1360	109	1420	114	4	64-163/20
60-29-7	Ethyl Ether	50	61.8	124	65.5	131	6	78-131/10
100-41-4	Ethylbenzene	50	51.6	103	55.0	110	6	83-115/10
87-68-3	Hexachlorobutadiene	50	52.7	105	59.3	119	12* [a]	65-130/11
591-78-6	2-Hexanone	200	191	96	212	106	10	73-138/10
98-82-8	Isopropylbenzene	50	48.9	98	52.4	105	7	81-122/11
99-87-6	p-Isopropyltoluene	50	45.8	92	53.4	107	15* [a]	80-120/10
1634-04-4	Methyl Tert Butyl Ether	50	53.7	107	62.4	125	15* [a]	75-126/12
108-10-1	4-Methyl-2-pentanone(MIBK)	200	182	91	212	106	15* [a]	71-138/10
74-95-3	Methylene bromide	50	52.0	104	56.6	113	8	81-122/10
75-09-2	Methylene chloride	50	52.3	105	59.3	119	13* [a]	73-122/10
91-20-3	Naphthalene	50	45.5	91	54.0	108	17* [a]	71-129/14
103-65-1	n-Propylbenzene	50	47.6	95	52.4	105	10	77-120/10
100-42-5	Styrene	50	50.1	100	53.1	106	6	84-122/10
994-05-8	tert-Amyl Methyl Ether	50	52.3	105	54.8	110	5	77-125/11
637-92-3	tert-Butyl Ethyl Ether	50	52.3	105	60.2	120	14* [a]	75-131/10
630-20-6	1,1,1,2-Tetrachloroethane	50	53.3	107	56.7	113	6	81-125/10
79-34-5	1,1,2,2-Tetrachloroethane	50	43.2	86	51.5	103	18* [a]	75-127/10
127-18-4	Tetrachloroethene	50	53.4	107	56.9	114	6	73-125/11
109-99-9	Tetrahydrofuran	50	45.4	91	52.5	105	15* [a]	61-136/11
108-88-3	Toluene	50	51.9	104	57.9	116	11* [a]	82-118/10
87-61-6	1,2,3-Trichlorobenzene	50	48.0	96	57.3	115	18* [a]	68-132/13
120-82-1	1,2,4-Trichlorobenzene	50	47.5	95	55.9	112	16* [a]	72-133/12
71-55-6	1,1,1-Trichloroethane	50	56.1	112	61.6	123	9	77-124/11
79-00-5	1,1,2-Trichloroethane	50	51.9	104	56.9	114	9	83-122/10
79-01-6	Trichloroethene	50	52.9	106	53.7	107	2	80-122/10
75-69-4	Trichlorofluoromethane	50	49.4	99	53.6	107	8	69-132/11
96-18-4	1,2,3-Trichloropropane	50	44.7	89	47.7	95	6	80-120/10
95-63-6	1,2,4-Trimethylbenzene	50	46.7	93	52.4	105	12* [a]	80-119/10
108-67-8	1,3,5-Trimethylbenzene	50	47.4	95	55.3	111	15* [a]	79-120/10
75-01-4	Vinyl chloride	50	46.5	93	53.4	107	14* [a]	60-144/13
	m,p-Xylene	100	103	103	106	106	3	82-119/10
95-47-6	o-Xylene	50	48.8	98	50.7	101	4	84-120/10
1330-20-7	Xylene (total)	150	152	101	157	105	3	83-119/10

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1C9104-BS	1C211970.D	1	12/09/25	JN	n/a	n/a	V1C9104
V1C9104-BSD	1C211971.D	1	12/09/25	JN	n/a	n/a	V1C9104

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE24521-1

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	107%	113%	80-124%
17060-07-0	1,2-Dichloroethane-D4	106%	110%	75-133%
2037-26-5	Toluene-D8	104%	115%	79-125%
460-00-4	4-Bromofluorobenzene	89%	98%	58-148%

(a) Outside in house control limits.
(b) Outside of in house control limits, but within the marginal exceedance limits.
(c) Outside control limits.

*** = Outside of Control Limits.**

Internal Standard Area Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	V1C9104-CC9032	**Injection Date:**	12/09/25
Lab File ID:	1C211968.D	**Injection Time:**	10:33
Instrument ID:	GCMS1C	**Method:**	SW846 8260D

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	139170	6.95	522497	9.20	692019	10.12	528303	13.30	323050	15.63
Upper Limit [a]	278340	7.45	1044994	9.70	1384038	10.62	1056606	13.80	646100	16.13
Lower Limit [b]	69585	6.45	261249	8.70	346010	9.62	264152	12.80	161525	15.13

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
V1C9104-BS	134507	6.95	542313	9.20	714414	10.12	557120	13.30	338033	15.63
V1C9104-BSD	142730	6.95	511498	9.20	703709	10.12	554419	13.30	310185	15.63
V1C9104-MB	129507	6.95	523034	9.20	693964	10.12	541456	13.30	317275	15.63
JE24521-1	131142	6.95	508694	9.20	687266	10.12	539222	13.30	309092	15.63
JE24601-3	135678	6.95	540158	9.20	738224	10.12	570840	13.30	324888	15.63
JE24601-11	133742	6.95	521809	9.20	721180	10.12	575828	13.30	327415	15.63
ZZZZZZ	140354	6.95	513150	9.20	703109	10.12	543066	13.30	302599	15.63
ZZZZZZ	132790	6.95	486128	9.20	678579	10.12	533321	13.30	290327	15.63
ZZZZZZ	115285	6.95	510829	9.20	686173	10.12	534167	13.30	288493	15.63
JE24601-3MS	104852	6.95	497217	9.20	656970	10.12	507263	13.30	306412	15.63
JE24601-11DUP	120368	6.95	505560	9.20	684772	10.12	495779	13.30	297264	15.63
ZZZZZZ	114310	6.94	502344	9.20	661039	10.12	510742	13.30	288503	15.63
ZZZZZZ	119174	6.95	469467	9.20	605233	10.12	476695	13.30	260516	15.63
ZZZZZZ	142734	6.95	520226	9.21	748492	10.12	567565	13.30	321437	15.63
ZZZZZZ	139581	6.95	520905	9.20	716476	10.12	563058	13.30	308690	15.63
ZZZZZZ	133358	6.95	510799	9.20	699321	10.12	552109	13.30	323419	15.63
ZZZZZZ	157277	6.95	599795	9.20	812011	10.12	664061	13.30	349198	15.63

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Surrogate Recovery Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8260D **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JE24521-1	1C211974.D	117	113	108	99
V1C9104-BS	1C211970.D	107	106	104	89
V1C9104-BSD	1C211971.D	113	110	115	98
V1C9104-MB	1C211973.D	113	106	109	101

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	80-124%
S2 = 1,2-Dichloroethane-D4	75-133%
S3 = Toluene-D8	79-125%
S4 = 4-Bromofluorobenzene	58-148%

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Internal Standard Area Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69554-MB1	4P699481.D	1	12/07/25	TL	12/06/25	OP69554	E4P3931

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE24521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	670	55	ug/kg	
95-57-8	2-Chlorophenol	ND	67	16	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	20	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	28	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	59	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	36	ug/kg	
95-48-7	2-Methylphenol	ND	67	21	ug/kg	
	3&4-Methylphenol	ND	67	27	ug/kg	
88-75-5	2-Nitrophenol	ND	170	22	ug/kg	
100-02-7	4-Nitrophenol	ND	330	89	ug/kg	
87-86-5	Pentachlorophenol	ND	130	31	ug/kg	
108-95-2	Phenol	ND	67	17	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	25	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	20	ug/kg	
83-32-9	Acenaphthene	ND	33	11	ug/kg	
208-96-8	Acenaphthylene	ND	33	17	ug/kg	
98-86-2	Acetophenone	ND	170	7.2	ug/kg	
62-53-3	Aniline	ND	67	15	ug/kg	
120-12-7	Anthracene	ND	33	20	ug/kg	
56-55-3	Benzo(a)anthracene	ND	33	9.4	ug/kg	
50-32-8	Benzo(a)pyrene	ND	33	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	33	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	33	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	33	16	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	67	13	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	67	8.1	ug/kg	
91-58-7	2-Chloronaphthalene	ND	67	7.9	ug/kg	
106-47-8	4-Chloroaniline	ND	170	12	ug/kg	
218-01-9	Chrysene	ND	33	10	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	67	7.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	67	14	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	67	12	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	67	11	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	67	9.6	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	67	7.6	ug/kg	

Method Blank Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69554-MB1	4P699481.D	1	12/07/25	TL	12/06/25	OP69554	E4P3931

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE24521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
541-73-1	1,3-Dichlorobenzene	ND	67	7.1	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	67	8.1	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	33	10	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	33	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	67	28	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	15	ug/kg	
132-64-9	Dibenzofuran	ND	67	14	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	67	5.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	67	8.3	ug/kg	
84-66-2	Diethyl phthalate	ND	67	7.1	ug/kg	
131-11-3	Dimethyl phthalate	ND	67	5.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	67	7.8	ug/kg	
206-44-0	Fluoranthene	ND	33	15	ug/kg	
86-73-7	Fluorene	ND	33	15	ug/kg	
118-74-1	Hexachlorobenzene	ND	67	8.4	ug/kg	
87-68-3	Hexachlorobutadiene	ND	33	13	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	330	13	ug/kg	
67-72-1	Hexachloroethane	ND	170	16	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	33	16	ug/kg	
78-59-1	Isophorone	ND	67	7.1	ug/kg	
91-57-6	2-Methylnaphthalene	ND	33	7.5	ug/kg	
91-20-3	Naphthalene	ND	33	9.4	ug/kg	
98-95-3	Nitrobenzene	ND	67	13	ug/kg	
62-75-9	n-Nitrosodimethylamine	ND	67	12	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	67	9.6	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	12	ug/kg	
85-01-8	Phenanthrene	ND	33	11	ug/kg	
129-00-0	Pyrene	ND	33	11	ug/kg	
110-86-1	Pyridine	ND	67	11	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	67	8.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	64%	10-99%
4165-62-2	Phenol-d5	66%	10-96%

Method Blank Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69554-MB1	4P699481.D	1	12/07/25	TL	12/06/25	OP69554	E4P3931

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE24521-1

CAS No.	Surrogate Recoveries		Limits
118-79-6	2,4,6-Tribromophenol	80%	10-123%
4165-60-0	Nitrobenzene-d5	58%	10-109%
321-60-8	2-Fluorobiphenyl	77%	11-109%
1718-51-0	Terphenyl-d14	93%	10-120%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69554-BS1	4P699482.D	1	12/07/25	TL	12/06/25	OP69554	E4P3931
OP69554-BSD	4P699483.D	1	12/07/25	TL	12/06/25	OP69554	E4P3931

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE24521-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic acid	1670	1120	67	1190	71	6	10-146/45
95-57-8	2-Chlorophenol	1670	1250	75	1300	78	4	10-135/43
59-50-7	4-Chloro-3-methyl phenol	1670	1410	85	1440	86	2	10-141/46
120-83-2	2,4-Dichlorophenol	1670	1420	85	1460	88	3	10-139/43
105-67-9	2,4-Dimethylphenol	1670	1350	81	1380	83	2	10-141/44
51-28-5	2,4-Dinitrophenol	3330	2570	77	2670	80	4	10-138/90
534-52-1	4,6-Dinitro-o-cresol	1670	1550	93	1620	97	4	10-156/64
95-48-7	2-Methylphenol	1670	1260	76	1320	79	5	10-139/45
	3&4-Methylphenol	3330	2510	75	2660	80	6	10-174/46
88-75-5	2-Nitrophenol	1670	1350	81	1430	86	6	10-142/43
100-02-7	4-Nitrophenol	1670	1290	77	1370	82	6	10-144/51
87-86-5	Pentachlorophenol	3330	3020	91	3080	92	2	10-165/51
108-95-2	Phenol	1670	1170	70	1210	73	3	23-115/45
95-95-4	2,4,5-Trichlorophenol	1670	1450	87	1500	90	3	13-136/47
88-06-2	2,4,6-Trichlorophenol	1670	1440	86	1490	89	3	10-142/46
83-32-9	Acenaphthene	1670	1310	79	1380	83	5	10-141/45
208-96-8	Acenaphthylene	1670	1330	80	1360	82	2	10-133/45
98-86-2	Acetophenone	1670	1190	71	1240	74	4	23-115/44
62-53-3	Aniline	1670	1250	75	1260	76	1	10-113/63
120-12-7	Anthracene	1670	1380	83	1430	86	4	10-144/49
56-55-3	Benzo(a)anthracene	1670	1390	83	1410	85	1	11-139/48
50-32-8	Benzo(a)pyrene	1670	1420	85	1470	88	3	13-141/48
205-99-2	Benzo(b)fluoranthene	1670	1430	86	1450	87	1	14-140/48
191-24-2	Benzo(g,h,i)perylene	1670	1530	92	1540	92	1	13-138/50
207-08-9	Benzo(k)fluoranthene	1670	1370	82	1430	86	4	12-140/47
101-55-3	4-Bromophenyl phenyl ether	1670	1530	92	1570	94	3	10-146/47
85-68-7	Butyl benzyl phthalate	1670	1380	83	1410	85	2	10-150/48
91-58-7	2-Chloronaphthalene	1670	1340	80	1390	83	4	10-142/42
106-47-8	4-Chloroaniline	1670	662	40	855	51	25	10-108/56
218-01-9	Chrysene	1670	1430	86	1430	86	0	11-139/48
111-91-1	bis(2-Chloroethoxy)methane	1670	1260	76	1290	77	2	10-144/42
111-44-4	bis(2-Chloroethyl)ether	1670	1130	68	1170	70	3	10-145/43
108-60-1	2,2'-Oxybis(1-chloropropane)	1670	1190	71	1210	73	2	10-145/43
7005-72-3	4-Chlorophenyl phenyl ether	1670	1480	89	1560	94	5	10-145/46
95-50-1	1,2-Dichlorobenzene	1670	1160	70	1160	70	0	10-136/41
122-66-7	1,2-Diphenylhydrazine	1670	1230	74	1270	76	3	10-145/46

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69554-BS1	4P699482.D	1	12/07/25	TL	12/06/25	OP69554	E4P3931
OP69554-BSD	4P699483.D	1	12/07/25	TL	12/06/25	OP69554	E4P3931

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE24521-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
541-73-1	1,3-Dichlorobenzene	1670	1120	67	1110	67	1	10-139/40
106-46-7	1,4-Dichlorobenzene	1670	1140	68	1160	70	2	10-136/43
121-14-2	2,4-Dinitrotoluene	1670	1560	94	1660	100	6	10-148/49
606-20-2	2,6-Dinitrotoluene	1670	1590	95	1640	98	3	12-145/48
91-94-1	3,3'-Dichlorobenzidine	1670	987	59	1040	62	5	10-100/62
53-70-3	Dibenzo(a,h)anthracene	1670	1530	92	1540	92	1	14-142/48
132-64-9	Dibenzofuran	1670	1360	82	1400	84	3	10-140/46
84-74-2	Di-n-butyl phthalate	1670	1360	82	1410	85	4	11-147/47
117-84-0	Di-n-octyl phthalate	1670	1300	78	1340	80	3	15-145/49
84-66-2	Diethyl phthalate	1670	1380	83	1430	86	4	10-145/46
131-11-3	Dimethyl phthalate	1670	1410	85	1460	88	3	10-144/47
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1370	82	1390	83	1	26-132/48
206-44-0	Fluoranthene	1670	1320	79	1350	81	2	10-147/48
86-73-7	Fluorene	1670	1370	82	1430	86	4	12-139/45
118-74-1	Hexachlorobenzene	1670	1510	91	1530	92	1	10-144/48
87-68-3	Hexachlorobutadiene	1670	1430	86	1460	88	2	10-142/41
77-47-4	Hexachlorocyclopentadiene	3330	3000	90	3130	94	4	10-120/53
67-72-1	Hexachloroethane	1670	1280	77	1270	76	1	10-141/41
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1510	91	1530	92	1	13-144/52
78-59-1	Isophorone	1670	1200	72	1250	75	4	10-139/44
91-57-6	2-Methylnaphthalene	1670	1300	78	1330	80	2	10-140/42
91-20-3	Naphthalene	1670	1260	76	1270	76	1	10-141/40
98-95-3	Nitrobenzene	1670	1170	70	1190	71	2	10-139/42
62-75-9	n-Nitrosodimethylamine	1670	961	58	925	56	4	10-140/41
621-64-7	N-Nitroso-di-n-propylamine	1670	1160	70	1230	74	6	10-143/41
86-30-6	N-Nitrosodiphenylamine	1670	1530	92	1540	92	1	10-145/45
85-01-8	Phenanthrene	1670	1350	81	1380	83	2	10-142/47
129-00-0	Pyrene	1670	1550	93	1550	93	0	13-141/46
110-86-1	Pyridine	1670	746	45	695	42	7	10-112/37
120-82-1	1,2,4-Trichlorobenzene	1670	1320	79	1350	81	2	10-141/41

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	77%	78%	10-99%
4165-62-2	Phenol-d5	76%	78%	10-96%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69554-BS1	4P699482.D	1	12/07/25	TL	12/06/25	OP69554	E4P3931
OP69554-BSD	4P699483.D	1	12/07/25	TL	12/06/25	OP69554	E4P3931

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE24521-1

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
118-79-6	2,4,6-Tribromophenol	98%	98%	10-123%
4165-60-0	Nitrobenzene-d5	73%	72%	10-109%
321-60-8	2-Fluorobiphenyl	86%	88%	11-109%
1718-51-0	Terphenyl-d14	94%	93%	10-120%

*** = Outside of Control Limits.**

Internal Standard Area Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	E4P3931-CC3929	**Injection Date:**	12/07/25
Lab File ID:	4P699477.D	**Injection Time:**	19:42
Instrument ID:	GCMS4P	**Method:**	SW846 8270E

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Initial Cal [a]	93036	4.73	365036	5.45	198119	6.59	377223	7.78	424354	10.26	459446	11.67
Check Std [b]	75481	4.74	294430	5.45	167944	6.59	319848	7.79	378387	10.26	417003	11.69
Upper Limit [c]	150962	4.91	588860	5.62	335888	6.76	639696	7.96	756774	10.43	834006	11.86
Lower Limit [d]	37741	4.57	147215	5.28	83972	6.42	159924	7.62	189194	10.09	208502	11.52

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP69554-MB1	87411	4.73	344547	5.45	193242	6.59	368999	7.78	340063	10.26	348743	11.67
OP69554-BS1	85386	4.74	328925	5.45	183799	6.59	341836	7.78	315092	10.26	370876	11.67
OP69554-BSD	81037	4.74	318772	5.45	178831	6.59	337874	7.78	320223	10.26	367090	11.68
JE24521-1	85843	4.74	334890	5.45	181500	6.59	332686	7.78	316261	10.26	368449	11.67
JE24529-2	84703	4.73	341645	5.45	188459	6.59	352818	7.78	312278	10.26	352706	11.67
OP69554-MS	106031	4.74	414101	5.45	225870	6.59	341598	7.78	313107	10.26	367865	11.68
OP69554-MSD	128495	4.74	503447	5.45	264975	6.59	474374	7.78	433619	10.26	506414	11.67
ZZZZZZ	106278	4.73	414123	5.45	216269	6.59	400477	7.78	447132	10.26	497432	11.67
ZZZZZZ	140972	4.74	549732	5.45	285766	6.59	499278	7.78	448348	10.26	530015	11.67
ZZZZZZ	123121	4.74	474438	5.45	247356	6.59	433345	7.78	413556	10.26	488323	11.67

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Initial Cal is: E4P3929-ICC3929 4P699439.D 12/05/25 11:40
(b) Check Std Limit = -50 to + 100% of initial cal area.
(c) Upper Limit = + 100% of check standard area; Retention time + 0.167 minutes.
(d) Lower Limit = -50% of check standard area; Retention time -0.167 minutes.

Surrogate Recovery Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8270E **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
JE24521-1	4P699484.D	61	62	76	55	73	70
OP69554-BS1	4P699482.D	77	76	98	73	86	94
OP69554-BSD	4P699483.D	78	78	98	72	88	93
OP69554-MB1	4P699481.D	64	66	80	58	77	93

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	10-99%
S2 = Phenol-d5	10-96%
S3 = 2,4,6-Tribromophenol	10-123%
S4 = Nitrobenzene-d5	10-109%
S5 = 2-Fluorobiphenyl	11-109%
S6 = Terphenyl-d14	10-120%

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GBH1985-MB	BH55452.D	1	12/09/25	JN	n/a	n/a	GBH1985

The QC reported here applies to the following samples: **Method: MADEP VPH REV 2.1**

JE24521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	5000	2500	ug/kg	
	C9- C12 Aliphatics (Unadj.)	ND	5000	2500	ug/kg	
	C5- C8 Aliphatics	ND	5000	2500	ug/kg	
	C9- C12 Aliphatics	ND	5000	2500	ug/kg	
	C9- C10 Aromatics	ND	5000	2500	ug/kg	

CAS No.	Surrogate Recoveries		Limits
	2,3,4-Trifluorotoluene	98%	70-130%
	2,3,4-Trifluorotoluene	94%	70-130%

Method Blank Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKM633-MB	KM15041.D	1	12/08/25	JN	n/a	n/a	GKM633

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE24521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries		Limits
98-08-8	aaa-Trifluorotoluene	86%	70-116%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GBH1985-BS	BH55453.D	1	12/09/25	JN	n/a	n/a	GBH1985
GBH1985-BSD	BH55454.D	1	12/09/25	JN	n/a	n/a	GBH1985

The QC reported here applies to the following samples: **Method: MADEP VPH REV 2.1**

JE24521-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
	C5- C8 Aliphatics (Unadj.)	7500	7610	101	7310	97	4	70-130/25
	C9- C12 Aliphatics (Unadj.)	5000	4180	84	4000	80	4	70-130/25
	C9- C10 Aromatics	2500	2420	97	2390	96	1	70-130/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
	2,3,4-Trifluorotoluene	100%	100%	70-130%
	2,3,4-Trifluorotoluene	97%	96%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKM633-BS	KM15042.D	1	12/08/25	JN	n/a	n/a	GKM633
GKM633-BSD	KM15043.D	1	12/08/25	JN	n/a	n/a	GKM633

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE24521-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	400	427	107	432	108	1	75-126/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
98-08-8	aaa-Trifluorotoluene	99%	101%	70-116%

* = Outside of Control Limits.

Surrogate Recovery Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: MADEP VPH REV 2.1 **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
JE24521-1	BH55456.D	94	92
GBH1985-BS	BH55453.D	100	97
GBH1985-BSD	BH55454.D	100	96
GBH1985-MB	BH55452.D	98	94

Surrogate Compounds	Recovery Limits
S1 = 2,3,4-Trifluorotoluene	70-130%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

Surrogate Recovery Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8015D **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]
JE24521-1	KM15044.D	84
GKM633-BS	KM15042.D	99
GKM633-BSD	KM15043.D	101
GKM633-MB	KM15041.D	86

Surrogate Compounds	Recovery Limits
S1 = aaa-Trifluorotoluene	70-116%

(a) Recovery from GC signal #1

GC/LC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69599-MB1	5Y83226.D	1	12/09/25	CB	12/08/25	OP69599	G5Y4098

The QC reported here applies to the following samples: **Method: MADEP EPH REV 2.1**

JE24521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	ND	6700	580	ug/kg	
	C9-C18 Aliphatics	ND	6700	190	ug/kg	
	C11-C22 Aromatics	ND	6700	580	ug/kg	
	C19-C36 Aliphatics	ND	6700	450	ug/kg	

CAS No.	Surrogate Recoveries		Limits
3386-33-2	1-Chlorooctadecane	52%	40-140%
84-15-1	o-Terphenyl	54%	40-140%
321-60-8	2-Fluorobiphenyl	88%	40-140%

Method Blank Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69558-MB1	RL32870.D	1	12/08/25	EA	12/07/25	OP69558	GRL848

The QC reported here applies to the following samples: **Method: SW846 8082A**

JE24521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	8.5	ug/kg	
11104-28-2	Aroclor 1221	ND	20	6.7	ug/kg	
11141-16-5	Aroclor 1232	ND	20	17	ug/kg	
53469-21-9	Aroclor 1242	ND	20	12	ug/kg	
12672-29-6	Aroclor 1248	ND	20	4.3	ug/kg	
11097-69-1	Aroclor 1254	ND	20	2.2	ug/kg	
11096-82-5	Aroclor 1260	ND	20	6.9	ug/kg	
11100-14-4	Aroclor 1268	ND	20	2.0	ug/kg	
37324-23-5	Aroclor 1262	ND	20	1.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
877-09-8	Tetrachloro-m-xylene	80%	35-154%
877-09-8	Tetrachloro-m-xylene	74%	35-154%
2051-24-3	Decachlorobiphenyl	89%	24-176%
2051-24-3	Decachlorobiphenyl	86%	24-176%

Method Blank Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69568-MB1	3Y98329.D	1	12/08/25	CB	12/06/25	OP69568	G3Y3785

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE24521-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	4.0	2.6	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	109%	50-150%
438-22-2	5a-Androstane	97%	50-150%

Blank Spike Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69568-BS1	3Y98330.D	1	12/08/25	CB	12/06/25	OP69568	G3Y3785

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE24521-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	500	559	112	50-150

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	144%	50-150%
438-22-2	5a-Androstane	123%	50-150%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69599-BS1	5Y83227.D	1	12/09/25	CB	12/08/25	OP69599	G5Y4098
OP69599-BSD	5Y83228.D	1	12/09/25	CB	12/08/25	OP69599	G5Y4098

The QC reported here applies to the following samples: **Method: MADEP EPH REV 2.1**

JE24521-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
	C11-C22 Aromatics (Unadj.)	56700	36200	64	37000	65	2	50-150/30 [a]
	C9-C18 Aliphatics	20000	14400	72	10600	53	30	40-140/30
	C19-C36 Aliphatics	36700	28400	77	22900	62	21	40-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
3386-33-2	1-Chlorooctadecane	64%	45%	40-140%
84-15-1	o-Terphenyl	53%	54%	40-140%
321-60-8	2-Fluorobiphenyl	97%	88%	40-140%

Sample	Compound	Col #1	Col #2	Breakthrough	Limit
OP69599-BS1	2-Methylnaphthalene	1280	ND	0.0%	5.0
OP69599-BS1	Naphthalene	1420	ND	0.0%	5.0
OP69599-BSD	2-Methylnaphthalene	1320	ND	0.0%	5.0
OP69599-BSD	Naphthalene	1450	ND	0.0%	5.0

(a) Advisory control limits.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69558-BS1	RL32871.D	1	12/08/25	EA	12/07/25	OP69558	GRL848
OP69558-BSD	RL32872.D	1	12/08/25	EA	12/07/25	OP69558	GRL848

The QC reported here applies to the following samples: **Method: SW846 8082A**

JE24521-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
12674-11-2	Aroclor 1016	40	35.3	88 [a]	35.3	88 [a]	0	64-128/30
11104-28-2	Aroclor 1221		ND		ND		nc	50-150/30
11141-16-5	Aroclor 1232		ND		ND		nc	50-150/30
53469-21-9	Aroclor 1242		ND		ND		nc	50-150/30
12672-29-6	Aroclor 1248		ND		ND		nc	50-150/30
11097-69-1	Aroclor 1254		ND		ND		nc	50-150/30
11096-82-5	Aroclor 1260	40	34.6	87 [a]	34.6	87 [a]	0	62-132/30
11100-14-4	Aroclor 1268		ND		ND		nc	50-150/30
37324-23-5	Aroclor 1262		ND		ND		nc	50-150/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
877-09-8	Tetrachloro-m-xylene	82%	82%	35-154%
877-09-8	Tetrachloro-m-xylene	75%	75%	35-154%
2051-24-3	Decachlorobiphenyl	91%	92%	24-176%
2051-24-3	Decachlorobiphenyl	87%	88%	24-176%

(a) Reported from the 2nd signal. The %D of the CCV on the 1st signal exceeds the method criteria of 20%, so it being used for confirmation only.

* = Outside of Control Limits.

Surrogate Recovery Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: MADEP EPH REV 2.1 **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S2 [b]	S3 [b]
JE24521-1	5Y83231.D	49	66	91
OP69599-BS1	5Y83227.D	64	53	97
OP69599-BSD	5Y83228.D	45	54	88
OP69599-MB1	5Y83226.D	52	54	88

Surrogate Compounds	Recovery Limits
S1 = 1-Chlorooctadecane	40-140%
S2 = o-Terphenyl	40-140%
S3 = 2-Fluorobiphenyl	40-140%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

Surrogate Recovery Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8082A **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]	S2 [a]	S2 [b]
JE24521-1	RL32873.D	81	76	88	86
OP69558-BS1	RL32871.D	82	75	91	87
OP69558-BSD	RL32872.D	82	75	92	88
OP69558-MB1	RL32870.D	80	74	89	86

Surrogate Compounds	Recovery Limits
S1 = Tetrachloro-m-xylene	35-154%
S2 = Decachlorobiphenyl	24-176%

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

Surrogate Recovery Summary

Job Number: JE24521
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8015D **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S2 [a]
JE24521-1	3Y98333.D	110	98
OP69568-BS1	3Y98330.D	144	123
OP69568-MB1	3Y98329.D	109	97

Surrogate Compounds	Recovery Limits
S1 = o-Terphenyl	50-150%
S2 = 5a-Androstane	50-150%

(a) Recovery from GC signal #1

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Blank Spike and Lab Control Sample Summaries**
- **Serial Dilution Summaries**

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE24521
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59133
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 12/05/25

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.7	8.1		
Antimony	2.0	.17	.41	0.060	<2.0
Arsenic	2.0	.21	.28	-0.22	<2.0
Barium	20	.08	1.9		
Beryllium	0.20	.03	.08	0.010	<0.20
Bismuth	2.0	.23	.52		
Boron	10	.23	3.7		
Cadmium	0.50	.03	.07	0.020	<0.50
Calcium	500	.66	21		
Chromium	1.0	.03	.37	0.070	<1.0
Cobalt	5.0	.04	.28		
Copper	2.5	.08	.84	0.41	<2.5
Iron	50	.53	19		
Lead	2.0	.11	.41	-0.050	<2.0
Lithium	5.0	.48	.92		
Magnesium	500	3.2	14		
Manganese	1.5	.01	.41		
Molybdenum	2.0	.06	.32		
Nickel	4.0	.04	.35	0.050	<4.0
Phosphorus	20	.12	3.3		
Potassium	1000	7.7	32		
Selenium	2.0	.32	.65	0.29	<2.0
Silicon	20	.17	11		
Silver	0.50	.1	.17	-0.050	<0.50
Sodium	1000	3.4	78		
Strontium	5.0	.03	.18		
Sulfur	10	.3	3.9		
Thallium	1.0	.18	.58	-0.060	<1.0
Tin	20	.08	3.8		
Titanium	1.0	.05	.34		
Tungsten	5.0	.26	1.8		
Vanadium	5.0	.06	.19		
Zinc	5.0	.01	2.3	0.20	<5.0

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE24521
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59133
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 12/05/25

Metal	RL	IDL	MDL	MB raw	final
Zirconium	2.0	.03	.54		

Associated samples MP59133: JE24521-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE24521
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59133
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date:			12/05/25				12/05/25	
Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits	LCS Result	Spikelot MPLC681022	% Rec	QC Limits
Aluminum								
Antimony	210	200	105.0	80-120	72.0	276	26.1	2-110
Arsenic	214	200	107.0	80-120	164	223	73.5	70-102
Barium	anr							
Beryllium	213	200	106.5	80-120	112	131	85.5	76-108
Bismuth								
Boron								
Cadmium	207	200	103.5	80-120	180	226	79.6	74-105
Calcium								
Chromium	209	200	104.5	80-120	191	230	83.0	73-107
Cobalt								
Copper	211	200	105.5	80-120	193	239	80.8	75-106
Iron								
Lead	210	200	105.0	80-120	240	275	87.3	74-108
Lithium								
Magnesium								
Manganese								
Molybdenum								
Nickel	209	200	104.5	80-120	99.5	118	84.3	72-104
Phosphorus								
Potassium								
Selenium	210	200	105.0	80-120	110	137	80.3	71-109
Silicon								
Silver	23.8	25	95.2	80-120	60.4	75.3	80.2	72-110
Sodium								
Strontium								
Sulfur								
Thallium	214	200	107.0	80-120	143	165	86.7	71-107
Tin								
Titanium								
Tungsten								
Vanadium								
Zinc	213	200	106.5	80-120	238	286	83.2	76-112

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE24521
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59133 Methods: SW846 6010D
Matrix Type: SOLID Units: mg/kg

Prep Date: 12/05/25 12/05/25

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits	LCS Result	Spikelot MPLC681022	% Rec	QC Limits
Zirconium								

Associated samples MP59133: JE24521-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE24521
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59133
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 12/05/25

Metal	LCS Result	Spikelot MPLC681022	% Rec	QC Limits
Aluminum				
Antimony	74.3	276	26.9	2-110
Arsenic	167	223	74.9	70-102
Barium	anr			
Beryllium	107	131	81.7	76-108
Bismuth				
Boron				
Cadmium	181	226	80.1	74-105
Calcium				
Chromium	185	230	80.4	73-107
Cobalt				
Copper	198	239	82.8	75-106
Iron				
Lead	245	275	89.1	74-108
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	101	118	85.6	72-104
Phosphorus				
Potassium				
Selenium	112	137	81.8	71-109
Silicon				
Silver	60.5	75.3	80.3	72-110
Sodium				
Strontium				
Sulfur				
Thallium	146	165	88.5	71-107
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc	236	286	82.5	76-112

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE24521
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59133
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 12/05/25

Metal	LCS Result	Spikelot MPLC681022	% Rec	QC Limits
Zirconium				

Associated samples MP59133: JE24521-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE24521
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59133
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 12/05/25

Metal	JE24521-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	1.90	0.00	100.0(a)	0-10
Arsenic	25.5	15.0	41.2 (a)	0-10
Barium	anr			
Beryllium	3.40	3.30	2.9	0-10
Bismuth				
Boron				
Cadmium	1.70	1.80	5.9	0-10
Calcium				
Chromium	114	115	1.4	0-10
Cobalt				
Copper	120	110	8.1	0-10
Iron				
Lead	31.5	33.3	5.7	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	98.4	97.4	1.0	0-10
Phosphorus				
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Sulfur				
Thallium	0.00	0.00	NC	0-10
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc	274	292	6.8	0-10

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE24521
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59133 Methods: SW846 6010D
Matrix Type: SOLID Units: ug/l

Prep Date: 12/05/25

Metal	JE24521-1 Original	SDL 1:5	%DIF	QC Limits
Zirconium				

Associated samples MP59133: JE24521-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

POST DIGESTATE SPIKE SUMMARY

Login Number: JE24521
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59133
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 12/05/25

Metal	Sample ml	Final ml	JE24521-1 Raw	JE24521-1 Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony	19.25	20	1.9	1.82875	2225	0.2	200	2000	111.2	80-120
Arsenic										
Barium										
Beryllium										
Bismuth										
Boron										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper										
Iron										
Lead										
Lithium										
Magnesium										
Manganese										
Molybdenum										
Nickel										
Phosphorus										
Potassium										
Selenium										
Silicon										
Silver										
Sodium										
Strontium										
Sulfur										
Thallium										
Tin										
Titanium										
Tungsten										
Vanadium										
Zinc										

POST DIGESTATE SPIKE SUMMARY

Login Number: JE24521
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59133
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 12/05/25

Metal	Sample ml	Final ml	JE24521-1 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Zirconium										

Associated samples MP59133: JE24521-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE24521
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59193 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 12/08/25

Metal	RL	IDL	MDL	MB raw	MB final
Mercury	0.033	.006	.015	-0.0027	<0.033

Associated samples MP59193: JE24521-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE24521
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59193
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 12/08/25

Metal	BSP Result	Spikelot HGPWS1	% Rec	QC Limits
Mercury	0.32	0.333	96.0	80-120

Associated samples MP59193: JE24521-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

General Chemistry

QC Data Summaries

Includes the following where applicable:

- **Method Blank and Blank Spike Summaries**
- **Duplicate Summaries**
- **Matrix Spike Summaries**

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: JE24521
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP66139/GN77091			mg/kg	40	38.9	97.3	80-120%
Chromium, Hexavalent	GP66139/GN77091	0.40	0.0	mg/kg	656.436	651	99.2	80-120%
Cyanide Reactivity	GP66057/GN76970	10	0.0	mg/kg	100	2.12	2.1	.25-27%
Specific Conductivity @ 25 C	GN77044			umhos/cm	1412	1410	99.9	95-105%
Sulfide Reactivity	GP66056/GN76990	100	0.0	mg/kg	440	230	52.3	42-107%

Associated Samples:
Batch GN77044: JE24521-1
Batch GP66056: JE24521-1
Batch GP66057: JE24521-1
Batch GP66139: JE24521-1
(*) Outside of QC limits

The results set forth herein are provided by SGS North America Inc.

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Automated Report

Technical Report for

WSP USA Environment & Infrastructure Inc

MWRA Water Tunnel

41005.1387

SGS Job Number: JE25540

Sampling Date: 12/18/25



Report to:

WSP USA Inc.
100 Summer Street, 13th Floor
Boston, MA 02110
dan.martin@wsp.com; andrew.k.nelson@wsp.com

ATTN: Dan Martin

Total number of pages in report: 120

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Olga Azarian
Technical Director

Client Service contact: Victoria Pushkova 732-329-0200
Certifications: NJ(12129),NY(10983),CA,CO,CT,FL,HI,IL,IN,KY,LA (120428),MA,MD,ME,MN,NC,NH,NV, AK (UST-103),AZ (AZ0786),PA(68-00408),RI,SC,TX (T104704234),UT,VA,WA,WV

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SGS North America Inc.

Sample Summary

WSP USA Environment & Infrastructure Inc

Job No: JE25540

MWRA Water Tunnel
Project No: 41005.1387

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JE25540-1	12/18/25	08:25	JS	12/18/25	AQ	Ground Water	SB-FD-542-A
JE25540-2	12/18/25	09:45	JS	12/18/25	AQ	Ground Water	SB-FD-543-A
JE25540-3	12/18/25	13:10	JS	12/18/25	AQ	Ground Water	B-GSS-411
JE25540-4	12/18/25	13:10	JS	12/18/25	AQ	Trip Blank Water	TRIP BLANK

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	WSP USA Environment & Infrastructure Inc	**Job No:**	JE25540
Site:	MWRA Water Tunnel	**Report Date**	1/7/2026 3:35:05 PM

On 12/18/2025, 3 sample(s), 1 Trip Blank(s), 0 Equip. Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 2.1 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of JE25540 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** V4D6474

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- JE25540-4 for Bromomethane: Associated CCV outside of control limits high, sample was ND.This compound is outside the MCP limits in the associated BS biased high.
- JE25540-2 for Bromomethane: Associated CCV outside of control limits high, sample was ND.This compound is outside the MCP limits in the associated BS biased high.
- JE25540-4 for Trichlorofluoromethane: Associated CCV outside of control limits high, sample was ND.
- JE25540-3 for Chloroethane: Associated CCV outside of control limits high, sample was ND.
- JE25540-3 for Trichlorofluoromethane: Associated CCV outside of control limits high, sample was ND.
- JE25540-3 for Bromomethane: Associated CCV outside of control limits high, sample was ND.This compound is outside the MCP limits in the associated BS biased high.
- JE25540-1 for Chloroethane: Associated CCV outside of control limits high, sample was ND.
- JE25540-1 for Trichlorofluoromethane: Associated CCV outside of control limits high, sample was ND.
- JE25540-1 for Bromomethane: Associated CCV outside of control limits high, sample was ND.This compound is outside the MCP limits in the associated BS biased high.
- JE25540-2 for Chloroethane: Associated CCV outside of control limits high, sample was ND.
- JE25540-2 for Trichlorofluoromethane: Associated CCV outside of control limits high, sample was ND.
- JE25540-4 for Chloroethane: Associated CCV outside of control limits high, sample was ND.

MS Semi-volatiles By Method SW846 8270E

Matrix: AQ **Batch ID:** OP69940

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- JE25540-2 for Di-n-octyl phthalate: Associated CCV outside of control limits high, sample was ND.
- JE25540-2 for 2,4-Dinitrophenol: Associated CCV outside of control limits high, sample was ND.
- JE25540-1 for 2,4-Dinitrophenol: Associated CCV outside of control limits high, sample was ND.
- JE25540-1 for Di-n-octyl phthalate: Associated CCV outside of control limits high, sample was ND.
- JE25540-1 for n-Nitrosodimethylamine: Associated CCV outside of control limits high, sample was ND.
- JE25540-3 for 2,4-Dinitrophenol: Associated CCV outside of control limits high, sample was ND.
- JE25540-3 for Di-n-octyl phthalate: Associated CCV outside of control limits high, sample was ND.
- JE25540-3 for n-Nitrosodimethylamine: Associated CCV outside of control limits high, sample was ND.
- JE25540-2 for n-Nitrosodimethylamine: Associated CCV outside of control limits high, sample was ND.

MS Semi-volatiles By Method SW846 8270E BY SIM

Matrix: AQ **Batch ID:** OP69940A

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- OP69940A-BSD12 for Dibenzo(a,h)anthracene: Analytical precision exceeds in-house control limits.
- OP69940A-BSD12 for Benzo(g,h,i)perylene: Analytical precision exceeds in-house control limits.
- OP69940A-BSD12 for Benzo(k)fluoranthene: Analytical precision exceeds in-house control limits.
- OP69940A-BSD12 for Benzo(a)pyrene: Analytical precision exceeds in-house control limits.
- OP69940A-BSD12 for Indeno(1,2,3-cd)pyrene: Analytical precision exceeds in-house control limits.
- OP69940A-BSD12 for Benzo(b)fluoranthene: Analytical precision exceeds in-house control limits.
- PAH reported only.

GC Volatiles By Method MADEP VPH REV 2.1

Matrix: AQ **Batch ID:** GBH1992

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

GC/LC Semi-volatiles By Method MADEP EPH REV 2.1

Matrix: AQ **Batch ID:** OP70007

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- JE25540-3: Associated CCV outside control limits. Sample reanalyzed for confirmation with similar results.
- JE25540-2: Confirmation run.
- JE25540-2: Associated CCV outside control limits. Sample reanalyzed for confirmation with similar results.
- JE25540-1: Confirmation run.
- JE25540-1: Associated CCV outside control limits. Sample reanalyzed for confirmation with similar results.
- JE25540-3: Confirmation run.
- JE25540-3 for 1-Chlorooctadecane: Outside of in house control limits.

GC/LC Semi-volatiles By Method SW846 8082A

Matrix: AQ **Batch ID:** OP69946

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- OP69946-BS1 for Decachlorobiphenyl: Outside of in house control limits.
- JE25540-1 for Decachlorobiphenyl: Outside of in house control limits.
- JE25540-2 for Decachlorobiphenyl: Outside of in house control limits.
- JE25540-3 for Decachlorobiphenyl: Outside of in house control limits.
- OP69946-MB1 for Decachlorobiphenyl: Outside of in house control limits.

Metals Analysis By Method SW846 6010D

Matrix: AQ **Batch ID:** MP59443

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JE25540-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Cadmium, Chromium, Nickel, Silver, Thallium, Zinc are outside control limits for sample MP59443-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals Analysis By Method SW846 7470A

Matrix: AQ **Batch ID:** MP59469

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SM2540 D-15/20

Matrix: AQ **Batch ID:** GN77629

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SM4500CL F-11

Matrix: AQ **Batch ID:** GN77571

- All method blanks for this batch meet method specific criteria.
- JE25540-1 for Total Residual Chlorine: Field analysis required. Received out of hold time and analyzed by request.
- JE25540-2 for Total Residual Chlorine: Field analysis required. Received out of hold time and analyzed by request.
- JE25540-3 for Total Residual Chlorine: Field analysis required. Received out of hold time and analyzed by request.

General Chemistry By Method SM4500H+ B-11/21

Matrix: AQ **Batch ID:** GN77552

- The data for SM4500H+ B-11/21 meets quality control requirements.
- JE25540-1 for pH: Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.36 Deg. C
- JE25540-2 for pH: Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.04 Deg. C
- JE25540-3 for pH: Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 19.94 Deg. C

General Chemistry By Method SW846 7196A

Matrix: AQ **Batch ID:** GN77470

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

Summary of Hits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE25540-1	SB-FD-542-A					
Acetone		30.7	10	3.1	ug/l	SW846 8260D
Ethylbenzene		1.4	1.0	0.60	ug/l	SW846 8260D
n-Propylbenzene		1.0 J	2.0	0.60	ug/l	SW846 8260D
Toluene		0.82 J	1.0	0.49	ug/l	SW846 8260D
1,2,4-Trimethylbenzene		6.2	2.0	1.0	ug/l	SW846 8260D
1,3,5-Trimethylbenzene		3.2	2.0	1.0	ug/l	SW846 8260D
m,p-Xylene		3.8	1.0	0.78	ug/l	SW846 8260D
o-Xylene		4.8	1.0	0.59	ug/l	SW846 8260D
Xylene (total)		8.6	1.0	0.59	ug/l	SW846 8260D
Benzoic Acid		2.4 J	21	0.53	ug/l	SW846 8270E
Phenol		0.98 J	2.1	0.28	ug/l	SW846 8270E
2-Methylnaphthalene		0.263	0.080	0.040	ug/l	SW846 8270E BY SIM
Naphthalene		0.237	0.080	0.040	ug/l	SW846 8270E BY SIM
C5- C8 Aliphatics (Unadj.)		898	100	50	ug/l	MADEP VPH REV 2.1
C9- C12 Aliphatics (Unadj.)		217	100	50	ug/l	MADEP VPH REV 2.1
C5- C8 Aliphatics		897	100	50	ug/l	MADEP VPH REV 2.1
C9- C12 Aliphatics		107	100	50	ug/l	MADEP VPH REV 2.1
C9- C10 Aromatics		100	100	50	ug/l	MADEP VPH REV 2.1
Beryllium		1.0	1.0		ug/l	SW846 6010D
Solids, Total Suspended		14.1	4.0		mg/l	SM2540 D-15/20
pH [a]		6.90			su	SM4500H+ B-11/21
JE25540-2	SB-FD-543-A					
n-Butylbenzene		0.66 J	2.0	0.52	ug/l	SW846 8260D
sec-Butylbenzene		0.77 J	2.0	0.62	ug/l	SW846 8260D
Ethylbenzene		1.1	1.0	0.60	ug/l	SW846 8260D
Isopropylbenzene		0.84 J	1.0	0.65	ug/l	SW846 8260D
n-Propylbenzene		1.8 J	2.0	0.60	ug/l	SW846 8260D
1,2,4-Trimethylbenzene		5.3	2.0	1.0	ug/l	SW846 8260D
1,3,5-Trimethylbenzene		4.1	2.0	1.0	ug/l	SW846 8260D
m,p-Xylene		2.2	1.0	0.78	ug/l	SW846 8260D
o-Xylene		4.4	1.0	0.59	ug/l	SW846 8260D
Xylene (total)		6.6	1.0	0.59	ug/l	SW846 8260D
2-Methylnaphthalene		0.74 J	1.0	0.66	ug/l	SW846 8270E
Fluorene		0.0458 J	0.080	0.040	ug/l	SW846 8270E BY SIM
2-Methylnaphthalene		0.696	0.080	0.040	ug/l	SW846 8270E BY SIM
Naphthalene		0.438	0.080	0.040	ug/l	SW846 8270E BY SIM
C5- C8 Aliphatics (Unadj.)		534	100	50	ug/l	MADEP VPH REV 2.1
C9- C12 Aliphatics (Unadj.)		237	100	50	ug/l	MADEP VPH REV 2.1
C5- C8 Aliphatics		534	100	50	ug/l	MADEP VPH REV 2.1
C9- C12 Aliphatics		115	100	50	ug/l	MADEP VPH REV 2.1
C9- C10 Aromatics		115	100	50	ug/l	MADEP VPH REV 2.1

Summary of Hits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

Lab Sample ID / Client Sample ID / Analyte	Result/ Qual	RL	MDL	Units	Method
C11-C22 Aromatics (Unadj.) [b]	83.5 J	100	13	ug/l	MADEP EPH REV 2.1
C11-C22 Aromatics [b]	81.8 J	100	13	ug/l	MADEP EPH REV 2.1
Arsenic	3.1	3.0		ug/l	SW846 6010D
Solids, Total Suspended	4.5	4.0		mg/l	SM2540 D-15/20
pH [c]	6.71			su	SM4500H+ B-11/21
JE25540-3 B-GSS-411					
Anthracene	0.0557 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Fluorene	0.0464 J	0.080	0.040	ug/l	SW846 8270E BY SIM
2-Methylnaphthalene	0.0450 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Phenanthrene	0.0483 J	0.080	0.040	ug/l	SW846 8270E BY SIM
Arsenic	4.7	3.0		ug/l	SW846 6010D
Copper	10.5	10		ug/l	SW846 6010D
Lead	4.2	3.0		ug/l	SW846 6010D
Zinc	738	20		ug/l	SW846 6010D
Solids, Total Suspended	15.5	4.0		mg/l	SM2540 D-15/20
pH [d]	5.80			su	SM4500H+ B-11/21
JE25540-4 TRIP BLANK					
No hits reported in this sample.					

(a) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.36 Deg. C
(b) Associated CCV outside control limits. Sample reanalyzed for confirmation with similar results.
(c) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.04 Deg. C
(d) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 19.94 Deg. C

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SB-FD-542-A		
Lab Sample ID:	JE25540-1	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4D148133.D	1	12/30/25 19:57	BK	n/a	n/a	V4D6474
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	30.7	10	3.1	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.55	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	0.98	0.45	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	2.0	0.52	ug/l	
135-98-8	sec-Butylbenzene	ND	2.0	0.62	ug/l	
98-06-6	tert-Butylbenzene	ND	2.0	0.69	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.8	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
95-49-8	o-Chlorotoluene	ND	2.0	0.63	ug/l	
106-43-4	p-Chlorotoluene	ND	2.0	0.60	ug/l	
108-20-3	Di-Isopropyl ether	ND	2.0	0.68	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.53	ug/l	
124-48-1	Dibromochloromethane	ND	0.78	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.56	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A		
Lab Sample ID:	JE25540-1	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.92	0.51	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.52	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.42	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.43	ug/l	
123-91-1	1,4-Dioxane	ND	130	39	ug/l	
60-29-7	Ethyl Ether	ND	2.0	0.52	ug/l	
100-41-4	Ethylbenzene	1.4	1.0	0.60	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	0.54	ug/l	
591-78-6	2-Hexanone	ND	5.0	4.8	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
99-87-6	p-Isopropyltoluene	ND	2.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	4.9	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.48	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	4.4	ug/l	
103-65-1	n-Propylbenzene	1.0	2.0	0.60	ug/l	J
100-42-5	Styrene	ND	1.0	0.49	ug/l	
994-05-8	tert-Amyl Methyl Ether	ND	2.0	0.85	ug/l	
637-92-3	tert-Butyl Ethyl Ether	ND	2.0	0.56	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.56	ug/l	
109-99-9	Tetrahydrofuran	ND	10	3.2	ug/l	
108-88-3	Toluene	0.82	1.0	0.49	ug/l	J
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	2.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	2.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	6.2	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	3.2	2.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.52	ug/l	
	m,p-Xylene	3.8	1.0	0.78	ug/l	
95-47-6	o-Xylene	4.8	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	8.6	1.0	0.59	ug/l	

ND = Not detected **MDL = Method Detection Limit**
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A		
Lab Sample ID:	JE25540-1	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	97%		80-120%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	101%		82-114%

(a) Associated CCV outside of control limits high, sample was ND. This compound is outside the MCP limits in the associated BS biased high.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A		
Lab Sample ID:	JE25540-1	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P107158.D	1	12/23/25 22:01	TL	12/22/25 09:00	OP69940	E5P5060
Run #2							

	Initial Volume	Final Volume
Run #1	240 ml	1.0 ml
Run #2		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	2.4	21	0.53	ug/l	J
95-57-8	2-Chlorophenol	ND	4.2	0.38	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.2	0.55	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.1	0.54	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.2	0.70	ug/l	
51-28-5	2,4-Dinitrophenol [a]	ND	4.2	1.9	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	4.2	1.6	ug/l	
95-48-7	2-Methylphenol	ND	2.1	0.49	ug/l	
	3&4-Methylphenol	ND	2.1	1.6	ug/l	
88-75-5	2-Nitrophenol	ND	4.2	0.41	ug/l	
100-02-7	4-Nitrophenol	ND	8.3	0.47	ug/l	
87-86-5	Pentachlorophenol	ND	4.2	1.2	ug/l	
108-95-2	Phenol	0.98	2.1	0.28	ug/l	J
95-95-4	2,4,5-Trichlorophenol	ND	4.2	0.51	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.2	0.62	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.64	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.44	ug/l	
98-86-2	Acetophenone	ND	2.1	0.54	ug/l	
62-53-3	Aniline	ND	2.1	0.79	ug/l	
120-12-7	Anthracene	ND	1.0	0.58	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.53	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.65	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.59	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.67	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.50	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.1	0.57	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.1	0.90	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.1	0.45	ug/l	
106-47-8	4-Chloroaniline	ND	4.2	0.55	ug/l	
218-01-9	Chrysene	ND	1.0	0.54	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.1	0.48	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.1	0.45	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A		
Lab Sample ID:	JE25540-1	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.1	0.52	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.1	0.62	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.40	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	1.0	0.51	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.45	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.43	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.57	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.58	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.1	1.1	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.52	ug/l	
132-64-9	Dibenzofuran	ND	4.2	0.76	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.1	0.55	ug/l	
117-84-0	Di-n-octyl phthalate [a]	ND	2.1	1.7	ug/l	
84-66-2	Diethyl phthalate	ND	2.1	0.60	ug/l	
131-11-3	Dimethyl phthalate	ND	2.1	0.57	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.1	1.4	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.60	ug/l	
86-73-7	Fluorene	ND	1.0	0.62	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.56	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.36	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	8.3	1.0	ug/l	
67-72-1	Hexachloroethane	ND	2.1	0.58	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.67	ug/l	
78-59-1	Isophorone	ND	2.1	0.41	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.67	ug/l	
91-20-3	Naphthalene	ND	1.0	0.46	ug/l	
98-95-3	Nitrobenzene	ND	2.1	0.44	ug/l	
62-75-9	n-Nitrosodimethylamine [a]	ND	2.1	0.33	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.1	0.68	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.2	0.44	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.50	ug/l	
129-00-0	Pyrene	ND	1.0	0.52	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.37	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	46%		10-69%
4165-62-2	Phenol-d5	32%		10-47%
118-79-6	2,4,6-Tribromophenol	91%		17-144%
4165-60-0	Nitrobenzene-d5	71%		17-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A		
Lab Sample ID:	JE25540-1	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	77%		23-124%
1718-51-0	Terphenyl-d14	79%		13-135%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A		
Lab Sample ID:	JE25540-1	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	CS10583.D	1	12/24/25 17:17	AC	12/22/25 09:00	OP69940A	ECS523
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.080	0.040	ug/l	
208-96-8	Acenaphthylene	ND	0.080	0.040	ug/l	
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.080	0.040	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.080	0.040	ug/l	
206-44-0	Fluoranthene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.080	0.040	ug/l	
91-57-6	2-Methylnaphthalene	0.263	0.080	0.040	ug/l	
91-20-3	Naphthalene	0.237	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	76%		29-124%
321-60-8	2-Fluorobiphenyl	68%		23-122%
1718-51-0	Terphenyl-d14	80%		22-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A		
Lab Sample ID:	JE25540-1	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	MADEP VPH REV 2.1	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BH55645.D	1	12/23/25 08:52	JN	n/a	n/a	GBH1992
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

MADEP VPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	898	100	50	ug/l	
	C9- C12 Aliphatics (Unadj.)	217	100	50	ug/l	
	C5- C8 Aliphatics	897	100	50	ug/l	
	C9- C12 Aliphatics	107	100	50	ug/l	
	C9- C10 Aromatics	100	100	50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	2,3,4-Trifluorotoluene	100%		70-130%
	2,3,4-Trifluorotoluene	108%		70-130%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A		
Lab Sample ID:	JE25540-1	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	MADEP EPH REV 2.1 SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Y93664.D	1	12/31/25 03:36	CP	12/23/25 09:00	OP70007	G4Y3539
Run #2 [b]	5Y83386.D	1	01/05/26 21:21	CB	12/23/25 09:00	OP70007	G5Y4106

	Initial Volume	Final Volume
Run #1	1000 ml	2.0 ml
Run #2	1000 ml	2.0 ml

MAEPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	ND	100	13	ug/l	
	C11-C22 Aromatics	ND	100	13	ug/l	
	C9-C18 Aliphatics	ND	100	7.7	ug/l	
	C19-C36 Aliphatics	ND	100	12	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3386-33-2	1-Chlorooctadecane	59%	76%	40-140%
84-15-1	o-Terphenyl	47%	66%	40-140%
321-60-8	2-Fluorobiphenyl	66%	96%	40-140%

(a) Associated CCV outside control limits. Sample reanalyzed for confirmation with similar results.
(b) Confirmation run.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A		
Lab Sample ID:	JE25540-1	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8082A SW846 3511	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	RM43460.D	1	12/22/25 13:21	CP	12/21/25 11:45	OP69946	GRM1054
Run #2							

	Initial Volume	Final Volume
Run #1	53.7 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.19	0.051	ug/l	
11104-28-2	Aroclor 1221	ND	0.19	0.097	ug/l	
11141-16-5	Aroclor 1232	ND	0.19	0.072	ug/l	
53469-21-9	Aroclor 1242	ND	0.19	0.040	ug/l	
12672-29-6	Aroclor 1248	ND	0.19	0.037	ug/l	
11097-69-1	Aroclor 1254	ND	0.19	0.069	ug/l	
11096-82-5	Aroclor 1260	ND	0.19	0.11	ug/l	
11100-14-4	Aroclor 1268	ND	0.19	0.063	ug/l	
37324-23-5	Aroclor 1262	ND	0.19	0.041	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	121%		50-150%
877-09-8	Tetrachloro-m-xylene	69%		50-150%
2051-24-3	Decachlorobiphenyl	45% [a]		50-150%
2051-24-3	Decachlorobiphenyl	44% [a]		50-150%

(a) Outside of in house control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A		
Lab Sample ID:	JE25540-1	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
		Percent Solids:	n/a
Project:	MWRA Water Tunnel		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	< 6.0	6.0	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [4]
Arsenic	< 15	15	ug/l	5	12/20/25	12/23/25	MM	SW846 6010D [3]	SW846 3010A [4]
Beryllium	1.0	1.0	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [4]
Chromium	< 50	50	ug/l	5	12/20/25	12/23/25	MM	SW846 6010D [3]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [4]
Lead	< 15	15	ug/l	5	12/20/25	12/23/25	MM	SW846 6010D [3]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	12/22/25	12/22/25	MK	SW846 7470A [2]	SW846 7470A [5]
Nickel	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [4]
Thallium	< 50	50	ug/l	5	12/20/25	12/23/25	MM	SW846 6010D [3]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [4]

(1) Instrument QC Batch: MA59987
(2) Instrument QC Batch: MA59990
(3) Instrument QC Batch: MA59995
(4) Prep QC Batch: MP59443
(5) Prep QC Batch: MP59469

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SB-FD-542-A		
Lab Sample ID:	JE25540-1	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
		Percent Solids:	n/a
Project:	MWRA Water Tunnel		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.010	0.010	mg/l	1	12/19/25 08:20	RI	SW846 7196A
Solids, Total Suspended	14.1	4.0	mg/l	1	12/23/25 13:30	SD	SM2540 D-15/20
Total Residual Chlorine [a]	< 0.050	0.050	mg/l	1	12/22/25 11:50	DB	SM4500CL F-11
pH [b]	6.90		su	1	12/21/25 14:29	MS	SM4500H+ B-11/21

(a) Field analysis required. Received out of hold time and analyzed by request.
(b) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.36 Deg. C

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SB-FD-543-A		
Lab Sample ID:	JE25540-2	Date Sampled:	12/18/25
Matrix:	AQ - Ground Water	Date Received:	12/18/25
Method:	SW846 8260D	Percent Solids:	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4D148134.D	1	12/30/25 20:25	BK	n/a	n/a	V4D6474
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	3.1	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.55	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	0.98	0.45	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	2.7	ug/l	
104-51-8	n-Butylbenzene	0.66	2.0	0.52	ug/l	J
135-98-8	sec-Butylbenzene	0.77	2.0	0.62	ug/l	J
98-06-6	tert-Butylbenzene	ND	2.0	0.69	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.8	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
95-49-8	o-Chlorotoluene	ND	2.0	0.63	ug/l	
106-43-4	p-Chlorotoluene	ND	2.0	0.60	ug/l	
108-20-3	Di-Isopropyl ether	ND	2.0	0.68	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.53	ug/l	
124-48-1	Dibromochloromethane	ND	0.78	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.56	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A		
Lab Sample ID:	JE25540-2	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.92	0.51	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.52	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.42	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.43	ug/l	
123-91-1	1,4-Dioxane	ND	130	39	ug/l	
60-29-7	Ethyl Ether	ND	2.0	0.52	ug/l	
100-41-4	Ethylbenzene	1.1	1.0	0.60	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	0.54	ug/l	
591-78-6	2-Hexanone	ND	5.0	4.8	ug/l	
98-82-8	Isopropylbenzene	0.84	1.0	0.65	ug/l	J
99-87-6	p-Isopropyltoluene	ND	2.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	4.9	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.48	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	4.4	ug/l	
103-65-1	n-Propylbenzene	1.8	2.0	0.60	ug/l	J
100-42-5	Styrene	ND	1.0	0.49	ug/l	
994-05-8	tert-Amyl Methyl Ether	ND	2.0	0.85	ug/l	
637-92-3	tert-Butyl Ethyl Ether	ND	2.0	0.56	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.56	ug/l	
109-99-9	Tetrahydrofuran	ND	10	3.2	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	2.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	2.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	5.3	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	4.1	2.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.52	ug/l	
	m,p-Xylene	2.2	1.0	0.78	ug/l	
95-47-6	o-Xylene	4.4	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	6.6	1.0	0.59	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A		
Lab Sample ID:	JE25540-2	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	97%		80-120%
2037-26-5	Toluene-D8	98%		80-120%
460-00-4	4-Bromofluorobenzene	100%		82-114%

(a) Associated CCV outside of control limits high, sample was ND. This compound is outside the MCP limits in the associated BS biased high.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A		
Lab Sample ID:	JE25540-2	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P107159.D	1	12/23/25 22:23	TL	12/22/25 09:00	OP69940	E5P5060
Run #2							

	Initial Volume	Final Volume
Run #1	245 ml	1.0 ml
Run #2		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	20	0.52	ug/l	
95-57-8	2-Chlorophenol	ND	4.1	0.38	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.1	0.54	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	0.53	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.1	0.69	ug/l	
51-28-5	2,4-Dinitrophenol [a]	ND	4.1	1.9	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	4.1	1.5	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.48	ug/l	
	3&4-Methylphenol	ND	2.0	1.5	ug/l	
88-75-5	2-Nitrophenol	ND	4.1	0.40	ug/l	
100-02-7	4-Nitrophenol	ND	8.2	0.46	ug/l	
87-86-5	Pentachlorophenol	ND	4.1	1.2	ug/l	
108-95-2	Phenol	ND	2.0	0.27	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.1	0.50	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.1	0.60	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.62	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.43	ug/l	
98-86-2	Acetophenone	ND	2.0	0.53	ug/l	
62-53-3	Aniline	ND	2.0	0.78	ug/l	
120-12-7	Anthracene	ND	1.0	0.57	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.52	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.64	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.58	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.65	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.49	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.56	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.88	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.44	ug/l	
106-47-8	4-Chloroaniline	ND	4.1	0.54	ug/l	
218-01-9	Chrysene	ND	1.0	0.53	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.47	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.44	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A		
Lab Sample ID:	JE25540-2	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.51	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.61	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.39	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	1.0	0.50	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.44	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.42	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.56	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.57	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	1.1	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.51	ug/l	
132-64-9	Dibenzofuran	ND	4.1	0.74	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.54	ug/l	
117-84-0	Di-n-octyl phthalate [a]	ND	2.0	1.7	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.59	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.56	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.3	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.59	ug/l	
86-73-7	Fluorene	ND	1.0	0.60	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.55	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.36	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	8.2	1.0	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.56	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.65	ug/l	
78-59-1	Isophorone	ND	2.0	0.40	ug/l	
91-57-6	2-Methylnaphthalene	0.74	1.0	0.66	ug/l	J
91-20-3	Naphthalene	ND	1.0	0.45	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.43	ug/l	
62-75-9	n-Nitrosodimethylamine [a]	ND	2.0	0.32	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.66	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.1	0.43	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.49	ug/l	
129-00-0	Pyrene	ND	1.0	0.51	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.36	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	43%		10-69%
4165-62-2	Phenol-d5	30%		10-47%
118-79-6	2,4,6-Tribromophenol	72%		17-144%
4165-60-0	Nitrobenzene-d5	58%		17-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A		
Lab Sample ID:	JE25540-2	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	62%		23-124%
1718-51-0	Terphenyl-d14	73%		13-135%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A		
Lab Sample ID:	JE25540-2	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	CS10584.D	1	12/24/25 17:42	AC	12/22/25 09:00	OP69940A	ECS523
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.080	0.040	ug/l	
208-96-8	Acenaphthylene	ND	0.080	0.040	ug/l	
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.080	0.040	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.080	0.040	ug/l	
206-44-0	Fluoranthene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	0.0458	0.080	0.040	ug/l	J
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.080	0.040	ug/l	
91-57-6	2-Methylnaphthalene	0.696	0.080	0.040	ug/l	
91-20-3	Naphthalene	0.438	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	67%		29-124%
321-60-8	2-Fluorobiphenyl	59%		23-122%
1718-51-0	Terphenyl-d14	72%		22-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A		
Lab Sample ID:	JE25540-2	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	MADEP VPH REV 2.1	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BH55646.D	1	12/23/25 09:34	JN	n/a	n/a	GBH1992
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

MADEP VPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	534	100	50	ug/l	
	C9- C12 Aliphatics (Unadj.)	237	100	50	ug/l	
	C5- C8 Aliphatics	534	100	50	ug/l	
	C9- C12 Aliphatics	115	100	50	ug/l	
	C9- C10 Aromatics	115	100	50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	2,3,4-Trifluorotoluene	97%		70-130%
	2,3,4-Trifluorotoluene	99%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A		
Lab Sample ID:	JE25540-2	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	MADEP EPH REV 2.1 SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Y93665.D	1	12/31/25 04:10	CP	12/23/25 09:00	OP70007	G4Y3539
Run #2 [b]	5Y83387.D	1	01/05/26 21:54	CB	12/23/25 09:00	OP70007	G5Y4106

	Initial Volume	Final Volume
Run #1	1000 ml	2.0 ml
Run #2	1000 ml	2.0 ml

MAEPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	83.5	100	13	ug/l	J
	C11-C22 Aromatics	81.8	100	13	ug/l	J
	C9-C18 Aliphatics	ND	100	7.7	ug/l	
	C19-C36 Aliphatics	ND	100	12	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3386-33-2	1-Chlorooctadecane	55%	69%	40-140%
84-15-1	o-Terphenyl	66%	84%	40-140%
321-60-8	2-Fluorobiphenyl	89%	117%	40-140%

(a) Associated CCV outside control limits. Sample reanalyzed for confirmation with similar results.
(b) Confirmation run.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A		
Lab Sample ID:	JE25540-2	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8082A SW846 3511	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	RM43461.D	1	12/22/25 13:36	CP	12/21/25 11:45	OP69946	GRM1054
Run #2							

	Initial Volume	Final Volume
Run #1	54.5 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.18	0.050	ug/l	
11104-28-2	Aroclor 1221	ND	0.18	0.096	ug/l	
11141-16-5	Aroclor 1232	ND	0.18	0.070	ug/l	
53469-21-9	Aroclor 1242	ND	0.18	0.040	ug/l	
12672-29-6	Aroclor 1248	ND	0.18	0.036	ug/l	
11097-69-1	Aroclor 1254	ND	0.18	0.068	ug/l	
11096-82-5	Aroclor 1260	ND	0.18	0.11	ug/l	
11100-14-4	Aroclor 1268	ND	0.18	0.062	ug/l	
37324-23-5	Aroclor 1262	ND	0.18	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	121%		50-150%
877-09-8	Tetrachloro-m-xylene	64%		50-150%
2051-24-3	Decachlorobiphenyl	45% [a]		50-150%
2051-24-3	Decachlorobiphenyl	40% [a]		50-150%

(a) Outside of in house control limits.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543-A		
Lab Sample ID:	JE25540-2	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
		Percent Solids:	n/a
Project:	MWRA Water Tunnel		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	< 6.0	6.0	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Arsenic	3.1	3.0	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Chromium	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Copper	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Lead	< 3.0	3.0	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Mercury	< 0.20	0.20	ug/l	1	12/22/25	12/22/25	MK	SW846 7470A [2]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Zinc	< 20	20	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA59987
(2) Instrument QC Batch: MA59990
(3) Prep QC Batch: MP59443
(4) Prep QC Batch: MP59469

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SB-FD-543-A		
Lab Sample ID:	JE25540-2	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
		Percent Solids:	n/a
Project:	MWRA Water Tunnel		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.010	0.010	mg/l	1	12/19/25 08:20	RI	SW846 7196A
Solids, Total Suspended	4.5	4.0	mg/l	1	12/23/25 13:30	SD	SM2540 D-15/20
Total Residual Chlorine [a]	< 0.050	0.050	mg/l	1	12/22/25 11:50	DB	SM4500CL F-11
pH [b]	6.71		su	1	12/21/25 14:29	MS	SM4500H+ B-11/21

(a) Field analysis required. Received out of hold time and analyzed by request.
(b) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.04 Deg. C

RL = Reporting Limit

Report of Analysis

Client Sample ID:	B-GSS-411		
Lab Sample ID:	JE25540-3	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4D148132.D	1	12/30/25 19:29	BK	n/a	n/a	V4D6474
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	3.1	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.55	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	0.98	0.45	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	2.0	0.52	ug/l	
135-98-8	sec-Butylbenzene	ND	2.0	0.62	ug/l	
98-06-6	tert-Butylbenzene	ND	2.0	0.69	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.8	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
95-49-8	o-Chlorotoluene	ND	2.0	0.63	ug/l	
106-43-4	p-Chlorotoluene	ND	2.0	0.60	ug/l	
108-20-3	Di-Isopropyl ether	ND	2.0	0.68	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.53	ug/l	
124-48-1	Dibromochloromethane	ND	0.78	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.56	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-411		
Lab Sample ID:	JE25540-3	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.92	0.51	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.52	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.42	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.43	ug/l	
123-91-1	1,4-Dioxane	ND	130	39	ug/l	
60-29-7	Ethyl Ether	ND	2.0	0.52	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	0.54	ug/l	
591-78-6	2-Hexanone	ND	5.0	4.8	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
99-87-6	p-Isopropyltoluene	ND	2.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	4.9	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.48	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	4.4	ug/l	
103-65-1	n-Propylbenzene	ND	2.0	0.60	ug/l	
100-42-5	Styrene	ND	1.0	0.49	ug/l	
994-05-8	tert-Amyl Methyl Ether	ND	2.0	0.85	ug/l	
637-92-3	tert-Butyl Ethyl Ether	ND	2.0	0.56	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.56	ug/l	
109-99-9	Tetrahydrofuran	ND	10	3.2	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	2.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	2.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.52	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-411		
Lab Sample ID:	JE25540-3	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		80-120%
17060-07-0	1,2-Dichloroethane-D4	97%		80-120%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	104%		82-114%

(a) Associated CCV outside of control limits high, sample was ND. This compound is outside the MCP limits in the associated BS biased high.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-411		
Lab Sample ID:	JE25540-3	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5P107160.D	1	12/23/25 22:44	TL	12/22/25 09:00	OP69940	E5P5060
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	20	0.51	ug/l	
95-57-8	2-Chlorophenol	ND	4.0	0.37	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.0	0.53	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	0.52	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.0	0.67	ug/l	
51-28-5	2,4-Dinitrophenol [a]	ND	4.0	1.9	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	4.0	1.5	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.47	ug/l	
	3&4-Methylphenol	ND	2.0	1.5	ug/l	
88-75-5	2-Nitrophenol	ND	4.0	0.40	ug/l	
100-02-7	4-Nitrophenol	ND	8.0	0.45	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.2	ug/l	
108-95-2	Phenol	ND	2.0	0.26	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.0	0.49	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.0	0.59	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.61	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.42	ug/l	
98-86-2	Acetophenone	ND	2.0	0.52	ug/l	
62-53-3	Aniline	ND	2.0	0.76	ug/l	
120-12-7	Anthracene	ND	1.0	0.56	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.51	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.63	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.57	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.64	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.48	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.55	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.86	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.43	ug/l	
106-47-8	4-Chloroaniline	ND	4.0	0.53	ug/l	
218-01-9	Chrysene	ND	1.0	0.52	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.46	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.43	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-411		
Lab Sample ID:	JE25540-3	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.50	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.60	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.38	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	1.0	0.49	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.43	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.42	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.56	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	1.1	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.50	ug/l	
132-64-9	Dibenzofuran	ND	4.0	0.73	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.53	ug/l	
117-84-0	Di-n-octyl phthalate [a]	ND	2.0	1.6	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.58	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.55	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.3	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.58	ug/l	
86-73-7	Fluorene	ND	1.0	0.59	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.54	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.35	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	8.0	0.98	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.55	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.64	ug/l	
78-59-1	Isophorone	ND	2.0	0.39	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.64	ug/l	
91-20-3	Naphthalene	ND	1.0	0.44	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.42	ug/l	
62-75-9	n-Nitrosodimethylamine [a]	ND	2.0	0.32	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.65	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.0	0.42	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.48	ug/l	
129-00-0	Pyrene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.36	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	48%		10-69%
4165-62-2	Phenol-d5	33%		10-47%
118-79-6	2,4,6-Tribromophenol	84%		17-144%
4165-60-0	Nitrobenzene-d5	79%		17-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-411		
Lab Sample ID:	JE25540-3	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	75%		23-124%
1718-51-0	Terphenyl-d14	80%		13-135%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-411		
Lab Sample ID:	JE25540-3	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	CS10585.D	1	12/24/25 18:06	AC	12/22/25 09:00	OP69940A	ECS523
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.080	0.040	ug/l	
208-96-8	Acenaphthylene	ND	0.080	0.040	ug/l	
120-12-7	Anthracene	0.0557	0.080	0.040	ug/l	J
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.080	0.040	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.080	0.040	ug/l	
206-44-0	Fluoranthene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	0.0464	0.080	0.040	ug/l	J
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.080	0.040	ug/l	
91-57-6	2-Methylnaphthalene	0.0450	0.080	0.040	ug/l	J
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	0.0483	0.080	0.040	ug/l	J
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	83%		29-124%
321-60-8	2-Fluorobiphenyl	69%		23-122%
1718-51-0	Terphenyl-d14	76%		22-130%

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-411		
Lab Sample ID:	JE25540-3	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	MADEP VPH REV 2.1	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BH55647.D	1	12/23/25 10:16	JN	n/a	n/a	GBH1992
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

MADEP VPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	100	50	ug/l	
	C9- C12 Aliphatics (Unadj.)	ND	100	50	ug/l	
	C5- C8 Aliphatics	ND	100	50	ug/l	
	C9- C12 Aliphatics	ND	100	50	ug/l	
	C9- C10 Aromatics	ND	100	50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	2,3,4-Trifluorotoluene	93%		70-130%
	2,3,4-Trifluorotoluene	93%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-411		
Lab Sample ID:	JE25540-3	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	MADEP EPH REV 2.1 SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	4Y93666.D	1	12/31/25 04:43	CP	12/23/25 09:00	OP70007	G4Y3539
Run #2 [b]	5Y83388.D	1	01/05/26 22:27	CB	12/23/25 09:00	OP70007	G5Y4106

	Initial Volume	Final Volume
Run #1	1000 ml	2.0 ml
Run #2	1000 ml	2.0 ml

MAEPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	ND	100	13	ug/l	
	C11-C22 Aromatics	ND	100	13	ug/l	
	C9-C18 Aliphatics	ND	100	7.7	ug/l	
	C19-C36 Aliphatics	ND	100	12	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3386-33-2	1-Chlorooctadecane	33% [c]	42%	40-140%
84-15-1	o-Terphenyl	39% [c]	62%	40-140%
321-60-8	2-Fluorobiphenyl	66%	114%	40-140%

(a) Associated CCV outside control limits. Sample reanalyzed for confirmation with similar results.
(b) Confirmation run.
(c) Outside of in house control limits.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-411		
Lab Sample ID:	JE25540-3	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
Method:	SW846 8082A SW846 3511	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	RM43462.D	1	12/22/25 13:51	CP	12/21/25 11:45	OP69946	GRM1054
Run #2							

	Initial Volume	Final Volume
Run #1	54.0 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.19	0.051	ug/l	
11104-28-2	Aroclor 1221	ND	0.19	0.097	ug/l	
11141-16-5	Aroclor 1232	ND	0.19	0.071	ug/l	
53469-21-9	Aroclor 1242	ND	0.19	0.040	ug/l	
12672-29-6	Aroclor 1248	ND	0.19	0.036	ug/l	
11097-69-1	Aroclor 1254	ND	0.19	0.069	ug/l	
11096-82-5	Aroclor 1260	ND	0.19	0.11	ug/l	
11100-14-4	Aroclor 1268	ND	0.19	0.063	ug/l	
37324-23-5	Aroclor 1262	ND	0.19	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	133%		50-150%
877-09-8	Tetrachloro-m-xylene	69%		50-150%
2051-24-3	Decachlorobiphenyl	39% [a]		50-150%
2051-24-3	Decachlorobiphenyl	35% [a]		50-150%

(a) Outside of in house control limits.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-411		
Lab Sample ID:	JE25540-3	**Date Sampled:**	12/18/25
Matrix:	AQ - Ground Water	**Date Received:**	12/18/25
		Percent Solids:	n/a
Project:	MWRA Water Tunnel		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	< 6.0	6.0	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Arsenic	4.7	3.0	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Chromium	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Copper	10.5	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Lead	4.2	3.0	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Mercury	< 0.20	0.20	ug/l	1	12/22/25	12/22/25	MK	SW846 7470A [2]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]
Zinc	738	20	ug/l	1	12/20/25	12/22/25	MM	SW846 6010D [1]	SW846 3010A [3]

(1) Instrument QC Batch: MA59987
(2) Instrument QC Batch: MA59990
(3) Prep QC Batch: MP59443
(4) Prep QC Batch: MP59469

RL = Reporting Limit

Report of Analysis

Client Sample ID:	**B-GSS-411**		
Lab Sample ID:	**JE25540-3**	**Date Sampled:**	**12/18/25**
Matrix:	**AQ - Ground Water**	**Date Received:**	**12/18/25**
		Percent Solids:	**n/a**
Project:	**MWRA Water Tunnel**		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.010	0.010	mg/l	1	12/19/25 12:30	RI	SW846 7196A
Solids, Total Suspended	15.5	4.0	mg/l	1	12/23/25 13:30	SD	SM2540 D-15/20
Total Residual Chlorine [a]	< 0.050	0.050	mg/l	1	12/22/25 11:50	DB	SM4500CL F-11
pH [b]	5.80		su	1	12/21/25 14:29	MS	SM4500H+ B-11/21

(a) Field analysis required. Received out of hold time and analyzed by request.
(b) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 19.94 Deg. C

RL = Reporting Limit

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JE25540-4	**Date Sampled:**	12/18/25
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/18/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4D148126.D	1	12/30/25 16:40	BK	n/a	n/a	V4D6474
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	3.1	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.55	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	0.98	0.45	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	2.0	0.52	ug/l	
135-98-8	sec-Butylbenzene	ND	2.0	0.62	ug/l	
98-06-6	tert-Butylbenzene	ND	2.0	0.69	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.8	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane [b]	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
95-49-8	o-Chlorotoluene	ND	2.0	0.63	ug/l	
106-43-4	p-Chlorotoluene	ND	2.0	0.60	ug/l	
108-20-3	Di-Isopropyl ether	ND	2.0	0.68	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.53	ug/l	
124-48-1	Dibromochloromethane	ND	0.78	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.56	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JE25540-4	**Date Sampled:**	12/18/25
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/18/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.92	0.51	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.52	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.42	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.43	ug/l	
123-91-1	1,4-Dioxane	ND	130	39	ug/l	
60-29-7	Ethyl Ether	ND	2.0	0.52	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	0.54	ug/l	
591-78-6	2-Hexanone	ND	5.0	4.8	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
99-87-6	p-Isopropyltoluene	ND	2.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	4.9	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.48	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	4.4	ug/l	
103-65-1	n-Propylbenzene	ND	2.0	0.60	ug/l	
100-42-5	Styrene	ND	1.0	0.49	ug/l	
994-05-8	tert-Amyl Methyl Ether	ND	2.0	0.85	ug/l	
637-92-3	tert-Butyl Ethyl Ether	ND	2.0	0.56	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.56	ug/l	
109-99-9	Tetrahydrofuran	ND	10	3.2	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane [b]	ND	2.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	2.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.52	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JE25540-4	**Date Sampled:**	12/18/25
Matrix:	AQ - Trip Blank Water	**Date Received:**	12/18/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	102%		80-120%
17060-07-0	1,2-Dichloroethane-D4	98%		80-120%
2037-26-5	Toluene-D8	97%		80-120%
460-00-4	4-Bromofluorobenzene	103%		82-114%

(a) Associated CCV outside of control limits high, sample was ND. This compound is outside the MCP limits in the associated BS biased high.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- **Chain of Custody**
- **MCP Form**
- **EPH Form**
- **VPH Form**
- **Sample Tracking Chronicle**
- **QC Evaluation: MA MCP Limits**

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL 732-329-0200
www.sgs.com/ehsusa

Page 1 of 1

FED-EX Tracking #:
Bottle Order Control #: TE-121725-7
SGS Quote #:
SGS Job #: JE25540

Client / Reporting Information

Company Name: WSP
Street Address: 100 Summer St
City: Boston State: MA Zip: 02110
Project Contact: DAN Martin E-mail: dan.martin@wsp.com
Phone #: 973-868-6611
Sampler(s) Name(s): J. SCUTERI Phone #:

Project Information

Project Name: USGW1005.1387 ~~MTBE~~ MWTP
Street: 60 CHARLES ST
City: NEEDHAM State: MA
Project #: 41005.1387
Client Purchase Order #:
Project Manager: DAN MARTIN

Billing Information (if different from Report to)

Company Name:
Street Address:
City State Zip
Attention:

Analysis Requested

BUBZTOSMPAH+2-MMP_ADV_8270_MS
BMADEPH2
PSOBZMCP
PM13
TRC
TSS
VB260 MCP
VMANPHC
XCR_PHTEMP

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Time	Sampled by	Grab (G) Comp (C)	Source Chlorinated (Y/N)	Matrix	# of bottles	HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	SHC	pH Check (Lab Use Only)	LAB USE ONLY
1	SB-FD-542-A		12/18/25	825	JS	G	N	GW	17	8		1		7				1	X X X X X X X X X	
2	SB-FD-543-A		12/18/25	945	JS	G	N	GW	17	8		1		7				1	X X X X X X X X X	
3	B-GSS-411		12/18/25	1310	JS	G	N	GW	17	8		1		7				1	X X X X X X X X X	
	~~END~~									8		1		7				1	X X X X X X X X X	
4	TRIP BLANK		12/17/25	-	-	-	-	W	2	2									X	
	END																			

Turn Around Time (Business Days)

Approved By (SGS PM) / Date:

- [ ] 10 Business Days
- [x] 5 Business Days STANDARD
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via SGS Engage

* Approval needed for 1-3 BD TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NJGW Criteria 2025 *new*
- [ ] NYASP Category A
- [ ] NYASP Category B
- [x] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format

8270 LVI

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

SGS Courier

12/18 SGS Service Center Northborough, MA

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished By	Date / Time	Received By
1	WSP	12/18/25 1530	1
2			2
3		12/18/25 23:40	3
4			4
5			5

Custody Seal # ☐ Intact ☐ Not Intact ☐ Absent

Therm ID: On Ice ☑ See Sample Receipt Summary

Cooler Temp. °C: 2.0, 1.0

Ref No: G140222989

SGS Sample Receipt Summary

Job Number: JE25540 **Client:** WSP USA INC. **Project:** MWRA WATER TUNNEL

Date / Time Received: 12/18/2025 11:40:00 PM **Delivery Method:** SGS **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (2.0); Cooler 2: (1.0);

Cooler Temps (Corrected) °C: Cooler 1: (2.1); Cooler 2: (1.1);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR-50		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	2		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JE25540: Chain of Custody
Page 2 of 2

Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup	WSC-CAM	Exhibit VII A
	July 1, 2010	Revision No. 1
	Final	

Exhibit VII A-2: MassDEP Analytical Protocol Certification Form

MassDEP Analytical Protocol Certification Form

Laboratory Name:	SGS North America Inc. - Dayton	Project #:	JE25540
Project Location:	MWRA Water Tunnel	MADEP RTN	None

This form provides certifications for the following data set: list Laboratory Sample ID Numbers(s)
JE25540-1,JE25540-2,JE25540-3,JE25540-4

Matrices: Groundwater/Surface Water (X) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other ( )

CAM Protocol (check all that apply below):

8260 VOC (X) CAM IIA	7470/7471 Hg (X) CAM III B	MassDEP VPH (X) CAM IV A	8081 Pesticides ( ) CAM V B	7196 Hex Cr (X) CAM VI B	Mass DEP APH ( ) CAM IX A
8270 SVOC (X) CAM II B	7010 Metals ( ) CAM III C	MassDEP EPH (X) CAM IV B	8151 Herbicides ( ) CAM V C	8330 Explosives ( ) CAM VIII A	TO-15 VOC ( ) CAM IX B
6010 Metals (X) CAM III A	6020 Metals ( ) CAM III D	8082 PCB (X) CAM V A	9014 Total Cyanide/PAC ( ) CAM VI A	6860 Perchlorate ( ) CAM VIII B	

Affirmative Responses to Questions A Through F are required for "Presumptive Certainty status

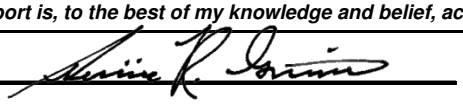
A	Were all samples received in a condition consistent with those described on the Chain-of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☑	Yes	☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑	Yes	☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑	Yes	☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑	Yes	☐ No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☑	Yes	☐ No
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐	Yes	☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☑	Yes	☐ No

Responses to questions G, H, and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols	☐	Yes	☑ No [1]
	Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data useability and representativeness requirements described in 310 CMR 40.1056(2)(k) and WSC-07-350.			
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	☐	Yes	☑ No [1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐	Yes	☑ No [1]

[1] ***All Negative responses must be addressed in an attached Environmental Laboratory case narrative.***

I the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature:  **Position:** **Technical Director**

Printed Name: Olga Azarian **Date:** **07-Jan-26**

MADEP EPH FORM

Matrix	**Aqueous** ☑	**Soil** ☐	**Sediment** ☐	**Other** ☐			
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐				
Aqueous Preservatives	**N/A** ☐	**pH <= 2** ☑	**pH > 2** ☐				
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☐	**Other** ☑	Rec'd at 2.1 Deg. C			
Extraction Method	**SW846 3510C**						

Method for Ranges: MADEP EPH REV 2.1
Method for Targets: MADEP EPH REV 2.1
EPH Surrogate Stds. Aliphatic: 1-Chlorooctadecane
Aromatic: o-Terphenyl
EPH Fractionation Surrogate Standards. 2-Fluorobiphenyl

Client ID: SB-FD-542-A **Lab ID:** JE25540-1
Date Collected: 12/18/2025 **Date Received:** 12/18/2025
Date Extracted: 12/23/2025 9:00:00 AM
First Date Run: 12/31/2025
Last Date Run: 01/05/26
% Solids: N/A
Low Dilution: 1
High Dilution: N/A

Unadjusted Ranges	CAS #	Units	Result		RDL	Q
C11-C22 Aromatics (Unadj.)		ug/l	ND	A	100	

Adjusted Ranges					
C9-C18 Aliphatics		ug/l	ND	A	100
C19-C36 Aliphatics		ug/l	ND	A	100
C11-C22 Aromatics		ug/l	ND	C	100

Surrogate Recoveries		Acceptance Range
1-Chlorooctadecane	%	76	40-140 %
1-Chlorooctadecane	%	59	40-140 %
o-Terphenyl	%	66	40-140 %
o-Terphenyl	%	47	40-140 %
2-Fluorobiphenyl	%	96	40-140 %
2-Fluorobiphenyl	%	66	40-140 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

C Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the EPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the EPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtainig the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** General Managerr

Printed Name David Chastain **Date** 1/7/2026

MADEP EPH FORM

Matrix	**Aqueous** ☑	**Soil** ☐	**Sediment** ☐	**Other** ☐			
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐				
Aqueous Preservatives	**N/A** ☐	**pH <= 2** ☑	**pH > 2** ☐				
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☐	**Other** ☑	Rec'd at 2.1 Deg. C			
Extraction Method	**SW846 3510C**						

Method for Ranges: MADEP EPH REV 2.1
Method for Targets: MADEP EPH REV 2.1
EPH Surrogate Stds. Aliphatic: 1-Chlorooctadecane
Aromatic: o-Terphenyl
EPH Fractionation Surrogate Standards. 2-Fluorobiphenyl

Client ID: SB-FD-543-A **Lab ID:** JE25540-2
Date Collected: 12/18/2025 **Date Received:** 12/18/2025
Date Extracted: 12/23/2025 9:00:00 AM
First Date Run: 12/31/2025
Last Date Run: 01/05/26
% Solids: N/A
Low Dilution: 1
High Dilution: N/A

Unadjusted Ranges	CAS #	Units	Result		RDL	Q
C11-C22 Aromatics (Unadj.)		ug/l	83.5	A	100	J

Adjusted Ranges					
C9-C18 Aliphatics	ug/l	ND	A	100	
C19-C36 Aliphatics	ug/l	ND	A	100	
C11-C22 Aromatics	ug/l	81.8	C	100	J

Surrogate Recoveries		Acceptance Range
1-Chlorooctadecane	%	69 40-140 %
1-Chlorooctadecane	%	55 40-140 %
o-Terphenyl	%	84 40-140 %
o-Terphenyl	%	66 40-140 %
2-Fluorobiphenyl	%	117 40-140 %
2-Fluorobiphenyl	%	89 40-140 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

C Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the EPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the EPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtainig the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** General Managerr

Printed Name David Chastain **Date** 1/7/2026

MADEP EPH FORM

Matrix	**Aqueous** ☑	**Soil** ☐	**Sediment** ☐	**Other** ☐			
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐				
Aqueous Preservatives	**N/A** ☐	**pH <= 2** ☑	**pH > 2** ☐				
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☐	**Other** ☑	Rec'd at 2.1 Deg. C			
Extraction Method	**SW846 3510C**						

Method for Ranges: MADEP EPH REV 2.1
Method for Targets: MADEP EPH REV 2.1
EPH Surrogate Stds. Aliphatic: 1-Chlorooctadecane
Aromatic: o-Terphenyl
EPH Fractionation Surrogate Standards. 2-Fluorobiphenyl

Client ID: B-GSS-411 **Lab ID:** JE25540-3
Date Collected: 12/18/2025 **Date Received:** 12/18/2025
Date Extracted: 12/23/2025 9:00:00 AM
First Date Run: 12/31/2025
Last Date Run: 01/05/26
% Solids: N/A
Low Dilution: 1
High Dilution: N/A

Unadjusted Ranges	CAS #	Units	Result		RDL	Q
C11-C22 Aromatics (Unadj.)		ug/l	ND	A	100	

Adjusted Ranges					
C9-C18 Aliphatics		ug/l	ND	A	100
C19-C36 Aliphatics		ug/l	ND	A	100
C11-C22 Aromatics		ug/l	ND	C	100
Surrogate Recoveries					**Acceptance Range**
1-Chlorooctadecane		%	42		40-140 %
1-Chlorooctadecane		%	33	E	40-140 %
o-Terphenyl		%	62		40-140 %
o-Terphenyl		%	39	E	40-140 %
2-Fluorobiphenyl		%	114		40-140 %
2-Fluorobiphenyl		%	66		40-140 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

C Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

E Outside of in house control limits.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the EPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☐ Yes ☑ No- Details Attatched
Were any significant modifications made to the EPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtainig the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** General Managerr

Printed Name David Chastain **Date** 1/7/2026

MADEP VPH FORM

Matrix	**Aqueous** ☑	**Soil** ☐	**Sediment** ☐	**Other** ☐				
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐					
Aqueous Preservatives	**N/A** ☐	**pH <= 2** ☑	**pH > 2** ☐					
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☐	**Other** ☑	Rec'd at 2.1 Deg. C				
Methanol	**N/A**							

Method for Ranges: MADEP VPH REV 2.1
Method for Target Analytes: MADEP VPH REV 2.1
VPH Surrogate Standards
PID:
FID:

Client ID: SB-FD-542-A **Lab ID:** JE25540-1
Date Collected: 12/18/2025 **Date Received:** 12/18/2025

Date Extracted:	First Date Run:	Last Date Run:
N/A	12/23/2025	N/A
% Solids:	**Low Dilution:**	**High Dilution:**
N/A	1	N/A

Unadjusted Ranges	CAS #	Elution Range	Units	Result		RDL	Q
C5- C8 Aliphatics (Unadj.)		N/A	ug/l	898	A	100	
C9- C12 Aliphatics (Unadj.)		N/A	ug/l	217	A	100	
Adjusted Ranges							
C5- C8 Aliphatics		N/A	ug/l	897	B	100	
C9- C12 Aliphatics		N/A	ug/l	107	D	100	
C9- C10 Aromatics			ug/l	100		100	

Surrogate Recoveries		Acceptance Range
FID:2,3,4-Trifluorotoluene	108	70-130 %
PID:2,3,4-Trifluorotoluene	100	70-130 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

B Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range.

D Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C9-C12 aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the VPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the VPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** **General Managerr**

Printed Name **David Chastain** **Date** **1/7/2026**

MADEP VPH FORM

Matrix	**Aqueous**	☑	**Soil**	☐	**Sediment**	☐	**Other**	☐	
Containers	**Satisfactory**	☑	**Broken**	☐	**Leaking**	☐			
Aqueous Preservatives	**N/A**	☐	**pH <= 2**	☑	**pH > 2**	☐			
Temperature	**Received on Ice**	☐			**Received at 4 Deg. C**	☐	**Other**	☑	Rec'd at 2.1 Deg. C
Methanol	**N/A**								

Method for Ranges: MADEP VPH REV 2.1
Method for Target Analytes: MADEP VPH REV 2.1
VPH Surrogate Standards
PID:
FID:

Client ID: SB-FD-543-A **Lab ID:** JE25540-2
Date Collected: 12/18/2025 **Date Received:** 12/18/2025

Date Extracted:	First Date Run:	Last Date Run:
N/A	12/23/2025	N/A
% Solids:	**Low Dilution:**	**High Dilution:**
N/A	1	N/A

Unadjusted Ranges	CAS #	Elution Range	Units	Result		RDL	Q
C5- C8 Aliphatics (Unadj.)		N/A	ug/l	534	A	100	
C9- C12 Aliphatics (Unadj.)		N/A	ug/l	237	A	100	
Adjusted Ranges							
C5- C8 Aliphatics		N/A	ug/l	534	B	100	
C9- C12 Aliphatics		N/A	ug/l	115	D	100	
C9- C10 Aromatics			ug/l	115		100	

Surrogate Recoveries		Acceptance Range
FID:2,3,4-Trifluorotoluene	% 99	70-130 %
PID:2,3,4-Trifluorotoluene	% 97	70-130 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

B Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range.

D Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C9-C12 aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the VPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the VPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** **General Managerr**

Printed Name **David Chastain** **Date** **1/7/2026**

MADEP VPH FORM

Matrix	**Aqueous**	☑	**Soil**	☐	**Sediment**	☐	**Other**	☐	
Containers	**Satisfactory**	☑	**Broken**	☐	**Leaking**	☐			
Aqueous Preservatives	**N/A**	☐	**pH <= 2**	☑	**pH > 2**	☐			
Temperature	**Received on Ice**	☐			**Received at 4 Deg. C**	☐	**Other**	☑	Rec'd at 2.1 Deg. C
Methanol	**N/A**								

Method for Ranges: MADEP VPH REV 2.1
Method for Target Analytes: MADEP VPH REV 2.1
VPH Surrogate Standards
PID:
FID:

Client ID: B-GSS-411 **Lab ID:** JE25540-3
Date Collected: 12/18/2025 **Date Received:** 12/18/2025

Date Extracted:	First Date Run:	Last Date Run:
N/A	12/23/2025	N/A
% Solids:	**Low Dilution:**	**High Dilution:**
N/A	1	N/A

Unadjusted Ranges	CAS #	Elution Range	Units	Result		RDL	Q
C5- C8 Aliphatics (Unadj.)		N/A	ug/l	ND	A	100	
C9- C12 Aliphatics (Unadj.)		N/A	ug/l	ND	A	100	
Adjusted Ranges							
C5- C8 Aliphatics		N/A	ug/l	ND	B	100	
C9- C12 Aliphatics		N/A	ug/l	ND	D	100	
C9- C10 Aromatics			ug/l	ND		100	

Surrogate Recoveries			Acceptance Range
FID:2,3,4-Trifluorotoluene	%	93	70-130 %
PID:2,3,4-Trifluorotoluene	%	93	70-130 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

B Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range.

D Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C9-C12 aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the VPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the VPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** **General Managerr**

Printed Name **David Chastain** **Date** **1/7/2026**

Internal Sample Tracking Chronicle

WSP USA Environment & Infrastructure Inc

Job No: JE25540

MWRA Water Tunnel
Project No: 41005.1387

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JE25540-1	Collected: 18-DEC-25 08:25 By: JS		Received: 18-DEC-25 By: KG			
SB-FD-542-A						
JE25540-1	SW846 7196A	19-DEC-25 08:20	RI			XCR
JE25540-1	SM4500H+ B-11/21	21-DEC-25 14:29	MS			PHLABTEMP
JE25540-1	SW846 6010D	22-DEC-25 03:41	MM	20-DEC-25	BP	AG,BE,CD,CU,NI,SB,SE,ZN
JE25540-1	SM4500CL F-11	22-DEC-25 11:50	DB			TRC
JE25540-1	SW846 8082A	22-DEC-25 13:21	CP	21-DEC-25	SGC	P8082MCP
JE25540-1	SW846 7470A	22-DEC-25 13:23	MK	22-DEC-25	MK	HG
JE25540-1	SW846 6010D	23-DEC-25 04:19	MM	20-DEC-25	BP	AS,CR,PB,TL
JE25540-1	MADEP VPH REV 2.1	23-DEC-25 08:52	JN			VMAVPHR
JE25540-1	SM2540 D-15/20	23-DEC-25 13:30	SD			TSS
JE25540-1	SW846 8270E	23-DEC-25 22:01	TL	22-DEC-25	BD	ABLV8270MCP
JE25540-1	SW846 8270E BY SIM	24-DEC-25 17:17	AC	22-DEC-25	BD	BLV8270SIMPAH+ 2MNAP
JE25540-1	SW846 8260D	30-DEC-25 19:57	BK			V8260MCP
JE25540-1	MADEP EPH REV 2.1	31-DEC-25 03:36	CP	23-DEC-25	ZR	BMAEPHR
JE25540-1	MADEP EPH REV 2.1	05-JAN-26 21:21	CB	23-DEC-25	ZR	BMAEPHR
JE25540-2	Collected: 18-DEC-25 09:45 By: JS		Received: 18-DEC-25 By: KG			
SB-FD-543-A						
JE25540-2	SW846 7196A	19-DEC-25 08:20	RI			XCR
JE25540-2	SM4500H+ B-11/21	21-DEC-25 14:29	MS			PHLABTEMP
JE25540-2	SW846 6010D	22-DEC-25 05:15	MM	20-DEC-25	BP	AG,AS,BE,CD,CR,CU,NI,PB,SB,SE,TL,ZN
JE25540-2	SM4500CL F-11	22-DEC-25 11:50	DB			TRC
JE25540-2	SW846 7470A	22-DEC-25 13:27	MK	22-DEC-25	MK	HG
JE25540-2	SW846 8082A	22-DEC-25 13:36	CP	21-DEC-25	SGC	P8082MCP
JE25540-2	MADEP VPH REV 2.1	23-DEC-25 09:34	JN			VMAVPHR
JE25540-2	SM2540 D-15/20	23-DEC-25 13:30	SD			TSS
JE25540-2	SW846 8270E	23-DEC-25 22:23	TL	22-DEC-25	BD	ABLV8270MCP
JE25540-2	SW846 8270E BY SIM	24-DEC-25 17:42	AC	22-DEC-25	BD	BLV8270SIMPAH+ 2MNAP
JE25540-2	SW846 8260D	30-DEC-25 20:25	BK			V8260MCP
JE25540-2	MADEP EPH REV 2.1	31-DEC-25 04:10	CP	23-DEC-25	ZR	BMAEPHR
JE25540-2	MADEP EPH REV 2.1	05-JAN-26 21:54	CB	23-DEC-25	ZR	BMAEPHR
JE25540-3	Collected: 18-DEC-25 13:10 By: JS		Received: 18-DEC-25 By: KG			
B-GSS-411						
JE25540-3	SW846 7196A	19-DEC-25 12:30	RI			XCR

Internal Sample Tracking Chronicle

WSP USA Environment & Infrastructure Inc

Job No: JE25540

MWRA Water Tunnel
Project No: 41005.1387

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JE25540-3	SM4500H+ B-11/21	21-DEC-25 14:29	MS			PHLABTEMP
JE25540-3	SW846 6010D	22-DEC-25 05:21	MM	20-DEC-25	BP	AG,AS,BE,CD,CR,CU,NI,PB,SB,SE,TL,ZN
JE25540-3	SM4500CL F-11	22-DEC-25 11:50	DB			TRC
JE25540-3	SW846 7470A	22-DEC-25 13:29	MK	22-DEC-25	MK	HG
JE25540-3	SW846 8082A	22-DEC-25 13:51	CP	21-DEC-25	SGC	P8082MCP
JE25540-3	MADEP VPH REV 2.1	23-DEC-25 10:16	JN			VMAVPHR
JE25540-3	SM2540 D-15/20	23-DEC-25 13:30	SD			TSS
JE25540-3	SW846 8270E	23-DEC-25 22:44	TL	22-DEC-25	BD	ABLV8270MCP
JE25540-3	SW846 8270E BY SIM	24-DEC-25 18:06	AC	22-DEC-25	BD	BLV8270SIMPAH+ 2MNAP
JE25540-3	SW846 8260D	30-DEC-25 19:29	BK			V8260MCP
JE25540-3	MADEP EPH REV 2.1	31-DEC-25 04:43	CP	23-DEC-25	ZR	BMAEPHR
JE25540-3	MADEP EPH REV 2.1	05-JAN-26 22:27	CB	23-DEC-25	ZR	BMAEPHR
JE25540-4	Collected: 18-DEC-25 13:10 By: JS			Received: 18-DEC-25 By: KG		
TRIP BLANK						
JE25540-4	SW846 8260D	30-DEC-25 16:40	BK			V8260MCP

QC Evaluation: MA MCP Limits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V4D6474	**SW846 8260D**						
V4D6474-BS	67-64-1	Acetone	BSP	REC	112	%	70-130
V4D6474-BS	71-43-2	Benzene	BSP	REC	103	%	70-130
V4D6474-BS	108-86-1	Bromobenzene	BSP	REC	100	%	70-130
V4D6474-BS	74-97-5	Bromochloromethane	BSP	REC	110	%	70-130
V4D6474-BS	75-27-4	Bromodichloromethane	BSP	REC	102	%	70-130
V4D6474-BS	75-25-2	Bromoform	BSP	REC	100	%	70-130
V4D6474-BS	74-83-9	Bromomethane	BSP	REC	131	%	70-130
V4D6474-BS	78-93-3	2-Butanone (MEK)	BSP	REC	107	%	70-130
V4D6474-BS	104-51-8	n-Butylbenzene	BSP	REC	109	%	70-130
V4D6474-BS	135-98-8	sec-Butylbenzene	BSP	REC	107	%	70-130
V4D6474-BS	98-06-6	tert-Butylbenzene	BSP	REC	102	%	70-130
V4D6474-BS	75-15-0	Carbon disulfide	BSP	REC	116	%	70-130
V4D6474-BS	56-23-5	Carbon tetrachloride	BSP	REC	115	%	70-130
V4D6474-BS	108-90-7	Chlorobenzene	BSP	REC	98	%	70-130
V4D6474-BS	75-00-3	Chloroethane	BSP	REC	125	%	70-130
V4D6474-BS	67-66-3	Chloroform	BSP	REC	100	%	70-130
V4D6474-BS	74-87-3	Chloromethane	BSP	REC	104	%	70-130
V4D6474-BS	95-49-8	o-Chlorotoluene	BSP	REC	99	%	70-130
V4D6474-BS	106-43-4	p-Chlorotoluene	BSP	REC	100	%	70-130
V4D6474-BS	108-20-3	Di-Isopropyl ether	BSP	REC	104	%	70-130
V4D6474-BS	96-12-8	1,2-Dibromo-3-chloropropane	BSP	REC	101	%	70-130
V4D6474-BS	124-48-1	Dibromochloromethane	BSP	REC	100	%	70-130
V4D6474-BS	106-93-4	1,2-Dibromoethane	BSP	REC	100	%	70-130
V4D6474-BS	95-50-1	1,2-Dichlorobenzene	BSP	REC	98	%	70-130
V4D6474-BS	541-73-1	1,3-Dichlorobenzene	BSP	REC	98	%	70-130
V4D6474-BS	106-46-7	1,4-Dichlorobenzene	BSP	REC	97	%	70-130
V4D6474-BS	75-71-8	Dichlorodifluoromethane	BSP	REC	102	%	70-130
V4D6474-BS	75-34-3	1,1-Dichloroethane	BSP	REC	109	%	70-130
V4D6474-BS	107-06-2	1,2-Dichloroethane	BSP	REC	96	%	70-130
V4D6474-BS	75-35-4	1,1-Dichloroethene	BSP	REC	118	%	70-130
V4D6474-BS	156-59-2	cis-1,2-Dichloroethene	BSP	REC	108	%	70-130
V4D6474-BS	156-60-5	trans-1,2-Dichloroethene	BSP	REC	112	%	70-130
V4D6474-BS	78-87-5	1,2-Dichloropropane	BSP	REC	104	%	70-130
V4D6474-BS	142-28-9	1,3-Dichloropropane	BSP	REC	95	%	70-130
V4D6474-BS	594-20-7	2,2-Dichloropropane	BSP	REC	113	%	70-130
V4D6474-BS	563-58-6	1,1-Dichloropropene	BSP	REC	112	%	70-130
V4D6474-BS	10061-01-5	cis-1,3-Dichloropropene	BSP	REC	102	%	70-130
V4D6474-BS	10061-02-6	trans-1,3-Dichloropropene	BSP	REC	97	%	70-130
V4D6474-BS	123-91-1	1,4-Dioxane	BSP	REC	93	%	70-130
V4D6474-BS	60-29-7	Ethyl Ether	BSP	REC	121	%	70-130
V4D6474-BS	100-41-4	Ethylbenzene	BSP	REC	99	%	70-130
V4D6474-BS	87-68-3	Hexachlorobutadiene	BSP	REC	105	%	70-130

*** Sample used for QC is not from job JE25540**

QC Evaluation: MA MCP Limits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V4D6474-BS	591-78-6	2-Hexanone	BSP	REC	97	%	70-130
V4D6474-BS	98-82-8	Isopropylbenzene	BSP	REC	99	%	70-130
V4D6474-BS	99-87-6	p-Isopropyltoluene	BSP	REC	106	%	70-130
V4D6474-BS	1634-04-4	Methyl Tert Butyl Ether	BSP	REC	113	%	70-130
V4D6474-BS	108-10-1	4-Methyl-2-pentanone(MIBK)	BSP	REC	101	%	70-130
V4D6474-BS	74-95-3	Methylene bromide	BSP	REC	98	%	70-130
V4D6474-BS	75-09-2	Methylene chloride	BSP	REC	107	%	70-130
V4D6474-BS	91-20-3	Naphthalene	BSP	REC	107	%	70-130
V4D6474-BS	103-65-1	n-Propylbenzene	BSP	REC	104	%	70-130
V4D6474-BS	100-42-5	Styrene	BSP	REC	98	%	70-130
V4D6474-BS	994-05-8	tert-Amyl Methyl Ether	BSP	REC	102	%	70-130
V4D6474-BS	637-92-3	tert-Butyl Ethyl Ether	BSP	REC	113	%	70-130
V4D6474-BS	630-20-6	1,1,1,2-Tetrachloroethane	BSP	REC	98	%	70-130
V4D6474-BS	79-34-5	1,1,2,2-Tetrachloroethane	BSP	REC	97	%	70-130
V4D6474-BS	127-18-4	Tetrachloroethene	BSP	REC	98	%	70-130
V4D6474-BS	109-99-9	Tetrahydrofuran	BSP	REC	94	%	70-130
V4D6474-BS	108-88-3	Toluene	BSP	REC	100	%	70-130
V4D6474-BS	87-61-6	1,2,3-Trichlorobenzene	BSP	REC	101	%	70-130
V4D6474-BS	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	103	%	70-130
V4D6474-BS	71-55-6	1,1,1-Trichloroethane	BSP	REC	113	%	70-130
V4D6474-BS	79-00-5	1,1,2-Trichloroethane	BSP	REC	98	%	70-130
V4D6474-BS	79-01-6	Trichloroethene	BSP	REC	107	%	70-130
V4D6474-BS	75-69-4	Trichlorofluoromethane	BSP	REC	124	%	70-130
V4D6474-BS	96-18-4	1,2,3-Trichloropropane	BSP	REC	96	%	70-130
V4D6474-BS	95-63-6	1,2,4-Trimethylbenzene	BSP	REC	101	%	70-130
V4D6474-BS	108-67-8	1,3,5-Trimethylbenzene	BSP	REC	101	%	70-130
V4D6474-BS	75-01-4	Vinyl chloride	BSP	REC	114	%	70-130
V4D6474-BS		m,p-Xylene	BSP	REC	98	%	70-130
V4D6474-BS	95-47-6	o-Xylene	BSP	REC	98	%	70-130
V4D6474-BS	1330-20-7	Xylene (total)	BSP	REC	98	%	70-130
V4D6474-BS	1868-53-7	Dibromofluoromethane	BSP	SURR	106	%	70-130
V4D6474-BS	2037-26-5	Toluene-D8	BSP	SURR	97	%	70-130
V4D6474-BS	460-00-4	4-Bromofluorobenzene	BSP	SURR	102	%	70-130
V4D6474-BSD	67-64-1	Acetone	BSD	REC	120	%	70-130
V4D6474-BSD	67-64-1	Acetone	BSD	RPD	7	%	20
V4D6474-BSD	71-43-2	Benzene	BSD	REC	106	%	70-130
V4D6474-BSD	71-43-2	Benzene	BSD	RPD	3	%	20
V4D6474-BSD	108-86-1	Bromobenzene	BSD	REC	103	%	70-130
V4D6474-BSD	108-86-1	Bromobenzene	BSD	RPD	3	%	20
V4D6474-BSD	74-97-5	Bromochloromethane	BSD	REC	114	%	70-130
V4D6474-BSD	74-97-5	Bromochloromethane	BSD	RPD	4	%	20
V4D6474-BSD	75-27-4	Bromodichloromethane	BSD	REC	106	%	70-130
V4D6474-BSD	75-27-4	Bromodichloromethane	BSD	RPD	3	%	20
V4D6474-BSD	75-25-2	Bromoform	BSD	REC	105	%	70-130
V4D6474-BSD	75-25-2	Bromoform	BSD	RPD	5	%	20

*** Sample used for QC is not from job JE25540**

QC Evaluation: MA MCP Limits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V4D6474-BSD	74-83-9	Bromomethane	BSD	REC	130	%	70-130
V4D6474-BSD	74-83-9	Bromomethane	BSD	RPD	0	%	20
V4D6474-BSD	78-93-3	2-Butanone (MEK)	BSD	REC	117	%	70-130
V4D6474-BSD	78-93-3	2-Butanone (MEK)	BSD	RPD	9	%	20
V4D6474-BSD	104-51-8	n-Butylbenzene	BSD	REC	111	%	70-130
V4D6474-BSD	104-51-8	n-Butylbenzene	BSD	RPD	2	%	20
V4D6474-BSD	135-98-8	sec-Butylbenzene	BSD	REC	109	%	70-130
V4D6474-BSD	135-98-8	sec-Butylbenzene	BSD	RPD	2	%	20
V4D6474-BSD	98-06-6	tert-Butylbenzene	BSD	REC	105	%	70-130
V4D6474-BSD	98-06-6	tert-Butylbenzene	BSD	RPD	2	%	20
V4D6474-BSD	75-15-0	Carbon disulfide	BSD	REC	120	%	70-130
V4D6474-BSD	75-15-0	Carbon disulfide	BSD	RPD	3	%	20
V4D6474-BSD	56-23-5	Carbon tetrachloride	BSD	REC	118	%	70-130
V4D6474-BSD	56-23-5	Carbon tetrachloride	BSD	RPD	3	%	20
V4D6474-BSD	108-90-7	Chlorobenzene	BSD	REC	101	%	70-130
V4D6474-BSD	108-90-7	Chlorobenzene	BSD	RPD	3	%	20
V4D6474-BSD	75-00-3	Chloroethane	BSD	REC	128	%	70-130
V4D6474-BSD	75-00-3	Chloroethane	BSD	RPD	2	%	20
V4D6474-BSD	67-66-3	Chloroform	BSD	REC	103	%	70-130
V4D6474-BSD	67-66-3	Chloroform	BSD	RPD	3	%	20
V4D6474-BSD	74-87-3	Chloromethane	BSD	REC	105	%	70-130
V4D6474-BSD	74-87-3	Chloromethane	BSD	RPD	2	%	20
V4D6474-BSD	95-49-8	o-Chlorotoluene	BSD	REC	101	%	70-130
V4D6474-BSD	95-49-8	o-Chlorotoluene	BSD	RPD	2	%	20
V4D6474-BSD	106-43-4	p-Chlorotoluene	BSD	REC	102	%	70-130
V4D6474-BSD	106-43-4	p-Chlorotoluene	BSD	RPD	3	%	20
V4D6474-BSD	108-20-3	Di-Isopropyl ether	BSD	REC	106	%	70-130
V4D6474-BSD	108-20-3	Di-Isopropyl ether	BSD	RPD	1	%	20
V4D6474-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	REC	110	%	70-130
V4D6474-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	RPD	8	%	20
V4D6474-BSD	124-48-1	Dibromochloromethane	BSD	REC	106	%	70-130
V4D6474-BSD	124-48-1	Dibromochloromethane	BSD	RPD	6	%	20
V4D6474-BSD	106-93-4	1,2-Dibromoethane	BSD	REC	104	%	70-130
V4D6474-BSD	106-93-4	1,2-Dibromoethane	BSD	RPD	4	%	20
V4D6474-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	102	%	70-130
V4D6474-BSD	95-50-1	1,2-Dichlorobenzene	BSD	RPD	4	%	20
V4D6474-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	101	%	70-130
V4D6474-BSD	541-73-1	1,3-Dichlorobenzene	BSD	RPD	3	%	20
V4D6474-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	98	%	70-130
V4D6474-BSD	106-46-7	1,4-Dichlorobenzene	BSD	RPD	1	%	20
V4D6474-BSD	75-71-8	Dichlorodifluoromethane	BSD	REC	104	%	70-130
V4D6474-BSD	75-71-8	Dichlorodifluoromethane	BSD	RPD	3	%	20
V4D6474-BSD	75-34-3	1,1-Dichloroethane	BSD	REC	114	%	70-130
V4D6474-BSD	75-34-3	1,1-Dichloroethane	BSD	RPD	4	%	20
V4D6474-BSD	107-06-2	1,2-Dichloroethane	BSD	REC	101	%	70-130

*** Sample used for QC is not from job JE25540**

QC Evaluation: MA MCP Limits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V4D6474-BSD	107-06-2	1,2-Dichloroethane	BSD	RPD	5	%	20
V4D6474-BSD	75-35-4	1,1-Dichloroethene	BSD	REC	121	%	70-130
V4D6474-BSD	75-35-4	1,1-Dichloroethene	BSD	RPD	3	%	20
V4D6474-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	REC	111	%	70-130
V4D6474-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	RPD	3	%	20
V4D6474-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	REC	115	%	70-130
V4D6474-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	RPD	3	%	20
V4D6474-BSD	78-87-5	1,2-Dichloropropane	BSD	REC	108	%	70-130
V4D6474-BSD	78-87-5	1,2-Dichloropropane	BSD	RPD	5	%	20
V4D6474-BSD	142-28-9	1,3-Dichloropropane	BSD	REC	99	%	70-130
V4D6474-BSD	142-28-9	1,3-Dichloropropane	BSD	RPD	4	%	20
V4D6474-BSD	594-20-7	2,2-Dichloropropane	BSD	REC	115	%	70-130
V4D6474-BSD	594-20-7	2,2-Dichloropropane	BSD	RPD	2	%	20
V4D6474-BSD	563-58-6	1,1-Dichloropropene	BSD	REC	113	%	70-130
V4D6474-BSD	563-58-6	1,1-Dichloropropene	BSD	RPD	1	%	20
V4D6474-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	REC	106	%	70-130
V4D6474-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	RPD	4	%	20
V4D6474-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	REC	102	%	70-130
V4D6474-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	RPD	5	%	20
V4D6474-BSD	123-91-1	1,4-Dioxane	BSD	REC	98	%	70-130
V4D6474-BSD	123-91-1	1,4-Dioxane	BSD	RPD	5	%	20
V4D6474-BSD	60-29-7	Ethyl Ether	BSD	REC	125	%	70-130
V4D6474-BSD	60-29-7	Ethyl Ether	BSD	RPD	3	%	20
V4D6474-BSD	100-41-4	Ethylbenzene	BSD	REC	103	%	70-130
V4D6474-BSD	100-41-4	Ethylbenzene	BSD	RPD	4	%	20
V4D6474-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	104	%	70-130
V4D6474-BSD	87-68-3	Hexachlorobutadiene	BSD	RPD	1	%	20
V4D6474-BSD	591-78-6	2-Hexanone	BSD	REC	104	%	70-130
V4D6474-BSD	591-78-6	2-Hexanone	BSD	RPD	7	%	20
V4D6474-BSD	98-82-8	Isopropylbenzene	BSD	REC	104	%	70-130
V4D6474-BSD	98-82-8	Isopropylbenzene	BSD	RPD	4	%	20
V4D6474-BSD	99-87-6	p-Isopropyltoluene	BSD	REC	106	%	70-130
V4D6474-BSD	99-87-6	p-Isopropyltoluene	BSD	RPD	1	%	20
V4D6474-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	REC	118	%	70-130
V4D6474-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	RPD	4	%	20
V4D6474-BSD	108-10-1	4-Methyl-2-pentanone(MIBK)	BSD	REC	106	%	70-130
V4D6474-BSD	108-10-1	4-Methyl-2-pentanone(MIBK)	BSD	RPD	4	%	20
V4D6474-BSD	74-95-3	Methylene bromide	BSD	REC	102	%	70-130
V4D6474-BSD	74-95-3	Methylene bromide	BSD	RPD	3	%	20
V4D6474-BSD	75-09-2	Methylene chloride	BSD	REC	111	%	70-130
V4D6474-BSD	75-09-2	Methylene chloride	BSD	RPD	3	%	20
V4D6474-BSD	91-20-3	Naphthalene	BSD	REC	113	%	70-130
V4D6474-BSD	91-20-3	Naphthalene	BSD	RPD	5	%	20
V4D6474-BSD	103-65-1	n-Propylbenzene	BSD	REC	106	%	70-130
V4D6474-BSD	103-65-1	n-Propylbenzene	BSD	RPD	2	%	20

*** Sample used for QC is not from job JE25540**

QC Evaluation: MA MCP Limits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V4D6474-BSD	100-42-5	Styrene	BSD	REC	104	%	70-130
V4D6474-BSD	100-42-5	Styrene	BSD	RPD	7	%	20
V4D6474-BSD	994-05-8	tert-Amyl Methyl Ether	BSD	REC	106	%	70-130
V4D6474-BSD	994-05-8	tert-Amyl Methyl Ether	BSD	RPD	4	%	20
V4D6474-BSD	637-92-3	tert-Butyl Ethyl Ether	BSD	REC	116	%	70-130
V4D6474-BSD	637-92-3	tert-Butyl Ethyl Ether	BSD	RPD	3	%	20
V4D6474-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	REC	102	%	70-130
V4D6474-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	RPD	4	%	20
V4D6474-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	REC	101	%	70-130
V4D6474-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	RPD	4	%	20
V4D6474-BSD	127-18-4	Tetrachloroethene	BSD	REC	103	%	70-130
V4D6474-BSD	127-18-4	Tetrachloroethene	BSD	RPD	5	%	20
V4D6474-BSD	109-99-9	Tetrahydrofuran	BSD	REC	102	%	70-130
V4D6474-BSD	109-99-9	Tetrahydrofuran	BSD	RPD	8	%	20
V4D6474-BSD	108-88-3	Toluene	BSD	REC	104	%	70-130
V4D6474-BSD	108-88-3	Toluene	BSD	RPD	4	%	20
V4D6474-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	REC	105	%	70-130
V4D6474-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	RPD	4	%	25
V4D6474-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	106	%	70-130
V4D6474-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	RPD	3	%	20
V4D6474-BSD	71-55-6	1,1,1-Trichloroethane	BSD	REC	116	%	70-130
V4D6474-BSD	71-55-6	1,1,1-Trichloroethane	BSD	RPD	3	%	20
V4D6474-BSD	79-00-5	1,1,2-Trichloroethane	BSD	REC	103	%	70-130
V4D6474-BSD	79-00-5	1,1,2-Trichloroethane	BSD	RPD	5	%	20
V4D6474-BSD	79-01-6	Trichloroethene	BSD	REC	112	%	70-130
V4D6474-BSD	79-01-6	Trichloroethene	BSD	RPD	5	%	20
V4D6474-BSD	75-69-4	Trichlorofluoromethane	BSD	REC	129	%	70-130
V4D6474-BSD	75-69-4	Trichlorofluoromethane	BSD	RPD	3	%	20
V4D6474-BSD	96-18-4	1,2,3-Trichloropropane	BSD	REC	100	%	70-130
V4D6474-BSD	96-18-4	1,2,3-Trichloropropane	BSD	RPD	4	%	20
V4D6474-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	REC	104	%	70-130
V4D6474-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	RPD	3	%	20
V4D6474-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	REC	104	%	70-130
V4D6474-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	RPD	3	%	20
V4D6474-BSD	75-01-4	Vinyl chloride	BSD	REC	116	%	70-130
V4D6474-BSD	75-01-4	Vinyl chloride	BSD	RPD	2	%	20
V4D6474-BSD		m,p-Xylene	BSD	REC	102	%	70-130
V4D6474-BSD		m,p-Xylene	BSD	RPD	4	%	20
V4D6474-BSD	95-47-6	o-Xylene	BSD	REC	102	%	70-130
V4D6474-BSD	95-47-6	o-Xylene	BSD	RPD	5	%	20
V4D6474-BSD	1330-20-7	Xylene (total)	BSD	REC	103	%	70-130
V4D6474-BSD	1330-20-7	Xylene (total)	BSD	RPD	5	%	20
V4D6474-BSD	1868-53-7	Dibromofluoromethane	BSD	SURR	106	%	70-130
V4D6474-BSD	2037-26-5	Toluene-D8	BSD	SURR	98	%	70-130
V4D6474-BSD	460-00-4	4-Bromofluorobenzene	BSD	SURR	101	%	70-130

*** Sample used for QC is not from job JE25540**

QC Evaluation: MA MCP Limits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V4D6474-MB	1868-53-7	Dibromofluoromethane	MB	SURR	102	%	70-130
V4D6474-MB	2037-26-5	Toluene-D8	MB	SURR	99	%	70-130
V4D6474-MB	460-00-4	4-Bromofluorobenzene	MB	SURR	101	%	70-130
JE25540-1	1868-53-7	Dibromofluoromethane	SAMP	SURR	101	%	70-130
JE25540-1	2037-26-5	Toluene-D8	SAMP	SURR	99	%	70-130
JE25540-1	460-00-4	4-Bromofluorobenzene	SAMP	SURR	101	%	70-130
JE25540-2	1868-53-7	Dibromofluoromethane	SAMP	SURR	102	%	70-130
JE25540-2	2037-26-5	Toluene-D8	SAMP	SURR	98	%	70-130
JE25540-2	460-00-4	4-Bromofluorobenzene	SAMP	SURR	100	%	70-130
JE25540-3	1868-53-7	Dibromofluoromethane	SAMP	SURR	101	%	70-130
JE25540-3	2037-26-5	Toluene-D8	SAMP	SURR	99	%	70-130
JE25540-3	460-00-4	4-Bromofluorobenzene	SAMP	SURR	104	%	70-130
JE25540-4	1868-53-7	Dibromofluoromethane	SAMP	SURR	102	%	70-130
JE25540-4	2037-26-5	Toluene-D8	SAMP	SURR	97	%	70-130
JE25540-4	460-00-4	4-Bromofluorobenzene	SAMP	SURR	103	%	70-130
OP69940	SW846 8270E						
OP69940-BS1	65-85-0	Benzoic Acid	BSP	REC	40	%	30-130
OP69940-BS1	95-57-8	2-Chlorophenol	BSP	REC	71	%	30-130
OP69940-BS1	59-50-7	4-Chloro-3-methyl phenol	BSP	REC	86	%	30-130
OP69940-BS1	120-83-2	2,4-Dichlorophenol	BSP	REC	77	%	30-130
OP69940-BS1	105-67-9	2,4-Dimethylphenol	BSP	REC	67	%	30-130
OP69940-BS1	51-28-5	2,4-Dinitrophenol	BSP	REC	93	%	30-130
OP69940-BS1	534-52-1	4,6-Dinitro-o-cresol	BSP	REC	106	%	30-130
OP69940-BS1	95-48-7	2-Methylphenol	BSP	REC	68	%	30-130
OP69940-BS1		3&4-Methylphenol	BSP	REC	69	%	30-130
OP69940-BS1	88-75-5	2-Nitrophenol	BSP	REC	78	%	30-130
OP69940-BS1	100-02-7	4-Nitrophenol	BSP	REC	67	%	30-130
OP69940-BS1	87-86-5	Pentachlorophenol	BSP	REC	96	%	30-130
OP69940-BS1	108-95-2	Phenol	BSP	REC	46	%	30-130
OP69940-BS1	95-95-4	2,4,5-Trichlorophenol	BSP	REC	83	%	30-130
OP69940-BS1	88-06-2	2,4,6-Trichlorophenol	BSP	REC	80	%	30-130
OP69940-BS1	83-32-9	Acenaphthene	BSP	REC	75	%	40-140
OP69940-BS1	208-96-8	Acenaphthylene	BSP	REC	75	%	40-140
OP69940-BS1	98-86-2	Acetophenone	BSP	REC	70	%	40-140
OP69940-BS1	62-53-3	Aniline	BSP	REC	44	%	40-140
OP69940-BS1	120-12-7	Anthracene	BSP	REC	87	%	40-140
OP69940-BS1	56-55-3	Benzo(a)anthracene	BSP	REC	87	%	40-140
OP69940-BS1	50-32-8	Benzo(a)pyrene	BSP	REC	80	%	40-140
OP69940-BS1	205-99-2	Benzo(b)fluoranthene	BSP	REC	83	%	40-140
OP69940-BS1	191-24-2	Benzo(g,h,i)perylene	BSP	REC	71	%	40-140
OP69940-BS1	207-08-9	Benzo(k)fluoranthene	BSP	REC	82	%	40-140
OP69940-BS1	101-55-3	4-Bromophenyl phenyl ether	BSP	REC	88	%	40-140
OP69940-BS1	85-68-7	Butyl benzyl phthalate	BSP	REC	100	%	40-140

*** Sample used for QC is not from job JE25540**

QC Evaluation: MA MCP Limits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP69940-BS1	91-58-7	2-Chloronaphthalene	BSP	REC	68	%	40-140
OP69940-BS1	106-47-8	4-Chloroaniline	BSP	REC	61	%	40-140
OP69940-BS1	218-01-9	Chrysene	BSP	REC	82	%	40-140
OP69940-BS1	111-91-1	bis(2-Chloroethoxy)methane	BSP	REC	80	%	40-140
OP69940-BS1	111-44-4	bis(2-Chloroethyl)ether	BSP	REC	69	%	40-140
OP69940-BS1	108-60-1	2,2'-Oxybis(1-chloropropane)	BSP	REC	74	%	40-140
OP69940-BS1	7005-72-3	4-Chlorophenyl phenyl ether	BSP	REC	79	%	40-140
OP69940-BS1	95-50-1	1,2-Dichlorobenzene	BSP	REC	57	%	40-140
OP69940-BS1	122-66-7	1,2-Diphenylhydrazine	BSP	REC	90	%	40-140
OP69940-BS1	541-73-1	1,3-Dichlorobenzene	BSP	REC	55	%	40-140
OP69940-BS1	106-46-7	1,4-Dichlorobenzene	BSP	REC	54	%	40-140
OP69940-BS1	121-14-2	2,4-Dinitrotoluene	BSP	REC	93	%	40-140
OP69940-BS1	606-20-2	2,6-Dinitrotoluene	BSP	REC	90	%	40-140
OP69940-BS1	91-94-1	3,3'-Dichlorobenzidine	BSP	REC	62	%	40-140
OP69940-BS1	53-70-3	Dibenzo(a,h)anthracene	BSP	REC	76	%	40-140
OP69940-BS1	132-64-9	Dibenzofuran	BSP	REC	77	%	40-140
OP69940-BS1	84-74-2	Di-n-butyl phthalate	BSP	REC	99	%	40-140
OP69940-BS1	117-84-0	Di-n-octyl phthalate	BSP	REC	104	%	40-140
OP69940-BS1	84-66-2	Diethyl phthalate	BSP	REC	91	%	40-140
OP69940-BS1	131-11-3	Dimethyl phthalate	BSP	REC	83	%	40-140
OP69940-BS1	117-81-7	bis(2-Ethylhexyl)phthalate	BSP	REC	97	%	40-140
OP69940-BS1	206-44-0	Fluoranthene	BSP	REC	89	%	40-140
OP69940-BS1	86-73-7	Fluorene	BSP	REC	81	%	40-140
OP69940-BS1	118-74-1	Hexachlorobenzene	BSP	REC	87	%	40-140
OP69940-BS1	87-68-3	Hexachlorobutadiene	BSP	REC	56	%	40-140
OP69940-BS1	77-47-4	Hexachlorocyclopentadiene	BSP	REC	53	%	40-140
OP69940-BS1	67-72-1	Hexachloroethane	BSP	REC	51	%	40-140
OP69940-BS1	193-39-5	Indeno(1,2,3-cd)pyrene	BSP	REC	75	%	40-140
OP69940-BS1	78-59-1	Isophorone	BSP	REC	83	%	40-140
OP69940-BS1	91-57-6	2-Methylnaphthalene	BSP	REC	68	%	40-140
OP69940-BS1	91-20-3	Naphthalene	BSP	REC	64	%	40-140
OP69940-BS1	98-95-3	Nitrobenzene	BSP	REC	71	%	40-140
OP69940-BS1	62-75-9	n-Nitrosodimethylamine	BSP	REC	69	%	40-140
OP69940-BS1	621-64-7	N-Nitroso-di-n-propylamine	BSP	REC	89	%	40-140
OP69940-BS1	86-30-6	N-Nitrosodiphenylamine	BSP	REC	97	%	40-140
OP69940-BS1	85-01-8	Phenanthrene	BSP	REC	83	%	40-140
OP69940-BS1	129-00-0	Pyrene	BSP	REC	91	%	40-140
OP69940-BS1	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	59	%	40-140
OP69940-BS1	367-12-4	2-Fluorophenol	BSP	SURR	62	%	15-110
OP69940-BS1	4165-62-2	Phenol-d5	BSP	SURR	46	%	15-110
OP69940-BS1	118-79-6	2,4,6-Tribromophenol	BSP	SURR	98	%	15-110
OP69940-BS1	4165-60-0	Nitrobenzene-d5	BSP	SURR	79	%	30-130
OP69940-BS1	321-60-8	2-Fluorobiphenyl	BSP	SURR	80	%	30-130
OP69940-BS1	1718-51-0	Terphenyl-d14	BSP	SURR	96	%	30-130
OP69940-BSD	65-85-0	Benzoic Acid	BSD	REC	49	%	30-130

*** Sample used for QC is not from job JE25540**

QC Evaluation: MA MCP Limits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP69940-BSD	65-85-0	Benzoic Acid	BSD	RPD	20	%	20
OP69940-BSD	95-57-8	2-Chlorophenol	BSD	REC	75	%	30-130
OP69940-BSD	95-57-8	2-Chlorophenol	BSD	RPD	6	%	20
OP69940-BSD	59-50-7	4-Chloro-3-methyl phenol	BSD	REC	94	%	30-130
OP69940-BSD	59-50-7	4-Chloro-3-methyl phenol	BSD	RPD	9	%	20
OP69940-BSD	120-83-2	2,4-Dichlorophenol	BSD	REC	84	%	30-130
OP69940-BSD	120-83-2	2,4-Dichlorophenol	BSD	RPD	9	%	20
OP69940-BSD	105-67-9	2,4-Dimethylphenol	BSD	REC	83	%	30-130
OP69940-BSD	105-67-9	2,4-Dimethylphenol	BSD	RPD	21	%	20
OP69940-BSD	51-28-5	2,4-Dinitrophenol	BSD	REC	102	%	30-130
OP69940-BSD	51-28-5	2,4-Dinitrophenol	BSD	RPD	9	%	20
OP69940-BSD	534-52-1	4,6-Dinitro-o-cresol	BSD	REC	104	%	30-130
OP69940-BSD	534-52-1	4,6-Dinitro-o-cresol	BSD	RPD	2	%	20
OP69940-BSD	95-48-7	2-Methylphenol	BSD	REC	78	%	30-130
OP69940-BSD	95-48-7	2-Methylphenol	BSD	RPD	14	%	20
OP69940-BSD		3&4-Methylphenol	BSD	REC	74	%	30-130
OP69940-BSD		3&4-Methylphenol	BSD	RPD	7	%	20
OP69940-BSD	88-75-5	2-Nitrophenol	BSD	REC	84	%	30-130
OP69940-BSD	88-75-5	2-Nitrophenol	BSD	RPD	7	%	20
OP69940-BSD	100-02-7	4-Nitrophenol	BSD	REC	62	%	30-130
OP69940-BSD	100-02-7	4-Nitrophenol	BSD	RPD	8	%	20
OP69940-BSD	87-86-5	Pentachlorophenol	BSD	REC	91	%	30-130
OP69940-BSD	87-86-5	Pentachlorophenol	BSD	RPD	5	%	20
OP69940-BSD	108-95-2	Phenol	BSD	REC	47	%	30-130
OP69940-BSD	108-95-2	Phenol	BSD	RPD	3	%	20
OP69940-BSD	95-95-4	2,4,5-Trichlorophenol	BSD	REC	90	%	30-130
OP69940-BSD	95-95-4	2,4,5-Trichlorophenol	BSD	RPD	9	%	20
OP69940-BSD	88-06-2	2,4,6-Trichlorophenol	BSD	REC	88	%	30-130
OP69940-BSD	88-06-2	2,4,6-Trichlorophenol	BSD	RPD	10	%	20
OP69940-BSD	83-32-9	Acenaphthene	BSD	REC	85	%	40-140
OP69940-BSD	83-32-9	Acenaphthene	BSD	RPD	12	%	20
OP69940-BSD	208-96-8	Acenaphthylene	BSD	REC	84	%	40-140
OP69940-BSD	208-96-8	Acenaphthylene	BSD	RPD	12	%	20
OP69940-BSD	98-86-2	Acetophenone	BSD	REC	79	%	40-140
OP69940-BSD	98-86-2	Acetophenone	BSD	RPD	12	%	20
OP69940-BSD	62-53-3	Aniline	BSD	REC	55	%	40-140
OP69940-BSD	62-53-3	Aniline	BSD	RPD	23	%	20
OP69940-BSD	120-12-7	Anthracene	BSD	REC	85	%	40-140
OP69940-BSD	120-12-7	Anthracene	BSD	RPD	2	%	20
OP69940-BSD	56-55-3	Benzo(a)anthracene	BSD	REC	91	%	40-140
OP69940-BSD	56-55-3	Benzo(a)anthracene	BSD	RPD	5	%	20
OP69940-BSD	50-32-8	Benzo(a)pyrene	BSD	REC	84	%	40-140
OP69940-BSD	50-32-8	Benzo(a)pyrene	BSD	RPD	4	%	20
OP69940-BSD	205-99-2	Benzo(b)fluoranthene	BSD	REC	85	%	40-140
OP69940-BSD	205-99-2	Benzo(b)fluoranthene	BSD	RPD	2	%	20

*** Sample used for QC is not from job JE25540**

QC Evaluation: MA MCP Limits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP69940-BSD	191-24-2	Benzo(g,h,i)perylene	BSD	REC	77	%	40-140
OP69940-BSD	191-24-2	Benzo(g,h,i)perylene	BSD	RPD	9	%	20
OP69940-BSD	207-08-9	Benzo(k)fluoranthene	BSD	REC	83	%	40-140
OP69940-BSD	207-08-9	Benzo(k)fluoranthene	BSD	RPD	1	%	20
OP69940-BSD	101-55-3	4-Bromophenyl phenyl ether	BSD	REC	88	%	40-140
OP69940-BSD	101-55-3	4-Bromophenyl phenyl ether	BSD	RPD	0	%	20
OP69940-BSD	85-68-7	Butyl benzyl phthalate	BSD	REC	106	%	40-140
OP69940-BSD	85-68-7	Butyl benzyl phthalate	BSD	RPD	6	%	20
OP69940-BSD	91-58-7	2-Chloronaphthalene	BSD	REC	77	%	40-140
OP69940-BSD	91-58-7	2-Chloronaphthalene	BSD	RPD	12	%	20
OP69940-BSD	106-47-8	4-Chloroaniline	BSD	REC	71	%	40-140
OP69940-BSD	106-47-8	4-Chloroaniline	BSD	RPD	15	%	20
OP69940-BSD	218-01-9	Chrysene	BSD	REC	87	%	40-140
OP69940-BSD	218-01-9	Chrysene	BSD	RPD	7	%	20
OP69940-BSD	111-91-1	bis(2-Chloroethoxy)methane	BSD	REC	84	%	40-140
OP69940-BSD	111-91-1	bis(2-Chloroethoxy)methane	BSD	RPD	5	%	20
OP69940-BSD	111-44-4	bis(2-Chloroethyl)ether	BSD	REC	77	%	40-140
OP69940-BSD	111-44-4	bis(2-Chloroethyl)ether	BSD	RPD	10	%	20
OP69940-BSD	108-60-1	2,2'-Oxybis(1-chloropropane)	BSD	REC	85	%	40-140
OP69940-BSD	108-60-1	2,2'-Oxybis(1-chloropropane)	BSD	RPD	14	%	20
OP69940-BSD	7005-72-3	4-Chlorophenyl phenyl ether	BSD	REC	85	%	40-140
OP69940-BSD	7005-72-3	4-Chlorophenyl phenyl ether	BSD	RPD	7	%	20
OP69940-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	61	%	40-140
OP69940-BSD	95-50-1	1,2-Dichlorobenzene	BSD	RPD	6	%	20
OP69940-BSD	122-66-7	1,2-Diphenylhydrazine	BSD	REC	86	%	40-140
OP69940-BSD	122-66-7	1,2-Diphenylhydrazine	BSD	RPD	5	%	20
OP69940-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	57	%	40-140
OP69940-BSD	541-73-1	1,3-Dichlorobenzene	BSD	RPD	4	%	20
OP69940-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	57	%	40-140
OP69940-BSD	106-46-7	1,4-Dichlorobenzene	BSD	RPD	6	%	20
OP69940-BSD	121-14-2	2,4-Dinitrotoluene	BSD	REC	96	%	40-140
OP69940-BSD	121-14-2	2,4-Dinitrotoluene	BSD	RPD	4	%	20
OP69940-BSD	606-20-2	2,6-Dinitrotoluene	BSD	REC	95	%	40-140
OP69940-BSD	606-20-2	2,6-Dinitrotoluene	BSD	RPD	6	%	20
OP69940-BSD	91-94-1	3,3'-Dichlorobenzidine	BSD	REC	72	%	40-140
OP69940-BSD	91-94-1	3,3'-Dichlorobenzidine	BSD	RPD	14	%	20
OP69940-BSD	53-70-3	Dibenzo(a,h)anthracene	BSD	REC	80	%	40-140
OP69940-BSD	53-70-3	Dibenzo(a,h)anthracene	BSD	RPD	6	%	20
OP69940-BSD	132-64-9	Dibenzofuran	BSD	REC	85	%	40-140
OP69940-BSD	132-64-9	Dibenzofuran	BSD	RPD	10	%	20
OP69940-BSD	84-74-2	Di-n-butyl phthalate	BSD	REC	96	%	40-140
OP69940-BSD	84-74-2	Di-n-butyl phthalate	BSD	RPD	3	%	20
OP69940-BSD	117-84-0	Di-n-octyl phthalate	BSD	REC	104	%	40-140
OP69940-BSD	117-84-0	Di-n-octyl phthalate	BSD	RPD	0	%	20
OP69940-BSD	84-66-2	Diethyl phthalate	BSD	REC	96	%	40-140

*** Sample used for QC is not from job JE25540**

QC Evaluation: MA MCP Limits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP69940-BSD	84-66-2	Diethyl phthalate	BSD	RPD	5	%	20
OP69940-BSD	131-11-3	Dimethyl phthalate	BSD	REC	91	%	40-140
OP69940-BSD	131-11-3	Dimethyl phthalate	BSD	RPD	10	%	20
OP69940-BSD	117-81-7	bis(2-Ethylhexyl)phthalate	BSD	REC	99	%	40-140
OP69940-BSD	117-81-7	bis(2-Ethylhexyl)phthalate	BSD	RPD	2	%	20
OP69940-BSD	206-44-0	Fluoranthene	BSD	REC	89	%	40-140
OP69940-BSD	206-44-0	Fluoranthene	BSD	RPD	0	%	20
OP69940-BSD	86-73-7	Fluorene	BSD	REC	86	%	40-140
OP69940-BSD	86-73-7	Fluorene	BSD	RPD	6	%	20
OP69940-BSD	118-74-1	Hexachlorobenzene	BSD	REC	85	%	40-140
OP69940-BSD	118-74-1	Hexachlorobenzene	BSD	RPD	2	%	20
OP69940-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	59	%	40-140
OP69940-BSD	87-68-3	Hexachlorobutadiene	BSD	RPD	6	%	20
OP69940-BSD	77-47-4	Hexachlorocyclopentadiene	BSD	REC	58	%	40-140
OP69940-BSD	77-47-4	Hexachlorocyclopentadiene	BSD	RPD	10	%	20
OP69940-BSD	67-72-1	Hexachloroethane	BSD	REC	55	%	40-140
OP69940-BSD	67-72-1	Hexachloroethane	BSD	RPD	8	%	20
OP69940-BSD	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	REC	78	%	40-140
OP69940-BSD	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	RPD	5	%	20
OP69940-BSD	78-59-1	Isophorone	BSD	REC	91	%	40-140
OP69940-BSD	78-59-1	Isophorone	BSD	RPD	8	%	20
OP69940-BSD	91-57-6	2-Methylnaphthalene	BSD	REC	74	%	40-140
OP69940-BSD	91-57-6	2-Methylnaphthalene	BSD	RPD	8	%	20
OP69940-BSD	91-20-3	Naphthalene	BSD	REC	66	%	40-140
OP69940-BSD	91-20-3	Naphthalene	BSD	RPD	3	%	20
OP69940-BSD	98-95-3	Nitrobenzene	BSD	REC	76	%	40-140
OP69940-BSD	98-95-3	Nitrobenzene	BSD	RPD	6	%	20
OP69940-BSD	62-75-9	n-Nitrosodimethylamine	BSD	REC	71	%	40-140
OP69940-BSD	62-75-9	n-Nitrosodimethylamine	BSD	RPD	4	%	20
OP69940-BSD	621-64-7	N-Nitroso-di-n-propylamine	BSD	REC	95	%	40-140
OP69940-BSD	621-64-7	N-Nitroso-di-n-propylamine	BSD	RPD	7	%	20
OP69940-BSD	86-30-6	N-Nitrosodiphenylamine	BSD	REC	93	%	40-140
OP69940-BSD	86-30-6	N-Nitrosodiphenylamine	BSD	RPD	4	%	20
OP69940-BSD	85-01-8	Phenanthrene	BSD	REC	82	%	40-140
OP69940-BSD	85-01-8	Phenanthrene	BSD	RPD	2	%	20
OP69940-BSD	129-00-0	Pyrene	BSD	REC	98	%	40-140
OP69940-BSD	129-00-0	Pyrene	BSD	RPD	7	%	20
OP69940-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	63	%	40-140
OP69940-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	RPD	7	%	20
OP69940-BSD	367-12-4	2-Fluorophenol	BSD	SURR	57	%	15-110
OP69940-BSD	4165-62-2	Phenol-d5	BSD	SURR	46	%	15-110
OP69940-BSD	118-79-6	2,4,6-Tribromophenol	BSD	SURR	94	%	15-110
OP69940-BSD	4165-60-0	Nitrobenzene-d5	BSD	SURR	76	%	30-130
OP69940-BSD	321-60-8	2-Fluorobiphenyl	BSD	SURR	86	%	30-130
OP69940-BSD	1718-51-0	Terphenyl-d14	BSD	SURR	89	%	30-130

*** Sample used for QC is not from job JE25540**

QC Evaluation: MA MCP Limits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP69940-MB1	367-12-4	2-Fluorophenol	MB	SURR	46	%	15-110
OP69940-MB1	4165-62-2	Phenol-d5	MB	SURR	30	%	15-110
OP69940-MB1	118-79-6	2,4,6-Tribromophenol	MB	SURR	76	%	15-110
OP69940-MB1	4165-60-0	Nitrobenzene-d5	MB	SURR	69	%	30-130
OP69940-MB1	321-60-8	2-Fluorobiphenyl	MB	SURR	70	%	30-130
OP69940-MB1	1718-51-0	Terphenyl-d14	MB	SURR	80	%	30-130
JE25540-1	367-12-4	2-Fluorophenol	SAMP	SURR	46	%	15-110
JE25540-1	4165-62-2	Phenol-d5	SAMP	SURR	32	%	15-110
JE25540-1	118-79-6	2,4,6-Tribromophenol	SAMP	SURR	91	%	15-110
JE25540-1	4165-60-0	Nitrobenzene-d5	SAMP	SURR	71	%	30-130
JE25540-1	321-60-8	2-Fluorobiphenyl	SAMP	SURR	77	%	30-130
JE25540-1	1718-51-0	Terphenyl-d14	SAMP	SURR	79	%	30-130
JE25540-2	367-12-4	2-Fluorophenol	SAMP	SURR	43	%	15-110
JE25540-2	4165-62-2	Phenol-d5	SAMP	SURR	30	%	15-110
JE25540-2	118-79-6	2,4,6-Tribromophenol	SAMP	SURR	72	%	15-110
JE25540-2	4165-60-0	Nitrobenzene-d5	SAMP	SURR	58	%	30-130
JE25540-2	321-60-8	2-Fluorobiphenyl	SAMP	SURR	62	%	30-130
JE25540-2	1718-51-0	Terphenyl-d14	SAMP	SURR	73	%	30-130
JE25540-3	367-12-4	2-Fluorophenol	SAMP	SURR	48	%	15-110
JE25540-3	4165-62-2	Phenol-d5	SAMP	SURR	33	%	15-110
JE25540-3	118-79-6	2,4,6-Tribromophenol	SAMP	SURR	84	%	15-110
JE25540-3	4165-60-0	Nitrobenzene-d5	SAMP	SURR	79	%	30-130
JE25540-3	321-60-8	2-Fluorobiphenyl	SAMP	SURR	75	%	30-130
JE25540-3	1718-51-0	Terphenyl-d14	SAMP	SURR	80	%	30-130
OP69940A	**SW846 8270E BY SIM**						
OP69940A-BS12	83-32-9	Acenaphthene	BSP	REC	73	%	40-140
OP69940A-BS12	208-96-8	Acenaphthylene	BSP	REC	79	%	40-140
OP69940A-BS12	120-12-7	Anthracene	BSP	REC	93	%	40-140
OP69940A-BS12	56-55-3	Benzo(a)anthracene	BSP	REC	91	%	40-140
OP69940A-BS12	50-32-8	Benzo(a)pyrene	BSP	REC	78	%	40-140
OP69940A-BS12	205-99-2	Benzo(b)fluoranthene	BSP	REC	89	%	40-140
OP69940A-BS12	191-24-2	Benzo(g,h,i)perylene	BSP	REC	75	%	40-140
OP69940A-BS12	207-08-9	Benzo(k)fluoranthene	BSP	REC	96	%	40-140
OP69940A-BS12	218-01-9	Chrysene	BSP	REC	92	%	40-140
OP69940A-BS12	53-70-3	Dibenzo(a,h)anthracene	BSP	REC	85	%	40-140
OP69940A-BS12	206-44-0	Fluoranthene	BSP	REC	89	%	40-140
OP69940A-BS12	86-73-7	Fluorene	BSP	REC	79	%	40-140
OP69940A-BS12	193-39-5	Indeno(1,2,3-cd)pyrene	BSP	REC	81	%	40-140
OP69940A-BS12	91-57-6	2-Methylnaphthalene	BSP	REC	65	%	40-140
OP69940A-BS12	91-20-3	Naphthalene	BSP	REC	70	%	40-140
OP69940A-BS12	85-01-8	Phenanthrene	BSP	REC	94	%	40-140
OP69940A-BS12	129-00-0	Pyrene	BSP	REC	90	%	40-140
OP69940A-BS12	4165-60-0	Nitrobenzene-d5	BSP	SURR	83	%	30-130

*** Sample used for QC is not from job JE25540**

QC Evaluation: MA MCP Limits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP69940A-BS12	321-60-8	2-Fluorobiphenyl	BSP	SURR	70	%	30-130
OP69940A-BS12	1718-51-0	Terphenyl-d14	BSP	SURR	89	%	30-130
OP69940A-BSD12	83-32-9	Acenaphthene	BSD	REC	64	%	40-140
OP69940A-BSD12	83-32-9	Acenaphthene	BSD	RPD	14	%	30
OP69940A-BSD12	208-96-8	Acenaphthylene	BSD	REC	67	%	40-140
OP69940A-BSD12	208-96-8	Acenaphthylene	BSD	RPD	16	%	30
OP69940A-BSD12	120-12-7	Anthracene	BSD	REC	77	%	40-140
OP69940A-BSD12	120-12-7	Anthracene	BSD	RPD	18	%	30
OP69940A-BSD12	56-55-3	Benzo(a)anthracene	BSD	REC	69	%	40-140
OP69940A-BSD12	56-55-3	Benzo(a)anthracene	BSD	RPD	27	%	30
OP69940A-BSD12	50-32-8	Benzo(a)pyrene	BSD	REC	46	%	40-140
OP69940A-BSD12	50-32-8	Benzo(a)pyrene	BSD	RPD	51 [a]	%	30
OP69940A-BSD12	205-99-2	Benzo(b)fluoranthene	BSD	REC	56	%	40-140
OP69940A-BSD12	205-99-2	Benzo(b)fluoranthene	BSD	RPD	45 [a]	%	30
OP69940A-BSD12	191-24-2	Benzo(g,h,i)perylene	BSD	REC	33	%	40-140
OP69940A-BSD12	191-24-2	Benzo(g,h,i)perylene	BSD	RPD	79 [a]	%	30
OP69940A-BSD12	207-08-9	Benzo(k)fluoranthene	BSD	REC	59	%	40-140
OP69940A-BSD12	207-08-9	Benzo(k)fluoranthene	BSD	RPD	48 [a]	%	30
OP69940A-BSD12	218-01-9	Chrysene	BSD	REC	69	%	40-140
OP69940A-BSD12	218-01-9	Chrysene	BSD	RPD	28	%	30
OP69940A-BSD12	53-70-3	Dibenzo(a,h)anthracene	BSD	REC	42	%	40-140
OP69940A-BSD12	53-70-3	Dibenzo(a,h)anthracene	BSD	RPD	67 [a]	%	30
OP69940A-BSD12	206-44-0	Fluoranthene	BSD	REC	74	%	40-140
OP69940A-BSD12	206-44-0	Fluoranthene	BSD	RPD	18	%	30
OP69940A-BSD12	86-73-7	Fluorene	BSD	REC	67	%	40-140
OP69940A-BSD12	86-73-7	Fluorene	BSD	RPD	16	%	30
OP69940A-BSD12	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	REC	37	%	40-140
OP69940A-BSD12	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	RPD	74 [a]	%	30
OP69940A-BSD12	91-57-6	2-Methylnaphthalene	BSD	REC	60	%	40-140
OP69940A-BSD12	91-57-6	2-Methylnaphthalene	BSD	RPD	8	%	30
OP69940A-BSD12	91-20-3	Naphthalene	BSD	REC	63	%	40-140
OP69940A-BSD12	91-20-3	Naphthalene	BSD	RPD	11	%	30
OP69940A-BSD12	85-01-8	Phenanthrene	BSD	REC	79	%	40-140
OP69940A-BSD12	85-01-8	Phenanthrene	BSD	RPD	17	%	30
OP69940A-BSD12	129-00-0	Pyrene	BSD	REC	75	%	40-140
OP69940A-BSD12	129-00-0	Pyrene	BSD	RPD	17	%	30
OP69940A-BSD12	4165-60-0	Nitrobenzene-d5	BSD	SURR	80	%	30-130
OP69940A-BSD12	321-60-8	2-Fluorobiphenyl	BSD	SURR	67	%	30-130
OP69940A-BSD12	1718-51-0	Terphenyl-d14	BSD	SURR	89	%	30-130
OP69940A-MB1	4165-60-0	Nitrobenzene-d5	MB	SURR	96	%	30-130
OP69940A-MB1	321-60-8	2-Fluorobiphenyl	MB	SURR	78	%	30-130
OP69940A-MB1	1718-51-0	Terphenyl-d14	MB	SURR	92	%	30-130
JE25540-1	4165-60-0	Nitrobenzene-d5	SAMP	SURR	76	%	30-130
JE25540-1	321-60-8	2-Fluorobiphenyl	SAMP	SURR	68	%	30-130
JE25540-1	1718-51-0	Terphenyl-d14	SAMP	SURR	80	%	30-130

*** Sample used for QC is not from job JE25540**

QC Evaluation: MA MCP Limits

Job Number: JE25540
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 12/18/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
JE25540-2	4165-60-0	Nitrobenzene-d5	SAMP	SURR	67	%	30-130
JE25540-2	321-60-8	2-Fluorobiphenyl	SAMP	SURR	59	%	30-130
JE25540-2	1718-51-0	Terphenyl-d14	SAMP	SURR	72	%	30-130
JE25540-3	4165-60-0	Nitrobenzene-d5	SAMP	SURR	83	%	30-130
JE25540-3	321-60-8	2-Fluorobiphenyl	SAMP	SURR	69	%	30-130
JE25540-3	1718-51-0	Terphenyl-d14	SAMP	SURR	76	%	30-130

(a) Analytical precision exceeds in-house control limits.

*** Sample used for QC is not from job JE25540**

MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Internal Standard Area Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4D6474-MB	4D148114.D	1	12/30/25	BK	n/a	n/a	V4D6474

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE25540-1, JE25540-2, JE25540-3, JE25540-4

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	3.1	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.55	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	0.98	0.45	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	2.0	0.52	ug/l	
135-98-8	sec-Butylbenzene	ND	2.0	0.62	ug/l	
98-06-6	tert-Butylbenzene	ND	2.0	0.69	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.8	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
95-49-8	o-Chlorotoluene	ND	2.0	0.63	ug/l	
106-43-4	p-Chlorotoluene	ND	2.0	0.60	ug/l	
108-20-3	Di-Isopropyl ether	ND	2.0	0.68	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.53	ug/l	
124-48-1	Dibromochloromethane	ND	0.78	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.56	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.92	0.51	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.52	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.42	ug/l	

Method Blank Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4D6474-MB	4D148114.D	1	12/30/25	BK	n/a	n/a	V4D6474

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE25540-1, JE25540-2, JE25540-3, JE25540-4

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.43	ug/l	
123-91-1	1,4-Dioxane	ND	130	39	ug/l	
60-29-7	Ethyl Ether	ND	2.0	0.52	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	0.54	ug/l	
591-78-6	2-Hexanone	ND	5.0	4.8	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
99-87-6	p-Isopropyltoluene	ND	2.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	4.9	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.48	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	4.4	ug/l	
103-65-1	n-Propylbenzene	ND	2.0	0.60	ug/l	
100-42-5	Styrene	ND	1.0	0.49	ug/l	
994-05-8	tert-Amyl Methyl Ether	ND	2.0	0.85	ug/l	
637-92-3	tert-Butyl Ethyl Ether	ND	2.0	0.56	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.56	ug/l	
109-99-9	Tetrahydrofuran	ND	10	3.2	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	1.0	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	2.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.52	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

Method Blank Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4D6474-MB	4D148114.D	1	12/30/25	BK	n/a	n/a	V4D6474

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE25540-1, JE25540-2, JE25540-3, JE25540-4

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	102%	80-120%
17060-07-0	1,2-Dichloroethane-D4	97%	80-120%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	101%	82-114%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4D6474-BS	4D148111.D	1	12/30/25	BK	n/a	n/a	V4D6474
V4D6474-BSD	4D148112.D	1	12/30/25	BK	n/a	n/a	V4D6474

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE25540-1, JE25540-2, JE25540-3, JE25540-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	200	223	112	240	120	7	27-175/31
71-43-2	Benzene	50	51.5	103	52.9	106	3	80-115/11
108-86-1	Bromobenzene	50	49.8	100	51.4	103	3	79-119/11
74-97-5	Bromochloromethane	50	55.0	110	57.2	114	4	83-122/10
75-27-4	Bromodichloromethane	50	51.0	102	52.8	106	3	82-119/12
75-25-2	Bromoform	50	50.0	100	52.6	105	5	77-135/11
74-83-9	Bromomethane	50	65.5	131	65.2	130	0	40-162/23
78-93-3	2-Butanone (MEK)	200	214	107	233	117	9	61-150/16
104-51-8	n-Butylbenzene	50	54.6	109	55.6	111	2	77-124/12
135-98-8	sec-Butylbenzene	50	53.5	107	54.4	109	2	75-121/12
98-06-6	tert-Butylbenzene	50	51.1	102	52.3	105	2	74-120/11
75-15-0	Carbon disulfide	50	58.2	116	60.2	120	3	64-130/13
56-23-5	Carbon tetrachloride	50	57.4	115	59.2	118	3	75-127/11
108-90-7	Chlorobenzene	50	48.9	98	50.5	101	3	80-115/10
75-00-3	Chloroethane	50	62.5	125	63.9	128	2	56-144/14
67-66-3	Chloroform	50	50.2	100	51.6	103	3	75-116/10
74-87-3	Chloromethane	50	51.8	104	52.6	105	2	41-153/14
95-49-8	o-Chlorotoluene	50	49.6	99	50.7	101	2	79-119/11
106-43-4	p-Chlorotoluene	50	49.8	100	51.1	102	3	77-117/11
108-20-3	Di-Isopropyl ether	50	52.2	104	52.8	106	1	69-135/11
96-12-8	1,2-Dibromo-3-chloropropane	50	50.7	101	54.8	110	8	69-134/11
124-48-1	Dibromochloromethane	50	50.1	100	53.1	106	6	81-123/11
106-93-4	1,2-Dibromoethane	50	50.0	100	52.2	104	4	67-138/11
95-50-1	1,2-Dichlorobenzene	50	49.0	98	51.0	102	4	81-117/10
541-73-1	1,3-Dichlorobenzene	50	49.1	98	50.5	101	3	81-115/10
106-46-7	1,4-Dichlorobenzene	50	48.7	97	49.2	98	1	80-114/10
75-71-8	Dichlorodifluoromethane	50	50.8	102	52.2	104	3	43-152/16
75-34-3	1,1-Dichloroethane	50	54.5	109	57.0	114	4	75-125/11
107-06-2	1,2-Dichloroethane	50	48.1	96	50.5	101	5	73-117/10
75-35-4	1,1-Dichloroethene	50	58.9	118	60.4	121	3	70-124/12
156-59-2	cis-1,2-Dichloroethene	50	53.8	108	55.3	111	3	80-120/10
156-60-5	trans-1,2-Dichloroethene	50	55.8	112	57.6	115	3	77-121/12
78-87-5	1,2-Dichloropropane	50	51.8	104	54.2	108	5	79-121/10
142-28-9	1,3-Dichloropropane	50	47.5	95	49.6	99	4	81-117/11
594-20-7	2,2-Dichloropropane	50	56.7	113	57.6	115	2	70-131/12
563-58-6	1,1-Dichloropropene	50	56.1	112	56.4	113	1	77-122/10

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4D6474-BS	4D148111.D	1	12/30/25	BK	n/a	n/a	V4D6474
V4D6474-BSD	4D148112.D	1	12/30/25	BK	n/a	n/a	V4D6474

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE25540-1, JE25540-2, JE25540-3, JE25540-4

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	50	50.9	102	52.9	106	4	83-123/11
10061-02-6	trans-1,3-Dichloropropene	50	48.3	97	50.8	102	5	83-122/12
123-91-1	1,4-Dioxane	1250	1160	93	1220	98	5	64-150/20
60-29-7	Ethyl Ether	50	60.6	121	62.4	125	3	74-132/11
100-41-4	Ethylbenzene	50	49.6	99	51.4	103	4	78-116/10
87-68-3	Hexachlorobutadiene	50	52.7	105	52.1	104	1	55-136/14
591-78-6	2-Hexanone	200	193	97	207	104	7	66-136/14
98-82-8	Isopropylbenzene	50	49.6	99	51.8	104	4	78-121/11
99-87-6	p-Isopropyltoluene	50	52.8	106	53.1	106	1	78-121/12
1634-04-4	Methyl Tert Butyl Ether	50	56.7	113	58.9	118	4	76-123/12
108-10-1	4-Methyl-2-pentanone(MIBK)	200	202	101	211	106	4	73-134/13
74-95-3	Methylene bromide	50	49.1	98	50.8	102	3	82-117/10
75-09-2	Methylene chloride	50	53.7	107	55.3	111	3	73-123/11
91-20-3	Naphthalene	50	53.7	107	56.4	113	5	64-136/13
103-65-1	n-Propylbenzene	50	52.1	104	53.2	106	2	75-121/11
100-42-5	Styrene	50	48.8	98	52.2	104	7	81-125/10
994-05-8	tert-Amyl Methyl Ether	50	51.0	102	52.9	106	4	80-119/11
637-92-3	tert-Butyl Ethyl Ether	50	56.6	113	58.2	116	3	77-124/10
630-20-6	1,1,1,2-Tetrachloroethane	50	49.1	98	51.2	102	4	81-124/10
79-34-5	1,1,2,2-Tetrachloroethane	50	48.7	97	50.6	101	4	73-126/12
127-18-4	Tetrachloroethene	50	49.1	98	51.6	103	5	73-119/12
109-99-9	Tetrahydrofuran	50	47.1	94	51.2	102	8	63-133/11
108-88-3	Toluene	50	50.1	100	51.9	104	4	79-116/12
87-61-6	1,2,3-Trichlorobenzene	50	50.3	101	52.4	105	4	63-137/13
120-82-1	1,2,4-Trichlorobenzene	50	51.6	103	53.1	106	3	68-135/12
71-55-6	1,1,1-Trichloroethane	50	56.5	113	58.2	116	3	76-124/11
79-00-5	1,1,2-Trichloroethane	50	49.1	98	51.6	103	5	83-117/11
79-01-6	Trichloroethene	50	53.6	107	56.1	112	5	80-118/11
75-69-4	Trichlorofluoromethane	50	62.2	124	64.3	129	3	67-134/13
96-18-4	1,2,3-Trichloropropane	50	48.2	96	50.2	100	4	75-123/11
95-63-6	1,2,4-Trimethylbenzene	50	50.5	101	51.8	104	3	78-120/10
108-67-8	1,3,5-Trimethylbenzene	50	50.7	101	52.2	104	3	77-120/11
75-01-4	Vinyl chloride	50	57.0	114	57.9	116	2	52-146/15
	m,p-Xylene	100	97.8	98	102	102	4	79-119/10
95-47-6	o-Xylene	50	48.8	98	51.1	102	5	81-119/10
1330-20-7	Xylene (total)	150	147	98	154	103	5	80-119/10

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V4D6474-BS	4D148111.D	1	12/30/25	BK	n/a	n/a	V4D6474
V4D6474-BSD	4D148112.D	1	12/30/25	BK	n/a	n/a	V4D6474

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE25540-1, JE25540-2, JE25540-3, JE25540-4

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	106%	106%	80-120%
17060-07-0	1,2-Dichloroethane-D4	95%	97%	80-120%
2037-26-5	Toluene-D8	97%	98%	80-120%
460-00-4	4-Bromofluorobenzene	102%	101%	82-114%

*** = Outside of Control Limits.**

Internal Standard Area Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	V4D6474-CC6417	**Injection Date:**	12/30/25
Lab File ID:	4D148110.D	**Injection Time:**	09:03
Instrument ID:	GCMS4D	**Method:**	SW846 8260D

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	354264	8.72	477517	11.21	754163	12.12	709279	15.00	320480	17.12
Upper Limit [a]	708528	9.22	955034	11.71	1508326	12.62	1418558	15.50	640960	17.62
Lower Limit [b]	177132	8.22	238759	10.71	377082	11.62	354640	14.50	160240	16.62

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
V4D6474-BS	349087	8.72	476241	11.21	751611	12.12	703351	15.00	311820	17.12
V4D6474-BSD	378399	8.72	481515	11.21	760569	12.12	699573	15.00	315082	17.12
V4D6474-MB	364177	8.72	541572	11.21	830884	12.12	781118	15.00	351696	17.12
ZZZZZZ	374501	8.71	532923	11.21	809795	12.12	768805	15.00	346289	17.12
ZZZZZZ	349341	8.71	496122	11.21	777487	12.12	738018	15.00	337961	17.12
JE25753-13	370752	8.71	518714	11.21	819136	12.12	755217	15.00	337521	17.12
ZZZZZZ	379507	8.71	534047	11.21	817178	12.12	764931	15.00	342933	17.12
ZZZZZZ	376685	8.72	523385	11.21	802928	12.12	745012	15.00	334093	17.12
ZZZZZZ	415385	8.71	518701	11.21	803651	12.12	755795	15.00	349595	17.12
ZZZZZZ	372950	8.71	538425	11.21	812593	12.12	774851	15.00	342139	17.12
ZZZZZZ	376441	8.71	532278	11.21	819684	12.12	756017	15.00	326547	17.12
JE25753-13MS	374660	8.72	478655	11.21	766005	12.12	704864	15.00	313335	17.12
JE25753-13MSD	385143	8.72	483753	11.21	765774	12.12	705978	15.00	313904	17.12
ZZZZZZ	400605	8.71	534206	11.21	808494	12.12	762292	15.00	335421	17.12
JE25540-4	369232	8.71	526881	11.21	796740	12.12	767718	15.00	336330	17.12
ZZZZZZ	372797	8.71	516994	11.21	780759	12.12	752633	15.00	332969	17.12
ZZZZZZ	393090	8.71	515601	11.21	776234	12.12	748926	15.00	337972	17.12
ZZZZZZ	395386	8.71	510286	11.21	782612	12.12	741761	15.00	332795	17.12
ZZZZZZ	371597	8.71	513256	11.21	776051	12.12	749508	15.00	331792	17.12
ZZZZZZ	355914	8.71	507682	11.21	763429	12.12	730872	15.00	325733	17.12
JE25540-3	367981	8.71	510705	11.21	774623	12.12	735070	15.00	319841	17.12
JE25540-1	376675	8.71	499723	11.21	767423	12.12	729025	15.00	326412	17.12
JE25540-2	393114	8.71	513014	11.21	783721	12.12	748400	15.00	341992	17.12

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Surrogate Recovery Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8260D **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JE25540-1	4D148133.D	101	97	99	101
JE25540-2	4D148134.D	102	97	98	100
JE25540-3	4D148132.D	101	97	99	104
JE25540-4	4D148126.D	102	98	97	103
V4D6474-BS	4D148111.D	106	95	97	102
V4D6474-BSD	4D148112.D	106	97	98	101
V4D6474-MB	4D148114.D	102	97	99	101

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	80-120%
S2 = 1,2-Dichloroethane-D4	80-120%
S3 = Toluene-D8	80-120%
S4 = 4-Bromofluorobenzene	82-114%

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Internal Standard Area Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69940-MB1	5P107139.D	1	12/23/25	TL	12/22/25	OP69940	E5P5060

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	20	0.51	ug/l	
95-57-8	2-Chlorophenol	ND	4.0	0.37	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.0	0.53	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	0.52	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.0	0.67	ug/l	
51-28-5	2,4-Dinitrophenol	ND	4.0	1.9	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	4.0	1.5	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.47	ug/l	
	3&4-Methylphenol	ND	2.0	1.5	ug/l	
88-75-5	2-Nitrophenol	ND	4.0	0.40	ug/l	
100-02-7	4-Nitrophenol	ND	8.0	0.45	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.2	ug/l	
108-95-2	Phenol	ND	2.0	0.26	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.0	0.49	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	4.0	0.59	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.61	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.42	ug/l	
98-86-2	Acetophenone	ND	2.0	0.52	ug/l	
62-53-3	Aniline	ND	2.0	0.76	ug/l	
120-12-7	Anthracene	ND	1.0	0.56	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.51	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.63	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.57	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.64	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.48	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.55	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.86	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.43	ug/l	
106-47-8	4-Chloroaniline	ND	4.0	0.53	ug/l	
218-01-9	Chrysene	ND	1.0	0.52	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.46	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.43	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.50	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.60	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.38	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	1.0	0.49	ug/l	

Method Blank Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69940-MB1	5P107139.D	1	12/23/25	TL	12/22/25	OP69940	E5P5060

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Compound	Result	RL	MDL	Units	Q
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.43	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.42	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.56	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	1.1	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.50	ug/l	
132-64-9	Dibenzofuran	ND	4.0	0.73	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.53	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	1.6	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.58	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.55	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.3	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.58	ug/l	
86-73-7	Fluorene	ND	1.0	0.59	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.54	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.35	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	8.0	0.98	ug/l	
67-72-1	Hexachloroethane	ND	2.0	0.55	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.64	ug/l	
78-59-1	Isophorone	ND	2.0	0.39	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.64	ug/l	
91-20-3	Naphthalene	ND	1.0	0.44	ug/l	
98-95-3	Nitrobenzene	ND	2.0	0.42	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	2.0	0.32	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	2.0	0.65	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.0	0.42	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.48	ug/l	
129-00-0	Pyrene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.36	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	46%	10-69%
4165-62-2	Phenol-d5	30%	10-47%
118-79-6	2,4,6-Tribromophenol	76%	17-144%

Method Blank Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69940-MB1	5P107139.D	1	12/23/25	TL	12/22/25	OP69940	E5P5060

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	69%	17-126%
321-60-8	2-Fluorobiphenyl	70%	23-124%
1718-51-0	Terphenyl-d14	80%	13-135%

Method Blank Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69940A-MB1	CS10531.D	1	12/23/25	AC	12/22/25	OP69940A	ECS522

The QC reported here applies to the following samples: **Method: SW846 8270E BY SIM**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.080	0.040	ug/l	
208-96-8	Acenaphthylene	ND	0.080	0.040	ug/l	
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.080	0.040	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.080	0.040	ug/l	
206-44-0	Fluoranthene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.080	0.040	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	96%	29-124%
321-60-8	2-Fluorobiphenyl	78%	23-122%
1718-51-0	Terphenyl-d14	92%	22-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69940-BS1	5P107142.D	1	12/23/25	TL	12/22/25	OP69940	E5P5060
OP69940-BSD	5P107143.D	1	12/23/25	TL	12/22/25	OP69940	E5P5060

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	40	15.8	40	19.4	49	20	10-107/99
95-57-8	2-Chlorophenol	40	28.2	71	29.8	75	6	18-114/63
59-50-7	4-Chloro-3-methyl phenol	40	34.5	86	37.6	94	9	31-128/48
120-83-2	2,4-Dichlorophenol	40	30.7	77	33.5	84	9	21-130/59
105-67-9	2,4-Dimethylphenol	40	26.8	67	33.0	83	21	18-124/52
51-28-5	2,4-Dinitrophenol	80	74.5	93	81.9	102	9	13-154/69
534-52-1	4,6-Dinitro-o-cresol	40	42.5	106	41.7	104	2	28-140/58
95-48-7	2-Methylphenol	40	27.1	68	31.2	78	14	14-109/55
	3&4-Methylphenol	80	54.9	69	59.1	74	7	10-119/55
88-75-5	2-Nitrophenol	40	31.1	78	33.4	84	7	22-128/63
100-02-7	4-Nitrophenol	40	26.9	67	24.9	62	8	10-104/70
87-86-5	Pentachlorophenol	80	76.7	96	73.1	91	5	10-155/56
108-95-2	Phenol	40	18.2	46	18.7	47	3	10-68/60
95-95-4	2,4,5-Trichlorophenol	40	33.1	83	36.1	90	9	29-134/57
88-06-2	2,4,6-Trichlorophenol	40	31.8	80	35.1	88	10	28-134/61
83-32-9	Acenaphthene	40	30.0	75	33.9	85	12	33-120/45
208-96-8	Acenaphthylene	40	29.9	75	33.7	84	12	15-119/46
98-86-2	Acetophenone	40	27.9	70	31.4	79	12	25-124/50
62-53-3	Aniline	40	17.4	44	22.1	55	23	10-101/30
120-12-7	Anthracene	40	34.6	87	34.0	85	2	36-125/40
56-55-3	Benzo(a)anthracene	40	34.6	87	36.2	91	5	38-132/41
50-32-8	Benzo(a)pyrene	40	32.0	80	33.4	84	4	37-135/42
205-99-2	Benzo(b)fluoranthene	40	33.0	83	33.8	85	2	36-143/42
191-24-2	Benzo(g,h,i)perylene	40	28.2	71	30.9	77	9	32-140/47
207-08-9	Benzo(k)fluoranthene	40	32.9	82	33.2	83	1	34-135/40
101-55-3	4-Bromophenyl phenyl ether	40	35.1	88	35.2	88	0	31-131/43
85-68-7	Butyl benzyl phthalate	40	39.9	100	42.4	106	6	39-150/42
91-58-7	2-Chloronaphthalene	40	27.1	68	30.7	77	12	26-117/47
106-47-8	4-Chloroaniline	40	24.2	61	28.2	71	15	13-118/78
218-01-9	Chrysene	40	32.6	82	34.9	87	7	37-126/41
111-91-1	bis(2-Chloroethoxy)methane	40	31.9	80	33.4	84	5	27-120/48
111-44-4	bis(2-Chloroethyl)ether	40	27.6	69	30.6	77	10	22-116/56
108-60-1	2,2'-Oxybis(1-chloropropane)	40	29.6	74	34.1	85	14	12-131/54
7005-72-3	4-Chlorophenyl phenyl ether	40	31.7	79	34.0	85	7	33-125/44
95-50-1	1,2-Dichlorobenzene	40	22.7	57	24.2	61	6	16-107/62
122-66-7	1,2-Diphenylhydrazine	40	36.1	90	34.3	86	5	30-127/42

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69940-BS1	5P107142.D	1	12/23/25	TL	12/22/25	OP69940	E5P5060
OP69940-BSD	5P107143.D	1	12/23/25	TL	12/22/25	OP69940	E5P5060

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
541-73-1	1,3-Dichlorobenzene	40	21.8	55	22.8	57	4	15-105/65
106-46-7	1,4-Dichlorobenzene	40	21.6	54	22.9	57	6	16-104/65
121-14-2	2,4-Dinitrotoluene	40	37.0	93	38.5	96	4	43-135/42
606-20-2	2,6-Dinitrotoluene	40	35.8	90	38.0	95	6	40-135/45
91-94-1	3,3'-Dichlorobenzidine	40	24.9	62	28.7	72	14	17-127/60
53-70-3	Dibenzo(a,h)anthracene	40	30.2	76	32.1	80	6	34-143/45
132-64-9	Dibenzofuran	40	30.7	77	33.8	85	10	35-122/43
84-74-2	Di-n-butyl phthalate	40	39.6	99	38.3	96	3	36-142/46
117-84-0	Di-n-octyl phthalate	40	41.4	104	41.4	104	0	36-156/41
84-66-2	Diethyl phthalate	40	36.5	91	38.3	96	5	41-137/45
131-11-3	Dimethyl phthalate	40	33.1	83	36.5	91	10	39-130/44
117-81-7	bis(2-Ethylhexyl)phthalate	40	38.6	97	39.4	99	2	39-145/40
206-44-0	Fluoranthene	40	35.5	89	35.4	89	0	39-128/40
86-73-7	Fluorene	40	32.3	81	34.3	86	6	38-123/44
118-74-1	Hexachlorobenzene	40	34.9	87	34.1	85	2	32-129/42
87-68-3	Hexachlorobutadiene	40	22.2	56	23.5	59	6	13-121/57
77-47-4	Hexachlorocyclopentadiene	80	42.3	53	46.6	58	10	10-125/56
67-72-1	Hexachloroethane	40	20.4	51	22.0	55	8	10-109/67
193-39-5	Indeno(1,2,3-cd)pyrene	40	29.8	75	31.3	78	5	35-141/46
78-59-1	Isophorone	40	33.3	83	36.2	91	8	27-124/46
91-57-6	2-Methylnaphthalene	40	27.3	68	29.6	74	8	25-118/50
91-20-3	Naphthalene	40	25.7	64	26.5	66	3	24-113/52
98-95-3	Nitrobenzene	40	28.5	71	30.3	76	6	24-120/51
62-75-9	n-Nitrosodimethylamine	40	27.4	69	28.5	71	4	10-93/64
621-64-7	N-Nitroso-di-n-propylamine	40	35.5	89	38.1	95	7	26-125/49
86-30-6	N-Nitrosodiphenylamine	40	38.7	97	37.2	93	4	32-123/46
85-01-8	Phenanthrene	40	33.2	83	32.6	82	2	36-122/40
129-00-0	Pyrene	40	36.3	91	39.0	98	7	39-137/41
120-82-1	1,2,4-Trichlorobenzene	40	23.4	59	25.0	63	7	17-114/54

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	62%	57%	10-69%
4165-62-2	Phenol-d5	46%	46%	10-47%
118-79-6	2,4,6-Tribromophenol	98%	94%	17-144%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69940-BS1	5P107142.D	1	12/23/25	TL	12/22/25	OP69940	E5P5060
OP69940-BSD	5P107143.D	1	12/23/25	TL	12/22/25	OP69940	E5P5060

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
4165-60-0	Nitrobenzene-d5	79%	76%	17-126%
321-60-8	2-Fluorobiphenyl	80%	86%	23-124%
1718-51-0	Terphenyl-d14	96%	89%	13-135%

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69940A-BS12	CS10534.D	1	12/23/25	AC	12/22/25	OP69940A	ECS522
OP69940A-BSD12	CS10535.D	1	12/23/25	AC	12/22/25	OP69940A	ECS522

The QC reported here applies to the following samples: **Method: SW846 8270E BY SIM**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	0.8	0.585	73	0.510	64	14	31-135/38
208-96-8	Acenaphthylene	0.8	0.632	79	0.536	67	16	28-130/42
120-12-7	Anthracene	0.8	0.741	93	0.618	77	18	40-125/32
56-55-3	Benzo(a)anthracene	0.8	0.730	91	0.554	69	27	38-132/31
50-32-8	Benzo(a)pyrene	0.8	0.623	78	0.371	46	51* [a]	31-110/37
205-99-2	Benzo(b)fluoranthene	0.8	0.708	89	0.446	56	45* [a]	31-113/37
191-24-2	Benzo(g,h,i)perylene	0.8	0.600	75	0.261	33	79* [a]	18-110/54
207-08-9	Benzo(k)fluoranthene	0.8	0.767	96	0.471	59	48* [a]	31-119/43
218-01-9	Chrysene	0.8	0.736	92	0.554	69	28	43-119/33
53-70-3	Dibenzo(a,h)anthracene	0.8	0.680	85	0.338	42	67* [a]	20-112/50
206-44-0	Fluoranthene	0.8	0.712	89	0.592	74	18	48-118/27
86-73-7	Fluorene	0.8	0.630	79	0.534	67	16	42-123/34
193-39-5	Indeno(1,2,3-cd)pyrene	0.8	0.649	81	0.299	37	74* [a]	18-113/49
91-57-6	2-Methylnaphthalene	0.8	0.522	65	0.480	60	8	26-126/37
91-20-3	Naphthalene	0.8	0.563	70	0.502	63	11	30-114/40
85-01-8	Phenanthrene	0.8	0.752	94	0.632	79	17	45-125/31
129-00-0	Pyrene	0.8	0.717	90	0.602	75	17	48-125/29

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
4165-60-0	Nitrobenzene-d5	83%	80%	29-124%
321-60-8	2-Fluorobiphenyl	70%	67%	23-122%
1718-51-0	Terphenyl-d14	89%	89%	22-130%

(a) Analytical precision exceeds in-house control limits.

*** = Outside of Control Limits.**

Internal Standard Area Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	E5P5060-CC5038	**Injection Date:**	12/23/25
Lab File ID:	5P107136.D	**Injection Time:**	14:10
Instrument ID:	GCMS5P	**Method:**	SW846 8270E

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	63905	4.45	233823	5.17	126533	6.29	242629	7.47	203586	9.93	202674	11.30
Upper Limit [a]	127810	4.95	467646	5.67	253066	6.79	485258	7.97	407172	10.43	405348	11.80
Lower Limit [b]	31953	3.95	116912	4.67	63267	5.79	121315	6.97	101793	9.43	101337	10.80
Lab Sample ID	**IS 1 AREA**	**RT**	**IS 2 AREA**	**RT**	**IS 3 AREA**	**RT**	**IS 4 AREA**	**RT**	**IS 5 AREA**	**RT**	**IS 6 AREA**	**RT**
OP69940-MB1	79812	4.45	311554	5.17	172638	6.29	315514	7.47	263131	9.93	249557	11.30
ZZZZZZ	78566	4.45	308244	5.17	164976	6.29	310148	7.47	238285	9.93	233447	11.30
ZZZZZZ	72544	4.45	290769	5.17	157730	6.29	307497	7.47	254805	9.93	237936	11.30
OP69940-BS1	70837	4.45	258202	5.17	142054	6.29	261729	7.47	229508	9.93	222516	11.30
OP69940-BSD	66740	4.45	251980	5.17	136113	6.29	273241	7.47	222425	9.93	227560	11.30
ZZZZZZ	72825	4.45	293885	5.17	153238	6.29	277792	7.47	229075	9.93	224991	11.30
ZZZZZZ	75877	4.45	296628	5.17	165981	6.29	272280	7.47	241210	9.93	232685	11.30
ZZZZZZ	69501	4.45	281561	5.17	127864	6.29	279015	7.47	240177	9.93	225384	11.30
ZZZZZZ	64267	4.45	267759	5.17	141081	6.29	262898	7.47	226449	9.93	216693	11.30
ZZZZZZ	75559	4.45	303213	5.17	168662	6.29	320941	7.47	260854	9.93	233395	11.30
ZZZZZZ	76927	4.45	322276	5.17	173729	6.29	327881	7.47	253918	9.93	236024	11.30
ZZZZZZ	77632	4.45	280242	5.17	145257	6.29	299518	7.47	242505	9.93	226182	11.30
ZZZZZZ	73296	4.45	302087	5.17	164913	6.29	301528	7.47	226891	9.93	224759	11.30
ZZZZZZ	79802	4.45	311192	5.17	171781	6.29	319740	7.47	247710	9.93	225209	11.30
ZZZZZZ	79834	4.45	311074	5.17	158011	6.29	279850	7.47	223787	9.93	219126	11.30
ZZZZZZ	73309	4.45	306644	5.17	149377	6.29	286414	7.47	234207	9.93	215548	11.30
ZZZZZZ	65936	4.45	269166	5.17	166404	6.29	290889	7.47	237388	9.93	230892	11.30
ZZZZZZ	82169	4.45	322792	5.17	176700	6.29	304969	7.47	237707	9.93	228022	11.30
ZZZZZZ	88330	4.45	350984	5.17	193832	6.29	347491	7.47	253752	9.93	221463	11.30
JE25540-1	81649	4.45	331933	5.17	175008	6.29	298807	7.47	235396	9.93	226508	11.30
JE25540-2	82298	4.45	332562	5.17	182911	6.29	332824	7.47	247574	9.93	238536	11.30
JE25540-3	87247	4.45	302313	5.17	182204	6.29	321247	7.47	244675	9.93	228861	11.30
ZZZZZZ	79879	4.45	320079	5.17	171599	6.29	304169	7.47	228170	9.93	213141	11.30
ZZZZZZ	83775	4.45	332473	5.17	183796	6.29	332550	7.47	248184	9.93	232990	11.30
ZZZZZZ	80848	4.45	286341	5.17	141495	6.29	253672	7.47	207242	9.93	202910	11.30

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-d10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Internal Standard Area Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	ECS522-CC491	**Injection Date:**	12/23/25
Lab File ID:	CS10527.D	**Injection Time:**	17:51
Instrument ID:	GCMSCS	**Method:**	SW846 8270E BY SIM

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT
Check Std	51310	7.08	62145	8.15	86053	10.46	37332	14.46
Upper Limit [a]	102620	7.58	124290	8.65	172106	10.96	74664	14.96
Lower Limit [b]	25655	6.58	31073	7.65	43027	9.96	18666	13.96

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT
OP69990A-MB1	42006	7.08	50961	8.15	69778	10.46	35979	14.46
OP69940A-MB1	35065	7.08	42162	8.15	57288	10.46	29138	14.46
ZZZZZZ	43723	7.08	51770	8.15	70115	10.46	33658	14.46
ZZZZZZ	41145	7.08	50138	8.15	70361	10.46	34375	14.46
OP69940A-BS12	44500	7.08	52639	8.15	70666	10.46	33259	14.46
OP69940A-BSD12	39112	7.08	47203	8.15	64512	10.46	31772	14.46
OP69990A-BS12	45449	7.08	54455	8.15	72688	10.46	33526	14.46
OP69990A-BSD12	44763	7.08	53580	8.15	72602	10.46	33224	14.46
ZZZZZZ	48523	7.09	59166	8.15	75090	10.46	33526	14.46
ZZZZZZ	64251	7.08	67653	8.15	75707	10.46	34355	14.46
ZZZZZZ	49947	7.08	55579	8.15	69741	10.46	33580	14.46
ZZZZZZ	59825	7.08	57620	8.15	67430	10.46	33480	14.46
ZZZZZZ	62363	7.08	51875	8.15	70955	10.46	33029	14.47
ZZZZZZ	41082	7.08	48652	8.15	65515	10.46	33924	14.46
ZZZZZZ	44032	7.08	51680	8.15	69255	10.46	33728	14.46
ZZZZZZ	52763	7.08	54380	8.15	68394	10.46	32661	14.46
ZZZZZZ	56327	7.08	56664	8.15	70604	10.46	33835	14.46
ZZZZZZ	45617	7.09	60943	8.15	72194	10.46	35663	14.46
ZZZZZZ	45766	7.08	53163	8.15	68487	10.46	31492	14.46
ZZZZZZ	47248	7.08	54808	8.15	68656	10.46	30856	14.46
ZZZZZZ	41506	7.08	48315	8.15	65526	10.46	30325	14.46
ZZZZZZ	40651	7.08	47928	8.15	61221	10.46	28964	14.46
ZZZZZZ	44992	7.08	53342	8.15	69927	10.46	32350	14.46
ZZZZZZ	42369	7.08	49458	8.15	66007	10.46	32510	14.46
ZZZZZZ	49838	7.08	58400	8.15	73005	10.46	34291	14.46
ZZZZZZ	46160	7.08	53177	8.15	70085	10.46	34171	14.46

IS 1 = 1-Methylnaphthalene-d10
IS 2 = Fluorene-d10
IS 3 = Fluoranthene-d10
IS 4 = Benzo(a)pyrene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Internal Standard Area Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	ECS523-CC491	**Injection Date:**	12/24/25
Lab File ID:	CS10560.D	**Injection Time:**	07:54
Instrument ID:	GCMSCS	**Method:**	SW846 8270E BY SIM

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT
Check Std	44430	7.06	56581	8.12	85938	10.43	42709	14.43
Upper Limit [a]	88860	7.56	113162	8.62	171876	10.93	85418	14.93
Lower Limit [b]	22215	6.56	28291	7.62	42969	9.93	21355	13.93

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT
OP69939A-MB1	43526	7.06	54136	8.12	77870	10.43	39940	14.43
ZZZZZZ	42361	7.06	54120	8.12	78491	10.43	39647	14.43
OP69939A-BS12	40273	7.06	51414	8.12	75494	10.43	39447	14.43
OP69939A-BSD12	43758	7.06	55483	8.12	82321	10.43	42246	14.43
ZZZZZZ	44158	7.06	54719	8.12	77353	10.43	42209	14.43
ZZZZZZ	48989	7.06	61031	8.12	88746	10.43	47600	14.43
ZZZZZZ	48036	7.06	60032	8.12	86442	10.43	46249	14.43
ZZZZZZ	43741	7.06	54616	8.12	76116	10.42	40496	14.43
ZZZZZZ	49203	7.06	61562	8.12	90692	10.42	46948	14.42
ZZZZZZ	44669	7.06	54948	8.12	78361	10.42	41388	14.42
ZZZZZZ	44875	7.06	55380	8.12	77779	10.42	40022	14.42
ZZZZZZ	44255	7.06	55593	8.12	81249	10.42	43337	14.42
ZZZZZZ	41990	7.06	52418	8.12	74456	10.42	40375	14.43
ZZZZZZ	44666	7.06	55512	8.12	79110	10.42	40856	14.43
ZZZZZZ	41705	7.06	50778	8.12	71826	10.42	36430	14.42
ZZZZZZ	38599	7.06	48304	8.12	67544	10.42	36047	14.43
ZZZZZZ	44879	7.06	57297	8.12	77987	10.42	43540	14.42
ZZZZZZ	45085	7.06	57048	8.12	78313	10.42	43083	14.42
ZZZZZZ	46380	7.06	56930	8.12	79309	10.42	42867	14.42
ZZZZZZ	44292	7.06	55485	8.12	76549	10.42	40391	14.42
JE25540-1	49634	7.06	56052	8.12	75469	10.42	45826	14.43
JE25540-2	47373	7.06	57802	8.12	79942	10.42	47692	14.42
JE25540-3	46576	7.06	57658	8.12	78913	10.42	44511	14.43
ZZZZZZ	37636	7.06	49293	8.12	66612	10.42	35606	14.42

IS 1 = 1-Methylnaphthalene-d10
IS 2 = Fluorene-d10
IS 3 = Fluoranthene-d10
IS 4 = Benzo(a)pyrene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Surrogate Recovery Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8270E **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
JE25540-1	5P107158.D	46	32	91	71	77	79
JE25540-2	5P107159.D	43	30	72	58	62	73
JE25540-3	5P107160.D	48	33	84	79	75	80
OP69940-BS1	5P107142.D	62	46	98	79	80	96
OP69940-BSD	5P107143.D	57	46	94	76	86	89
OP69940-MB1	5P107139.D	46	30	76	69	70	80

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	10-69%
S2 = Phenol-d5	10-47%
S3 = 2,4,6-Tribromophenol	17-144%
S4 = Nitrobenzene-d5	17-126%
S5 = 2-Fluorobiphenyl	23-124%
S6 = Terphenyl-d14	13-135%

Surrogate Recovery Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8270E BY SIM **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
JE25540-1	CS10583.D	76	68	80
JE25540-2	CS10584.D	67	59	72
JE25540-3	CS10585.D	83	69	76
OP69940A-BS12	CS10534.D	83	70	89
OP69940A-BSD12	CS10535.D	80	67	89
OP69940A-MB1	CS10531.D	96	78	92

Surrogate Compounds	Recovery Limits
S1 = Nitrobenzene-d5	29-124%
S2 = 2-Fluorobiphenyl	23-122%
S3 = Terphenyl-d14	22-130%

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GBH1992-MB	BH55618.D	1	12/22/25	JN	n/a	n/a	GBH1992

The QC reported here applies to the following samples: **Method: MADEP VPH REV 2.1**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	100	50	ug/l	
	C9- C12 Aliphatics (Unadj.)	ND	100	50	ug/l	
	C5- C8 Aliphatics	ND	100	50	ug/l	
	C9- C12 Aliphatics	ND	100	50	ug/l	
	C9- C10 Aromatics	ND	100	50	ug/l	

CAS No.	Surrogate Recoveries		Limits
	2,3,4-Trifluorotoluene	99%	70-130%
	2,3,4-Trifluorotoluene	99%	70-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GBH1992-BS	BH55619.D	1	12/22/25	JN	n/a	n/a	GBH1992
GBH1992-BSD	BH55620.D	1	12/22/25	JN	n/a	n/a	GBH1992

The QC reported here applies to the following samples: **Method: MADEP VPH REV 2.1**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
	C5- C8 Aliphatics (Unadj.)	150	146	97	144	96	1	70-130/25
	C9- C12 Aliphatics (Unadj.)	100	76.9	77	74.9	75	3	70-130/25
	C9- C10 Aromatics	50	46.3	93	46.2	92	0	70-130/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
	2,3,4-Trifluorotoluene	101%	101%	70-130%
	2,3,4-Trifluorotoluene	101%	102%	70-130%

* = Outside of Control Limits.

Surrogate Recovery Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: MADEP VPH REV 2.1 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
JE25540-1	BH55645.D	100	108
JE25540-2	BH55646.D	97	99
JE25540-3	BH55647.D	93	93
GBH1992-BS	BH55619.D	101	101
GBH1992-BSD	BH55620.D	101	102
GBH1992-MB	BH55618.D	99	99

Surrogate Compounds	Recovery Limits
S1 = 2,3,4-Trifluorotoluene	70-130%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

GC/LC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP70007-MB1	4Y93661.D	1	12/31/25	CP	12/23/25	OP70007	G4Y3539

The QC reported here applies to the following samples: **Method: MADEP EPH REV 2.1**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	ND	100	13	ug/l	
	C11-C22 Aromatics	ND	100	13	ug/l	
	C9-C18 Aliphatics	ND	100	7.7	ug/l	
	C19-C36 Aliphatics	ND	100	12	ug/l	

CAS No.	Surrogate Recoveries		Limits
3386-33-2	1-Chlorooctadecane	61%	40-140%
84-15-1	o-Terphenyl	73%	40-140%
321-60-8	2-Fluorobiphenyl	101%	40-140%

Method Blank Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP70007-MB1	5Y83383.D	1	01/05/26	CB	12/23/25	OP70007	G5Y4106

The QC reported here applies to the following samples: **Method: MADEP EPH REV 2.1**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	ND	100	13	ug/l	
	C11-C22 Aromatics	ND	100	13	ug/l	
	C9-C18 Aliphatics	ND	100	7.7	ug/l	
	C19-C36 Aliphatics	ND	100	12	ug/l	

CAS No.	Surrogate Recoveries		Limits
3386-33-2	1-Chlorooctadecane	78%	40-140%
84-15-1	o-Terphenyl	91%	40-140%
321-60-8	2-Fluorobiphenyl	135%	40-140%

Method Blank Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69946-MB1	RM43422.D	1	12/22/25	CP	12/21/25	OP69946	GRM1054

The QC reported here applies to the following samples: **Method: SW846 8082A**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.18	0.050	ug/l	
11104-28-2	Aroclor 1221	ND	0.18	0.096	ug/l	
11141-16-5	Aroclor 1232	ND	0.18	0.071	ug/l	
53469-21-9	Aroclor 1242	ND	0.18	0.040	ug/l	
12672-29-6	Aroclor 1248	ND	0.18	0.036	ug/l	
11097-69-1	Aroclor 1254	ND	0.18	0.068	ug/l	
11096-82-5	Aroclor 1260	ND	0.18	0.11	ug/l	
11100-14-4	Aroclor 1268	ND	0.18	0.062	ug/l	
37324-23-5	Aroclor 1262	ND	0.18	0.040	ug/l	

CAS No.	Surrogate Recoveries		Limits
877-09-8	Tetrachloro-m-xylene	149%	50-150%
877-09-8	Tetrachloro-m-xylene	73%	50-150%
2051-24-3	Decachlorobiphenyl	54%	50-150%
2051-24-3	Decachlorobiphenyl	49%* [a]	50-150%

(a) Outside of in house control limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP70007-BS1	4Y93662.D	1	12/31/25	CP	12/23/25	OP70007	G4Y3539
OP70007-BSD	4Y93663.D	1	12/31/25	CP	12/23/25	OP70007	G4Y3539

The QC reported here applies to the following samples: **Method: MADEP EPH REV 2.1**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
	C11-C22 Aromatics (Unadj.)	850	525	62	463	54	13	50-150/30 [a]
	C9-C18 Aliphatics	300	166	55	167	56	1	40-140/30
	C19-C36 Aliphatics	550	513	93	494	90	4	40-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
3386-33-2	1-Chlorooctadecane	60%	61%	40-140%
84-15-1	o-Terphenyl	65%	57%	40-140%
321-60-8	2-Fluorobiphenyl	93%	73%	40-140%

Sample	Compound	Col #1	Col #2	Breakthrough	Limit
OP70007-BS1	2-Methylnaphthalene	21.2	ND	0.0%	5.0
OP70007-BS1	Naphthalene	22.9	ND	0.0%	5.0
OP70007-BSD	2-Methylnaphthalene	18.8	ND	0.0%	5.0
OP70007-BSD	Naphthalene	19.9	ND	0.0%	5.0

(a) Advisory control limits.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69946-BS1	RM43423.D	1	12/22/25	CP	12/21/25	OP69946	GRM1054
OP69946-BSD	RM43424.D	1	12/22/25	CP	12/21/25	OP69946	GRM1054

The QC reported here applies to the following samples: **Method: SW846 8082A**

JE25540-1, JE25540-2, JE25540-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
12674-11-2	Aroclor 1016	3.61	2.8	78	2.9	80	4	60-140/30
11104-28-2	Aroclor 1221		ND		ND		nc	60-140/30
11141-16-5	Aroclor 1232		ND		ND		nc	60-140/30
53469-21-9	Aroclor 1242		ND		ND		nc	60-140/30
12672-29-6	Aroclor 1248		ND		ND		nc	60-140/30
11097-69-1	Aroclor 1254		ND		ND		nc	60-140/30
11096-82-5	Aroclor 1260	3.61	3.0	83	3.1	86	3	60-140/30
11100-14-4	Aroclor 1268		ND		ND		nc	60-140/30
37324-23-5	Aroclor 1262		ND		ND		nc	60-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
877-09-8	Tetrachloro-m-xylene	132%	123%	50-150%
877-09-8	Tetrachloro-m-xylene	77%	75%	50-150%
2051-24-3	Decachlorobiphenyl	52%	55%	50-150%
2051-24-3	Decachlorobiphenyl	49%* [a]	50%	50-150%

(a) Outside of in house control limits.

*** = Outside of Control Limits.**

Surrogate Recovery Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: MADEP EPH REV 2.1 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S2 [b]	S3 [b]
JE25540-1	5Y83386.D	76	66	96
JE25540-1	4Y93664.D	59	47	66
JE25540-2	5Y83387.D	69	84	117
JE25540-2	4Y93665.D	55	66	89
JE25540-3	5Y83388.D	42	62	114
JE25540-3	4Y93666.D	33* [c]	39* [c]	66
OP70007-BS1	4Y93662.D	60	65	93
OP70007-BSD	4Y93663.D	61	57	73
OP70007-MB1	4Y93661.D	61	73	101
OP70007-MB1	5Y83383.D	78	91	135

Surrogate Compounds	Recovery Limits
S1 = 1-Chlorooctadecane	40-140%
S2 = o-Terphenyl	40-140%
S3 = 2-Fluorobiphenyl	40-140%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1
(c) Outside of in house control limits.

Surrogate Recovery Summary

Job Number: JE25540
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8082A **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]	S2 [a]	S2 [b]
JE25540-1	RM43460.D	121	69	45* [c]	44* [c]
JE25540-2	RM43461.D	121	64	45* [c]	40* [c]
JE25540-3	RM43462.D	133	69	39* [c]	35* [c]
OP69946-BS1	RM43423.D	132	77	52	49* [c]
OP69946-BSD	RM43424.D	123	75	55	50
OP69946-MB1	RM43422.D	149	73	54	49* [c]

Surrogate Compounds	Recovery Limits
S1 = Tetrachloro-m-xylene	50-150%
S2 = Decachlorobiphenyl	50-150%

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2
(c) Outside of in house control limits.

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Blank Spike and Lab Control Sample Summaries**
- **Serial Dilution Summaries**

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE25540
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59443
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 12/20/25

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	9.2	150		
Antimony	6.0	2.8	4.7	-2.2	<6.0
Arsenic	3.0	2.6	2.8	0.40	<3.0
Barium	200	.2	13		
Beryllium	1.0	.2	.5	0.20	<1.0
Bismuth	20	2.5	8.6		
Boron	100	1.8	10		
Cadmium	3.0	.4	1	0.20	<3.0
Calcium	5000	13	99		
Cerium	100				
Chromium	10	.7	2	0.10	<10
Cobalt	50	.6	2.6		
Copper	10	.7	5.9	1.6	<10
Iron	100	3.3	32		
Lead	3.0	2	1.8	0.50	<3.0
Lithium	50	1.5	7.3		
Magnesium	5000	25	140		
Manganese	15	.1	1.4		
Molybdenum	20	.6	3.6		
Nickel	10	.8	1.7	0.50	<10
Phosphorus	50	7	18		
Potassium	10000	35	200		
Selenium	10	3.6	4.9	0.80	<10
Silicon	200	2.2	32		
Silver	10	.6	6.1	0.70	<10
Sodium	10000	14	570		
Strontium	10	.1	2.7		
Sulfur	50	3.7	45		
Thallium	10	5.2	1.8	-0.30	<10
Tin	10	1.4	3.7		
Titanium	10	.8	2.5		
Tungsten	50	1.3	40		
Vanadium	50	.5	1.8		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE25540
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59443 Methods: SW846 6010D
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 12/20/25

Metal	RL	IDL	MDL	MB raw	final
Zinc	20	.3	6.9	0.0	<20
Zirconium	10	.5	4.1		

Associated samples MP59443: JE25540-1, JE25540-2, JE25540-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE25540
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59443
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date:			12/20/25				12/20/25	
Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Aluminum	anr							
Antimony	1790	2000	89.5	80-120	1840	2000	92.0	80-120
Arsenic	1840	2000	92.0	80-120	1880	2000	94.0	80-120
Barium	anr							
Beryllium	1860	2000	93.0	80-120	1870	2000	93.5	80-120
Bismuth								
Boron								
Cadmium	1990	2000	99.5	80-120	2040	2000	102.0	80-120
Calcium	anr							
Cerium								
Chromium	2000	2000	100.0	80-120	2050	2000	102.5	80-120
Cobalt	anr							
Copper	1860	2000	93.0	80-120	1890	2000	94.5	80-120
Iron	anr							
Lead	2020	2000	101.0	80-120	2060	2000	103.0	80-120
Lithium								
Magnesium	anr							
Manganese	anr							
Molybdenum								
Nickel	1960	2000	98.0	80-120	1990	2000	99.5	80-120
Phosphorus								
Potassium	anr							
Selenium	1850	2000	92.5	80-120	1890	2000	94.5	80-120
Silicon								
Silver	237	250	94.8	80-120	240	250	96.0	80-120
Sodium	anr							
Strontium								
Sulfur								
Thallium	1990	2000	99.5	80-120	2020	2000	101.0	80-120
Tin								
Titanium								
Tungsten								
Vanadium	anr							

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE25540
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59443
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 12/20/25 12/20/25

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits	BSP Result	Spikelot MPSPK2	% Rec	QC Limits
Zinc	2070	2000	103.5	80-120	2120	2000	106.0	80-120
Zirconium								

Associated samples MP59443: JE25540-1, JE25540-2, JE25540-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE25540
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59443
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 12/20/25

Metal	JE25540-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	0.00	0.00	NC	0-10
Arsenic	0.00	0.00	NC	0-10
Barium	anr			
Beryllium	1.00	1.00	0.0	0-10
Bismuth				
Boron				
Cadmium	0.600	0.00	100.0(a)	0-10
Calcium	anr			
Cerium				
Chromium	3.00	0.00	100.0(a)	0-10
Cobalt	anr			
Copper	0.00	6.50	NC	0-10
Iron	anr			
Lead	0.00	0.00	NC	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	3.70	7.00	89.2 (a)	0-10
Phosphorus				
Potassium	anr			
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.00	5.80	241.2(a)	0-10
Sodium	anr			
Strontium				
Sulfur				
Thallium	18.0	45.4	152.2(a)	0-10
Tin				
Titanium				
Tungsten				
Vanadium	anr			

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE25540
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59443 Methods: SW846 6010D
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 12/20/25

Metal	JE25540-1 Original	SDL 1:5	%DIF	QC Limits
Zinc	1.70	0.00	100.0(a)	0-10
Zirconium				

Associated samples MP59443: JE25540-1, JE25540-2, JE25540-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE25540
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59469 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 12/22/25

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.20	.04	.095	-0.072	<0.20

Associated samples MP59469: JE25540-1, JE25540-2, JE25540-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE25540
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP59469
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 12/22/25

Metal	BSP Result	Spikelot HGPW3	% Rec	QC Limits
Mercury	2.0	2	100.0	80-120

Associated samples MP59469: JE25540-1, JE25540-2, JE25540-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

General Chemistry

QC Data Summaries

Includes the following where applicable:

- **Method Blank and Blank Spike Summaries**
- **Duplicate Summaries**
- **Matrix Spike Summaries**

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: JE25540
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GN77470	0.010	0.0	mg/l	0.150	0.150	100.0	90-110%
Solids, Total Suspended	GN77629	4.0	0.0	mg/l	50	49.9	99.8	84-111%
Total Residual Chlorine	GN77571	0.050	0.0	mg/l				

Associated Samples:
Batch GN77470: JE25540-1, JE25540-2, JE25540-3
Batch GN77571: JE25540-1, JE25540-2, JE25540-3
Batch GN77629: JE25540-1, JE25540-2, JE25540-3
(*) Outside of QC limits

The results set forth herein are provided by SGS North America Inc.

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Automated Report

Technical Report for

WSP USA Environment & Infrastructure Inc

MWRA Water Tunnel

US004105.1397

SGS Job Number: JE21699

Sampling Date: 10/22/25



Report to:

WSP USA Inc.
100 Summer Street, 13th Floor
Boston, MA 02110
dan.martin@wsp.com

ATTN: Dan Martin

Total number of pages in report: 129

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Olga Azarian
Technical Director

Client Service contact: Victoria Pushkova 732-329-0200
Certifications: NJ(12129),NY(10983),CA,CO,CT,FL,HI,IL,IN,KY,LA (120428),MA,MD,ME,MN,NC,NH,NV, AK (UST-103),AZ (AZ0786),PA(68-00408),RI,SC,TX (T104704234),UT,VA,WA,WV

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Sample Summary

WSP USA Environment & Infrastructure Inc

Job No: JE21699

MWRA Water Tunnel
Project No: US004105.1397

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
JE21699-1	10/22/25	10:00	JV	10/22/25	SO	Soil	SB-FD-541_2.0-3.0
JE21699-2	10/22/25	10:50	JV	10/22/25	SO	Soil	SB-FD-542_2.0-3.0
JE21699-3	10/22/25	11:50	JV	10/22/25	SO	Soil	SB-FD-543_2.0-3.0
JE21699-4	10/22/25	11:50	JV	10/22/25	SO	Trip Blank Soil	TRIP BLANK

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	WSP USA Environment & Infrastructure Inc	**Job No:**	JE21699
Site:	MWRA Water Tunnel	**Report Date**	11/5/2025 3:11:51 PM

On 10/22/2025, 3 sample(s), 1 Trip Blank(s), 0 Equip. Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 2 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of JE21699 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: SO **Batch ID:** VY9398

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- The blank spike (BS) recovery(s) of trans-1,2-Dichloroethene, cis-1,2-Dichloroethene are outside control limits.
- JE21699-4 for Chloroethane: Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.
- JE21699-3 for Tetrahydrofuran: This compound is outside the MCP limits in the associated BS biased low.
- VY9398-BS for trans-1,2-Dichloroethene: High percent recovery and no associated positive reported in the QC batch.
- VY9398-BS for cis-1,2-Dichloroethene: Outside of in house control limits, but within reasonable method recovery limits.
- JE21699-4 for Methyl Tert Butyl Ether: Associated CCV outside of control limits high, sample was ND.
- JE21699-4 for Tetrahydrofuran: This compound is outside the MCP limits in the associated BS biased low.
- JE21699-1 for Chloroethane: Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.
- JE21699-1 for trans-1,2-Dichloroethene: This compound in blank spike is outside in house QC limits bias high.
- JE21699-1 for Tetrahydrofuran: This compound is outside the MCP limits in the associated BS biased low.
- JE21699-2 for Methyl Tert Butyl Ether: Associated CCV outside of control limits high, sample was ND.
- JE21699-2 for Chloroethane: Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.
- JE21699-2 for Tetrahydrofuran: This compound is outside the MCP limits in the associated BS biased low.
- JE21699-1 for Methyl Tert Butyl Ether: Associated CCV outside of control limits high, sample was ND.
- JE21699-3 for Chloroethane: Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.
- VY9398-BSD for Tetrahydrofuran: Outside in house control limits.
- JE21699-3 for Methyl Tert Butyl Ether: Associated CCV outside of control limits high, sample was ND.

MS Semi-volatiles By Method SW846 8270E

Matrix: SO **Batch ID:** OP68490

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- JE21699-1 for n-Nitrosodimethylamine: Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.
- JE21699-2 for n-Nitrosodimethylamine: Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.
- JE21699-3 for n-Nitrosodimethylamine: Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

GC Volatiles By Method MADEP VPH REV 2.1

Matrix: SO **Batch ID:** GBH1968

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

GC Volatiles By Method SW846 8015D

Matrix: SO **Batch ID:** GKM602

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

GC/LC Semi-volatiles By Method MADEP EPH REV 2.1

Matrix: SO **Batch ID:** OP68483

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JE21699-1, JE21699-2, JE21699-3 have surrogates outside control limits. Probable cause due to matrix interference.
- JE21699-3 for 2-Fluorobiphenyl: Outside of in house control limits.
- JE21699-3 for 1-Chlorooctadecane: Outside of in house control limits.
- JE21699-2 for 2-Fluorobiphenyl: Outside of in house control limits.
- JE21699-1 for 2-Fluorobiphenyl: Outside of in house control limits.
- OP68483-BSD for 2-Fluorobiphenyl: Outside of in house control limits.
- OP68483-BS1 for 2-Fluorobiphenyl: Outside of in house control limits.
- OP68483-MB1 for 2-Fluorobiphenyl: Outside of in house control limits.

GC/LC Semi-volatiles By Method SW846 8015D

Matrix: SO **Batch ID:** OP68517

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- The blank spike (BS) recovery(s) of TPH-DRO (C10-C28) are outside control limits.
- OP68517-BS1 for TPH-DRO (C10-C28): Outside control limits, but within reasonable method recovery limits.

GC/LC Semi-volatiles By Method SW846 8082A

Matrix: SO **Batch ID:** OP68479

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- OP68479-BS1 for Aroclor 1016: Reported from 1st signal, 2nd signal used for confirmation.

Metals Analysis By Method SW846 6010D

Matrix: SO **Batch ID:** MP58377

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JE21699-1PS, JE21699-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Antimony, Cadmium, Thallium are outside control limits for sample MP58377-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals Analysis By Method SW846 7471B

Matrix: SO **Batch ID:** MP58199

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method ASTM D1498-76M

Matrix: SO **Batch ID:** GN75170

- The data for ASTM D1498-76M meets quality control requirements.

General Chemistry By Method SM2540 G 18TH ED MOD

Matrix: SO **Batch ID:** GN75202

- The data for SM2540 G 18TH ED MOD meets quality control requirements.

Matrix: SO **Batch ID:** GN75203

- The data for SM2540 G 18TH ED MOD meets quality control requirements.

General Chemistry By Method SW846 1010B/ASTM D93

Matrix: SO **Batch ID:** GN75169

- The data for SW846 1010B/ASTM D93 meets quality control requirements.
- JE21699-2 for Ignitability (Flashpoint): Flashpoint testing started at 71 deg. F. Sample did not sustain flame when tested with a flame in open air.
- JE21699-3 for Ignitability (Flashpoint): Flashpoint testing started at 71 deg. F. Sample did not sustain flame when tested with a flame in open air.
- JE21699-1 for Ignitability (Flashpoint): Flashpoint testing started at 71 deg. F. Sample did not sustain flame when tested with a flame in open air.

General Chemistry By Method SW846 3060A/7196A

Matrix:	SO	Batch ID:	GP65041

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SW846 9045D

Matrix:	SO	Batch ID:	GN75171

- The data for SW846 9045D meets quality control requirements.
- JE21699-1 for pH: Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.4 Deg. C
- JE21699-2 for pH: Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.4 Deg. C
- JE21699-3 for pH: Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.5 Deg. C

General Chemistry By Method SW846 CHAP7/9012 B

Matrix:	SO	Batch ID:	GP65008

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SW846 CHAP7/9034

Matrix:	SO	Batch ID:	GP65007

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

Summary of Hits

Job Number: JE21699
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/22/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE21699-1	SB-FD-541_2.0-3.0					
Acenaphthene		202	37	13	ug/kg	SW846 8270E
Acenaphthylene		31.7 J	37	19	ug/kg	SW846 8270E
Anthracene		423	37	23	ug/kg	SW846 8270E
Benzo(a)anthracene		879	37	10	ug/kg	SW846 8270E
Benzo(a)pyrene		765	37	17	ug/kg	SW846 8270E
Benzo(b)fluoranthene		987	37	16	ug/kg	SW846 8270E
Benzo(g,h,i)perylene		545	37	19	ug/kg	SW846 8270E
Benzo(k)fluoranthene		337	37	17	ug/kg	SW846 8270E
Chrysene		818	37	12	ug/kg	SW846 8270E
Dibenzo(a,h)anthracene		136	37	16	ug/kg	SW846 8270E
Dibenzofuran		91.1	74	15	ug/kg	SW846 8270E
Di-n-butyl phthalate		441	74	6.0	ug/kg	SW846 8270E
bis(2-Ethylhexyl)phthalate		56.4 J	74	8.7	ug/kg	SW846 8270E
Fluoranthene		2070	37	17	ug/kg	SW846 8270E
Fluorene		185	37	17	ug/kg	SW846 8270E
Indeno(1,2,3-cd)pyrene		442	37	17	ug/kg	SW846 8270E
2-Methylnaphthalene		28.5 J	37	8.4	ug/kg	SW846 8270E
Naphthalene		41.6	37	10	ug/kg	SW846 8270E
Phenanthrene		1720	37	12	ug/kg	SW846 8270E
Pyrene		1730	37	12	ug/kg	SW846 8270E
C11-C22 Aromatics (Unadj.)		33900	6900	600	ug/kg	MADEP EPH REV 2.1
C11-C22 Aromatics		29500	6900	600	ug/kg	MADEP EPH REV 2.1
C19-C36 Aliphatics		24400	6900	470	ug/kg	MADEP EPH REV 2.1
TPH-DRO (C10-C28)		103	4.1	2.7	mg/kg	SW846 8015D
Aroclor 1260		260	22	7.6	ug/kg	SW846 8082A
Arsenic		6.6	2.2		mg/kg	SW846 6010D
Beryllium		0.29	0.22		mg/kg	SW846 6010D
Chromium		28.2	1.1		mg/kg	SW846 6010D
Copper		28.1	2.7		mg/kg	SW846 6010D
Lead		74.1	2.2		mg/kg	SW846 6010D
Mercury		0.037	0.035		mg/kg	SW846 7471B
Nickel		18.9	4.3		mg/kg	SW846 6010D
Zinc		56.4	5.4		mg/kg	SW846 6010D
Chromium, Hexavalent		7.7	0.44		mg/kg	SW846 3060A/7196A
Ignitability (Flashpoint) [a]		> 200			Deg. F	SW846 1010B/ASTM D93
Redox Potential Vs H2		296			mv	ASTM D1498-76M
pH [b]		7.57			su	SW846 9045D
JE21699-2	SB-FD-542_2.0-3.0					
Chromium		4.9	1.0		mg/kg	SW846 6010D
Copper		4.3	2.6		mg/kg	SW846 6010D
Nickel		4.4	4.2		mg/kg	SW846 6010D

Summary of Hits

Job Number: JE21699
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/22/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Zinc		10.3	5.2		mg/kg	SW846 6010D
Ignitability (Flashpoint) [a]		> 200			Deg. F	SW846 1010B/ASTM D93
Redox Potential Vs H2		290			mv	ASTM D1498-76M
pH [b]		7.72			su	SW846 9045D
JE21699-3	**SB-FD-543_2.0-3.0**					
Acetone		15.2	11	4.7	ug/kg	SW846 8260D
Arsenic		4.9	2.6		mg/kg	SW846 6010D
Beryllium		0.43	0.26		mg/kg	SW846 6010D
Chromium		15.3	1.3		mg/kg	SW846 6010D
Copper		24.1	3.2		mg/kg	SW846 6010D
Lead		13.5	2.6		mg/kg	SW846 6010D
Nickel		14.3	5.2		mg/kg	SW846 6010D
Zinc		43.0	6.5		mg/kg	SW846 6010D
Ignitability (Flashpoint) [a]		> 200			Deg. F	SW846 1010B/ASTM D93
Redox Potential Vs H2		305			mv	ASTM D1498-76M
Specific Conductivity @ 25 C		115	7.5		umhos/cm	SM2510 B-11/SW 9050A
pH [c]		7.91			su	SW846 9045D
JE21699-4	**TRIP BLANK**					
No hits reported in this sample.						

(a) Flashpoint testing started at 71 deg. F. Sample did not sustain flame when tested with a flame in open air.
(b) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.4 Deg. C
(c) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.5 Deg. C

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SB-FD-541_2.0-3.0		
Lab Sample ID:	JE21699-1	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8260D	**Percent Solids:**	89.3
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y218663.D	1	10/24/25 19:25	PS	n/a	n/a	VY9398
Run #2							

	Initial Weight
Run #1	5.3 g
Run #2	

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	11	4.4	ug/kg	
71-43-2	Benzene	ND	0.53	0.48	ug/kg	
108-86-1	Bromobenzene	ND	5.3	0.59	ug/kg	
74-97-5	Bromochloromethane	ND	5.3	0.59	ug/kg	
75-27-4	Bromodichloromethane	ND	2.1	0.45	ug/kg	
75-25-2	Bromoform	ND	5.3	1.4	ug/kg	
74-83-9	Bromomethane	ND	5.3	0.81	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	2.6	ug/kg	
104-51-8	n-Butylbenzene	ND	2.1	0.43	ug/kg	
135-98-8	sec-Butylbenzene	ND	2.1	0.45	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.1	0.53	ug/kg	
75-15-0	Carbon disulfide	ND	2.1	0.57	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.1	0.65	ug/kg	
108-90-7	Chlorobenzene	ND	2.1	0.48	ug/kg	
75-00-3	Chloroethane [a]	ND	5.3	0.62	ug/kg	
67-66-3	Chloroform	ND	2.1	1.1	ug/kg	
74-87-3	Chloromethane	ND	5.3	2.1	ug/kg	
95-49-8	o-Chlorotoluene	ND	2.1	0.57	ug/kg	
106-43-4	p-Chlorotoluene	ND	2.1	0.47	ug/kg	
108-20-3	Di-Isopropyl ether	ND	2.1	0.53	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.1	0.73	ug/kg	
124-48-1	Dibromochloromethane	ND	2.1	0.59	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.1	0.44	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.58	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.52	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.52	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.3	0.77	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.52	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.50	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.69	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	0.89	ug/kg	
156-60-5	trans-1,2-Dichloroethene [b]	ND	1.1	0.65	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_2.0-3.0		
Lab Sample ID:	JE21699-1	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8260D	**Percent Solids:**	89.3
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.1	0.50	ug/kg	
142-28-9	1,3-Dichloropropane	ND	2.1	0.55	ug/kg	
594-20-7	2,2-Dichloropropane	ND	2.1	0.45	ug/kg	
563-58-6	1,1-Dichloropropene	ND	2.1	0.49	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.1	0.50	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.1	0.48	ug/kg	
123-91-1	1,4-Dioxane	ND	130	39	ug/kg	
60-29-7	Ethyl Ether	ND	2.1	0.48	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.48	ug/kg	
87-68-3	Hexachlorobutadiene	ND	5.3	0.69	ug/kg	
591-78-6	2-Hexanone	ND	5.3	2.2	ug/kg	
98-82-8	Isopropylbenzene	ND	2.1	1.5	ug/kg	
99-87-6	p-Isopropyltoluene	ND	2.1	0.42	ug/kg	
1634-04-4	Methyl Tert Butyl Ether [c]	ND	1.1	0.50	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.3	2.4	ug/kg	
74-95-3	Methylene bromide	ND	5.3	0.56	ug/kg	
75-09-2	Methylene chloride	ND	5.3	2.8	ug/kg	
91-20-3	Naphthalene	ND	5.3	2.6	ug/kg	
103-65-1	n-Propylbenzene	ND	2.1	0.50	ug/kg	
100-42-5	Styrene	ND	2.1	0.42	ug/kg	
994-05-8	tert-Amyl Methyl Ether	ND	2.1	0.53	ug/kg	
637-92-3	tert-Butyl Ethyl Ether	ND	2.1	0.51	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	2.1	0.44	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.1	0.63	ug/kg	
127-18-4	Tetrachloroethene	ND	2.1	0.61	ug/kg	
109-99-9	Tetrahydrofuran [d]	ND	11	3.1	ug/kg	
108-88-3	Toluene	ND	1.1	0.55	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.3	2.6	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.3	2.6	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.1	0.51	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.1	0.59	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.80	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.3	0.72	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	5.3	0.59	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	2.1	0.53	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	2.1	0.46	ug/kg	
75-01-4	Vinyl chloride	ND	2.1	0.51	ug/kg	
	m,p-Xylene	ND	1.1	0.95	ug/kg	
95-47-6	o-Xylene	ND	1.1	0.48	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.48	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_2.0-3.0		
Lab Sample ID:	JE21699-1	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8260D	**Percent Solids:**	89.3
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	109%		80-124%
17060-07-0	1,2-Dichloroethane-D4	108%		75-133%
2037-26-5	Toluene-D8	103%		79-125%
460-00-4	4-Bromofluorobenzene	106%		58-148%

(a) Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.
(b) This compound in blank spike is outside in house QC limits bias high.
(c) Associated CCV outside of control limits high, sample was ND.
(d) This compound is outside the MCP limits in the associated BS biased low.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_2.0-3.0		
Lab Sample ID:	JE21699-1	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	89.3
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P168220.D	1	10/27/25 17:38	RS	10/24/25 15:30	OP68490	EP7827
Run #2							

	Initial Weight	Final Volume
Run #1	30.2 g	1.0 ml
Run #2		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	740	61	ug/kg	
95-57-8	2-Chlorophenol	ND	74	18	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	190	23	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	190	32	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	190	66	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	190	140	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	190	40	ug/kg	
95-48-7	2-Methylphenol	ND	74	24	ug/kg	
	3&4-Methylphenol	ND	74	30	ug/kg	
88-75-5	2-Nitrophenol	ND	190	25	ug/kg	
100-02-7	4-Nitrophenol	ND	370	99	ug/kg	
87-86-5	Pentachlorophenol	ND	150	35	ug/kg	
108-95-2	Phenol	ND	74	19	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	190	28	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	190	22	ug/kg	
83-32-9	Acenaphthene	202	37	13	ug/kg	
208-96-8	Acenaphthylene	31.7	37	19	ug/kg	J
98-86-2	Acetophenone	ND	190	8.0	ug/kg	
62-53-3	Aniline	ND	74	17	ug/kg	
120-12-7	Anthracene	423	37	23	ug/kg	
56-55-3	Benzo(a)anthracene	879	37	10	ug/kg	
50-32-8	Benzo(a)pyrene	765	37	17	ug/kg	
205-99-2	Benzo(b)fluoranthene	987	37	16	ug/kg	
191-24-2	Benzo(g,h,i)perylene	545	37	19	ug/kg	
207-08-9	Benzo(k)fluoranthene	337	37	17	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	74	14	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	74	9.0	ug/kg	
91-58-7	2-Chloronaphthalene	ND	74	8.8	ug/kg	
106-47-8	4-Chloroaniline	ND	190	13	ug/kg	
218-01-9	Chrysene	818	37	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	74	7.9	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	74	16	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_2.0-3.0		
Lab Sample ID:	JE21699-1	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	89.3
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	74	13	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	74	12	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	74	11	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	74	8.4	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	74	7.9	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	74	9.0	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	37	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	37	19	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	74	31	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	136	37	16	ug/kg	
132-64-9	Dibenzofuran	91.1	74	15	ug/kg	
84-74-2	Di-n-butyl phthalate	441	74	6.0	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	74	9.2	ug/kg	
84-66-2	Diethyl phthalate	ND	74	7.9	ug/kg	
131-11-3	Dimethyl phthalate	ND	74	6.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	56.4	74	8.7	ug/kg	J
206-44-0	Fluoranthene	2070	37	17	ug/kg	
86-73-7	Fluorene	185	37	17	ug/kg	
118-74-1	Hexachlorobenzene	ND	74	9.4	ug/kg	
87-68-3	Hexachlorobutadiene	ND	37	15	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	370	15	ug/kg	
67-72-1	Hexachloroethane	ND	190	18	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	442	37	17	ug/kg	
78-59-1	Isophorone	ND	74	7.9	ug/kg	
91-57-6	2-Methylnaphthalene	28.5	37	8.4	ug/kg	J
91-20-3	Naphthalene	41.6	37	10	ug/kg	
98-95-3	Nitrobenzene	ND	74	14	ug/kg	
62-75-9	n-Nitrosodimethylamine [a]	ND	74	13	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	74	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	190	14	ug/kg	
85-01-8	Phenanthrene	1720	37	12	ug/kg	
129-00-0	Pyrene	1730	37	12	ug/kg	
110-86-1	Pyridine	ND	74	13	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	74	9.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	34%		10-99%
4165-62-2	Phenol-d5	37%		10-96%
118-79-6	2,4,6-Tribromophenol	44%		10-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_2.0-3.0		
Lab Sample ID:	JE21699-1	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	89.3
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	37%		10-109%
321-60-8	2-Fluorobiphenyl	42%		11-109%
1718-51-0	Terphenyl-d14	41%		10-120%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_2.0-3.0		
Lab Sample ID:	JE21699-1	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	MADEP VPH REV 2.1	**Percent Solids:**	89.3
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BH55078.D	1	10/31/25 23:26	JN	n/a	n/a	GBH1968
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	9.1 g	10.0 ml	100 ul
Run #2			

MADEP VPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	6800	3400	ug/kg	
	C9- C12 Aliphatics (Unadj.)	ND	6800	3400	ug/kg	
	C5- C8 Aliphatics	ND	6800	3400	ug/kg	
	C9- C12 Aliphatics	ND	6800	3400	ug/kg	
	C9- C10 Aromatics	ND	6800	3400	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	2,3,4-Trifluorotoluene	100%		70-130%
	2,3,4-Trifluorotoluene	99%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_2.0-3.0		
Lab Sample ID:	JE21699-1	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8015D	**Percent Solids:**	89.3
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KM14338.D	1	10/27/25 19:03	JN	n/a	n/a	GKM602
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	9.1 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	14	6.8	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	84%		70-116%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_2.0-3.0		
Lab Sample ID:	JE21699-1	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	MADEP EPH REV 2.1 SW846 3546	**Percent Solids:**	89.3
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Y93321.D	1	10/29/25 11:39	CB	10/24/25 10:00	OP68483	G4Y3522
Run #2							

	Initial Weight	Final Volume
Run #1	16.3 g	2.0 ml
Run #2		

MAEPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	33900	6900	600	ug/kg	
	C9-C18 Aliphatics	ND	6900	190	ug/kg	
	C19-C36 Aliphatics	24400	6900	470	ug/kg	
	C11-C22 Aromatics	29500	6900	600	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3386-33-2	1-Chlorooctadecane	51%		40-140%
84-15-1	o-Terphenyl	78%		40-140%
321-60-8	2-Fluorobiphenyl	158% [a]		40-140%

(a) Outside of in house control limits.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_2.0-3.0		
Lab Sample ID:	JE21699-1	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8082A SW846 3570	**Percent Solids:**	89.3
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	RM40979.D	1	10/26/25 21:11	MLC	10/24/25 12:10	OP68479	GRM998
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	22	9.3	ug/kg	
11104-28-2	Aroclor 1221	ND	22	7.4	ug/kg	
11141-16-5	Aroclor 1232	ND	22	18	ug/kg	
53469-21-9	Aroclor 1242	ND	22	13	ug/kg	
12672-29-6	Aroclor 1248	ND	22	4.7	ug/kg	
11097-69-1	Aroclor 1254	ND	22	2.4	ug/kg	
11096-82-5	Aroclor 1260	260	22	7.6	ug/kg	
11100-14-4	Aroclor 1268	ND	22	2.2	ug/kg	
37324-23-5	Aroclor 1262	ND	22	1.8	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	80%		35-154%
877-09-8	Tetrachloro-m-xylene	96%		35-154%
2051-24-3	Decachlorobiphenyl	70%		24-176%
2051-24-3	Decachlorobiphenyl	74%		24-176%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_2.0-3.0		
Lab Sample ID:	JE21699-1	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8015D SW846 3570	**Percent Solids:**	89.3
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Y97377.D	1	10/28/25 13:04	CB	10/26/25 13:15	OP68517	G3Y3754
Run #2							

	Initial Weight	Final Volume
Run #1	5.4 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	103	4.1	2.7	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	108%		50-150%
438-22-2	5a-Androstane	114%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_2.0-3.0		
Lab Sample ID:	JE21699-1	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
		Percent Solids:	89.3
Project:	MWRA Water Tunnel		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	< 2.2	2.2	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Arsenic	6.6	2.2	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.29	0.22	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Cadmium	< 0.54	0.54	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Chromium	28.2	1.1	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Copper	28.1	2.7	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Lead	74.1	2.2	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Mercury	0.037	0.035	mg/kg	1	10/23/25	10/24/25	MK	SW846 7471B [1]	SW846 7471B [3]
Nickel	18.9	4.3	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Selenium	< 2.2	2.2	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Silver	< 0.54	0.54	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Thallium	< 1.1	1.1	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Zinc	56.4	5.4	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA59602
(2) Instrument QC Batch: MA59689
(3) Prep QC Batch: MP58199
(4) Prep QC Batch: MP58377

RL = Reporting Limit

Report of Analysis

Client Sample ID:	**SB-FD-541_2.0-3.0**		
Lab Sample ID:	**JE21699-1**	**Date Sampled:**	**10/22/25**
Matrix:	**SO - Soil**	**Date Received:**	**10/22/25**
		Percent Solids:	**89.3**
Project:	**MWRA Water Tunnel**		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	7.7	0.44	mg/kg	1	11/03/25 16:55	RI	SW846 3060A/7196A
Cyanide Reactivity	< 11	11	mg/kg	1	10/28/25 20:42	JD	SW846 CHAP7/9012 B
Ignitability (Flashpoint) [a]	> 200		Deg. F	1	10/23/25 14:00	KG	SW846 1010B/ASTM D93
Redox Potential Vs H2	296		mv	1	10/23/25 17:00	KG	ASTM D1498-76M
Solids, Percent	89.3		%	1	10/24/25 13:05	RB	SM2540 G 18TH ED MOD
Specific Conductivity @ 25 C	< 7.5	7.5	umhos/cm	1	10/23/25 10:52	GT	SM2510 B-11/SW 9050A
Sulfide Reactivity	< 110	110	mg/kg	1	10/27/25 09:19	GT	SW846 CHAP7/9034
pH [b]	7.57		su	1	10/23/25 17:04	KG	SW846 9045D

(a) Flashpoint testing started at 71 deg. F. Sample did not sustain flame when tested with a flame in open air.
(b) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.4 Deg. C

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SB-FD-542_2.0-3.0		
Lab Sample ID:	JE21699-2	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8260D	**Percent Solids:**	93.0
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y218664.D	1	10/24/25 19:47	PS	n/a	n/a	VY9398
Run #2							

	Initial Weight
Run #1	4.4 g
Run #2	

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	12	5.1	ug/kg	
71-43-2	Benzene	ND	0.61	0.56	ug/kg	
108-86-1	Bromobenzene	ND	6.1	0.68	ug/kg	
74-97-5	Bromochloromethane	ND	6.1	0.68	ug/kg	
75-27-4	Bromodichloromethane	ND	2.4	0.52	ug/kg	
75-25-2	Bromoform	ND	6.1	1.7	ug/kg	
74-83-9	Bromomethane	ND	6.1	0.93	ug/kg	
78-93-3	2-Butanone (MEK)	ND	12	3.0	ug/kg	
104-51-8	n-Butylbenzene	ND	2.4	0.50	ug/kg	
135-98-8	sec-Butylbenzene	ND	2.4	0.52	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.4	0.61	ug/kg	
75-15-0	Carbon disulfide	ND	2.4	0.65	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.4	0.76	ug/kg	
108-90-7	Chlorobenzene	ND	2.4	0.56	ug/kg	
75-00-3	Chloroethane [a]	ND	6.1	0.72	ug/kg	
67-66-3	Chloroform	ND	2.4	1.2	ug/kg	
74-87-3	Chloromethane	ND	6.1	2.4	ug/kg	
95-49-8	o-Chlorotoluene	ND	2.4	0.66	ug/kg	
106-43-4	p-Chlorotoluene	ND	2.4	0.54	ug/kg	
108-20-3	Di-Isopropyl ether	ND	2.4	0.62	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.4	0.85	ug/kg	
124-48-1	Dibromochloromethane	ND	2.4	0.68	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.51	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.67	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.61	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.60	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.1	0.89	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.60	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.57	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.2	0.80	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.2	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.75	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542_2.0-3.0		
Lab Sample ID:	JE21699-2	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8260D	**Percent Solids:**	93.0
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.4	0.58	ug/kg	
142-28-9	1,3-Dichloropropane	ND	2.4	0.64	ug/kg	
594-20-7	2,2-Dichloropropane	ND	2.4	0.52	ug/kg	
563-58-6	1,1-Dichloropropene	ND	2.4	0.57	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.4	0.58	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.4	0.56	ug/kg	
123-91-1	1,4-Dioxane	ND	150	45	ug/kg	
60-29-7	Ethyl Ether	ND	2.4	0.56	ug/kg	
100-41-4	Ethylbenzene	ND	1.2	0.55	ug/kg	
87-68-3	Hexachlorobutadiene	ND	6.1	0.80	ug/kg	
591-78-6	2-Hexanone	ND	6.1	2.6	ug/kg	
98-82-8	Isopropylbenzene	ND	2.4	1.7	ug/kg	
99-87-6	p-Isopropyltoluene	ND	2.4	0.48	ug/kg	
1634-04-4	Methyl Tert Butyl Ether [b]	ND	1.2	0.57	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	6.1	2.8	ug/kg	
74-95-3	Methylene bromide	ND	6.1	0.64	ug/kg	
75-09-2	Methylene chloride	ND	6.1	3.2	ug/kg	
91-20-3	Naphthalene	ND	6.1	3.1	ug/kg	
103-65-1	n-Propylbenzene	ND	2.4	0.57	ug/kg	
100-42-5	Styrene	ND	2.4	0.49	ug/kg	
994-05-8	tert-Amyl Methyl Ether	ND	2.4	0.61	ug/kg	
637-92-3	tert-Butyl Ethyl Ether	ND	2.4	0.60	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	2.4	0.51	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.4	0.73	ug/kg	
127-18-4	Tetrachloroethene	ND	2.4	0.71	ug/kg	
109-99-9	Tetrahydrofuran [c]	ND	12	3.6	ug/kg	
108-88-3	Toluene	ND	1.2	0.64	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.1	3.1	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.1	3.1	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.4	0.59	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.4	0.68	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.93	ug/kg	
75-69-4	Trichlorofluoromethane	ND	6.1	0.84	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	6.1	0.68	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	2.4	0.61	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	2.4	0.53	ug/kg	
75-01-4	Vinyl chloride	ND	2.4	0.59	ug/kg	
	m,p-Xylene	ND	1.2	1.1	ug/kg	
95-47-6	o-Xylene	ND	1.2	0.56	ug/kg	
1330-20-7	Xylene (total)	ND	1.2	0.56	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542_2.0-3.0		
Lab Sample ID:	JE21699-2	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8260D	**Percent Solids:**	93.0
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		80-124%
17060-07-0	1,2-Dichloroethane-D4	108%		75-133%
2037-26-5	Toluene-D8	101%		79-125%
460-00-4	4-Bromofluorobenzene	105%		58-148%

(a) Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.
(c) This compound is outside the MCP limits in the associated BS biased low.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542_2.0-3.0		
Lab Sample ID:	JE21699-2	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	93.0
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P168219.D	1	10/27/25 17:16	RS	10/24/25 15:30	OP68490	EP7827
Run #2							

	Initial Weight	Final Volume
Run #1	31.3 g	1.0 ml
Run #2		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	690	57	ug/kg	
95-57-8	2-Chlorophenol	ND	69	17	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	21	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	29	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	61	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	37	ug/kg	
95-48-7	2-Methylphenol	ND	69	22	ug/kg	
	3&4-Methylphenol	ND	69	28	ug/kg	
88-75-5	2-Nitrophenol	ND	170	23	ug/kg	
100-02-7	4-Nitrophenol	ND	340	92	ug/kg	
87-86-5	Pentachlorophenol	ND	140	32	ug/kg	
108-95-2	Phenol	ND	69	18	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	26	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	20	ug/kg	
83-32-9	Acenaphthene	ND	34	12	ug/kg	
208-96-8	Acenaphthylene	ND	34	17	ug/kg	
98-86-2	Acetophenone	ND	170	7.4	ug/kg	
62-53-3	Aniline	ND	69	15	ug/kg	
120-12-7	Anthracene	ND	34	21	ug/kg	
56-55-3	Benzo(a)anthracene	ND	34	9.7	ug/kg	
50-32-8	Benzo(a)pyrene	ND	34	16	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	34	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	34	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	34	16	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	69	13	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	69	8.4	ug/kg	
91-58-7	2-Chloronaphthalene	ND	69	8.2	ug/kg	
106-47-8	4-Chloroaniline	ND	170	12	ug/kg	
218-01-9	Chrysene	ND	34	11	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	69	7.4	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	69	15	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542_2.0-3.0		
Lab Sample ID:	JE21699-2	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	93.0
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	69	12	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	69	11	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	69	9.9	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	69	7.8	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	69	7.3	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	69	8.3	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	34	11	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	34	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	69	29	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	34	15	ug/kg	
132-64-9	Dibenzofuran	ND	69	14	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	69	5.6	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	69	8.6	ug/kg	
84-66-2	Diethyl phthalate	ND	69	7.3	ug/kg	
131-11-3	Dimethyl phthalate	ND	69	6.1	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	69	8.0	ug/kg	
206-44-0	Fluoranthene	ND	34	15	ug/kg	
86-73-7	Fluorene	ND	34	16	ug/kg	
118-74-1	Hexachlorobenzene	ND	69	8.7	ug/kg	
87-68-3	Hexachlorobutadiene	ND	34	14	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	340	14	ug/kg	
67-72-1	Hexachloroethane	ND	170	17	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	34	16	ug/kg	
78-59-1	Isophorone	ND	69	7.4	ug/kg	
91-57-6	2-Methylnaphthalene	ND	34	7.8	ug/kg	
91-20-3	Naphthalene	ND	34	9.7	ug/kg	
98-95-3	Nitrobenzene	ND	69	13	ug/kg	
62-75-9	n-Nitrosodimethylamine [a]	ND	69	12	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	69	9.9	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	13	ug/kg	
85-01-8	Phenanthrene	ND	34	12	ug/kg	
129-00-0	Pyrene	ND	34	11	ug/kg	
110-86-1	Pyridine	ND	69	12	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	69	9.0	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	41%		10-99%
4165-62-2	Phenol-d5	42%		10-96%
118-79-6	2,4,6-Tribromophenol	52%		10-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542_2.0-3.0		
Lab Sample ID:	JE21699-2	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	93.0
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	41%		10-109%
321-60-8	2-Fluorobiphenyl	47%		11-109%
1718-51-0	Terphenyl-d14	51%		10-120%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542_2.0-3.0		
Lab Sample ID:	JE21699-2	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	MADEP VPH REV 2.1	**Percent Solids:**	93.0
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BH55077.D	1	10/31/25 22:44	JN	n/a	n/a	GBH1968
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	9.1 g	10.0 ml	100 ul
Run #2			

MADEP VPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	6300	3100	ug/kg	
	C9- C12 Aliphatics (Unadj.)	ND	6300	3100	ug/kg	
	C5- C8 Aliphatics	ND	6300	3100	ug/kg	
	C9- C12 Aliphatics	ND	6300	3100	ug/kg	
	C9- C10 Aromatics	ND	6300	3100	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	2,3,4-Trifluorotoluene	100%		70-130%
	2,3,4-Trifluorotoluene	100%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542_2.0-3.0		
Lab Sample ID:	JE21699-2	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8015D	**Percent Solids:**	93.0
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KM14328.D	1	10/27/25 14:19	JN	n/a	n/a	GKM602
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	9.1 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	13	6.3	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	84%		70-116%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542_2.0-3.0		
Lab Sample ID:	JE21699-2	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	MADEP EPH REV 2.1 SW846 3546	**Percent Solids:**	93.0
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Y93322.D	1	10/29/25 12:12	CB	10/24/25 10:00	OP68483	G4Y3522
Run #2							

	Initial Weight	Final Volume
Run #1	16.6 g	2.0 ml
Run #2		

MAEPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	ND	6500	560	ug/kg	
	C9-C18 Aliphatics	ND	6500	180	ug/kg	
	C19-C36 Aliphatics	ND	6500	440	ug/kg	
	C11-C22 Aromatics	ND	6500	560	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3386-33-2	1-Chlorooctadecane	54%		40-140%
84-15-1	o-Terphenyl	55%		40-140%
321-60-8	2-Fluorobiphenyl	150% [a]		40-140%

(a) Outside of in house control limits.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542_2.0-3.0		
Lab Sample ID:	JE21699-2	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8082A SW846 3570	**Percent Solids:**	93.0
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	RM40980.D	1	10/26/25 21:26	MLC	10/24/25 12:10	OP68479	GRM998
Run #2							

	Initial Weight	Final Volume
Run #1	5.2 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	21	8.8	ug/kg	
11104-28-2	Aroclor 1221	ND	21	6.9	ug/kg	
11141-16-5	Aroclor 1232	ND	21	17	ug/kg	
53469-21-9	Aroclor 1242	ND	21	12	ug/kg	
12672-29-6	Aroclor 1248	ND	21	4.5	ug/kg	
11097-69-1	Aroclor 1254	ND	21	2.2	ug/kg	
11096-82-5	Aroclor 1260	ND	21	7.1	ug/kg	
11100-14-4	Aroclor 1268	ND	21	2.1	ug/kg	
37324-23-5	Aroclor 1262	ND	21	1.7	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	81%		35-154%
877-09-8	Tetrachloro-m-xylene	93%		35-154%
2051-24-3	Decachlorobiphenyl	74%		24-176%
2051-24-3	Decachlorobiphenyl	76%		24-176%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542_2.0-3.0		
Lab Sample ID:	JE21699-2	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8015D SW846 3570	**Percent Solids:**	93.0
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Y97384.D	1	10/28/25 15:25	CB	10/26/25 13:15	OP68517	G3Y3754
Run #2							

	Initial Weight	Final Volume
Run #1	5.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	4.1	2.7	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	110%		50-150%
438-22-2	5a-Androstane	113%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542_2.0-3.0		
Lab Sample ID:	JE21699-2	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
		Percent Solids:	93.0
Project:	MWRA Water Tunnel		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	< 2.1	2.1	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Arsenic	< 2.1	2.1	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Beryllium	< 0.21	0.21	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Cadmium	< 0.52	0.52	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Chromium	4.9	1.0	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Copper	4.3	2.6	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Lead	< 2.1	2.1	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Mercury	< 0.032	0.032	mg/kg	1	10/23/25	10/24/25	MK	SW846 7471B [1]	SW846 7471B [3]
Nickel	4.4	4.2	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Selenium	< 2.1	2.1	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Silver	< 0.52	0.52	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Thallium	< 1.0	1.0	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Zinc	10.3	5.2	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA59602
(2) Instrument QC Batch: MA59689
(3) Prep QC Batch: MP58199
(4) Prep QC Batch: MP58377

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SB-FD-542_2.0-3.0		
Lab Sample ID:	JE21699-2	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
		Percent Solids:	93.0
Project:	MWRA Water Tunnel		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.45	0.45	mg/kg	1	11/03/25 16:55	RI	SW846 3060A/7196A
Cyanide Reactivity	< 10	10	mg/kg	1	10/28/25 20:43	JD	SW846 CHAP7/9012 B
Ignitability (Flashpoint) [a]	> 200		Deg. F	1	10/23/25 14:00	KG	SW846 1010B/ASTM D93
Redox Potential Vs H2	290		mv	1	10/23/25 17:01	KG	ASTM D1498-76M
Solids, Percent	93		%	1	10/24/25 13:35	RB	SM2540 G 18TH ED MOD
Specific Conductivity @ 25 C	< 7.5	7.5	umhos/cm	1	10/23/25 10:52	GT	SM2510 B-11/SW 9050A
Sulfide Reactivity	< 100	100	mg/kg	1	10/27/25 09:19	GT	SW846 CHAP7/9034
pH [b]	7.72		su	1	10/23/25 17:05	KG	SW846 9045D

(a) Flashpoint testing started at 71 deg. F. Sample did not sustain flame when tested with a flame in open air.
(b) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.4 Deg. C

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SB-FD-543_2.0-3.0		
Lab Sample ID:	JE21699-3	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8260D	**Percent Solids:**	79.4
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y218665.D	1	10/24/25 20:09	PS	n/a	n/a	VY9398
Run #2							

	Initial Weight
Run #1	5.6 g
Run #2	

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	15.2	11	4.7	ug/kg	
71-43-2	Benzene	ND	0.56	0.51	ug/kg	
108-86-1	Bromobenzene	ND	5.6	0.62	ug/kg	
74-97-5	Bromochloromethane	ND	5.6	0.63	ug/kg	
75-27-4	Bromodichloromethane	ND	2.2	0.48	ug/kg	
75-25-2	Bromoform	ND	5.6	1.5	ug/kg	
74-83-9	Bromomethane	ND	5.6	0.86	ug/kg	
78-93-3	2-Butanone (MEK)	ND	11	2.7	ug/kg	
104-51-8	n-Butylbenzene	ND	2.2	0.46	ug/kg	
135-98-8	sec-Butylbenzene	ND	2.2	0.48	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.2	0.56	ug/kg	
75-15-0	Carbon disulfide	ND	2.2	0.60	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.2	0.69	ug/kg	
108-90-7	Chlorobenzene	ND	2.2	0.52	ug/kg	
75-00-3	Chloroethane [a]	ND	5.6	0.66	ug/kg	
67-66-3	Chloroform	ND	2.2	1.1	ug/kg	
74-87-3	Chloromethane	ND	5.6	2.2	ug/kg	
95-49-8	o-Chlorotoluene	ND	2.2	0.61	ug/kg	
106-43-4	p-Chlorotoluene	ND	2.2	0.50	ug/kg	
108-20-3	Di-Isopropyl ether	ND	2.2	0.57	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.2	0.78	ug/kg	
124-48-1	Dibromochloromethane	ND	2.2	0.63	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.1	0.47	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.1	0.61	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.1	0.56	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.1	0.56	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.6	0.82	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.1	0.56	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.1	0.53	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.1	0.74	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.1	0.94	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.1	0.69	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543_2.0-3.0		
Lab Sample ID:	JE21699-3	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8260D	**Percent Solids:**	79.4
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.2	0.53	ug/kg	
142-28-9	1,3-Dichloropropane	ND	2.2	0.59	ug/kg	
594-20-7	2,2-Dichloropropane	ND	2.2	0.48	ug/kg	
563-58-6	1,1-Dichloropropene	ND	2.2	0.52	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.2	0.53	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.2	0.51	ug/kg	
123-91-1	1,4-Dioxane	ND	140	41	ug/kg	
60-29-7	Ethyl Ether	ND	2.2	0.51	ug/kg	
100-41-4	Ethylbenzene	ND	1.1	0.51	ug/kg	
87-68-3	Hexachlorobutadiene	ND	5.6	0.74	ug/kg	
591-78-6	2-Hexanone	ND	5.6	2.4	ug/kg	
98-82-8	Isopropylbenzene	ND	2.2	1.6	ug/kg	
99-87-6	p-Isopropyltoluene	ND	2.2	0.44	ug/kg	
1634-04-4	Methyl Tert Butyl Ether [b]	ND	1.1	0.53	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.6	2.6	ug/kg	
74-95-3	Methylene bromide	ND	5.6	0.59	ug/kg	
75-09-2	Methylene chloride	ND	5.6	2.9	ug/kg	
91-20-3	Naphthalene	ND	5.6	2.8	ug/kg	
103-65-1	n-Propylbenzene	ND	2.2	0.53	ug/kg	
100-42-5	Styrene	ND	2.2	0.45	ug/kg	
994-05-8	tert-Amyl Methyl Ether	ND	2.2	0.56	ug/kg	
637-92-3	tert-Butyl Ethyl Ether	ND	2.2	0.55	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	2.2	0.47	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.2	0.67	ug/kg	
127-18-4	Tetrachloroethene	ND	2.2	0.65	ug/kg	
109-99-9	Tetrahydrofuran [c]	ND	11	3.3	ug/kg	
108-88-3	Toluene	ND	1.1	0.59	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.6	2.8	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.6	2.8	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.2	0.54	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.2	0.62	ug/kg	
79-01-6	Trichloroethene	ND	1.1	0.86	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.6	0.77	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	5.6	0.62	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	2.2	0.56	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	2.2	0.48	ug/kg	
75-01-4	Vinyl chloride	ND	2.2	0.54	ug/kg	
	m,p-Xylene	ND	1.1	1.0	ug/kg	
95-47-6	o-Xylene	ND	1.1	0.52	ug/kg	
1330-20-7	Xylene (total)	ND	1.1	0.52	ug/kg	

ND = Not detected **MDL =** Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543_2.0-3.0		
Lab Sample ID:	JE21699-3	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8260D	**Percent Solids:**	79.4
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	111%		80-124%
17060-07-0	1,2-Dichloroethane-D4	106%		75-133%
2037-26-5	Toluene-D8	102%		79-125%
460-00-4	4-Bromofluorobenzene	105%		58-148%

(a) Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.
(c) This compound is outside the MCP limits in the associated BS biased low.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543_2.0-3.0		
Lab Sample ID:	JE21699-3	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	79.4
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	P168211.D	1	10/27/25 14:20	RS	10/24/25 15:30	OP68490	EP7827
Run #2							

	Initial Weight	Final Volume
Run #1	32.0 g	1.0 ml
Run #2		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	790	65	ug/kg	
95-57-8	2-Chlorophenol	ND	79	19	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	200	24	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	200	34	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	200	70	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	200	150	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	200	42	ug/kg	
95-48-7	2-Methylphenol	ND	79	25	ug/kg	
	3&4-Methylphenol	ND	79	32	ug/kg	
88-75-5	2-Nitrophenol	ND	200	26	ug/kg	
100-02-7	4-Nitrophenol	ND	390	110	ug/kg	
87-86-5	Pentachlorophenol	ND	160	37	ug/kg	
108-95-2	Phenol	ND	79	21	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	200	29	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	200	23	ug/kg	
83-32-9	Acenaphthene	ND	39	14	ug/kg	
208-96-8	Acenaphthylene	ND	39	20	ug/kg	
98-86-2	Acetophenone	ND	200	8.5	ug/kg	
62-53-3	Aniline	ND	79	18	ug/kg	
120-12-7	Anthracene	ND	39	24	ug/kg	
56-55-3	Benzo(a)anthracene	ND	39	11	ug/kg	
50-32-8	Benzo(a)pyrene	ND	39	18	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	39	17	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	39	20	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	39	18	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	79	15	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	79	9.6	ug/kg	
91-58-7	2-Chloronaphthalene	ND	79	9.4	ug/kg	
106-47-8	4-Chloroaniline	ND	200	14	ug/kg	
218-01-9	Chrysene	ND	39	12	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	79	8.4	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	79	17	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543_2.0-3.0		
Lab Sample ID:	JE21699-3	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	79.4
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	79	14	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	79	13	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	79	11	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	79	8.9	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	79	8.4	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	79	9.6	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	39	12	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	39	20	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	79	33	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	39	17	ug/kg	
132-64-9	Dibenzofuran	ND	79	16	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	79	6.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	79	9.8	ug/kg	
84-66-2	Diethyl phthalate	ND	79	8.4	ug/kg	
131-11-3	Dimethyl phthalate	ND	79	7.0	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	79	9.2	ug/kg	
206-44-0	Fluoranthene	ND	39	18	ug/kg	
86-73-7	Fluorene	ND	39	18	ug/kg	
118-74-1	Hexachlorobenzene	ND	79	10	ug/kg	
87-68-3	Hexachlorobutadiene	ND	39	16	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	390	16	ug/kg	
67-72-1	Hexachloroethane	ND	200	19	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	39	18	ug/kg	
78-59-1	Isophorone	ND	79	8.4	ug/kg	
91-57-6	2-Methylnaphthalene	ND	39	8.9	ug/kg	
91-20-3	Naphthalene	ND	39	11	ug/kg	
98-95-3	Nitrobenzene	ND	79	15	ug/kg	
62-75-9	n-Nitrosodimethylamine [a]	ND	79	14	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	79	11	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	200	14	ug/kg	
85-01-8	Phenanthrene	ND	39	13	ug/kg	
129-00-0	Pyrene	ND	39	13	ug/kg	
110-86-1	Pyridine	ND	79	13	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	79	10	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	54%		10-99%
4165-62-2	Phenol-d5	60%		10-96%
118-79-6	2,4,6-Tribromophenol	58%		10-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543_2.0-3.0		
Lab Sample ID:	JE21699-3	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	79.4
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	59%		10-109%
321-60-8	2-Fluorobiphenyl	67%		11-109%
1718-51-0	Terphenyl-d14	77%		10-120%

(a) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543_2.0-3.0		
Lab Sample ID:	JE21699-3	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	MADEP VPH REV 2.1	**Percent Solids:**	79.4
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BH55076.D	1	10/31/25 22:02	JN	n/a	n/a	GBH1968
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	11.0 g	10.0 ml	100 ul
Run #2			

MADEP VPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	7000	3500	ug/kg	
	C9- C12 Aliphatics (Unadj.)	ND	7000	3500	ug/kg	
	C5- C8 Aliphatics	ND	7000	3500	ug/kg	
	C9- C12 Aliphatics	ND	7000	3500	ug/kg	
	C9- C10 Aromatics	ND	7000	3500	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	2,3,4-Trifluorotoluene	97%		70-130%
	2,3,4-Trifluorotoluene	98%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543_2.0-3.0		
Lab Sample ID:	JE21699-3	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8015D	**Percent Solids:**	79.4
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KM14339.D	1	10/27/25 19:28	JN	n/a	n/a	GKM602
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	11.0 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	14	7.0	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	82%		70-116%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543_2.0-3.0		
Lab Sample ID:	JE21699-3	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	MADEP EPH REV 2.1 SW846 3546	**Percent Solids:**	79.4
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Y93323.D	1	10/29/25 12:45	CB	10/24/25 10:00	OP68483	G4Y3522
Run #2							

	Initial Weight	Final Volume
Run #1	15.1 g	2.0 ml
Run #2		

MAEPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	ND	8300	720	ug/kg	
	C9-C18 Aliphatics	ND	8300	230	ug/kg	
	C19-C36 Aliphatics	ND	8300	570	ug/kg	
	C11-C22 Aromatics	ND	8300	720	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3386-33-2	1-Chlorooctadecane	33% [a]		40-140%
84-15-1	o-Terphenyl	61%		40-140%
321-60-8	2-Fluorobiphenyl	179% [a]		40-140%

(a) Outside of in house control limits.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543_2.0-3.0		
Lab Sample ID:	JE21699-3	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8082A SW846 3570	**Percent Solids:**	79.4
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	RM40981.D	1	10/26/25 21:41	MLC	10/24/25 12:10	OP68479	GRM998
Run #2							

	Initial Weight	Final Volume
Run #1	5.1 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	25	10	ug/kg	
11104-28-2	Aroclor 1221	ND	25	8.3	ug/kg	
11141-16-5	Aroclor 1232	ND	25	20	ug/kg	
53469-21-9	Aroclor 1242	ND	25	15	ug/kg	
12672-29-6	Aroclor 1248	ND	25	5.3	ug/kg	
11097-69-1	Aroclor 1254	ND	25	2.7	ug/kg	
11096-82-5	Aroclor 1260	ND	25	8.5	ug/kg	
11100-14-4	Aroclor 1268	ND	25	2.5	ug/kg	
37324-23-5	Aroclor 1262	ND	25	2.1	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	84%		35-154%
877-09-8	Tetrachloro-m-xylene	94%		35-154%
2051-24-3	Decachlorobiphenyl	71%		24-176%
2051-24-3	Decachlorobiphenyl	79%		24-176%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543_2.0-3.0		
Lab Sample ID:	JE21699-3	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
Method:	SW846 8015D SW846 3570	**Percent Solids:**	79.4
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Y97385.D	1	10/28/25 15:45	CB	10/26/25 13:15	OP68517	G3Y3754
Run #2							

	Initial Weight	Final Volume
Run #1	5.3 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	4.8	3.1	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	115%		50-150%
438-22-2	5a-Androstane	119%		50-150%

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-543_2.0-3.0		
Lab Sample ID:	JE21699-3	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
		Percent Solids:	79.4
Project:	MWRA Water Tunnel		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	< 2.6	2.6	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Arsenic	4.9	2.6	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.43	0.26	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Cadmium	< 0.65	0.65	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Chromium	15.3	1.3	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Copper	24.1	3.2	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Lead	13.5	2.6	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Mercury	< 0.040	0.040	mg/kg	1	10/23/25	10/24/25	MK	SW846 7471B [1]	SW846 7471B [3]
Nickel	14.3	5.2	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Selenium	< 2.6	2.6	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Silver	< 0.65	0.65	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Thallium	< 1.3	1.3	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Zinc	43.0	6.5	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA59602
(2) Instrument QC Batch: MA59689
(3) Prep QC Batch: MP58199
(4) Prep QC Batch: MP58377

RL = Reporting Limit

Report of Analysis

Client Sample ID:	SB-FD-543_2.0-3.0		
Lab Sample ID:	JE21699-3	**Date Sampled:**	10/22/25
Matrix:	SO - Soil	**Date Received:**	10/22/25
		Percent Solids:	79.4
Project:	MWRA Water Tunnel		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.50	0.50	mg/kg	1	11/03/25 16:55	RI	SW846 3060A/7196A
Cyanide Reactivity	< 13	13	mg/kg	1	10/28/25 20:44	JD	SW846 CHAP7/9012 B
Ignitability (Flashpoint) [a]	> 200		Deg. F	1	10/23/25 14:00	KG	SW846 1010B/ASTM D93
Redox Potential Vs H2	305		mv	1	10/23/25 17:05	KG	ASTM D1498-76M
Solids, Percent	79.4		%	1	10/24/25 13:35	RB	SM2540 G 18TH ED MOD
Specific Conductivity @ 25 C	115	7.5	umhos/cm	1	10/23/25 10:52	GT	SM2510 B-11/SW 9050A
Sulfide Reactivity	< 130	130	mg/kg	1	10/27/25 09:19	GT	SW846 CHAP7/9034
pH [b]	7.91		su	1	10/23/25 17:08	KG	SW846 9045D

(a) Flashpoint testing started at 71 deg. F. Sample did not sustain flame when tested with a flame in open air.
(b) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.5 Deg. C

RL = Reporting Limit

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JE21699-4	**Date Sampled:**	10/22/25
Matrix:	SO - Trip Blank Soil	**Date Received:**	10/22/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y218648.D	1	10/24/25 14:00	PS	n/a	n/a	VY9398
Run #2							

	Initial Weight
Run #1	5.0 g
Run #2	

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.1	ug/kg	
71-43-2	Benzene	ND	0.50	0.46	ug/kg	
108-86-1	Bromobenzene	ND	5.0	0.55	ug/kg	
74-97-5	Bromochloromethane	ND	5.0	0.56	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.43	ug/kg	
75-25-2	Bromoform	ND	5.0	1.4	ug/kg	
74-83-9	Bromomethane	ND	5.0	0.76	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	2.4	ug/kg	
104-51-8	n-Butylbenzene	ND	2.0	0.41	ug/kg	
135-98-8	sec-Butylbenzene	ND	2.0	0.43	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.0	0.50	ug/kg	
75-15-0	Carbon disulfide	ND	2.0	0.54	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.62	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.46	ug/kg	
75-00-3	Chloroethane [a]	ND	5.0	0.59	ug/kg	
67-66-3	Chloroform	ND	2.0	1.0	ug/kg	
74-87-3	Chloromethane	ND	5.0	2.0	ug/kg	
95-49-8	o-Chlorotoluene	ND	2.0	0.54	ug/kg	
106-43-4	p-Chlorotoluene	ND	2.0	0.44	ug/kg	
108-20-3	Di-Isopropyl ether	ND	2.0	0.50	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.56	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.42	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.55	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.49	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.0	0.73	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.47	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.66	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.84	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.61	ug/kg	

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N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JE21699-4	**Date Sampled:**	10/22/25
Matrix:	SO - Trip Blank Soil	**Date Received:**	10/22/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.0	0.47	ug/kg	
142-28-9	1,3-Dichloropropane	ND	2.0	0.52	ug/kg	
594-20-7	2,2-Dichloropropane	ND	2.0	0.43	ug/kg	
563-58-6	1,1-Dichloropropene	ND	2.0	0.47	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.48	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.46	ug/kg	
123-91-1	1,4-Dioxane	ND	130	37	ug/kg	
60-29-7	Ethyl Ether	ND	2.0	0.46	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.45	ug/kg	
87-68-3	Hexachlorobutadiene	ND	5.0	0.66	ug/kg	
591-78-6	2-Hexanone	ND	5.0	2.1	ug/kg	
98-82-8	Isopropylbenzene	ND	2.0	1.4	ug/kg	
99-87-6	p-Isopropyltoluene	ND	2.0	0.40	ug/kg	
1634-04-4	Methyl Tert Butyl Ether [b]	ND	1.0	0.47	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	2.3	ug/kg	
74-95-3	Methylene bromide	ND	5.0	0.53	ug/kg	
75-09-2	Methylene chloride	ND	5.0	2.6	ug/kg	
91-20-3	Naphthalene	ND	5.0	2.5	ug/kg	
103-65-1	n-Propylbenzene	ND	2.0	0.47	ug/kg	
100-42-5	Styrene	ND	2.0	0.40	ug/kg	
994-05-8	tert-Amyl Methyl Ether	ND	2.0	0.50	ug/kg	
637-92-3	tert-Butyl Ethyl Ether	ND	2.0	0.49	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	2.0	0.42	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.60	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.58	ug/kg	
109-99-9	Tetrahydrofuran [c]	ND	10	3.0	ug/kg	
108-88-3	Toluene	ND	1.0	0.53	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	2.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	2.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.48	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.55	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.76	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.0	0.68	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.56	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.50	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.43	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.48	ug/kg	
	m,p-Xylene	ND	1.0	0.90	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.46	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.46	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	TRIP BLANK		
Lab Sample ID:	JE21699-4	**Date Sampled:**	10/22/25
Matrix:	SO - Trip Blank Soil	**Date Received:**	10/22/25
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	108%		80-124%
17060-07-0	1,2-Dichloroethane-D4	110%		75-133%
2037-26-5	Toluene-D8	101%		79-125%
460-00-4	4-Bromofluorobenzene	104%		58-148%

(a) Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.
(b) Associated CCV outside of control limits high, sample was ND.
(c) This compound is outside the MCP limits in the associated BS biased low.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- **Certification Exceptions**
- **Chain of Custody**
- **MCP Form**
- **EPH Form**
- **VPH Form**
- **Sample Tracking Chronicle**
- **QC Evaluation: MA MCP Limits**

Parameter Certification Exceptions

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

The following parameters included in this report are exceptions to NELAC certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
Cyanide Reactivity		SW846 CHAP7/9012 B	SO	SGS is not certified for this parameter.[a]
Redox Potential Vs H2		ASTM D1498-76M	SO	SGS is not certified for this parameter.[b]
Specific Conductivity @ 25 C		SM2510 B-11/SW 9050A	SO	SGS is not certified for this parameter.[b]
Sulfide Reactivity		SW846 CHAP7/9034	SO	SGS is not certified for this parameter.[a]

(a) Reactivity analyzed following SW846 Chapter 7 is no longer recognized by regulatory agencies. Use of results should be verified through the program to which the data is being submitted.
(b) Lab cert for analyte not supported by NJDEP, OQA. Only methods/analytes required for reporting by the State of NJ can be certified in NJ. Use of this analyte for compliance must be verified through the appropriate regulatory office.

Certification exceptions shown are based on the New Jersey DEP certifications. Applicability in other states may vary. Please contact your laboratory representative if additional information is required for a specific regulatory program.

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200
www.sgs.com/ehsusa

SO WTB SLL SME

Page 1 of 1

FED-EX Tracking #:
Bottle Order Control #: 72516256
SGS Quote #:
SGS Job #: JE21699

Client / Reporting Information

Company Name: WSP USA
Street Address: 100 Summer St. 13th Floor
City: Boston State: MA Zip: 02110
Project Contact: DAN MARTIN E-mail: dan.martin@wsp.com
Phone #: 973-407-1394
Sampler(s) Name(s): J. Vicordo Phone #: 518-354-0529

Project Information

Project Name: MWRA Water Tunnel
Street: 116 Gould St.
City: Needham State: MA
Project #: US004105.1397
Client Purchase Order #: DT5371445001
Project Manager:
Attention:

Billing Information (if different from Report to)
Company Name:
Street Address:
City State Zip:

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED - Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB - Equipment Blank
RB - Rinse Blank
TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Source Chlorinated (Y/N)	Matrix	# of bottles	HCl	NaOH	HNO_3	H_2SO_4	NONE	DI Water	MEOH	ENCORE	pH Check (Lab Use Only)	LAB USE ONLY
1	SB-FD-541_2.0-3.0		10/22/25	1000	JDV	G	N	S	9						X	X		X X X X X X X X	
2	SB-FD-542_2.0-3.0			1050	JDV	G	N	S	9						X	X		X X X X X X X X	
3	SB-FD-543_2.0-3.0			1150	JDV	G	N	S	9						X	X		X X X X X X X X	
4	TRIP BLANK			-	JDV	G	N	-	3						X	X		X	
	END																		

Number of Bottles — Preservation Codes: VIALS, AB, 8270MCP; BOTTLE, BS, 8151SIM; UNPRES, PM2.5, NJCERC; SCAN, IGN; SREAC; CREAC; VIALS, 8015GRO; VIALS, 8260MCP

Initial Assessment
Label Verification

Turn Around Time (Business Days)

Approved By (SGS PM) / Date:

- [x] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via SGS Engage
*Approval needed for 1-3 BD TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [x] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

* XXCRA INCLUDES EH+PHTEMP ANALYSE WITHIN 24 HRS FOR MCP

Comments / Special Instructions

SGS Courier
SGS Service Center
Northborough, MA
10/24
http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:
1		10/22 14:05	
2		10/22/25 16:10	
3		10/24/25 09:00	
4			
5			

Custody Seal # ☐ Intact ☐ Not Intact ☐ Absent
Therm ID: On Ice: Cooler Temp. °C: 1.9
See Sample Receipt Summary

EHSA-QAC-0023-05 Rev.Date:8/5/22

1200

JE21699: Chain of Custody
Page 1 of 2

SGS Sample Receipt Summary

Job Number: JE21699 **Client:** WSP USA INC. **Project:** MWRA WATER TUNNEL

Date / Time Received: 10/22/2025 10:00:00 PM **Delivery Method:** SGS COURIER **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (1.9);

Cooler Temps (Corrected) °C: Cooler 1: (2.0);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR-50		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JE21699: Chain of Custody
Page 2 of 2

Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup	WSC-CAM	Exhibit VII A
	July 1, 2010	Revision No. 1
	Final	

Exhibit VII A-2: MassDEP Analytical Protocol Certification Form

MassDEP Analytical Protocol Certification Form

Laboratory Name:	SGS North America Inc. - Dayton	Project #:	JE21699
Project Location:	MWRA Water Tunnel	MADEP RTN	None

This form provides certifications for the following data set: list Laboratory Sample ID Numbers(s)

JE21699-1,JE21699-2,JE21699-3,JE21699-4

Matrices: Groundwater/Surface Water ( ) Soil/Sediment (X) Drinking Water ( ) Air ( ) Other ( )

CAM Protocol (check all that apply below):

8260 VOC (X) CAM IIA	7470/7471 Hg (X) CAM III B	MassDEP VPH (X) CAM IV A	8081 Pesticides ( ) CAM V B	7196 Hex Cr (X) CAM VI B	Mass DEP APH ( ) CAM IX A
8270 SVOC (X) CAM II B	7010 Metals ( ) CAM III C	MassDEP EPH (X) CAM IV B	8151 Herbicides ( ) CAM V C	8330 Explosives ( ) CAM VIII A	TO-15 VOC ( ) CAM IX B
6010 Metals (X) CAM III A	6020 Metals ( ) CAM III D	8082 PCB (X) CAM V A	9014 Total Cyanide/PAC ( ) CAM VI A	6860 Perchlorate ( ) CAM VIII B	

Affirmative Responses to Questions A Through F are required for "Presumptive Certainty status

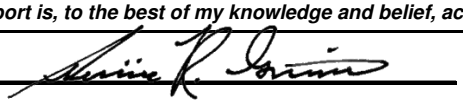
A	Were all samples received in a condition consistent with those described on the Chain-of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☑ Yes	☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes	☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes	☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑ Yes	☐ No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☑ Yes ☐ Yes	☐ No ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☑ Yes	☐ No

Responses to questions G, H, and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols	☑ Yes	☐ No [1]
	Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data useability and representativeness requirements described in 310 CMR 40.1056(2)(k) and WSC-07-350.		
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	☐ Yes	☑ No [1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☑ Yes	☐ No [1]

[1] ***All Negative responses must be addressed in an attached Environmental Laboratory case narrative.***

I the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature:  **Position:** **Technical Director**

Printed Name: Olga Azarian **Date:** **05-Nov-25**

MADEP EPH FORM

Matrix	**Aqueous** ☐	**Soil** ☑	**Sediment** ☐	**Other** ☐
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐	
Aqueous Preservatives	**N/A** ☑	**pH <= 2** ☐	**pH > 2** ☐	
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☑	**Other** ☐	
Extraction Method	**SW846 3546**			

Method for Ranges: MADEP EPH REV 2.1
Method for Targets: MADEP EPH REV 2.1
EPH Surrogate Stds. Aliphatic: 1-Chlorooctadecane
Aromatic: o-Terphenyl
EPH Fractionation Surrogate Standards. 2-Fluorobiphenyl

Client ID: SB-FD-541_2.0-3.0 **Lab ID:** JE21699-1
Date Collected: 10/22/2025 **Date Received:** 10/22/2025
Date Extracted: 10/24/2025 10:00:00 AM
First Date Run: 10/29/2025
Last Date Run: N/A
% Solids: 89.3
Low Dilution: 1
High Dilution: N/A

Unadjusted Ranges	CAS #	Units	Result		RDL	Q
C11-C22 Aromatics (Unadj.)		ug/kg	33900	A	6900	

Adjusted Ranges					
C9-C18 Aliphatics		ug/kg	ND	A	6900
C19-C36 Aliphatics		ug/kg	24400	A	6900
C11-C22 Aromatics		ug/kg	29500	C	6900
Surrogate Recoveries					**Acceptance Range**
1-Chlorooctadecane		%	51		40-140 %
o-Terphenyl		%	78		40-140 %
2-Fluorobiphenyl		%	158	E	40-140 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

C Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

E Outside of in house control limits.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the EPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the EPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtainig the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** General Managerr

Printed Name David Chastain **Date** 11/5/2025

MADEP EPH FORM

Matrix	**Aqueous** ☐	**Soil** ☑	**Sediment** ☐	**Other** ☐				
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐					
Aqueous Preservatives	**N/A** ☑	**pH <= 2** ☐	**pH > 2** ☐					
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☑	**Other** ☐	Rec'd at 2.0 Deg. C				
Extraction Method	**SW846 3546**							

Method for Ranges: MADEP EPH REV 2.1
Method for Targets: MADEP EPH REV 2.1
EPH Surrogate Stds. Aliphatic: 1-Chlorooctadecane
Aromatic: o-Terphenyl
EPH Fractionation Surrogate Standards. 2-Fluorobiphenyl

Client ID: SB-FD-542_2.0-3.0 **Lab ID:** JE21699-2
Date Collected: 10/22/2025 **Date Received:** 10/22/2025
Date Extracted: 10/24/2025 10:00:00 AM
First Date Run: 10/29/2025
Last Date Run: N/A
% Solids: 93
Low Dilution: 1
High Dilution: N/A

Unadjusted Ranges	CAS #	Units	Result		RDL	Q
C11-C22 Aromatics (Unadj.)		ug/kg	ND	A	6500	

Adjusted Ranges				
C9-C18 Aliphatics	ug/kg	ND	A	6500
C19-C36 Aliphatics	ug/kg	ND	A	6500
C11-C22 Aromatics	ug/kg	ND	C	6500

Surrogate Recoveries			Acceptance Range
1-Chlorooctadecane	%	54	40-140 %
o-Terphenyl	%	55	40-140 %
2-Fluorobiphenyl	%	150 E	40-140 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

C Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

E Outside of in house control limits.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the EPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the EPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtainig the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** General Managerr

Printed Name David Chastain **Date** 11/5/2025

MADEP EPH FORM

Matrix	**Aqueous** ☐	**Soil** ☑	**Sediment** ☐	**Other** ☐				
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐					
Aqueous Preservatives	**N/A** ☑	**pH <= 2** ☐	**pH > 2** ☐					
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☑	**Other** ☐	Rec'd at 2.0 Deg. C				
Extraction Method	**SW846 3546**							

Method for Ranges: MADEP EPH REV 2.1
Method for Targets: MADEP EPH REV 2.1
EPH Surrogate Stds. Aliphatic: 1-Chlorooctadecane
Aromatic: o-Terphenyl
EPH Fractionation Surrogate Standards. 2-Fluorobiphenyl

Client ID: SB-FD-543_2.0-3.0 **Lab ID:** JE21699-3
Date Collected: 10/22/2025 **Date Received:** 10/22/2025

Date Extracted:	First Date Run:	Last Date Run:
10/24/2025 10:00:00 AM	10/29/2025	N/A
% Solids:	**Low Dilution:**	**High Dilution:**
79.4	1	N/A

Unadjusted Ranges	CAS #	Units	Result		RDL	Q
C11-C22 Aromatics (Unadj.)		ug/kg	ND	A	8300	

Adjusted Ranges					
C9-C18 Aliphatics		ug/kg	ND	A	8300
C19-C36 Aliphatics		ug/kg	ND	A	8300
C11-C22 Aromatics		ug/kg	ND	C	8300
Surrogate Recoveries					**Acceptance Range**
1-Chlorooctadecane		%	33	E	40-140 %
o-Terphenyl		%	61		40-140 %
2-Fluorobiphenyl		%	179	E	40-140 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

C Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

E Outside of in house control limits.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the EPH Method followed?	☑ **Yes** ☐	**No- Details Attatched**
Were all performance/acceptance standards for required QA/QC procedures achieved?	☑ **Yes** ☐	**No- Details Attatched**
Were any significant modifications made to the EPH method, as specified in Sect. 11.3?	☑ **No** ☐	**Yes- Details Attatched**

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtainig the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** **General Managerr**

Printed Name **David Chastain** **Date** **11/5/2025**

MADEP VPH FORM

Matrix	Aqueous ☐	Soil ☑	Sediment ☐	Other ☐			
Containers	Satisfactory ☑	Broken ☐	Leaking ☐				
Aqueous Preservatives	N/A ☑	pH <= 2 ☐	pH > 2 ☐				
Temperature	Received on Ice ☐	Received at 4 Deg. C ☑	Other ☐				
Methanol	Methanol Covering Soil. (mL Methanol/g soil: 1:1 +/- 25%)						

Method for Ranges: MADEP VPH REV 2.1
Method for Target Analytes: MADEP VPH REV 2.1
VPH Surrogate Standards
PID:
FID:

Client ID: SB-FD-541_2.0-3.0 **Lab ID:** JE21699-1
Date Collected: 10/22/2025 **Date Received:** 10/22/2025

Date Extracted:	First Date Run:	Last Date Run:
N/A	10/31/2025	N/A
% Solids:	**Low Dilution:**	**High Dilution:**
89.3	1	N/A

Unadjusted Ranges	CAS #	Elution Range	Units	Result		RDL	Q
C5- C8 Aliphatics (Unadj.)		N/A	ug/kg	ND	A	6800	
C9- C12 Aliphatics (Unadj.)		N/A	ug/kg	ND	A	6800	
Adjusted Ranges							
C5- C8 Aliphatics		N/A	ug/kg	ND	B	6800	
C9- C12 Aliphatics		N/A	ug/kg	ND	D	6800	
C9- C10 Aromatics			ug/kg	ND		6800	

Surrogate Recoveries		Acceptance Range
FID:2,3,4-Trifluorotoluene	% 99	70-130 %
PID:2,3,4-Trifluorotoluene	% 100	70-130 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

B Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range.

D Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C9-C12 aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the VPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the VPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** General Managerr

Printed Name David Chastain **Date** 11/5/2025

MADEP VPH FORM

Matrix	**Aqueous** ☐	**Soil** ☑	**Sediment** ☐	**Other** ☐				
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐					
Aqueous Preservatives	**N/A** ☑	**pH <= 2** ☐	**pH > 2** ☐					
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☑	**Other** ☐	Rec'd at 2.0 Deg. C				
Methanol	**Methanol Covering Soil. (mL Methanol/g soil: 1:1 +/- 25%)**							

Method for Ranges: MADEP VPH REV 2.1
Method for Target Analytes: MADEP VPH REV 2.1
VPH Surrogate Standards
PID:
FID:

Client ID: SB-FD-542_2.0-3.0 **Lab ID:** JE21699-2
Date Collected: 10/22/2025 **Date Received:** 10/22/2025

Date Extracted:	First Date Run:	Last Date Run:
N/A	10/31/2025	N/A
% Solids:	**Low Dilution:**	**High Dilution:**
93	1	N/A

Unadjusted Ranges	CAS #	Elution Range	Units	Result		RDL	Q
C5- C8 Aliphatics (Unadj.)		N/A	ug/kg	ND	A	6300	
C9- C12 Aliphatics (Unadj.)		N/A	ug/kg	ND	A	6300	
Adjusted Ranges							
C5- C8 Aliphatics		N/A	ug/kg	ND	B	6300	
C9- C12 Aliphatics		N/A	ug/kg	ND	D	6300	
C9- C10 Aromatics			ug/kg	ND		6300	

Surrogate Recoveries			Acceptance Range
FID:2,3,4-Trifluorotoluene	%	100	70-130 %
PID:2,3,4-Trifluorotoluene	%	100	70-130 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

B Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range.

D Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C9-C12 aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the VPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the VPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** General Managerr

Printed Name David Chastain **Date** 11/5/2025

MADEP VPH FORM

Matrix	**Aqueous** ☐		**Soil** ☑		**Sediment** ☐		**Other** ☐	
Containers	**Satisfactory** ☑		**Broken** ☐		**Leaking** ☐			
Aqueous Preservatives	**N/A** ☑		**pH <= 2** ☐		**pH > 2** ☐			
Temperature	**Received on Ice** ☐		**Received at 4 Deg. C** ☑		**Other** ☐	Rec'd at 2.0 Deg. C		
Methanol	**Methanol Covering Soil. (mL Methanol/g soil: 1:1 +/- 25%)**							

Method for Ranges: MADEP VPH REV 2.1
Method for Target Analytes: MADEP VPH REV 2.1
VPH Surrogate Standards
PID:
FID:

Client ID: SB-FD-543_2.0-3.0 **Lab ID:** JE21699-3
Date Collected: 10/22/2025 **Date Received:** 10/22/2025

Date Extracted:	First Date Run:	Last Date Run:
N/A	10/31/2025	N/A
% Solids:	**Low Dilution:**	**High Dilution:**
79.4	1	N/A

Unadjusted Ranges	CAS #	Elution Range	Units	Result		RDL	Q
C5- C8 Aliphatics (Unadj.)		N/A	ug/kg	ND	A	7000	
C9- C12 Aliphatics (Unadj.)		N/A	ug/kg	ND	A	7000	
Adjusted Ranges							
C5- C8 Aliphatics		N/A	ug/kg	ND	B	7000	
C9- C12 Aliphatics		N/A	ug/kg	ND	D	7000	
C9- C10 Aromatics			ug/kg	ND		7000	

Surrogate Recoveries			Acceptance Range
FID:2,3,4-Trifluorotoluene	%	98	70-130 %
PID:2,3,4-Trifluorotoluene	%	97	70-130 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

B Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range.

D Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C9-C12 aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the VPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the VPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** General Managerr

Printed Name David Chastain **Date** 11/5/2025

Internal Sample Tracking Chronicle

WSP USA Environment & Infrastructure Inc

Job No: JE21699

MWRA Water Tunnel
Project No: US004105.1397

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JE21699-1	**Collected: 22-OCT-25 10:00 By: JV**		**Received: 22-OCT-25 By: AR**			
SB-FD-541_2.0-3.0						
JE21699-1	SM2510 B-11/SW 9050A	23-OCT-25 10:52	GT			SCON
JE21699-1	SW846 1010B/ASTM D93	23-OCT-25 14:00	KG			IGN
JE21699-1	ASTM D1498-76M	23-OCT-25 17:00	KG			EH
JE21699-1	SW846 9045D	23-OCT-25 17:04	KG			PHTEMP
JE21699-1	SW846 7471B	24-OCT-25 12:20	MK	23-OCT-25	MK	HG
JE21699-1	SM2540 G 18TH ED MOD	24-OCT-25 13:05	RB			SOL104
JE21699-1	SW846 8260D	24-OCT-25 19:25	PS			V8260MCP
JE21699-1	SW846 8082A	26-OCT-25 21:11	MLC	24-OCT-25	PG	P8082MCP
JE21699-1	SW846 CHAP7/9034	27-OCT-25 09:19	GT	24-OCT-25	KG	SREAC
JE21699-1	SW846 8270E	27-OCT-25 17:38	RS	24-OCT-25	NH	AB8270MCP
JE21699-1	SW846 8015D	27-OCT-25 19:03	JN			V8015GRO
JE21699-1	SW846 8015D	28-OCT-25 13:04	CB	26-OCT-25	IS	B8015DRO
JE21699-1	SW846 CHAP7/9012 B	28-OCT-25 20:42	JD	24-OCT-25	KG	CREAC
JE21699-1	MADEP EPH REV 2.1	29-OCT-25 11:39	CB	24-OCT-25	ZR	BMAEPHR
JE21699-1	MADEP VPH REV 2.1	31-OCT-25 23:26	JN			VMAVPHR
JE21699-1	SW846 3060A/7196A	03-NOV-25 16:55	RI	27-OCT-25	RI	XCRA
JE21699-1	SW846 6010D	04-NOV-25 18:14	MM	31-OCT-25	SK	AG,AS,BE,CD,CR,CU,NI,PB,SB,SE,TL,ZN
JE21699-2	**Collected: 22-OCT-25 10:50 By: JV**		**Received: 22-OCT-25 By: AR**			
SB-FD-542_2.0-3.0						
JE21699-2	SM2510 B-11/SW 9050A	23-OCT-25 10:52	GT			SCON
JE21699-2	SW846 1010B/ASTM D93	23-OCT-25 14:00	KG			IGN
JE21699-2	ASTM D1498-76M	23-OCT-25 17:01	KG			EH
JE21699-2	SW846 9045D	23-OCT-25 17:05	KG			PHTEMP
JE21699-2	SW846 7471B	24-OCT-25 12:28	MK	23-OCT-25	MK	HG
JE21699-2	SM2540 G 18TH ED MOD	24-OCT-25 13:35	RB			SOL104
JE21699-2	SW846 8260D	24-OCT-25 19:47	PS			V8260MCP
JE21699-2	SW846 8082A	26-OCT-25 21:26	MLC	24-OCT-25	PG	P8082MCP
JE21699-2	SW846 CHAP7/9034	27-OCT-25 09:19	GT	24-OCT-25	KG	SREAC
JE21699-2	SW846 8015D	27-OCT-25 14:19	JN			V8015GRO
JE21699-2	SW846 8270E	27-OCT-25 17:16	RS	24-OCT-25	NH	AB8270MCP
JE21699-2	SW846 8015D	28-OCT-25 15:25	CB	26-OCT-25	IS	B8015DRO
JE21699-2	SW846 CHAP7/9012 B	28-OCT-25 20:43	JD	24-OCT-25	KG	CREAC
JE21699-2	MADEP EPH REV 2.1	29-OCT-25 12:12	CB	24-OCT-25	ZR	BMAEPHR
JE21699-2	MADEP VPH REV 2.1	31-OCT-25 22:44	JN			VMAVPHR

Internal Sample Tracking Chronicle

WSP USA Environment & Infrastructure Inc

Job No: JE21699

MWRA Water Tunnel
Project No: US004105.1397

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JE21699-2	SW846 3060A/7196A	03-NOV-25 16:55	RI	27-OCT-25	RI	XCRA
JE21699-2	SW846 6010D	04-NOV-25 18:28	MM	31-OCT-25	SK	AG,AS,BE,CD,CR,CU,NI,PB,SB,SE,TL,ZN
JE21699-3	Collected: 22-OCT-25 11:50 By: JV			Received: 22-OCT-25 By: AR		
SB-FD-543_2.0-3.0						
JE21699-3	SM2510 B-11/SW 9050A	23-OCT-25 10:52	GT			SCON
JE21699-3	SW846 1010B/ASTM D93	23-OCT-25 14:00	KG			IGN
JE21699-3	ASTM D1498-76M	23-OCT-25 17:05	KG			EH
JE21699-3	SW846 9045D	23-OCT-25 17:08	KG			PHTEMP
JE21699-3	SW846 7471B	24-OCT-25 12:30	MK	23-OCT-25	MK	HG
JE21699-3	SM2540 G 18TH ED MOD	24-OCT-25 13:35	RB			SOL104
JE21699-3	SW846 8260D	24-OCT-25 20:09	PS			V8260MCP
JE21699-3	SW846 8082A	26-OCT-25 21:41	MLC	24-OCT-25	PG	P8082MCP
JE21699-3	SW846 CHAP7/9034	27-OCT-25 09:19	GT	24-OCT-25	KG	SREAC
JE21699-3	SW846 8270E	27-OCT-25 14:20	RS	24-OCT-25	NH	AB8270MCP
JE21699-3	SW846 8015D	27-OCT-25 19:28	JN			V8015GRO
JE21699-3	SW846 8015D	28-OCT-25 15:45	CB	26-OCT-25	IS	B8015DRO
JE21699-3	SW846 CHAP7/9012 B	28-OCT-25 20:44	JD	24-OCT-25	KG	CREAC
JE21699-3	MADEP EPH REV 2.1	29-OCT-25 12:45	CB	24-OCT-25	ZR	BMAEPHR
JE21699-3	MADEP VPH REV 2.1	31-OCT-25 22:02	JN			VMAVPHR
JE21699-3	SW846 3060A/7196A	03-NOV-25 16:55	RI	27-OCT-25	RI	XCRA
JE21699-3	SW846 6010D	04-NOV-25 18:43	MM	31-OCT-25	SK	AG,AS,BE,CD,CR,CU,NI,PB,SB,SE,TL,ZN
JE21699-4	Collected: 22-OCT-25 11:50 By: JV			Received: 22-OCT-25 By: AR		
TRIP BLANK						
JE21699-4	SW846 8260D	24-OCT-25 14:00	PS			V8260MCP

QC Evaluation: MA MCP Limits

Job Number: JE21699
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/22/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9398	**SW846 8260D**						
VY9398-BS	67-64-1	Acetone	BSP	REC	91	%	70-130
VY9398-BS	71-43-2	Benzene	BSP	REC	107	%	70-130
VY9398-BS	108-86-1	Bromobenzene	BSP	REC	98	%	70-130
VY9398-BS	74-97-5	Bromochloromethane	BSP	REC	117	%	70-130
VY9398-BS	75-27-4	Bromodichloromethane	BSP	REC	110	%	70-130
VY9398-BS	75-25-2	Bromoform	BSP	REC	98	%	70-130
VY9398-BS	74-83-9	Bromomethane	BSP	REC	112	%	70-130
VY9398-BS	78-93-3	2-Butanone (MEK)	BSP	REC	118	%	70-130
VY9398-BS	104-51-8	n-Butylbenzene	BSP	REC	110	%	70-130
VY9398-BS	135-98-8	sec-Butylbenzene	BSP	REC	104	%	70-130
VY9398-BS	98-06-6	tert-Butylbenzene	BSP	REC	102	%	70-130
VY9398-BS	75-15-0	Carbon disulfide	BSP	REC	113	%	70-130
VY9398-BS	56-23-5	Carbon tetrachloride	BSP	REC	119	%	70-130
VY9398-BS	108-90-7	Chlorobenzene	BSP	REC	106	%	70-130
VY9398-BS	75-00-3	Chloroethane	BSP	REC	83	%	70-130
VY9398-BS	67-66-3	Chloroform	BSP	REC	106	%	70-130
VY9398-BS	74-87-3	Chloromethane	BSP	REC	95	%	70-130
VY9398-BS	95-49-8	o-Chlorotoluene	BSP	REC	104	%	70-130
VY9398-BS	106-43-4	p-Chlorotoluene	BSP	REC	101	%	70-130
VY9398-BS	108-20-3	Di-Isopropyl ether	BSP	REC	94	%	70-130
VY9398-BS	96-12-8	1,2-Dibromo-3-chloropropane	BSP	REC	97	%	70-130
VY9398-BS	124-48-1	Dibromochloromethane	BSP	REC	106	%	70-130
VY9398-BS	106-93-4	1,2-Dibromoethane	BSP	REC	103	%	70-130
VY9398-BS	95-50-1	1,2-Dichlorobenzene	BSP	REC	103	%	70-130
VY9398-BS	541-73-1	1,3-Dichlorobenzene	BSP	REC	103	%	70-130
VY9398-BS	106-46-7	1,4-Dichlorobenzene	BSP	REC	102	%	70-130
VY9398-BS	75-71-8	Dichlorodifluoromethane	BSP	REC	119	%	70-130
VY9398-BS	75-34-3	1,1-Dichloroethane	BSP	REC	112	%	70-130
VY9398-BS	107-06-2	1,2-Dichloroethane	BSP	REC	111	%	70-130
VY9398-BS	75-35-4	1,1-Dichloroethene	BSP	REC	120	%	70-130
VY9398-BS	156-59-2	cis-1,2-Dichloroethene	BSP	REC	120 [a]	%	70-130
VY9398-BS	156-60-5	trans-1,2-Dichloroethene	BSP	REC	124 [b]	%	70-130
VY9398-BS	78-87-5	1,2-Dichloropropane	BSP	REC	102	%	70-130
VY9398-BS	142-28-9	1,3-Dichloropropane	BSP	REC	105	%	70-130
VY9398-BS	594-20-7	2,2-Dichloropropane	BSP	REC	110	%	70-130
VY9398-BS	563-58-6	1,1-Dichloropropene	BSP	REC	113	%	70-130
VY9398-BS	10061-01-5	cis-1,3-Dichloropropene	BSP	REC	103	%	70-130
VY9398-BS	10061-02-6	trans-1,3-Dichloropropene	BSP	REC	103	%	70-130
VY9398-BS	123-91-1	1,4-Dioxane	BSP	REC	114	%	70-130
VY9398-BS	60-29-7	Ethyl Ether	BSP	REC	123	%	70-130
VY9398-BS	100-41-4	Ethylbenzene	BSP	REC	107	%	70-130
VY9398-BS	87-68-3	Hexachlorobutadiene	BSP	REC	99	%	70-130

*** Sample used for QC is not from job JE21699**

QC Evaluation: MA MCP Limits

Job Number: JE21699
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/22/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9398-BS	591-78-6	2-Hexanone	BSP	REC	100	%	70-130
VY9398-BS	98-82-8	Isopropylbenzene	BSP	REC	102	%	70-130
VY9398-BS	99-87-6	p-Isopropyltoluene	BSP	REC	103	%	70-130
VY9398-BS	1634-04-4	Methyl Tert Butyl Ether	BSP	REC	125	%	70-130
VY9398-BS	108-10-1	4-Methyl-2-pentanone(MIBK)	BSP	REC	102	%	70-130
VY9398-BS	74-95-3	Methylene bromide	BSP	REC	115	%	70-130
VY9398-BS	75-09-2	Methylene chloride	BSP	REC	113	%	70-130
VY9398-BS	91-20-3	Naphthalene	BSP	REC	107	%	70-130
VY9398-BS	103-65-1	n-Propylbenzene	BSP	REC	107	%	70-130
VY9398-BS	100-42-5	Styrene	BSP	REC	105	%	70-130
VY9398-BS	994-05-8	tert-Amyl Methyl Ether	BSP	REC	100	%	70-130
VY9398-BS	637-92-3	tert-Butyl Ethyl Ether	BSP	REC	102	%	70-130
VY9398-BS	630-20-6	1,1,1,2-Tetrachloroethane	BSP	REC	99	%	70-130
VY9398-BS	79-34-5	1,1,2,2-Tetrachloroethane	BSP	REC	101	%	70-130
VY9398-BS	127-18-4	Tetrachloroethene	BSP	REC	99	%	70-130
VY9398-BS	109-99-9	Tetrahydrofuran	BSP	REC	108	%	70-130
VY9398-BS	108-88-3	Toluene	BSP	REC	108	%	70-130
VY9398-BS	87-61-6	1,2,3-Trichlorobenzene	BSP	REC	107	%	70-130
VY9398-BS	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	102	%	70-130
VY9398-BS	71-55-6	1,1,1-Trichloroethane	BSP	REC	122	%	70-130
VY9398-BS	79-00-5	1,1,2-Trichloroethane	BSP	REC	102	%	70-130
VY9398-BS	79-01-6	Trichloroethene	BSP	REC	113	%	70-130
VY9398-BS	75-69-4	Trichlorofluoromethane	BSP	REC	102	%	70-130
VY9398-BS	96-18-4	1,2,3-Trichloropropane	BSP	REC	97	%	70-130
VY9398-BS	95-63-6	1,2,4-Trimethylbenzene	BSP	REC	103	%	70-130
VY9398-BS	108-67-8	1,3,5-Trimethylbenzene	BSP	REC	102	%	70-130
VY9398-BS	75-01-4	Vinyl chloride	BSP	REC	103	%	70-130
VY9398-BS		m,p-Xylene	BSP	REC	105	%	70-130
VY9398-BS	95-47-6	o-Xylene	BSP	REC	106	%	70-130
VY9398-BS	1330-20-7	Xylene (total)	BSP	REC	105	%	70-130
VY9398-BS	1868-53-7	Dibromofluoromethane	BSP	SURR	114	%	70-130
VY9398-BS	2037-26-5	Toluene-D8	BSP	SURR	105	%	70-130
VY9398-BS	460-00-4	4-Bromofluorobenzene	BSP	SURR	100	%	70-130
VY9398-BSD	67-64-1	Acetone	BSD	REC	85	%	70-130
VY9398-BSD	67-64-1	Acetone	BSD	RPD	7	%	20
VY9398-BSD	71-43-2	Benzene	BSD	REC	103	%	70-130
VY9398-BSD	71-43-2	Benzene	BSD	RPD	5	%	20
VY9398-BSD	108-86-1	Bromobenzene	BSD	REC	94	%	70-130
VY9398-BSD	108-86-1	Bromobenzene	BSD	RPD	4	%	20
VY9398-BSD	74-97-5	Bromochloromethane	BSD	REC	110	%	70-130
VY9398-BSD	74-97-5	Bromochloromethane	BSD	RPD	6	%	20
VY9398-BSD	75-27-4	Bromodichloromethane	BSD	REC	103	%	70-130
VY9398-BSD	75-27-4	Bromodichloromethane	BSD	RPD	6	%	20
VY9398-BSD	75-25-2	Bromoform	BSD	REC	93	%	70-130
VY9398-BSD	75-25-2	Bromoform	BSD	RPD	5	%	20

*** Sample used for QC is not from job JE21699**

QC Evaluation: MA MCP Limits

Job Number: JE21699
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/22/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9398-BSD	74-83-9	Bromomethane	BSD	REC	105	%	70-130
VY9398-BSD	74-83-9	Bromomethane	BSD	RPD	7	%	20
VY9398-BSD	78-93-3	2-Butanone (MEK)	BSD	REC	109	%	70-130
VY9398-BSD	78-93-3	2-Butanone (MEK)	BSD	RPD	8	%	20
VY9398-BSD	104-51-8	n-Butylbenzene	BSD	REC	104	%	70-130
VY9398-BSD	104-51-8	n-Butylbenzene	BSD	RPD	6	%	20
VY9398-BSD	135-98-8	sec-Butylbenzene	BSD	REC	98	%	70-130
VY9398-BSD	135-98-8	sec-Butylbenzene	BSD	RPD	6	%	20
VY9398-BSD	98-06-6	tert-Butylbenzene	BSD	REC	97	%	70-130
VY9398-BSD	98-06-6	tert-Butylbenzene	BSD	RPD	5	%	20
VY9398-BSD	75-15-0	Carbon disulfide	BSD	REC	105	%	70-130
VY9398-BSD	75-15-0	Carbon disulfide	BSD	RPD	7	%	20
VY9398-BSD	56-23-5	Carbon tetrachloride	BSD	REC	110	%	70-130
VY9398-BSD	56-23-5	Carbon tetrachloride	BSD	RPD	8	%	20
VY9398-BSD	108-90-7	Chlorobenzene	BSD	REC	102	%	70-130
VY9398-BSD	108-90-7	Chlorobenzene	BSD	RPD	4	%	20
VY9398-BSD	75-00-3	Chloroethane	BSD	REC	76	%	70-130
VY9398-BSD	75-00-3	Chloroethane	BSD	RPD	8	%	20
VY9398-BSD	67-66-3	Chloroform	BSD	REC	99	%	70-130
VY9398-BSD	67-66-3	Chloroform	BSD	RPD	6	%	20
VY9398-BSD	74-87-3	Chloromethane	BSD	REC	91	%	70-130
VY9398-BSD	74-87-3	Chloromethane	BSD	RPD	4	%	20
VY9398-BSD	95-49-8	o-Chlorotoluene	BSD	REC	98	%	70-130
VY9398-BSD	95-49-8	o-Chlorotoluene	BSD	RPD	6	%	20
VY9398-BSD	106-43-4	p-Chlorotoluene	BSD	REC	97	%	70-130
VY9398-BSD	106-43-4	p-Chlorotoluene	BSD	RPD	5	%	20
VY9398-BSD	108-20-3	Di-Isopropyl ether	BSD	REC	88	%	70-130
VY9398-BSD	108-20-3	Di-Isopropyl ether	BSD	RPD	6	%	20
VY9398-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	REC	95	%	70-130
VY9398-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	RPD	2	%	20
VY9398-BSD	124-48-1	Dibromochloromethane	BSD	REC	102	%	70-130
VY9398-BSD	124-48-1	Dibromochloromethane	BSD	RPD	4	%	20
VY9398-BSD	106-93-4	1,2-Dibromoethane	BSD	REC	99	%	70-130
VY9398-BSD	106-93-4	1,2-Dibromoethane	BSD	RPD	4	%	20
VY9398-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	99	%	70-130
VY9398-BSD	95-50-1	1,2-Dichlorobenzene	BSD	RPD	4	%	20
VY9398-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	99	%	70-130
VY9398-BSD	541-73-1	1,3-Dichlorobenzene	BSD	RPD	4	%	20
VY9398-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	99	%	70-130
VY9398-BSD	106-46-7	1,4-Dichlorobenzene	BSD	RPD	4	%	20
VY9398-BSD	75-71-8	Dichlorodifluoromethane	BSD	REC	109	%	70-130
VY9398-BSD	75-71-8	Dichlorodifluoromethane	BSD	RPD	9	%	20
VY9398-BSD	75-34-3	1,1-Dichloroethane	BSD	REC	104	%	70-130
VY9398-BSD	75-34-3	1,1-Dichloroethane	BSD	RPD	7	%	20
VY9398-BSD	107-06-2	1,2-Dichloroethane	BSD	REC	107	%	70-130

*** Sample used for QC is not from job JE21699**

QC Evaluation: MA MCP Limits

Job Number: JE21699
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/22/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9398-BSD	107-06-2	1,2-Dichloroethane	BSD	RPD	3	%	20
VY9398-BSD	75-35-4	1,1-Dichloroethene	BSD	REC	111	%	70-130
VY9398-BSD	75-35-4	1,1-Dichloroethene	BSD	RPD	7	%	20
VY9398-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	REC	114	%	70-130
VY9398-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	RPD	6	%	20
VY9398-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	REC	116	%	70-130
VY9398-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	RPD	7	%	20
VY9398-BSD	78-87-5	1,2-Dichloropropane	BSD	REC	97	%	70-130
VY9398-BSD	78-87-5	1,2-Dichloropropane	BSD	RPD	5	%	20
VY9398-BSD	142-28-9	1,3-Dichloropropane	BSD	REC	100	%	70-130
VY9398-BSD	142-28-9	1,3-Dichloropropane	BSD	RPD	5	%	20
VY9398-BSD	594-20-7	2,2-Dichloropropane	BSD	REC	102	%	70-130
VY9398-BSD	594-20-7	2,2-Dichloropropane	BSD	RPD	7	%	20
VY9398-BSD	563-58-6	1,1-Dichloropropene	BSD	REC	105	%	70-130
VY9398-BSD	563-58-6	1,1-Dichloropropene	BSD	RPD	7	%	20
VY9398-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	REC	99	%	70-130
VY9398-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	RPD	4	%	20
VY9398-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	REC	97	%	70-130
VY9398-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	RPD	5	%	20
VY9398-BSD	123-91-1	1,4-Dioxane	BSD	REC	108	%	70-130
VY9398-BSD	123-91-1	1,4-Dioxane	BSD	RPD	5	%	20
VY9398-BSD	60-29-7	Ethyl Ether	BSD	REC	118	%	70-130
VY9398-BSD	60-29-7	Ethyl Ether	BSD	RPD	4	%	20
VY9398-BSD	100-41-4	Ethylbenzene	BSD	REC	101	%	70-130
VY9398-BSD	100-41-4	Ethylbenzene	BSD	RPD	6	%	20
VY9398-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	95	%	70-130
VY9398-BSD	87-68-3	Hexachlorobutadiene	BSD	RPD	4	%	20
VY9398-BSD	591-78-6	2-Hexanone	BSD	REC	95	%	70-130
VY9398-BSD	591-78-6	2-Hexanone	BSD	RPD	5	%	20
VY9398-BSD	98-82-8	Isopropylbenzene	BSD	REC	97	%	70-130
VY9398-BSD	98-82-8	Isopropylbenzene	BSD	RPD	5	%	20
VY9398-BSD	99-87-6	p-Isopropyltoluene	BSD	REC	100	%	70-130
VY9398-BSD	99-87-6	p-Isopropyltoluene	BSD	RPD	4	%	20
VY9398-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	REC	111	%	70-130
VY9398-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	RPD	12	%	20
VY9398-BSD	108-10-1	4-Methyl-2-pentanone(MIBK)	BSD	REC	96	%	70-130
VY9398-BSD	108-10-1	4-Methyl-2-pentanone(MIBK)	BSD	RPD	7	%	20
VY9398-BSD	74-95-3	Methylene bromide	BSD	REC	108	%	70-130
VY9398-BSD	74-95-3	Methylene bromide	BSD	RPD	7	%	20
VY9398-BSD	75-09-2	Methylene chloride	BSD	REC	106	%	70-130
VY9398-BSD	75-09-2	Methylene chloride	BSD	RPD	7	%	20
VY9398-BSD	91-20-3	Naphthalene	BSD	REC	102	%	70-130
VY9398-BSD	91-20-3	Naphthalene	BSD	RPD	4	%	20
VY9398-BSD	103-65-1	n-Propylbenzene	BSD	REC	100	%	70-130
VY9398-BSD	103-65-1	n-Propylbenzene	BSD	RPD	6	%	20

*** Sample used for QC is not from job JE21699**

QC Evaluation: MA MCP Limits

Job Number: JE21699
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/22/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9398-BSD	100-42-5	Styrene	BSD	REC	100	%	70-130
VY9398-BSD	100-42-5	Styrene	BSD	RPD	5	%	20
VY9398-BSD	994-05-8	tert-Amyl Methyl Ether	BSD	REC	97	%	70-130
VY9398-BSD	994-05-8	tert-Amyl Methyl Ether	BSD	RPD	3	%	20
VY9398-BSD	637-92-3	tert-Butyl Ethyl Ether	BSD	REC	97	%	70-130
VY9398-BSD	637-92-3	tert-Butyl Ethyl Ether	BSD	RPD	6	%	20
VY9398-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	REC	93	%	70-130
VY9398-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	RPD	6	%	20
VY9398-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	REC	96	%	70-130
VY9398-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	RPD	5	%	20
VY9398-BSD	127-18-4	Tetrachloroethene	BSD	REC	95	%	70-130
VY9398-BSD	127-18-4	Tetrachloroethene	BSD	RPD	4	%	20
VY9398-BSD	109-99-9	Tetrahydrofuran	BSD	REC	86	%	70-130
VY9398-BSD	109-99-9	Tetrahydrofuran	BSD	RPD	23 [c]	%	20
VY9398-BSD	108-88-3	Toluene	BSD	REC	103	%	70-130
VY9398-BSD	108-88-3	Toluene	BSD	RPD	5	%	20
VY9398-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	REC	103	%	70-130
VY9398-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	RPD	4	%	20
VY9398-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	99	%	70-130
VY9398-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	RPD	3	%	20
VY9398-BSD	71-55-6	1,1,1-Trichloroethane	BSD	REC	113	%	70-130
VY9398-BSD	71-55-6	1,1,1-Trichloroethane	BSD	RPD	8	%	20
VY9398-BSD	79-00-5	1,1,2-Trichloroethane	BSD	REC	97	%	70-130
VY9398-BSD	79-00-5	1,1,2-Trichloroethane	BSD	RPD	5	%	20
VY9398-BSD	79-01-6	Trichloroethene	BSD	REC	108	%	70-130
VY9398-BSD	79-01-6	Trichloroethene	BSD	RPD	4	%	20
VY9398-BSD	75-69-4	Trichlorofluoromethane	BSD	REC	100	%	70-130
VY9398-BSD	75-69-4	Trichlorofluoromethane	BSD	RPD	2	%	20
VY9398-BSD	96-18-4	1,2,3-Trichloropropane	BSD	REC	93	%	70-130
VY9398-BSD	96-18-4	1,2,3-Trichloropropane	BSD	RPD	3	%	20
VY9398-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	REC	98	%	70-130
VY9398-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	RPD	5	%	20
VY9398-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	REC	97	%	70-130
VY9398-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	RPD	5	%	20
VY9398-BSD	75-01-4	Vinyl chloride	BSD	REC	95	%	70-130
VY9398-BSD	75-01-4	Vinyl chloride	BSD	RPD	8	%	20
VY9398-BSD		m,p-Xylene	BSD	REC	99	%	70-130
VY9398-BSD		m,p-Xylene	BSD	RPD	6	%	20
VY9398-BSD	95-47-6	o-Xylene	BSD	REC	101	%	70-130
VY9398-BSD	95-47-6	o-Xylene	BSD	RPD	4	%	20
VY9398-BSD	1330-20-7	Xylene (total)	BSD	REC	100	%	70-130
VY9398-BSD	1330-20-7	Xylene (total)	BSD	RPD	5	%	20
VY9398-BSD	1868-53-7	Dibromofluoromethane	BSD	SURR	112	%	70-130
VY9398-BSD	2037-26-5	Toluene-D8	BSD	SURR	105	%	70-130
VY9398-BSD	460-00-4	4-Bromofluorobenzene	BSD	SURR	101	%	70-130

*** Sample used for QC is not from job JE21699**

QC Evaluation: MA MCP Limits

Job Number: JE21699
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/22/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9398-MB	1868-53-7	Dibromofluoromethane	MB	SURR	107	%	70-130
VY9398-MB	2037-26-5	Toluene-D8	MB	SURR	102	%	70-130
VY9398-MB	460-00-4	4-Bromofluorobenzene	MB	SURR	105	%	70-130
JE21699-1	1868-53-7	Dibromofluoromethane	SAMP	SURR	109	%	70-130
JE21699-1	2037-26-5	Toluene-D8	SAMP	SURR	103	%	70-130
JE21699-1	460-00-4	4-Bromofluorobenzene	SAMP	SURR	106	%	70-130
JE21699-2	1868-53-7	Dibromofluoromethane	SAMP	SURR	111	%	70-130
JE21699-2	2037-26-5	Toluene-D8	SAMP	SURR	101	%	70-130
JE21699-2	460-00-4	4-Bromofluorobenzene	SAMP	SURR	105	%	70-130
JE21699-3	1868-53-7	Dibromofluoromethane	SAMP	SURR	111	%	70-130
JE21699-3	2037-26-5	Toluene-D8	SAMP	SURR	102	%	70-130
JE21699-3	460-00-4	4-Bromofluorobenzene	SAMP	SURR	105	%	70-130
JE21699-4	1868-53-7	Dibromofluoromethane	SAMP	SURR	108	%	70-130
JE21699-4	2037-26-5	Toluene-D8	SAMP	SURR	101	%	70-130
JE21699-4	460-00-4	4-Bromofluorobenzene	SAMP	SURR	104	%	70-130
OP68490	SW846 8270E						
OP68490-BS1	65-85-0	Benzoic acid	BSP	REC	43	%	30-130
OP68490-BS1	95-57-8	2-Chlorophenol	BSP	REC	49	%	30-130
OP68490-BS1	59-50-7	4-Chloro-3-methyl phenol	BSP	REC	54	%	30-130
OP68490-BS1	120-83-2	2,4-Dichlorophenol	BSP	REC	51	%	30-130
OP68490-BS1	105-67-9	2,4-Dimethylphenol	BSP	REC	52	%	30-130
OP68490-BS1	51-28-5	2,4-Dinitrophenol	BSP	REC	33	%	30-130
OP68490-BS1	534-52-1	4,6-Dinitro-o-cresol	BSP	REC	51	%	30-130
OP68490-BS1	95-48-7	2-Methylphenol	BSP	REC	48	%	30-130
OP68490-BS1		3&4-Methylphenol	BSP	REC	50	%	30-130
OP68490-BS1	88-75-5	2-Nitrophenol	BSP	REC	54	%	30-130
OP68490-BS1	100-02-7	4-Nitrophenol	BSP	REC	46	%	30-130
OP68490-BS1	87-86-5	Pentachlorophenol	BSP	REC	46	%	30-130
OP68490-BS1	108-95-2	Phenol	BSP	REC	50	%	30-130
OP68490-BS1	95-95-4	2,4,5-Trichlorophenol	BSP	REC	53	%	30-130
OP68490-BS1	88-06-2	2,4,6-Trichlorophenol	BSP	REC	53	%	30-130
OP68490-BS1	83-32-9	Acenaphthene	BSP	REC	49	%	40-140
OP68490-BS1	208-96-8	Acenaphthylene	BSP	REC	50	%	40-140
OP68490-BS1	98-86-2	Acetophenone	BSP	REC	47	%	40-140
OP68490-BS1	62-53-3	Aniline	BSP	REC	49	%	40-140
OP68490-BS1	120-12-7	Anthracene	BSP	REC	52	%	40-140
OP68490-BS1	56-55-3	Benzo(a)anthracene	BSP	REC	51	%	40-140
OP68490-BS1	50-32-8	Benzo(a)pyrene	BSP	REC	52	%	40-140
OP68490-BS1	205-99-2	Benzo(b)fluoranthene	BSP	REC	53	%	40-140
OP68490-BS1	191-24-2	Benzo(g,h,i)perylene	BSP	REC	48	%	40-140
OP68490-BS1	207-08-9	Benzo(k)fluoranthene	BSP	REC	52	%	40-140
OP68490-BS1	101-55-3	4-Bromophenyl phenyl ether	BSP	REC	52	%	40-140
OP68490-BS1	85-68-7	Butyl benzyl phthalate	BSP	REC	62	%	40-140

*** Sample used for QC is not from job JE21699**

QC Evaluation: MA MCP Limits

Job Number: JE21699
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/22/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP68490-BS1	91-58-7	2-Chloronaphthalene	BSP	REC	50	%	40-140
OP68490-BS1	106-47-8	4-Chloroaniline	BSP	REC	18	%	40-140
OP68490-BS1	218-01-9	Chrysene	BSP	REC	52	%	40-140
OP68490-BS1	111-91-1	bis(2-Chloroethoxy)methane	BSP	REC	53	%	40-140
OP68490-BS1	111-44-4	bis(2-Chloroethyl)ether	BSP	REC	46	%	40-140
OP68490-BS1	108-60-1	2,2'-Oxybis(1-chloropropane)	BSP	REC	50	%	40-140
OP68490-BS1	7005-72-3	4-Chlorophenyl phenyl ether	BSP	REC	49	%	40-140
OP68490-BS1	95-50-1	1,2-Dichlorobenzene	BSP	REC	43	%	40-140
OP68490-BS1	122-66-7	1,2-Diphenylhydrazine	BSP	REC	60	%	40-140
OP68490-BS1	541-73-1	1,3-Dichlorobenzene	BSP	REC	41	%	40-140
OP68490-BS1	106-46-7	1,4-Dichlorobenzene	BSP	REC	42	%	40-140
OP68490-BS1	121-14-2	2,4-Dinitrotoluene	BSP	REC	55	%	40-140
OP68490-BS1	606-20-2	2,6-Dinitrotoluene	BSP	REC	57	%	40-140
OP68490-BS1	91-94-1	3,3'-Dichlorobenzidine	BSP	REC	43	%	40-140
OP68490-BS1	53-70-3	Dibenzo(a,h)anthracene	BSP	REC	50	%	40-140
OP68490-BS1	132-64-9	Dibenzofuran	BSP	REC	50	%	40-140
OP68490-BS1	84-74-2	Di-n-butyl phthalate	BSP	REC	54	%	40-140
OP68490-BS1	117-84-0	Di-n-octyl phthalate	BSP	REC	62	%	40-140
OP68490-BS1	84-66-2	Diethyl phthalate	BSP	REC	50	%	40-140
OP68490-BS1	131-11-3	Dimethyl phthalate	BSP	REC	50	%	40-140
OP68490-BS1	117-81-7	bis(2-Ethylhexyl)phthalate	BSP	REC	61	%	40-140
OP68490-BS1	206-44-0	Fluoranthene	BSP	REC	49	%	40-140
OP68490-BS1	86-73-7	Fluorene	BSP	REC	49	%	40-140
OP68490-BS1	118-74-1	Hexachlorobenzene	BSP	REC	50	%	40-140
OP68490-BS1	87-68-3	Hexachlorobutadiene	BSP	REC	44	%	40-140
OP68490-BS1	77-47-4	Hexachlorocyclopentadiene	BSP	REC	41	%	40-140
OP68490-BS1	67-72-1	Hexachloroethane	BSP	REC	42	%	40-140
OP68490-BS1	193-39-5	Indeno(1,2,3-cd)pyrene	BSP	REC	49	%	40-140
OP68490-BS1	78-59-1	Isophorone	BSP	REC	53	%	40-140
OP68490-BS1	91-57-6	2-Methylnaphthalene	BSP	REC	47	%	40-140
OP68490-BS1	91-20-3	Naphthalene	BSP	REC	46	%	40-140
OP68490-BS1	98-95-3	Nitrobenzene	BSP	REC	48	%	40-140
OP68490-BS1	62-75-9	n-Nitrosodimethylamine	BSP	REC	45	%	40-140
OP68490-BS1	621-64-7	N-Nitroso-di-n-propylamine	BSP	REC	54	%	40-140
OP68490-BS1	86-30-6	N-Nitrosodiphenylamine	BSP	REC	57	%	40-140
OP68490-BS1	85-01-8	Phenanthrene	BSP	REC	50	%	40-140
OP68490-BS1	129-00-0	Pyrene	BSP	REC	58	%	40-140
OP68490-BS1	110-86-1	Pyridine	BSP	REC	28	%	40-140
OP68490-BS1	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	46	%	40-140
OP68490-BS1	367-12-4	2-Fluorophenol	BSP	SURR	50	%	30-130
OP68490-BS1	4165-62-2	Phenol-d5	BSP	SURR	52	%	30-130
OP68490-BS1	118-79-6	2,4,6-Tribromophenol	BSP	SURR	51	%	30-130
OP68490-BS1	4165-60-0	Nitrobenzene-d5	BSP	SURR	52	%	30-130
OP68490-BS1	321-60-8	2-Fluorobiphenyl	BSP	SURR	50	%	30-130
OP68490-BS1	1718-51-0	Terphenyl-d14	BSP	SURR	55	%	30-130

*** Sample used for QC is not from job JE21699**

QC Evaluation: MA MCP Limits

Job Number: JE21699
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/22/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP68490-BSD	65-85-0	Benzoic acid	BSD	REC	56	%	30-130
OP68490-BSD	65-85-0	Benzoic acid	BSD	RPD	27	%	30
OP68490-BSD	95-57-8	2-Chlorophenol	BSD	REC	60	%	30-130
OP68490-BSD	95-57-8	2-Chlorophenol	BSD	RPD	20	%	30
OP68490-BSD	59-50-7	4-Chloro-3-methyl phenol	BSD	REC	70	%	30-130
OP68490-BSD	59-50-7	4-Chloro-3-methyl phenol	BSD	RPD	24	%	30
OP68490-BSD	120-83-2	2,4-Dichlorophenol	BSD	REC	66	%	30-130
OP68490-BSD	120-83-2	2,4-Dichlorophenol	BSD	RPD	25	%	30
OP68490-BSD	105-67-9	2,4-Dimethylphenol	BSD	REC	67	%	30-130
OP68490-BSD	105-67-9	2,4-Dimethylphenol	BSD	RPD	24	%	30
OP68490-BSD	51-28-5	2,4-Dinitrophenol	BSD	REC	43	%	30-130
OP68490-BSD	51-28-5	2,4-Dinitrophenol	BSD	RPD	26	%	30
OP68490-BSD	534-52-1	4,6-Dinitro-o-cresol	BSD	REC	70	%	30-130
OP68490-BSD	534-52-1	4,6-Dinitro-o-cresol	BSD	RPD	31	%	30
OP68490-BSD	95-48-7	2-Methylphenol	BSD	REC	61	%	30-130
OP68490-BSD	95-48-7	2-Methylphenol	BSD	RPD	24	%	30
OP68490-BSD		3&4-Methylphenol	BSD	REC	63	%	30-130
OP68490-BSD		3&4-Methylphenol	BSD	RPD	24	%	30
OP68490-BSD	88-75-5	2-Nitrophenol	BSD	REC	64	%	30-130
OP68490-BSD	88-75-5	2-Nitrophenol	BSD	RPD	18	%	30
OP68490-BSD	100-02-7	4-Nitrophenol	BSD	REC	61	%	30-130
OP68490-BSD	100-02-7	4-Nitrophenol	BSD	RPD	29	%	30
OP68490-BSD	87-86-5	Pentachlorophenol	BSD	REC	60	%	30-130
OP68490-BSD	87-86-5	Pentachlorophenol	BSD	RPD	28	%	30
OP68490-BSD	108-95-2	Phenol	BSD	REC	62	%	30-130
OP68490-BSD	108-95-2	Phenol	BSD	RPD	22	%	30
OP68490-BSD	95-95-4	2,4,5-Trichlorophenol	BSD	REC	70	%	30-130
OP68490-BSD	95-95-4	2,4,5-Trichlorophenol	BSD	RPD	27	%	30
OP68490-BSD	88-06-2	2,4,6-Trichlorophenol	BSD	REC	69	%	30-130
OP68490-BSD	88-06-2	2,4,6-Trichlorophenol	BSD	RPD	27	%	30
OP68490-BSD	83-32-9	Acenaphthene	BSD	REC	64	%	40-140
OP68490-BSD	83-32-9	Acenaphthene	BSD	RPD	27	%	30
OP68490-BSD	208-96-8	Acenaphthylene	BSD	REC	65	%	40-140
OP68490-BSD	208-96-8	Acenaphthylene	BSD	RPD	26	%	30
OP68490-BSD	98-86-2	Acetophenone	BSD	REC	57	%	40-140
OP68490-BSD	98-86-2	Acetophenone	BSD	RPD	18	%	30
OP68490-BSD	62-53-3	Aniline	BSD	REC	59	%	40-140
OP68490-BSD	62-53-3	Aniline	BSD	RPD	18	%	30
OP68490-BSD	120-12-7	Anthracene	BSD	REC	68	%	40-140
OP68490-BSD	120-12-7	Anthracene	BSD	RPD	27	%	30
OP68490-BSD	56-55-3	Benzo(a)anthracene	BSD	REC	69	%	40-140
OP68490-BSD	56-55-3	Benzo(a)anthracene	BSD	RPD	30	%	30
OP68490-BSD	50-32-8	Benzo(a)pyrene	BSD	REC	70	%	40-140
OP68490-BSD	50-32-8	Benzo(a)pyrene	BSD	RPD	30	%	30
OP68490-BSD	205-99-2	Benzo(b)fluoranthene	BSD	REC	70	%	40-140

*** Sample used for QC is not from job JE21699**

QC Evaluation: MA MCP Limits

Job Number: JE21699
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/22/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP68490-BSD	205-99-2	Benzo(b)fluoranthene	BSD	RPD	27	%	30
OP68490-BSD	191-24-2	Benzo(g,h,i)perylene	BSD	REC	65	%	40-140
OP68490-BSD	191-24-2	Benzo(g,h,i)perylene	BSD	RPD	31	%	30
OP68490-BSD	207-08-9	Benzo(k)fluoranthene	BSD	REC	70	%	40-140
OP68490-BSD	207-08-9	Benzo(k)fluoranthene	BSD	RPD	29	%	30
OP68490-BSD	101-55-3	4-Bromophenyl phenyl ether	BSD	REC	70	%	40-140
OP68490-BSD	101-55-3	4-Bromophenyl phenyl ether	BSD	RPD	28	%	30
OP68490-BSD	85-68-7	Butyl benzyl phthalate	BSD	REC	83	%	40-140
OP68490-BSD	85-68-7	Butyl benzyl phthalate	BSD	RPD	30	%	30
OP68490-BSD	91-58-7	2-Chloronaphthalene	BSD	REC	64	%	40-140
OP68490-BSD	91-58-7	2-Chloronaphthalene	BSD	RPD	25	%	30
OP68490-BSD	106-47-8	4-Chloroaniline	BSD	REC	20	%	40-140
OP68490-BSD	106-47-8	4-Chloroaniline	BSD	RPD	12	%	30
OP68490-BSD	218-01-9	Chrysene	BSD	REC	68	%	40-140
OP68490-BSD	218-01-9	Chrysene	BSD	RPD	27	%	30
OP68490-BSD	111-91-1	bis(2-Chloroethoxy)methane	BSD	REC	66	%	40-140
OP68490-BSD	111-91-1	bis(2-Chloroethoxy)methane	BSD	RPD	21	%	30
OP68490-BSD	111-44-4	bis(2-Chloroethyl)ether	BSD	REC	52	%	40-140
OP68490-BSD	111-44-4	bis(2-Chloroethyl)ether	BSD	RPD	14	%	30
OP68490-BSD	108-60-1	2,2'-Oxybis(1-chloropropane)	BSD	REC	59	%	40-140
OP68490-BSD	108-60-1	2,2'-Oxybis(1-chloropropane)	BSD	RPD	16	%	30
OP68490-BSD	7005-72-3	4-Chlorophenyl phenyl ether	BSD	REC	65	%	40-140
OP68490-BSD	7005-72-3	4-Chlorophenyl phenyl ether	BSD	RPD	27	%	30
OP68490-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	48	%	40-140
OP68490-BSD	95-50-1	1,2-Dichlorobenzene	BSD	RPD	11	%	30
OP68490-BSD	122-66-7	1,2-Diphenylhydrazine	BSD	REC	80	%	40-140
OP68490-BSD	122-66-7	1,2-Diphenylhydrazine	BSD	RPD	28	%	30
OP68490-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	46	%	40-140
OP68490-BSD	541-73-1	1,3-Dichlorobenzene	BSD	RPD	11	%	30
OP68490-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	46	%	40-140
OP68490-BSD	106-46-7	1,4-Dichlorobenzene	BSD	RPD	10	%	30
OP68490-BSD	121-14-2	2,4-Dinitrotoluene	BSD	REC	73	%	40-140
OP68490-BSD	121-14-2	2,4-Dinitrotoluene	BSD	RPD	28	%	30
OP68490-BSD	606-20-2	2,6-Dinitrotoluene	BSD	REC	77	%	40-140
OP68490-BSD	606-20-2	2,6-Dinitrotoluene	BSD	RPD	30	%	30
OP68490-BSD	91-94-1	3,3'-Dichlorobenzidine	BSD	REC	54	%	40-140
OP68490-BSD	91-94-1	3,3'-Dichlorobenzidine	BSD	RPD	22	%	30
OP68490-BSD	53-70-3	Dibenzo(a,h)anthracene	BSD	REC	66	%	40-140
OP68490-BSD	53-70-3	Dibenzo(a,h)anthracene	BSD	RPD	28	%	30
OP68490-BSD	132-64-9	Dibenzofuran	BSD	REC	64	%	40-140
OP68490-BSD	132-64-9	Dibenzofuran	BSD	RPD	25	%	30
OP68490-BSD	84-74-2	Di-n-butyl phthalate	BSD	REC	72	%	40-140
OP68490-BSD	84-74-2	Di-n-butyl phthalate	BSD	RPD	28	%	30
OP68490-BSD	117-84-0	Di-n-octyl phthalate	BSD	REC	86	%	40-140
OP68490-BSD	117-84-0	Di-n-octyl phthalate	BSD	RPD	32	%	30

*** Sample used for QC is not from job JE21699**

QC Evaluation: MA MCP Limits

Job Number: JE21699
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/22/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP68490-BSD	84-66-2	Diethyl phthalate	BSD	REC	66	%	40-140
OP68490-BSD	84-66-2	Diethyl phthalate	BSD	RPD	28	%	30
OP68490-BSD	131-11-3	Dimethyl phthalate	BSD	REC	65	%	40-140
OP68490-BSD	131-11-3	Dimethyl phthalate	BSD	RPD	27	%	30
OP68490-BSD	117-81-7	bis(2-Ethylhexyl)phthalate	BSD	REC	82	%	40-140
OP68490-BSD	117-81-7	bis(2-Ethylhexyl)phthalate	BSD	RPD	30	%	30
OP68490-BSD	206-44-0	Fluoranthene	BSD	REC	64	%	40-140
OP68490-BSD	206-44-0	Fluoranthene	BSD	RPD	27	%	30
OP68490-BSD	86-73-7	Fluorene	BSD	REC	65	%	40-140
OP68490-BSD	86-73-7	Fluorene	BSD	RPD	27	%	30
OP68490-BSD	118-74-1	Hexachlorobenzene	BSD	REC	68	%	40-140
OP68490-BSD	118-74-1	Hexachlorobenzene	BSD	RPD	31	%	30
OP68490-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	51	%	40-140
OP68490-BSD	87-68-3	Hexachlorobutadiene	BSD	RPD	15	%	30
OP68490-BSD	77-47-4	Hexachlorocyclopentadiene	BSD	REC	53	%	40-140
OP68490-BSD	77-47-4	Hexachlorocyclopentadiene	BSD	RPD	26	%	30
OP68490-BSD	67-72-1	Hexachloroethane	BSD	REC	47	%	40-140
OP68490-BSD	67-72-1	Hexachloroethane	BSD	RPD	11	%	30
OP68490-BSD	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	REC	66	%	40-140
OP68490-BSD	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	RPD	30	%	30
OP68490-BSD	78-59-1	Isophorone	BSD	REC	65	%	40-140
OP68490-BSD	78-59-1	Isophorone	BSD	RPD	22	%	30
OP68490-BSD	91-57-6	2-Methylnaphthalene	BSD	REC	57	%	40-140
OP68490-BSD	91-57-6	2-Methylnaphthalene	BSD	RPD	20	%	30
OP68490-BSD	91-20-3	Naphthalene	BSD	REC	55	%	40-140
OP68490-BSD	91-20-3	Naphthalene	BSD	RPD	17	%	30
OP68490-BSD	98-95-3	Nitrobenzene	BSD	REC	58	%	40-140
OP68490-BSD	98-95-3	Nitrobenzene	BSD	RPD	18	%	30
OP68490-BSD	62-75-9	n-Nitrosodimethylamine	BSD	REC	50	%	40-140
OP68490-BSD	62-75-9	n-Nitrosodimethylamine	BSD	RPD	9	%	30
OP68490-BSD	621-64-7	N-Nitroso-di-n-propylamine	BSD	REC	68	%	40-140
OP68490-BSD	621-64-7	N-Nitroso-di-n-propylamine	BSD	RPD	23	%	30
OP68490-BSD	86-30-6	N-Nitrosodiphenylamine	BSD	REC	77	%	40-140
OP68490-BSD	86-30-6	N-Nitrosodiphenylamine	BSD	RPD	30	%	30
OP68490-BSD	85-01-8	Phenanthrene	BSD	REC	67	%	40-140
OP68490-BSD	85-01-8	Phenanthrene	BSD	RPD	29	%	30
OP68490-BSD	129-00-0	Pyrene	BSD	REC	77	%	40-140
OP68490-BSD	129-00-0	Pyrene	BSD	RPD	29	%	30
OP68490-BSD	110-86-1	Pyridine	BSD	REC	31	%	40-140
OP68490-BSD	110-86-1	Pyridine	BSD	RPD	12	%	30
OP68490-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	54	%	40-140
OP68490-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	RPD	17	%	30
OP68490-BSD	367-12-4	2-Fluorophenol	BSD	SURR	58	%	30-130
OP68490-BSD	4165-62-2	Phenol-d5	BSD	SURR	62	%	30-130
OP68490-BSD	118-79-6	2,4,6-Tribromophenol	BSD	SURR	67	%	30-130

*** Sample used for QC is not from job JE21699**

QC Evaluation: MA MCP Limits

Job Number: JE21699
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/22/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP68490-BSD	4165-60-0	Nitrobenzene-d5	BSD	SURR	60	%	30-130
OP68490-BSD	321-60-8	2-Fluorobiphenyl	BSD	SURR	63	%	30-130
OP68490-BSD	1718-51-0	Terphenyl-d14	BSD	SURR	71	%	30-130
OP68490-MB1	367-12-4	2-Fluorophenol	MB	SURR	65	%	30-130
OP68490-MB1	4165-62-2	Phenol-d5	MB	SURR	71	%	30-130
OP68490-MB1	118-79-6	2,4,6-Tribromophenol	MB	SURR	80	%	30-130
OP68490-MB1	4165-60-0	Nitrobenzene-d5	MB	SURR	72	%	30-130
OP68490-MB1	321-60-8	2-Fluorobiphenyl	MB	SURR	74	%	30-130
OP68490-MB1	1718-51-0	Terphenyl-d14	MB	SURR	89	%	30-130
JE21699-1	367-12-4	2-Fluorophenol	SAMP	SURR	34	%	30-130
JE21699-1	4165-62-2	Phenol-d5	SAMP	SURR	37	%	30-130
JE21699-1	118-79-6	2,4,6-Tribromophenol	SAMP	SURR	44	%	30-130
JE21699-1	4165-60-0	Nitrobenzene-d5	SAMP	SURR	37	%	30-130
JE21699-1	321-60-8	2-Fluorobiphenyl	SAMP	SURR	42	%	30-130
JE21699-1	1718-51-0	Terphenyl-d14	SAMP	SURR	41	%	30-130
JE21699-2	367-12-4	2-Fluorophenol	SAMP	SURR	41	%	30-130
JE21699-2	4165-62-2	Phenol-d5	SAMP	SURR	42	%	30-130
JE21699-2	118-79-6	2,4,6-Tribromophenol	SAMP	SURR	52	%	30-130
JE21699-2	4165-60-0	Nitrobenzene-d5	SAMP	SURR	41	%	30-130
JE21699-2	321-60-8	2-Fluorobiphenyl	SAMP	SURR	47	%	30-130
JE21699-2	1718-51-0	Terphenyl-d14	SAMP	SURR	51	%	30-130
JE21699-3	367-12-4	2-Fluorophenol	SAMP	SURR	54	%	30-130
JE21699-3	4165-62-2	Phenol-d5	SAMP	SURR	60	%	30-130
JE21699-3	118-79-6	2,4,6-Tribromophenol	SAMP	SURR	58	%	30-130
JE21699-3	4165-60-0	Nitrobenzene-d5	SAMP	SURR	59	%	30-130
JE21699-3	321-60-8	2-Fluorobiphenyl	SAMP	SURR	67	%	30-130
JE21699-3	1718-51-0	Terphenyl-d14	SAMP	SURR	77	%	30-130

(a) Outside of in house control limits, but within reasonable method recovery limits.
(b) High percent recovery and no associated positive reported in the QC batch.
(c) Outside in house control limits.

* Sample used for QC is not from job JE21699

MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Internal Standard Area Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9398-MB	Y218647.D	1	10/24/25	PS	n/a	n/a	VY9398

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE21699-1, JE21699-2, JE21699-3, JE21699-4

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.1	ug/kg	
71-43-2	Benzene	ND	0.50	0.46	ug/kg	
108-86-1	Bromobenzene	ND	5.0	0.55	ug/kg	
74-97-5	Bromochloromethane	ND	5.0	0.56	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.43	ug/kg	
75-25-2	Bromoform	ND	5.0	1.4	ug/kg	
74-83-9	Bromomethane	ND	5.0	0.76	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	2.4	ug/kg	
104-51-8	n-Butylbenzene	ND	2.0	0.41	ug/kg	
135-98-8	sec-Butylbenzene	ND	2.0	0.43	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.0	0.50	ug/kg	
75-15-0	Carbon disulfide	ND	2.0	0.54	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.62	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.46	ug/kg	
75-00-3	Chloroethane	ND	5.0	0.59	ug/kg	
67-66-3	Chloroform	ND	2.0	1.0	ug/kg	
74-87-3	Chloromethane	ND	5.0	2.0	ug/kg	
95-49-8	o-Chlorotoluene	ND	2.0	0.54	ug/kg	
106-43-4	p-Chlorotoluene	ND	2.0	0.44	ug/kg	
108-20-3	Di-Isopropyl ether	ND	2.0	0.50	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.56	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.42	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.55	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.49	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.0	0.73	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.47	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.66	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.84	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.61	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.47	ug/kg	
142-28-9	1,3-Dichloropropane	ND	2.0	0.52	ug/kg	
594-20-7	2,2-Dichloropropane	ND	2.0	0.43	ug/kg	
563-58-6	1,1-Dichloropropene	ND	2.0	0.47	ug/kg	

Method Blank Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9398-MB	Y218647.D	1	10/24/25	PS	n/a	n/a	VY9398

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE21699-1, JE21699-2, JE21699-3, JE21699-4

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.48	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.46	ug/kg	
123-91-1	1,4-Dioxane	ND	130	37	ug/kg	
60-29-7	Ethyl Ether	ND	2.0	0.46	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.45	ug/kg	
87-68-3	Hexachlorobutadiene	ND	5.0	0.66	ug/kg	
591-78-6	2-Hexanone	ND	5.0	2.1	ug/kg	
98-82-8	Isopropylbenzene	ND	2.0	1.4	ug/kg	
99-87-6	p-Isopropyltoluene	ND	2.0	0.40	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.47	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	2.3	ug/kg	
74-95-3	Methylene bromide	ND	5.0	0.53	ug/kg	
75-09-2	Methylene chloride	ND	5.0	2.6	ug/kg	
91-20-3	Naphthalene	ND	5.0	2.5	ug/kg	
103-65-1	n-Propylbenzene	ND	2.0	0.47	ug/kg	
100-42-5	Styrene	ND	2.0	0.40	ug/kg	
994-05-8	tert-Amyl Methyl Ether	ND	2.0	0.50	ug/kg	
637-92-3	tert-Butyl Ethyl Ether	ND	2.0	0.49	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	2.0	0.42	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.60	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.58	ug/kg	
109-99-9	Tetrahydrofuran	ND	10	3.0	ug/kg	
108-88-3	Toluene	ND	1.0	0.53	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	2.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	2.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.48	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.55	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.76	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.0	0.68	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.56	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.50	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.43	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.48	ug/kg	
	m,p-Xylene	ND	1.0	0.90	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.46	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.46	ug/kg	

Method Blank Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9398-MB	Y218647.D	1	10/24/25	PS	n/a	n/a	VY9398

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE21699-1, JE21699-2, JE21699-3, JE21699-4

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	107%	80-124%
17060-07-0	1,2-Dichloroethane-D4	103%	75-133%
2037-26-5	Toluene-D8	102%	79-125%
460-00-4	4-Bromofluorobenzene	105%	58-148%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9398-BS	Y218644.D	1	10/24/25	PS	n/a	n/a	VY9398
VY9398-BSD	Y218645.D	1	10/24/25	PS	n/a	n/a	VY9398

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE21699-1, JE21699-2, JE21699-3, JE21699-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	200	181	91	169	85	7	52-156/12
71-43-2	Benzene	50	53.7	107	51.3	103	5	82-119/10
108-86-1	Bromobenzene	50	48.9	98	47.2	94	4	82-115/10
74-97-5	Bromochloromethane	50	58.5	117	54.9	110	6	82-123/10
75-27-4	Bromodichloromethane	50	54.8	110	51.7	103	6	83-121/10
75-25-2	Bromoform	50	48.9	98	46.6	93	5	74-138/10
74-83-9	Bromomethane	50	56.2	112	52.6	105	7	56-150/12
78-93-3	2-Butanone (MEK)	200	236	118	218	109	8	72-138/10
104-51-8	n-Butylbenzene	50	55.1	110	52.1	104	6	81-124/11
135-98-8	sec-Butylbenzene	50	52.0	104	49.1	98	6	78-120/10
98-06-6	tert-Butylbenzene	50	50.9	102	48.5	97	5	78-121/10
75-15-0	Carbon disulfide	50	56.6	113	52.7	105	7	67-131/11
56-23-5	Carbon tetrachloride	50	59.5	119	55.1	110	8	72-130/11
108-90-7	Chlorobenzene	50	53.1	106	50.9	102	4	83-114/10
75-00-3	Chloroethane	50	41.3	83	38.0	76	8	67-141/12
67-66-3	Chloroform	50	52.9	106	49.6	99	6	76-115/10
74-87-3	Chloromethane	50	47.4	95	45.4	91	4	57-141/13
95-49-8	o-Chlorotoluene	50	52.0	104	48.9	98	6	81-118/10
106-43-4	p-Chlorotoluene	50	50.6	101	48.3	97	5	78-117/10
108-20-3	Di-Isopropyl ether	50	46.9	94	44.2	88	6	66-138/10
96-12-8	1,2-Dibromo-3-chloropropane	50	48.3	97	47.3	95	2	72-131/11
124-48-1	Dibromochloromethane	50	53.1	106	50.9	102	4	80-128/10
106-93-4	1,2-Dibromoethane	50	51.6	103	49.7	99	4	58-145/10
95-50-1	1,2-Dichlorobenzene	50	51.5	103	49.6	99	4	83-117/10
541-73-1	1,3-Dichlorobenzene	50	51.3	103	49.3	99	4	82-114/10
106-46-7	1,4-Dichlorobenzene	50	51.1	102	49.3	99	4	79-114/10
75-71-8	Dichlorodifluoromethane	50	59.4	119	54.5	109	9	49-146/13
75-34-3	1,1-Dichloroethane	50	56.0	112	52.2	104	7	76-126/10
107-06-2	1,2-Dichloroethane	50	55.5	111	53.6	107	3	76-118/10
75-35-4	1,1-Dichloroethene	50	59.8	120	55.6	111	7	72-125/11
156-59-2	cis-1,2-Dichloroethene	50	60.2	120* [a]	56.8	114	6	80-118/10
156-60-5	trans-1,2-Dichloroethene	50	61.8	124* [b]	57.8	116	7	76-122/10
78-87-5	1,2-Dichloropropane	50	51.0	102	48.6	97	5	82-123/10
142-28-9	1,3-Dichloropropane	50	52.3	105	49.9	100	5	84-120/10
594-20-7	2,2-Dichloropropane	50	55.0	110	51.1	102	7	66-130/11
563-58-6	1,1-Dichloropropene	50	56.3	113	52.7	105	7	78-122/10

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9398-BS	Y218644.D	1	10/24/25	PS	n/a	n/a	VY9398
VY9398-BSD	Y218645.D	1	10/24/25	PS	n/a	n/a	VY9398

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE21699-1, JE21699-2, JE21699-3, JE21699-4

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	50	51.5	103	49.6	99	4	83-123/10
10061-02-6	trans-1,3-Dichloropropene	50	51.3	103	48.7	97	5	83-123/10
123-91-1	1,4-Dioxane	1250	1420	114	1350	108	5	64-163/20
60-29-7	Ethyl Ether	50	61.7	123	59.1	118	4	78-131/10
100-41-4	Ethylbenzene	50	53.5	107	50.4	101	6	83-115/10
87-68-3	Hexachlorobutadiene	50	49.4	99	47.5	95	4	65-130/11
591-78-6	2-Hexanone	200	200	100	190	95	5	73-138/10
98-82-8	Isopropylbenzene	50	51.0	102	48.6	97	5	81-122/11
99-87-6	p-Isopropyltoluene	50	51.7	103	49.8	100	4	80-120/10
1634-04-4	Methyl Tert Butyl Ether	50	62.7	125	55.4	111	12	75-126/12
108-10-1	4-Methyl-2-pentanone(MIBK)	200	204	102	191	96	7	71-138/10
74-95-3	Methylene bromide	50	57.6	115	53.9	108	7	81-122/10
75-09-2	Methylene chloride	50	56.5	113	52.9	106	7	73-122/10
91-20-3	Naphthalene	50	53.5	107	51.2	102	4	71-129/14
103-65-1	n-Propylbenzene	50	53.3	107	50.1	100	6	77-120/10
100-42-5	Styrene	50	52.5	105	50.1	100	5	84-122/10
994-05-8	tert-Amyl Methyl Ether	50	50.0	100	48.4	97	3	77-125/11
637-92-3	tert-Butyl Ethyl Ether	50	51.2	102	48.3	97	6	75-131/10
630-20-6	1,1,1,2-Tetrachloroethane	50	49.6	99	46.6	93	6	81-125/10
79-34-5	1,1,2,2-Tetrachloroethane	50	50.4	101	48.1	96	5	75-127/10
127-18-4	Tetrachloroethene	50	49.4	99	47.5	95	4	73-125/11
109-99-9	Tetrahydrofuran	50	53.8	108	42.9	86	23* [c]	61-136/11
108-88-3	Toluene	50	54.1	108	51.3	103	5	82-118/10
87-61-6	1,2,3-Trichlorobenzene	50	53.5	107	51.6	103	4	68-132/13
120-82-1	1,2,4-Trichlorobenzene	50	51.0	102	49.3	99	3	72-133/12
71-55-6	1,1,1-Trichloroethane	50	60.9	122	56.3	113	8	77-124/11
79-00-5	1,1,2-Trichloroethane	50	51.1	102	48.7	97	5	83-122/10
79-01-6	Trichloroethene	50	56.3	113	53.9	108	4	80-122/10
75-69-4	Trichlorofluoromethane	50	51.2	102	50.0	100	2	69-132/11
96-18-4	1,2,3-Trichloropropane	50	48.3	97	46.7	93	3	80-120/10
95-63-6	1,2,4-Trimethylbenzene	50	51.6	103	49.1	98	5	80-119/10
108-67-8	1,3,5-Trimethylbenzene	50	51.1	102	48.6	97	5	79-120/10
75-01-4	Vinyl chloride	50	51.7	103	47.6	95	8	60-144/13
	m,p-Xylene	100	105	105	98.9	99	6	82-119/10
95-47-6	o-Xylene	50	52.8	106	50.6	101	4	84-120/10
1330-20-7	Xylene (total)	150	157	105	150	100	5	83-119/10

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9398-BS	Y218644.D	1	10/24/25	PS	n/a	n/a	VY9398
VY9398-BSD	Y218645.D	1	10/24/25	PS	n/a	n/a	VY9398

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE21699-1, JE21699-2, JE21699-3, JE21699-4

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	114%	112%	80-124%
17060-07-0	1,2-Dichloroethane-D4	109%	110%	75-133%
2037-26-5	Toluene-D8	105%	105%	79-125%
460-00-4	4-Bromofluorobenzene	100%	101%	58-148%

(a) Outside of in house control limits, but within reasonable method recovery limits.
(b) High percent recovery and no associated positive reported in the QC batch.
(c) Outside in house control limits.

*** = Outside of Control Limits.**

Internal Standard Area Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	VY9398-CC9360	**Injection Date:**	10/24/25
Lab File ID:	Y218642.D	**Injection Time:**	11:11
Instrument ID:	GCMSY	**Method:**	SW846 8260D

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	141178	1.70	293921	2.74	486918	3.27	393089	5.73	256010	7.62
Upper Limit [a]	282356	2.20	587842	3.24	973836	3.77	786178	6.23	512020	8.12
Lower Limit [b]	70589	1.20	146961	2.24	243459	2.77	196545	5.23	128005	7.12

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VY9398-BS	131920	1.69	286639	2.74	483671	3.27	388951	5.73	255055	7.62
VY9398-BSD	136361	1.70	303789	2.74	500351	3.27	404376	5.73	262712	7.62
VY9398-MB	93667	1.69	280476	2.73	436017	3.26	376211	5.73	240146	7.62
JE21699-4	108854	1.69	268360	2.74	421310	3.27	367497	5.73	239070	7.62
JE21767-2	102999	1.69	268020	2.74	423366	3.27	363588	5.73	236640	7.62
JE21767-3	104553	1.70	264470	2.74	414610	3.27	360071	5.73	236424	7.62
ZZZZZZ	105587	1.70	262315	2.74	415849	3.27	358657	5.73	231648	7.62
ZZZZZZ	93667	1.70	270338	2.74	423625	3.27	366282	5.73	234904	7.62
ZZZZZZ	100862	1.69	261305	2.73	408708	3.27	351077	5.73	214617	7.62
ZZZZZZ	97713	1.69	287203	2.74	448701	3.27	389605	5.73	249868	7.62
ZZZZZZ	96247	1.69	284288	2.74	448341	3.27	385083	5.73	241191	7.62
JE21767-2MS	109924	1.70	302898	2.74	502422	3.27	405332	5.73	254366	7.62
JE21767-3DUP	100024	1.69	278432	2.74	442831	3.26	375936	5.73	243961	7.62
JE21699-1	91647	1.69	282332	2.74	448790	3.27	377478	5.73	236304	7.62
JE21699-2	101786	1.69	280242	2.74	447139	3.27	383944	5.73	248530	7.62
JE21699-3	83096	1.70	276982	2.74	445516	3.27	375913	5.73	246194	7.62
ZZZZZZ	98781	1.70	273590	2.74	435879	3.27	375447	5.73	242872	7.62
ZZZZZZ	100375	1.70	272646	2.74	440833	3.27	377338	5.73	246301	7.62
ZZZZZZ	103464	1.70	271586	2.74	430732	3.27	366574	5.73	238909	7.62
ZZZZZZ	103853	1.69	268972	2.74	430666	3.27	366493	5.73	232995	7.62
ZZZZZZ	88200	1.69	264568	2.73	421155	3.26	367485	5.73	234936	7.62
ZZZZZZ	88446	1.69	263443	2.74	419542	3.27	363613	5.73	233999	7.62

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Surrogate Recovery Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8260D **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JE21699-1	Y218663.D	109	108	103	106
JE21699-2	Y218664.D	111	108	101	105
JE21699-3	Y218665.D	111	106	102	105
JE21699-4	Y218648.D	108	110	101	104
VY9398-BS	Y218644.D	114	109	105	100
VY9398-BSD	Y218645.D	112	110	105	101
VY9398-MB	Y218647.D	107	103	102	105

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	80-124%
S2 = 1,2-Dichloroethane-D4	75-133%
S3 = Toluene-D8	79-125%
S4 = 4-Bromofluorobenzene	58-148%

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Internal Standard Area Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68490-MB1	P168172.D	1	10/25/25	RS	10/24/25	OP68490	EP7826

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	670	55	ug/kg	
95-57-8	2-Chlorophenol	ND	67	16	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	20	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	28	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	59	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	36	ug/kg	
95-48-7	2-Methylphenol	ND	67	21	ug/kg	
	3&4-Methylphenol	ND	67	27	ug/kg	
88-75-5	2-Nitrophenol	ND	170	22	ug/kg	
100-02-7	4-Nitrophenol	ND	330	89	ug/kg	
87-86-5	Pentachlorophenol	ND	130	31	ug/kg	
108-95-2	Phenol	ND	67	17	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	25	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	20	ug/kg	
83-32-9	Acenaphthene	ND	33	11	ug/kg	
208-96-8	Acenaphthylene	ND	33	17	ug/kg	
98-86-2	Acetophenone	ND	170	7.2	ug/kg	
62-53-3	Aniline	ND	67	15	ug/kg	
120-12-7	Anthracene	ND	33	20	ug/kg	
56-55-3	Benzo(a)anthracene	ND	33	9.4	ug/kg	
50-32-8	Benzo(a)pyrene	ND	33	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	33	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	33	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	33	16	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	67	13	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	67	8.1	ug/kg	
91-58-7	2-Chloronaphthalene	ND	67	7.9	ug/kg	
106-47-8	4-Chloroaniline	ND	170	12	ug/kg	
218-01-9	Chrysene	ND	33	10	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	67	7.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	67	14	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	67	12	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	67	11	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	67	9.6	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	67	7.6	ug/kg	

Method Blank Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68490-MB1	P168172.D	1	10/25/25	RS	10/24/25	OP68490	EP7826

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Compound	Result	RL	MDL	Units	Q
541-73-1	1,3-Dichlorobenzene	ND	67	7.1	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	67	8.1	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	33	10	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	33	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	67	28	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	15	ug/kg	
132-64-9	Dibenzofuran	ND	67	14	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	67	5.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	67	8.3	ug/kg	
84-66-2	Diethyl phthalate	ND	67	7.1	ug/kg	
131-11-3	Dimethyl phthalate	ND	67	5.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	67	7.8	ug/kg	
206-44-0	Fluoranthene	ND	33	15	ug/kg	
86-73-7	Fluorene	ND	33	15	ug/kg	
118-74-1	Hexachlorobenzene	ND	67	8.4	ug/kg	
87-68-3	Hexachlorobutadiene	ND	33	13	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	330	13	ug/kg	
67-72-1	Hexachloroethane	ND	170	16	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	33	16	ug/kg	
78-59-1	Isophorone	ND	67	7.1	ug/kg	
91-57-6	2-Methylnaphthalene	ND	33	7.5	ug/kg	
91-20-3	Naphthalene	ND	33	9.4	ug/kg	
98-95-3	Nitrobenzene	ND	67	13	ug/kg	
62-75-9	n-Nitrosodimethylamine	ND	67	12	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	67	9.6	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	12	ug/kg	
85-01-8	Phenanthrene	ND	33	11	ug/kg	
129-00-0	Pyrene	ND	33	11	ug/kg	
110-86-1	Pyridine	ND	67	11	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	67	8.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	65%	10-99%
4165-62-2	Phenol-d5	71%	10-96%

Method Blank Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68490-MB1	P168172.D	1	10/25/25	RS	10/24/25	OP68490	EP7826

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Surrogate Recoveries		Limits
118-79-6	2,4,6-Tribromophenol	80%	10-123%
4165-60-0	Nitrobenzene-d5	72%	10-109%
321-60-8	2-Fluorobiphenyl	74%	11-109%
1718-51-0	Terphenyl-d14	89%	10-120%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68490-BS1	P168173.D	1	10/25/25	RS	10/24/25	OP68490	EP7826
OP68490-BSD	P168174.D	1	10/25/25	RS	10/24/25	OP68490	EP7826

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic acid	1670	714	43	935	56	27	10-146/45
95-57-8	2-Chlorophenol	1670	820	49	1000	60	20	10-135/43
59-50-7	4-Chloro-3-methyl phenol	1670	907	54	1160	70	24	10-141/46
120-83-2	2,4-Dichlorophenol	1670	858	51	1100	66	25	10-139/43
105-67-9	2,4-Dimethylphenol	1670	870	52	1110	67	24	10-141/44
51-28-5	2,4-Dinitrophenol	3330	1090	33	1420	43	26	10-138/90
534-52-1	4,6-Dinitro-o-cresol	1670	853	51	1170	70	31	10-156/64
95-48-7	2-Methylphenol	1670	805	48	1020	61	24	10-139/45
	3&4-Methylphenol	3330	1660	50	2110	63	24	10-174/46
88-75-5	2-Nitrophenol	1670	893	54	1070	64	18	10-142/43
100-02-7	4-Nitrophenol	1670	765	46	1020	61	29	10-144/51
87-86-5	Pentachlorophenol	3330	1520	46	2010	60	28	10-165/51
108-95-2	Phenol	1670	836	50	1040	62	22	23-115/45
95-95-4	2,4,5-Trichlorophenol	1670	881	53	1160	70	27	13-136/47
88-06-2	2,4,6-Trichlorophenol	1670	875	53	1150	69	27	10-142/46
83-32-9	Acenaphthene	1670	817	49	1070	64	27	10-141/45
208-96-8	Acenaphthylene	1670	836	50	1090	65	26	10-133/45
98-86-2	Acetophenone	1670	788	47	947	57	18	23-115/44
62-53-3	Aniline	1670	816	49	981	59	18	10-113/63
120-12-7	Anthracene	1670	866	52	1140	68	27	10-144/49
56-55-3	Benzo(a)anthracene	1670	848	51	1150	69	30	11-139/48
50-32-8	Benzo(a)pyrene	1670	865	52	1170	70	30	13-141/48
205-99-2	Benzo(b)fluoranthene	1670	883	53	1160	70	27	14-140/48
191-24-2	Benzo(g,h,i)perylene	1670	798	48	1090	65	31	13-138/50
207-08-9	Benzo(k)fluoranthene	1670	871	52	1170	70	29	12-140/47
101-55-3	4-Bromophenyl phenyl ether	1670	873	52	1160	70	28	10-146/47
85-68-7	Butyl benzyl phthalate	1670	1030	62	1390	83	30	10-150/48
91-58-7	2-Chloronaphthalene	1670	835	50	1070	64	25	10-142/42
106-47-8	4-Chloroaniline	1670	297	18	335	20	12	10-108/56
218-01-9	Chrysene	1670	867	52	1140	68	27	11-139/48
111-91-1	bis(2-Chloroethoxy)methane	1670	890	53	1100	66	21	10-144/42
111-44-4	bis(2-Chloroethyl)ether	1670	759	46	874	52	14	10-145/43
108-60-1	2,2'-Oxybis(1-chloropropane)	1670	838	50	986	59	16	10-145/43
7005-72-3	4-Chlorophenyl phenyl ether	1670	819	49	1080	65	27	10-145/46
95-50-1	1,2-Dichlorobenzene	1670	714	43	800	48	11	10-136/41
122-66-7	1,2-Diphenylhydrazine	1670	1000	60	1330	80	28	10-145/46

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68490-BS1	P168173.D	1	10/25/25	RS	10/24/25	OP68490	EP7826
OP68490-BSD	P168174.D	1	10/25/25	RS	10/24/25	OP68490	EP7826

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
541-73-1	1,3-Dichlorobenzene	1670	689	41	769	46	11	10-139/40
106-46-7	1,4-Dichlorobenzene	1670	693	42	765	46	10	10-136/43
121-14-2	2,4-Dinitrotoluene	1670	922	55	1220	73	28	10-148/49
606-20-2	2,6-Dinitrotoluene	1670	946	57	1280	77	30	12-145/48
91-94-1	3,3'-Dichlorobenzidine	1670	721	43	900	54	22	10-100/62
53-70-3	Dibenzo(a,h)anthracene	1670	826	50	1100	66	28	14-142/48
132-64-9	Dibenzofuran	1670	834	50	1070	64	25	10-140/46
84-74-2	Di-n-butyl phthalate	1670	905	54	1200	72	28	11-147/47
117-84-0	Di-n-octyl phthalate	1670	1040	62	1430	86	32	15-145/49
84-66-2	Diethyl phthalate	1670	834	50	1100	66	28	10-145/46
131-11-3	Dimethyl phthalate	1670	834	50	1090	65	27	10-144/47
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1010	61	1370	82	30	26-132/48
206-44-0	Fluoranthene	1670	811	49	1060	64	27	10-147/48
86-73-7	Fluorene	1670	820	49	1080	65	27	12-139/45
118-74-1	Hexachlorobenzene	1670	827	50	1130	68	31	10-144/48
87-68-3	Hexachlorobutadiene	1670	738	44	858	51	15	10-142/41
77-47-4	Hexachlorocyclopentadiene	3330	1350	41	1750	53	26	10-120/53
67-72-1	Hexachloroethane	1670	692	42	776	47	11	10-141/41
193-39-5	Indeno(1,2,3-cd)pyrene	1670	813	49	1100	66	30	13-144/52
78-59-1	Isophorone	1670	877	53	1090	65	22	10-139/44
91-57-6	2-Methylnaphthalene	1670	780	47	954	57	20	10-140/42
91-20-3	Naphthalene	1670	771	46	916	55	17	10-141/40
98-95-3	Nitrobenzene	1670	800	48	962	58	18	10-139/42
62-75-9	n-Nitrosodimethylamine	1670	753	45	828	50	9	10-140/41
621-64-7	N-Nitroso-di-n-propylamine	1670	895	54	1130	68	23	10-143/41
86-30-6	N-Nitrosodiphenylamine	1670	944	57	1280	77	30	10-145/45
85-01-8	Phenanthrene	1670	840	50	1120	67	29	10-142/47
129-00-0	Pyrene	1670	959	58	1280	77	29	13-141/46
110-86-1	Pyridine	1670	459	28	516	31	12	10-112/37
120-82-1	1,2,4-Trichlorobenzene	1670	760	46	900	54	17	10-141/41

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	50%	58%	10-99%
4165-62-2	Phenol-d5	52%	62%	10-96%

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68490-BS1	P168173.D	1	10/25/25	RS	10/24/25	OP68490	EP7826
OP68490-BSD	P168174.D	1	10/25/25	RS	10/24/25	OP68490	EP7826

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
118-79-6	2,4,6-Tribromophenol	51%	67%	10-123%
4165-60-0	Nitrobenzene-d5	52%	60%	10-109%
321-60-8	2-Fluorobiphenyl	50%	63%	11-109%
1718-51-0	Terphenyl-d14	55%	71%	10-120%

*** = Outside of Control Limits.**

Internal Standard Area Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	EP7826-CC7821	**Injection Date:**	10/25/25
Lab File ID:	P168169.D	**Injection Time:**	11:14
Instrument ID:	GCMSP	**Method:**	SW846 8270E

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Initial Cal [a]	64158	4.52	246102	5.44	134357	6.79	250350	8.36	261536	12.16	283349	14.26
Check Std [b]	43241	4.48	165035	5.40	85311	6.76	148357	8.32	145156	12.14	167785	14.24
Upper Limit [c]	86482	4.65	330070	5.57	170622	6.93	296714	8.49	290312	12.31	335570	14.41
Lower Limit [d]	21621	4.31	82518	5.23	42656	6.59	74179	8.15	72578	11.97	83893	14.07
Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP68490-MB1	61766	4.49	237133	5.40	121241	6.76	197129	8.32	161116	12.13	161222	14.24
OP68490-BS1	57402	4.48	216241	5.40	109902	6.76	182312	8.32	157079	12.13	159384	14.24
OP68490-BSD	57776	4.48	218153	5.40	108790	6.76	178557	8.32	150780	12.13	152576	14.24
OP68486-BS1	78720	4.48	294120	5.40	155495	6.76	263759	8.32	235501	12.13	248939	14.24
ZZZZZZ	83643	4.48	327759	5.40	176523[e]	6.75	304676[e]	8.32	270562	12.13	280652	14.23
ZZZZZZ	83868	4.48	329524	5.40	170357	6.75	270907	8.32	214850	12.13	247086	14.24
ZZZZZZ	69949	4.50	260558	5.42	152440	6.76	263144	8.32	213058	12.13	223693	14.23
ZZZZZZ	72237	4.51	243984	5.42	154707	6.76	220450	8.33	202197	12.14	241219	14.24
ZZZZZZ	82181	4.48	319844	5.40	161927	6.76	260035	8.33	232419	12.18	308806	14.29
ZZZZZZ	71118	4.49	231353	5.42	131429	6.77	230177	8.34	248271	12.15	309152	14.26
ZZZZZZ	60653	4.49	200956	5.42	107687	6.77	190957	8.34	195704	12.15	239075	14.26
ZZZZZZ	56467	4.49	183908	5.42	105470	6.77	185016	8.34	205365	12.15	244668	14.26
ZZZZZZ	74013	4.49	283626	5.40	139784	6.76	221790	8.33	200930	12.14	237480	14.26
JE21688-3	70631	4.49	247883	5.41	123178	6.76	206958	8.33	202222	12.14	242447	14.26
ZZZZZZ	66614	4.48	259858	5.41	127025	6.76	215351	8.33	221968	12.16	241241	14.28
OP68490-MS	62796	4.49	225829	5.41	115042	6.76	197356	8.34	203612	12.15	236047	14.26
OP68490-MSD	66564	4.49	235423	5.41	117543	6.76	197790	8.34	202004	12.15	239848	14.27

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Initial Cal is: EP7821-ICC7821 P168045.D 10/02/25 11:24
(b) Check Std Limit = -50 to + 100% of initial cal area.
(c) Upper Limit = + 100% of check standard area; Retention time + 0.167 minutes.
(d) Lower Limit = -50% of check standard area; Retention time -0.167 minutes.
(e) Response outside of control limits; ISTD does not reference any reported target analytes.

Internal Standard Area Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	EP7827-CC7821	**Injection Date:**	10/27/25
Lab File ID:	P168201.D	**Injection Time:**	10:24
Instrument ID:	GCMSP	**Method:**	SW846 8270E

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Initial Cal [a]	64158	4.52	246102	5.44	134357	6.79	250350	8.36	261536	12.16	283349	14.26
Check Std [b]	71047	4.48	270910	5.40	152645	6.76	282230	8.33	300687	12.14	349289	14.25
Upper Limit [c]	142094	4.65	541820	5.57	305290	6.93	564460	8.50	601374	12.31	698578	14.42
Lower Limit [d]	35524	4.31	135455	5.23	76323	6.59	141115	8.16	150344	11.97	174645	14.08
Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP68515-MB1	85570	4.48	331995	5.40	183243	6.75	331371	8.32	294448	12.13	304854	14.24
OP68486-MB1	80105	4.48	319485	5.40	174003	6.75	303476	8.32	255075	12.13	264873	14.24
OP68515-BS1	81968	4.48	310175	5.40	170389	6.75	299923	8.32	266356	12.14	279697	14.24
JE21702-1	81734	4.48	329532	5.40	183190	6.75	324551	8.32	290113	12.13	314087	14.24
JE21699-3	97804	4.48	387853	5.40	207636	6.75	360257	8.32	302300	12.13	306385	14.24
ZZZZZZ	102176	4.48	398150	5.40	208172	6.75	364992	8.32	317216	12.14	335817	14.24
ZZZZZZ	96044	4.48	380281	5.40	208271	6.75	372301	8.32	334236	12.13	362611	14.24
ZZZZZZ	85746	4.48	345172	5.40	186330	6.75	327086	8.32	290471	12.13	307031	14.24
ZZZZZZ	82367	4.48	330997	5.40	178740	6.75	316249	8.32	276849	12.13	299402	14.24
ZZZZZZ	82421	4.48	322403	5.40	166995	6.75	285308	8.32	244484	12.13	278270	14.24
OP68486-MS	87750	4.48	343197	5.40	190338	6.76	338052	8.32	300099	12.14	329863	14.24
OP68486-MSD	74555	4.48	291675	5.40	156772	6.76	272619	8.32	239355	12.14	256740	14.24
JE21699-2	98477	4.48	385119	5.40	207098	6.75	356995	8.32	314012	12.13	354062	14.24
JE21699-1	80242	4.48	309387	5.40	159390	6.75	277063	8.32	266754	12.14	295768	14.25
ZZZZZZ	76231	4.49	298096	5.41	156424	6.76	273455	8.33	265750	12.14	303372	14.25
ZZZZZZ	78284	4.48	303712	5.40	153530	6.76	257620	8.33	235286	12.14	266786	14.25
ZZZZZZ	85186	4.48	327739	5.40	162819	6.76	265982	8.33	246919	12.14	279233	14.25
ZZZZZZ	84054	4.48	320739	5.40	165272	6.76	279593	8.33	275645	12.14	308903	14.26
ZZZZZZ	70161	4.48	274864	5.40	136023	6.76	224970	8.33	209703	12.15	240510	14.26
ZZZZZZ	78461	4.48	304078	5.40	157318	6.76	263274	8.33	258405	12.15	283313	14.26
ZZZZZZ	82154	4.48	309233	5.41	158836	6.76	270400	8.33	257195	12.15	304859	14.27
ZZZZZZ	71040	4.48	278191	5.41	138721	6.76	223122	8.33	218855	12.15	248817	14.27
ZZZZZZ	80169	4.49	299273	5.41	139437	6.76	250798	8.33	257788	12.15	299338	14.27
ZZZZZZ	76412	4.49	294121	5.41	147632	6.76	244788	8.33	236669	12.16	264353	14.27
ZZZZZZ	76678	4.49	293046	5.41	143132	6.76	240968	8.33	239262	12.16	269454	14.27

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

Internal Standard Area Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	EP7827-CC7821	**Injection Date:**	10/27/25
Lab File ID:	P168201.D	**Injection Time:**	10:24
Instrument ID:	GCMSP	**Method:**	SW846 8270E

Lab Sample ID	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT

(a) Initial Cal is: EP7821-ICC7821 P168045.D 10/02/25 11:24
(b) Check Std Limit = -50 to + 100% of initial cal area.
(c) Upper Limit = + 100% of check standard area; Retention time + 0.167 minutes.
(d) Lower Limit = -50% of check standard area; Retention time -0.167 minutes.

Surrogate Recovery Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8270E **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
JE21699-1	P168220.D	34	37	44	37	42	41
JE21699-2	P168219.D	41	42	52	41	47	51
JE21699-3	P168211.D	54	60	58	59	67	77
OP68490-BS1	P168173.D	50	52	51	52	50	55
OP68490-BSD	P168174.D	58	62	67	60	63	71
OP68490-MB1	P168172.D	65	71	80	72	74	89

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	10-99%
S2 = Phenol-d5	10-96%
S3 = 2,4,6-Tribromophenol	10-123%
S4 = Nitrobenzene-d5	10-109%
S5 = 2-Fluorobiphenyl	11-109%
S6 = Terphenyl-d14	10-120%

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GBH1968-MB	BH55061.D	1	10/31/25	JN	n/a	n/a	GBH1968

The QC reported here applies to the following samples: **Method: MADEP VPH REV 2.1**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	5000	2500	ug/kg	
	C9- C12 Aliphatics (Unadj.)	ND	5000	2500	ug/kg	
	C5- C8 Aliphatics	ND	5000	2500	ug/kg	
	C9- C12 Aliphatics	ND	5000	2500	ug/kg	
	C9- C10 Aromatics	ND	5000	2500	ug/kg	

CAS No.	Surrogate Recoveries		Limits
	2,3,4-Trifluorotoluene	96%	70-130%
	2,3,4-Trifluorotoluene	99%	70-130%

Method Blank Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKM602-MB	KM14323.D	1	10/27/25	JN	n/a	n/a	GKM602

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE21699-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries		Limits
98-08-8	aaa-Trifluorotoluene	81%	70-116%

Method Blank Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKM602-MB2	KM14332.D	1	10/27/25	JN	n/a	n/a	GKM602

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE21699-1, JE21699-3

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries		Limits
98-08-8	aaa-Trifluorotoluene	83%	70-116%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GBH1968-BS	BH55062.D	1	10/31/25	JN	n/a	n/a	GBH1968
GBH1968-BSD	BH55063.D	1	10/31/25	JN	n/a	n/a	GBH1968

The QC reported here applies to the following samples: **Method: MADEP VPH REV 2.1**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
	C5- C8 Aliphatics (Unadj.)	7500	7320	98	7240	97	1	70-130/25
	C9- C12 Aliphatics (Unadj.)	5000	4120	82	4040	81	2	70-130/25
	C9- C10 Aromatics	2500	2340	94	2330	93	0	70-130/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
	2,3,4-Trifluorotoluene	101%	100%	70-130%
	2,3,4-Trifluorotoluene	101%	102%	70-130%

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKM602-BS	KM14324.D	1	10/27/25	JN	n/a	n/a	GKM602
GKM602-BSD	KM14325.D	1	10/27/25	JN	n/a	n/a	GKM602

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	400	389	97	391	98	1	75-126/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
98-08-8	aaa-Trifluorotoluene	99%	99%	70-116%

8.2.2

8

*** = Outside of Control Limits.**

Surrogate Recovery Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: MADEP VPH REV 2.1 **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
JE21699-1	BH55078.D	100	99
JE21699-2	BH55077.D	100	100
JE21699-3	BH55076.D	97	98
GBH1968-BS	BH55062.D	101	101
GBH1968-BSD	BH55063.D	100	102
GBH1968-MB	BH55061.D	96	99

Surrogate Compounds	Recovery Limits
S1 = 2,3,4-Trifluorotoluene	70-130%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

Surrogate Recovery Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8015D **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]
JE21699-1	KM14338.D	84
JE21699-2	KM14328.D	84
JE21699-3	KM14339.D	82
GKM602-BS	KM14324.D	99
GKM602-BSD	KM14325.D	99
GKM602-MB	KM14323.D	81
GKM602-MB2	KM14332.D	83

Surrogate Compounds	Recovery Limits
S1 = aaa-Trifluorotoluene	70-116%

(a) Recovery from GC signal #1

GC/LC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68483-MB1	4Y93310.D	1	10/28/25	CB	10/24/25	OP68483	G4Y3522

The QC reported here applies to the following samples: **Method: MADEP EPH REV 2.1**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	ND	6700	580	ug/kg	
	C9-C18 Aliphatics	ND	6700	190	ug/kg	
	C11-C22 Aromatics	ND	6700	580	ug/kg	
	C19-C36 Aliphatics	ND	6700	450	ug/kg	

CAS No.	Surrogate Recoveries		Limits
3386-33-2	1-Chlorooctadecane	59%	40-140%
84-15-1	o-Terphenyl	83%	40-140%
321-60-8	2-Fluorobiphenyl	144%* [a]	40-140%

(a) Outside of in house control limits.

Method Blank Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68479-MB1	RM40967.D	1	10/26/25	MLC	10/24/25	OP68479	GRM998

The QC reported here applies to the following samples: **Method: SW846 8082A**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	8.5	ug/kg	
11104-28-2	Aroclor 1221	ND	20	6.7	ug/kg	
11141-16-5	Aroclor 1232	ND	20	17	ug/kg	
53469-21-9	Aroclor 1242	ND	20	12	ug/kg	
12672-29-6	Aroclor 1248	ND	20	4.3	ug/kg	
11097-69-1	Aroclor 1254	ND	20	2.2	ug/kg	
11096-82-5	Aroclor 1260	ND	20	6.9	ug/kg	
11100-14-4	Aroclor 1268	ND	20	2.0	ug/kg	
37324-23-5	Aroclor 1262	ND	20	1.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
877-09-8	Tetrachloro-m-xylene	88%	35-154%
877-09-8	Tetrachloro-m-xylene	97%	35-154%
2051-24-3	Decachlorobiphenyl	76%	24-176%
2051-24-3	Decachlorobiphenyl	80%	24-176%

Method Blank Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68517-MB1	3Y97374.D	1	10/28/25	CB	10/26/25	OP68517	G3Y3754

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	4.0	2.6	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	98%	50-150%
438-22-2	5a-Androstane	101%	50-150%

Blank Spike Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68479-BS1	RM40968.D	1	10/26/25	MLC	10/24/25	OP68479	GRM998

The QC reported here applies to the following samples: **Method: SW846 8082A**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
12674-11-2	Aroclor 1016	40	32.2	81 [a]	64-128
11104-28-2	Aroclor 1221		ND		50-150
11141-16-5	Aroclor 1232		ND		50-150
53469-21-9	Aroclor 1242		ND		50-150
12672-29-6	Aroclor 1248		ND		50-150
11097-69-1	Aroclor 1254		ND		50-150
11096-82-5	Aroclor 1260	40	35.9	90	62-132
11100-14-4	Aroclor 1268		ND		50-150
37324-23-5	Aroclor 1262		ND		50-150

CAS No.	Surrogate Recoveries	BSP	Limits
877-09-8	Tetrachloro-m-xylene	90%	35-154%
877-09-8	Tetrachloro-m-xylene	98%	35-154%
2051-24-3	Decachlorobiphenyl	79%	24-176%
2051-24-3	Decachlorobiphenyl	81%	24-176%

(a) Reported from 1st signal, 2nd signal used for confirmation.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68483-BS1	4Y93311.D	1	10/28/25	CB	10/24/25	OP68483	G4Y3522
OP68483-BSD	4Y93312.D	1	10/28/25	CB	10/24/25	OP68483	G4Y3522

The QC reported here applies to the following samples: **Method: MADEP EPH REV 2.1**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
	C11-C22 Aromatics (Unadj.)	56700	52300	92	43700	77	18	50-150/30 [a]
	C9-C18 Aliphatics	20000	15200	76	16300	82	7	40-140/30
	C19-C36 Aliphatics	36700	35100	96	31100	85	12	40-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
3386-33-2	1-Chlorooctadecane	101%	97%	40-140%
84-15-1	o-Terphenyl	114%	93%	40-140%
321-60-8	2-Fluorobiphenyl	164%* [b]	142%* [b]	40-140%

Sample	Compound	Col #1	Col #2	Breakthrough	Limit
OP68483-BS1	2-Methylnaphthalene	2430	ND	0.0%	5.0
OP68483-BS1	Naphthalene	2750	ND	0.0%	5.0
OP68483-BSD	2-Methylnaphthalene	2120	ND	0.0%	5.0
OP68483-BSD	Naphthalene	2440	ND	0.0%	5.0

(a) Advisory control limits.
(b) Outside of in house control limits.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68517-BS1	3Y97375.D	1	10/28/25	CB	10/26/25	OP68517	G3Y3754
OP68517-BSD	3Y97376.D	1	10/28/25	CB	10/26/25	OP68517	G3Y3754

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE21699-1, JE21699-2, JE21699-3

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	500	778	156* [a]	769	154* [a]	1	50-150/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	141%	145%	50-150%
438-22-2	5a-Androstane	129%	135%	50-150%

(a) Outside control limits, but within reasonable method recovery limits.

*** = Outside of Control Limits.**

Surrogate Recovery Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: MADEP EPH REV 2.1 **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S2 [b]	S3 [b]
JE21699-1	4Y93321.D	51	78	158* [c]
JE21699-2	4Y93322.D	54	55	150* [c]
JE21699-3	4Y93323.D	33* [c]	61	179* [c]
OP68483-BS1	4Y93311.D	101	114	164* [c]
OP68483-BSD	4Y93312.D	97	93	142* [c]
OP68483-MB1	4Y93310.D	59	83	144* [c]

Surrogate Compounds	Recovery Limits
S1 = 1-Chlorooctadecane	40-140%
S2 = o-Terphenyl	40-140%
S3 = 2-Fluorobiphenyl	40-140%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1
(c) Outside of in house control limits.

Surrogate Recovery Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8082A **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]	S2 [a]	S2 [b]
JE21699-1	RM40979.D	80	96	70	74
JE21699-2	RM40980.D	81	93	74	76
JE21699-3	RM40981.D	84	94	71	79
OP68479-BS1	RM40968.D	90	98	79	81
OP68479-MB1	RM40967.D	88	97	76	80

Surrogate Compounds	Recovery Limits
S1 = Tetrachloro-m-xylene	35-154%
S2 = Decachlorobiphenyl	24-176%

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

Surrogate Recovery Summary

Job Number: JE21699
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8015D **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S2 [a]
JE21699-1	3Y97377.D	108	114
JE21699-2	3Y97384.D	110	113
JE21699-3	3Y97385.D	115	119
OP68517-BS1	3Y97375.D	141	129
OP68517-BSD	3Y97376.D	145	135
OP68517-MB1	3Y97374.D	98	101

Surrogate Compounds	Recovery Limits
S1 = o-Terphenyl	50-150%
S2 = 5a-Androstane	50-150%

(a) Recovery from GC signal #1

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Blank Spike and Lab Control Sample Summaries**
- **Serial Dilution Summaries**

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE21699
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58199 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 10/23/25

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.033	.006	.015	-0.0033	<0.033

Associated samples MP58199: JE21699-1, JE21699-2, JE21699-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE21699
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58199
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 10/23/25

Metal	BSP Result	Spikelot HGPWS1	% Rec	QC Limits
Mercury	0.35	0.333	105.0	80-120

Associated samples MP58199: JE21699-1, JE21699-2, JE21699-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE21699
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 10/31/25

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.7	8.1		
Antimony	2.0	.17	.41	-0.030	<2.0
Arsenic	2.0	.21	.28	0.040	<2.0
Barium	20	.08	1.9		
Beryllium	0.20	.03	.08	-0.020	<0.20
Bismuth	2.0	.23	.52		
Boron	10	.23	3.7		
Cadmium	0.50	.03	.07	0.010	<0.50
Calcium	500	.66	21		
Chromium	1.0	.03	.37	0.030	<1.0
Cobalt	5.0	.04	.28		
Copper	2.5	.08	.84	0.24	<2.5
Iron	50	.53	19		
Lead	2.0	.11	.41	-0.040	<2.0
Lithium	5.0	.48	.92		
Magnesium	500	3.2	14		
Manganese	1.5	.01	.41		
Molybdenum	2.0	.06	.32		
Nickel	4.0	.04	.35	0.020	<4.0
Phosphorus	20	.12	3.3		
Potassium	1000	7.7	32		
Selenium	2.0	.32	.65	-0.050	<2.0
Silicon	20	.17	11		
Silver	0.50	.1	.17	0.010	<0.50
Sodium	1000	3.4	78		
Strontium	5.0	.03	.18		
Sulfur	10	.3	3.9		
Thallium	1.0	.18	.58	-0.29	<1.0
Tin	20	.08	3.8		
Titanium	1.0	.05	.34		
Tungsten	5.0	.26	1.8		
Vanadium	5.0	.06	.19		
Zinc	5.0	.01	2.3	0.38	<5.0

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE21699
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377 Methods: SW846 6010D
Matrix Type: SOLID Units: mg/kg

Prep Date: 10/31/25

Metal	RL	IDL	MDL	MB raw	final
Zirconium	2.0	.03	.54		

Associated samples MP58377: JE21699-1, JE21699-2, JE21699-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE21699
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date:			10/31/25				10/31/25	
Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits	LCS Result	Spikelot MPLC681022	% Rec	QC Limits
Aluminum								
Antimony	183	200	91.5	80-120	66.6	276	24.1	2-110
Arsenic	186	200	93.0	80-120	161	223	72.2	70-102
Barium								
Beryllium	192	200	96.0	80-120	110	131	84.0	76-108
Bismuth								
Boron								
Cadmium	188	200	94.0	80-120	181	226	80.1	74-105
Calcium								
Chromium	192	200	96.0	80-120	189	230	82.2	73-107
Cobalt								
Copper	181	200	90.5	80-120	187	239	78.2	75-106
Iron								
Lead	190	200	95.0	80-120	236	275	85.8	74-108
Lithium								
Magnesium								
Manganese								
Molybdenum								
Nickel	191	200	95.5	80-120	99.7	118	84.5	72-104
Phosphorus								
Potassium								
Selenium	176	200	88.0	80-120	107	137	78.1	71-109
Silicon								
Silver	24.0	25	96.0	80-120	61.3	75.3	81.4	72-110
Sodium								
Strontium								
Sulfur								
Thallium	187	200	93.5	80-120	139	165	84.2	71-107
Tin								
Titanium								
Tungsten								
Vanadium								
Zinc	193	200	96.5	80-120	236	286	82.5	76-112

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE21699
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date:				10/31/25				10/31/25
Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits	LCS Result	Spikelot MPLC681022	% Rec	QC Limits
Zirconium								

Associated samples MP58377: JE21699-1, JE21699-2, JE21699-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE21699
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 10/31/25

Metal	LCS Result	Spikelot MPLC681022	% Rec	QC Limits
Aluminum				
Antimony	65.2	276	23.6	2-110
Arsenic	162	223	72.6	70-102
Barium				
Beryllium	109	131	83.2	76-108
Bismuth				
Boron				
Cadmium	183	226	81.0	74-105
Calcium				
Chromium	190	230	82.6	73-107
Cobalt				
Copper	190	239	79.5	75-106
Iron				
Lead	239	275	86.9	74-108
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	101	118	85.6	72-104
Phosphorus				
Potassium				
Selenium	107	137	78.1	71-109
Silicon				
Silver	62.0	75.3	82.3	72-110
Sodium				
Strontium				
Sulfur				
Thallium	140	165	84.8	71-107
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc	238	286	83.2	76-112

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE21699
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 10/31/25

Metal	LCS Result	Spikelot MPLC681022% Rec	QC Limits
Zirconium			

Associated samples MP58377: JE21699-1, JE21699-2, JE21699-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE21699
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 10/31/25

Metal	JE21699-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	3.40	0.00	100.0(a)	0-10
Arsenic	60.5	58.9	2.6	0-10
Barium				
Beryllium	2.70	2.70	0.0	0-10
Bismuth				
Boron				
Cadmium	3.50	2.80	20.0 (a)	0-10
Calcium				
Chromium	260	265	1.9	0-10
Cobalt				
Copper	259	255	1.7	0-10
Iron				
Lead	684	681	0.4	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	174	177	1.3	0-10
Phosphorus				
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Sulfur				
Thallium	3.00	0.00	100.0(a)	0-10
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc	520	531	2.1	0-10

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE21699
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 10/31/25

Metal	JE21699-1 Original SDL 1:5	%DIF	QC Limits
Zirconium			

Associated samples MP58377: JE21699-1, JE21699-2, JE21699-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

POST DIGESTATE SPIKE SUMMARY

Login Number: JE21699
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 10/31/25

Metal	Sample ml	Final ml	JE21699-1 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony	19.25	20	3.4	3.2725	1843	0.2	200	2000	92.0	80-120
Arsenic										
Barium										
Beryllium										
Bismuth										
Boron										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper										
Iron										
Lead	19.25	20	683.8	658.1575	2545	0.2	200	2000	94.3	80-120
Lithium										
Magnesium										
Manganese										
Molybdenum										
Nickel										
Phosphorus										
Potassium										
Selenium										
Silicon										
Silver										
Sodium										
Strontium										
Sulfur										
Thallium										
Tin										
Titanium										
Tungsten										
Vanadium										
Zinc										

POST DIGESTATE SPIKE SUMMARY

Login Number: JE21699
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 10/31/25

Metal	Sample ml	Final ml	JE21699-1 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Zirconium										

Associated samples MP58377: JE21699-1, JE21699-2, JE21699-3

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested

General Chemistry

QC Data Summaries

Includes the following where applicable:

- **Method Blank and Blank Spike Summaries**
- **Duplicate Summaries**
- **Matrix Spike Summaries**

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: JE21699
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP65041/GN75570	0.40	0.0	mg/kg	40	38.6	96.5	80-120%
Chromium, Hexavalent	GP65041/GN75570			mg/kg	913.861	912	99.8	80-120%
Cyanide Reactivity	GP65008/GN75378	10	0.0	mg/kg	100	3.37	3.4	.25-27%
Specific Conductivity @ 25 C	GN75133			umhos/cm	1412	1400	99.2	95-105%
Sulfide Reactivity	GP65007/GN75263	100	0.0	mg/kg	440	240	54.5	42-107%

Associated Samples:
Batch GN75133: JE21699-1, JE21699-2, JE21699-3
Batch GP65007: JE21699-1, JE21699-2, JE21699-3
Batch GP65008: JE21699-1, JE21699-2, JE21699-3
Batch GP65041: JE21699-1, JE21699-2, JE21699-3
(*) Outside of QC limits

The results set forth herein are provided by SGS North America Inc.

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Automated Report

Technical Report for

WSP USA Environment & Infrastructure Inc

MWRA Water Tunnel

US0041005.1387 PO#P13532445001

SGS Job Number: JE21772

Sampling Date: 10/23/25



Report to:

WSP USA Inc.
100 Summer Street, 13th Floor
Boston, MA 02110
dan.martin@wsp.com

ATTN: Dan Martin

Total number of pages in report: 93

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Olga Azarian
Technical Director

Client Service contact: Victoria Pushkova 732-329-0200
Certifications: NJ(12129),NY(10983),CA,CO,CT,FL,HI,IL,IN,KY,LA (120428),MA,MD,ME,MN,NC,NH,NV, AK (UST-103),AZ (AZ0786),PA(68-00408),RI,SC,TX (T104704234),UT,VA,WA,WV

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Sample Summary

WSP USA Environment & Infrastructure Inc

Job No: JE21772

MWRA Water Tunnel
Project No: US0041005.1387 PO#P13532445001

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JE21772-1	10/23/25	12:00	JDV	10/24/25	SO	Soil	SB-FD-541_8.0-14.0

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client: WSP USA Environment & Infrastructure Inc **Job No:** JE21772

Site: MWRA Water Tunnel **Report Date** 11/7/2025 12:38:51 P

On 10/24/2025, 1 sample(s), 0 Trip Blank(s), 0 Equip. Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 1 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of JE21772 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: SO **Batch ID:** VY9398

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- The blank spike (BS) recovery(s) of trans-1,2-Dichloroethene, cis-1,2-Dichloroethene are outside control limits.
- JE21772-1 for 4-Methyl-2-pentanone(MIBK): Response factor for this compound is below 0.05 in the initial and continuing calibrations.
- JE21772-1 for 2-Butanone (MEK): Response factor for this compound is below 0.05 in the initial and continuing calibrations.
- JE21772-1 for Chloroethane: Associated CCV outside of control limits low.
- JE21772-1 for Methyl Tert Butyl Ether: Associated CCV outside of control limits high, sample was ND.
- VY9398-BSD for Tetrahydrofuran: Outside in house control limits.
- VY9398-BS for cis-1,2-Dichloroethene: Outside of in house control limits, but within reasonable method recovery limits.
- VY9398-BS for trans-1,2-Dichloroethene: High percent recovery and no associated positive reported in the QC batch.
- JE21772-1 for Acetone: Response factor for this compound is below 0.05 in the initial and continuing calibrations.

MS Semi-volatiles By Method SW846 8270E

Matrix: SO **Batch ID:** OP68514

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- JE21772-1: Dilution required due to viscosity of the extract matrix.
- JE21772-1 for 4,6-Dinitro-o-cresol: Associated CCV outside of control limits high, sample was ND.
- Not all RL meet the requirement.

GC Volatiles By Method MADEP VPH REV 2.1

Matrix: SO **Batch ID:** GBH1964

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

GC Volatiles By Method SW846 8015D

Matrix: SO **Batch ID:** GKM602

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

GC/LC Semi-volatiles By Method MADEP EPH REV 2.1

Matrix: SO **Batch ID:** OP68512

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JE21772-1 have surrogates outside control limits. Probable cause due to matrix interference.
- OP68512-BS1 for 2-Fluorobiphenyl: Outside of in house control limits.
- JE21772-1 for 1-Chlorooctadecane: Outside of in house control limits.

GC/LC Semi-volatiles By Method SW846 8015D

Matrix: SO **Batch ID:** OP68517

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- The blank spike (BS) recovery(s) of TPH-DRO (C10-C28) are outside control limits.
- OP68517-BS1 for TPH-DRO (C10-C28): Outside control limits, but within reasonable method recovery limits.

GC/LC Semi-volatiles By Method SW846 8082A

Matrix: SO **Batch ID:** OP68508

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- JE21772-1 for Aroclor 1260: More than 40 % RPD for detected concentrations between the two GC columns.

Metals Analysis By Method SW846 6010D

Matrix: SO **Batch ID:** MP58377

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JE21699-1PS, JE21699-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Antimony, Cadmium, Thallium are outside control limits for sample MP58377-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

Metals Analysis By Method SW846 7471B

Matrix: SO **Batch ID:** MP58265

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JE21768-5PS were used as the QC samples for the metals analysis.

General Chemistry By Method ASTM D1498-76M

Matrix:	SO	Batch ID:	GN75215

- The data for ASTM D1498-76M meets quality control requirements.

General Chemistry By Method SM2540 G 18TH ED MOD

Matrix:	SO	Batch ID:	GN75279

- The data for SM2540 G 18TH ED MOD meets quality control requirements.

General Chemistry By Method SW846 1010B/ASTM D93

Matrix:	SO	Batch ID:	GN75222

- The data for SW846 1010B/ASTM D93 meets quality control requirements.

General Chemistry By Method SW846 3060A/7196A

Matrix:	SO	Batch ID:	GP65113

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SW846 9045D

Matrix:	SO	Batch ID:	GN75216

- The data for SW846 9045D meets quality control requirements.
- JE21772-1 for pH: Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.2 Deg. C

General Chemistry By Method SW846 CHAP7/9012 B

Matrix:	SO	Batch ID:	GP65084

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SW846 CHAP7/9034

Matrix:	SO	Batch ID:	GP65083

- All samples were prepared within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

Summary of Hits

Job Number: JE21772
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/23/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE21772-1	SB-FD-541_8.0-14.0					
Acetone [a]		5.8 J	9.3	3.9	ug/kg	SW846 8260D
Anthracene [b]		156 J	170	100	ug/kg	SW846 8270E
Benzo(a)anthracene [b]		413	170	47	ug/kg	SW846 8270E
Benzo(a)pyrene [b]		305	170	75	ug/kg	SW846 8270E
Benzo(b)fluoranthene [b]		399	170	73	ug/kg	SW846 8270E
Benzo(g,h,i)perylene [b]		194	170	83	ug/kg	SW846 8270E
Benzo(k)fluoranthene [b]		112 J	170	77	ug/kg	SW846 8270E
Chrysene [b]		377	170	52	ug/kg	SW846 8270E
Fluoranthene [b]		870	170	74	ug/kg	SW846 8270E
Indeno(1,2,3-cd)pyrene [b]		168 J	170	78	ug/kg	SW846 8270E
Phenanthrene [b]		579	170	56	ug/kg	SW846 8270E
Pyrene [b]		779	170	53	ug/kg	SW846 8270E
C11-C22 Aromatics (Unadj.)		50100	6400	550	ug/kg	MADEP EPH REV 2.1
C9-C18 Aliphatics		3460 J	6400	180	ug/kg	MADEP EPH REV 2.1
C11-C22 Aromatics		44600	6400	550	ug/kg	MADEP EPH REV 2.1
C19-C36 Aliphatics		22400	6400	430	ug/kg	MADEP EPH REV 2.1
TPH-DRO (C10-C28)		131	4.2	2.7	mg/kg	SW846 8015D
Aroclor 1260 [c]		13.5 J	19	6.6	ug/kg	SW846 8082A
Arsenic		2.7	2.1		mg/kg	SW846 6010D
Beryllium		0.21	0.21		mg/kg	SW846 6010D
Chromium		11.1	1.1		mg/kg	SW846 6010D
Copper		13.3	2.7		mg/kg	SW846 6010D
Lead		21.2	2.1		mg/kg	SW846 6010D
Nickel		8.5	4.3		mg/kg	SW846 6010D
Zinc		28.9	5.4		mg/kg	SW846 6010D
Chromium, Hexavalent		0.50	0.42		mg/kg	SW846 3060A/7196A
Ignitability (Flashpoint)		> 200			Deg. F	SW846 1010B/ASTM D93
Redox Potential Vs H2		324			mv	ASTM D1498-76M
Specific Conductivity @ 25 C		135	7.5		umhos/cm	SM2510 B-11/SW 9050A
pH [d]		7.42			su	SW846 9045D

(a) Response factor for this compound is below 0.05 in the initial and continuing calibrations.
(b) Dilution required due to viscosity of the extract matrix.
(c) More than 40 % RPD for detected concentrations between the two GC columns.
(d) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.2 Deg. C

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SB-FD-541_8.0-14.0		
Lab Sample ID:	JE21772-1	**Date Sampled:**	10/23/25
Matrix:	SO - Soil	**Date Received:**	10/24/25
Method:	SW846 8260D	**Percent Solids:**	95.6
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y218669.D	1	10/24/25 21:36	PS	n/a	n/a	VY9398
Run #2							

	Initial Weight
Run #1	5.6 g
Run #2	

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	5.8	9.3	3.9	ug/kg	J
71-43-2	Benzene	ND	0.47	0.42	ug/kg	
108-86-1	Bromobenzene	ND	4.7	0.52	ug/kg	
74-97-5	Bromochloromethane	ND	4.7	0.52	ug/kg	
75-27-4	Bromodichloromethane	ND	1.9	0.40	ug/kg	
75-25-2	Bromoform	ND	4.7	1.3	ug/kg	
74-83-9	Bromomethane	ND	4.7	0.71	ug/kg	
78-93-3	2-Butanone (MEK) [a]	ND	9.3	2.3	ug/kg	
104-51-8	n-Butylbenzene	ND	1.9	0.38	ug/kg	
135-98-8	sec-Butylbenzene	ND	1.9	0.40	ug/kg	
98-06-6	tert-Butylbenzene	ND	1.9	0.47	ug/kg	
75-15-0	Carbon disulfide	ND	1.9	0.50	ug/kg	
56-23-5	Carbon tetrachloride	ND	1.9	0.58	ug/kg	
108-90-7	Chlorobenzene	ND	1.9	0.43	ug/kg	
75-00-3	Chloroethane [b]	ND	4.7	0.55	ug/kg	
67-66-3	Chloroform	ND	1.9	0.93	ug/kg	
74-87-3	Chloromethane	ND	4.7	1.8	ug/kg	
95-49-8	o-Chlorotoluene	ND	1.9	0.50	ug/kg	
106-43-4	p-Chlorotoluene	ND	1.9	0.41	ug/kg	
108-20-3	Di-Isopropyl ether	ND	1.9	0.47	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	1.9	0.65	ug/kg	
124-48-1	Dibromochloromethane	ND	1.9	0.52	ug/kg	
106-93-4	1,2-Dibromoethane	ND	0.93	0.39	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	0.93	0.51	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	0.93	0.46	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	0.93	0.46	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	4.7	0.68	ug/kg	
75-34-3	1,1-Dichloroethane	ND	0.93	0.46	ug/kg	
107-06-2	1,2-Dichloroethane	ND	0.93	0.44	ug/kg	
75-35-4	1,1-Dichloroethene	ND	0.93	0.61	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	0.93	0.78	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	0.93	0.57	ug/kg	

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_8.0-14.0		
Lab Sample ID:	JE21772-1	**Date Sampled:**	10/23/25
Matrix:	SO - Soil	**Date Received:**	10/24/25
Method:	SW846 8260D	**Percent Solids:**	95.6
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	1.9	0.44	ug/kg	
142-28-9	1,3-Dichloropropane	ND	1.9	0.49	ug/kg	
594-20-7	2,2-Dichloropropane	ND	1.9	0.40	ug/kg	
563-58-6	1,1-Dichloropropene	ND	1.9	0.44	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	1.9	0.44	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	1.9	0.43	ug/kg	
123-91-1	1,4-Dioxane	ND	120	34	ug/kg	
60-29-7	Ethyl Ether	ND	1.9	0.43	ug/kg	
100-41-4	Ethylbenzene	ND	0.93	0.42	ug/kg	
87-68-3	Hexachlorobutadiene	ND	4.7	0.61	ug/kg	
591-78-6	2-Hexanone	ND	4.7	2.0	ug/kg	
98-82-8	Isopropylbenzene	ND	1.9	1.3	ug/kg	
99-87-6	p-Isopropyltoluene	ND	1.9	0.37	ug/kg	
1634-04-4	Methyl Tert Butyl Ether [c]	ND	0.93	0.44	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [a]	ND	4.7	2.1	ug/kg	
74-95-3	Methylene bromide	ND	4.7	0.49	ug/kg	
75-09-2	Methylene chloride	ND	4.7	2.4	ug/kg	
91-20-3	Naphthalene	ND	4.7	2.3	ug/kg	
103-65-1	n-Propylbenzene	ND	1.9	0.44	ug/kg	
100-42-5	Styrene	ND	1.9	0.38	ug/kg	
994-05-8	tert-Amyl Methyl Ether	ND	1.9	0.47	ug/kg	
637-92-3	tert-Butyl Ethyl Ether	ND	1.9	0.45	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.9	0.39	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.9	0.56	ug/kg	
127-18-4	Tetrachloroethene	ND	1.9	0.54	ug/kg	
109-99-9	Tetrahydrofuran	ND	9.3	2.8	ug/kg	
108-88-3	Toluene	ND	0.93	0.49	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	4.7	2.3	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	4.7	2.3	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	1.9	0.45	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	1.9	0.52	ug/kg	
79-01-6	Trichloroethene	ND	0.93	0.71	ug/kg	
75-69-4	Trichlorofluoromethane	ND	4.7	0.64	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	4.7	0.52	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	1.9	0.47	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	1.9	0.40	ug/kg	
75-01-4	Vinyl chloride	ND	1.9	0.45	ug/kg	
	m,p-Xylene	ND	0.93	0.84	ug/kg	
95-47-6	o-Xylene	ND	0.93	0.43	ug/kg	
1330-20-7	Xylene (total)	ND	0.93	0.43	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_8.0-14.0		
Lab Sample ID:	JE21772-1	**Date Sampled:**	10/23/25
Matrix:	SO - Soil	**Date Received:**	10/24/25
Method:	SW846 8260D	**Percent Solids:**	95.6
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	112%		80-124%
17060-07-0	1,2-Dichloroethane-D4	111%		75-133%
2037-26-5	Toluene-D8	102%		79-125%
460-00-4	4-Bromofluorobenzene	105%		58-148%

(a) Response factor for this compound is below 0.05 in the initial and continuing calibrations.
(b) Associated CCV outside of control limits low.
(c) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_8.0-14.0		
Lab Sample ID:	JE21772-1	**Date Sampled:**	10/23/25
Matrix:	SO - Soil	**Date Received:**	10/24/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	95.6
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	CT14646.D	5	10/26/25 19:58	TL	10/25/25 15:55	OP68514	ECT640
Run #2							

	Initial Weight	Final Volume
Run #1	31.6 g	1.0 ml
Run #2		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	3300	270	ug/kg	
95-57-8	2-Chlorophenol	ND	330	82	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	830	100	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	830	140	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	830	290	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	830	620	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [b]	ND	830	180	ug/kg	
95-48-7	2-Methylphenol	ND	330	110	ug/kg	
	3&4-Methylphenol	ND	330	140	ug/kg	
88-75-5	2-Nitrophenol	ND	830	110	ug/kg	
100-02-7	4-Nitrophenol	ND	1700	440	ug/kg	
87-86-5	Pentachlorophenol	ND	660	160	ug/kg	
108-95-2	Phenol	ND	330	86	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	830	120	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	830	99	ug/kg	
83-32-9	Acenaphthene	ND	170	57	ug/kg	
208-96-8	Acenaphthylene	ND	170	84	ug/kg	
98-86-2	Acetophenone	ND	830	36	ug/kg	
62-53-3	Aniline	ND	330	74	ug/kg	
120-12-7	Anthracene	156	170	100	ug/kg	J
56-55-3	Benzo(a)anthracene	413	170	47	ug/kg	
50-32-8	Benzo(a)pyrene	305	170	75	ug/kg	
205-99-2	Benzo(b)fluoranthene	399	170	73	ug/kg	
191-24-2	Benzo(g,h,i)perylene	194	170	83	ug/kg	
207-08-9	Benzo(k)fluoranthene	112	170	77	ug/kg	J
101-55-3	4-Bromophenyl phenyl ether	ND	330	64	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	330	40	ug/kg	
91-58-7	2-Chloronaphthalene	ND	330	39	ug/kg	
106-47-8	4-Chloroaniline	ND	830	60	ug/kg	
218-01-9	Chrysene	377	170	52	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	330	35	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	330	71	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_8.0-14.0		
Lab Sample ID:	JE21772-1	**Date Sampled:**	10/23/25
Matrix:	SO - Soil	**Date Received:**	10/24/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	95.6
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	330	59	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	330	54	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	330	48	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	330	38	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	330	35	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	330	40	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	170	51	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	170	83	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	330	140	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	170	73	ug/kg	
132-64-9	Dibenzofuran	ND	330	67	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	330	27	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	330	41	ug/kg	
84-66-2	Diethyl phthalate	ND	330	35	ug/kg	
131-11-3	Dimethyl phthalate	ND	330	29	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	330	39	ug/kg	
206-44-0	Fluoranthene	870	170	74	ug/kg	
86-73-7	Fluorene	ND	170	76	ug/kg	
118-74-1	Hexachlorobenzene	ND	330	42	ug/kg	
87-68-3	Hexachlorobutadiene	ND	170	67	ug/kg	
77-47-4	Hexachlorocyclopentadiene [b]	ND	1700	66	ug/kg	
67-72-1	Hexachloroethane	ND	830	82	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	168	170	78	ug/kg	J
78-59-1	Isophorone	ND	330	35	ug/kg	
91-57-6	2-Methylnaphthalene	ND	170	37	ug/kg	
91-20-3	Naphthalene	ND	170	47	ug/kg	
98-95-3	Nitrobenzene	ND	330	64	ug/kg	
62-75-9	n-Nitrosodimethylamine	ND	330	59	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	330	48	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	830	61	ug/kg	
85-01-8	Phenanthrene	579	170	56	ug/kg	
129-00-0	Pyrene	779	170	53	ug/kg	
110-86-1	Pyridine	ND	330	57	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	330	43	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	27%		10-99%
4165-62-2	Phenol-d5	30%		10-96%
118-79-6	2,4,6-Tribromophenol	43%		10-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_8.0-14.0		
Lab Sample ID:	JE21772-1	**Date Sampled:**	10/23/25
Matrix:	SO - Soil	**Date Received:**	10/24/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	95.6
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	26%		10-109%
321-60-8	2-Fluorobiphenyl	31%		11-109%
1718-51-0	Terphenyl-d14	40%		10-120%

(a) Dilution required due to viscosity of the extract matrix.
(b) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_8.0-14.0		
Lab Sample ID:	JE21772-1	**Date Sampled:**	10/23/25
Matrix:	SO - Soil	**Date Received:**	10/24/25
Method:	MADEP VPH REV 2.1	**Percent Solids:**	95.6
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BH54942.D	1	10/24/25 21:23	JN	n/a	n/a	GBH1964
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	8.3 g	10.0 ml	100 ul
Run #2			

MADEP VPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	6500	3300	ug/kg	
	C9- C12 Aliphatics (Unadj.)	ND	6500	3300	ug/kg	
	C5- C8 Aliphatics	ND	6500	3300	ug/kg	
	C9- C12 Aliphatics	ND	6500	3300	ug/kg	
	C9- C10 Aromatics	ND	6500	3300	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	2,3,4-Trifluorotoluene	103%		70-130%
	2,3,4-Trifluorotoluene	98%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_8.0-14.0		
Lab Sample ID:	JE21772-1	**Date Sampled:**	10/23/25
Matrix:	SO - Soil	**Date Received:**	10/24/25
Method:	SW846 8015D	**Percent Solids:**	95.6
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KM14340.D	1	10/27/25 19:52	JN	n/a	n/a	GKM602
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	9.1 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	12	6.0	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	83%		70-116%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_8.0-14.0		
Lab Sample ID:	JE21772-1	**Date Sampled:**	10/23/25
Matrix:	SO - Soil	**Date Received:**	10/24/25
Method:	MADEP EPH REV 2.1 SW846 3546	**Percent Solids:**	95.6
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Y93425.D	1	11/06/25 01:52	CB	10/24/25 14:00	OP68512	G4Y3526
Run #2							

	Initial Weight	Final Volume
Run #1	16.4 g	2.0 ml
Run #2		

MAEPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	50100	6400	550	ug/kg	
	C9-C18 Aliphatics	3460	6400	180	ug/kg	J
	C19-C36 Aliphatics	22400	6400	430	ug/kg	
	C11-C22 Aromatics	44600	6400	550	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3386-33-2	1-Chlorooctadecane	36% [a]		40-140%
84-15-1	o-Terphenyl	47%		40-140%
321-60-8	2-Fluorobiphenyl	138%		40-140%

(a) Outside of in house control limits.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_8.0-14.0		
Lab Sample ID:	JE21772-1	**Date Sampled:**	10/23/25
Matrix:	SO - Soil	**Date Received:**	10/24/25
Method:	SW846 8082A SW846 3570	**Percent Solids:**	95.6
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	RL32545.D	1	10/28/25 13:56	EA	10/26/25 13:15	OP68508	GRL825
Run #2							

	Initial Weight	Final Volume
Run #1	5.5 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	19	8.1	ug/kg	
11104-28-2	Aroclor 1221	ND	19	6.4	ug/kg	
11141-16-5	Aroclor 1232	ND	19	16	ug/kg	
53469-21-9	Aroclor 1242	ND	19	11	ug/kg	
12672-29-6	Aroclor 1248	ND	19	4.1	ug/kg	
11097-69-1	Aroclor 1254	ND	19	2.1	ug/kg	
11096-82-5	Aroclor 1260 [a]	13.5	19	6.6	ug/kg	J
11100-14-4	Aroclor 1268	ND	19	1.9	ug/kg	
37324-23-5	Aroclor 1262	ND	19	1.6	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	85%		35-154%
877-09-8	Tetrachloro-m-xylene	58%		35-154%
2051-24-3	Decachlorobiphenyl	99%		24-176%
2051-24-3	Decachlorobiphenyl	55%		24-176%

(a) More than 40 % RPD for detected concentrations between the two GC columns.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_8.0-14.0		
Lab Sample ID:	JE21772-1	**Date Sampled:**	10/23/25
Matrix:	SO - Soil	**Date Received:**	10/24/25
Method:	SW846 8015D SW846 3570	**Percent Solids:**	95.6
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Y97386.D	1	10/28/25 16:06	CB	10/26/25 13:15	OP68517	G3Y3754
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	131	4.2	2.7	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	113%		50-150%
438-22-2	5a-Androstane	116%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-541_8.0-14.0		
Lab Sample ID:	JE21772-1	**Date Sampled:**	10/23/25
Matrix:	SO - Soil	**Date Received:**	10/24/25
		Percent Solids:	95.6
Project:	MWRA Water Tunnel		

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	< 2.1	2.1	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Arsenic	2.7	2.1	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Beryllium	0.21	0.21	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Cadmium	< 0.54	0.54	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Chromium	11.1	1.1	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Copper	13.3	2.7	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Lead	21.2	2.1	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Mercury	< 0.028	0.028	mg/kg	1	10/27/25	10/27/25	MK	SW846 7471B [1]	SW846 7471B [3]
Nickel	8.5	4.3	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Selenium	< 2.1	2.1	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Silver	< 0.54	0.54	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Thallium	< 1.1	1.1	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]
Zinc	28.9	5.4	mg/kg	1	10/31/25	11/04/25	MM	SW846 6010D [2]	SW846 3050B [4]

(1) Instrument QC Batch: MA59630
(2) Instrument QC Batch: MA59689
(3) Prep QC Batch: MP58265
(4) Prep QC Batch: MP58377

RL = Reporting Limit

Report of Analysis

Client Sample ID:	**SB-FD-541_8.0-14.0**		
Lab Sample ID:	**JE21772-1**	**Date Sampled:**	**10/23/25**
Matrix:	**SO - Soil**	**Date Received:**	**10/24/25**
		Percent Solids:	**95.6**
Project:	**MWRA Water Tunnel**		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	0.50	0.42	mg/kg	1	10/31/25 18:20	RI	SW846 3060A/7196A
Cyanide Reactivity	< 10	10	mg/kg	1	10/28/25 21:13	JD	SW846 CHAP7/9012 B
Ignitability (Flashpoint)	> 200		Deg. F	1	10/24/25 15:04	DB	SW846 1010B/ASTM D93
Redox Potential Vs H2	324		mv	1	10/24/25 15:07	DB	ASTM D1498-76M
Solids, Percent	95.6		%	1	10/27/25 14:10	RB	SM2540 G 18TH ED MOD
Specific Conductivity @ 25 C	135	7.5	umhos/cm	1	10/29/25 10:20	GTT	SM2510 B-11/SW 9050A
Sulfide Reactivity	< 100	100	mg/kg	1	10/29/25 09:12	GT	SW846 CHAP7/9034
pH [a]	7.42		su	1	10/24/25 15:02	DB	SW846 9045D

(a) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 20.2 Deg. C

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- **Certification Exceptions**
- **Chain of Custody**
- **MCP Form**
- **EPH Form**
- **VPH Form**
- **Sample Tracking Chronicle**
- **QC Evaluation: MA MCP Limits**

Parameter Certification Exceptions

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

The following parameters included in this report are exceptions to NELAC certification.
The certification status of each is indicated below.

Parameter	CAS#	Method	Mat	Certification Status
Cyanide Reactivity		SW846 CHAP7/9012 B	SO	SGS is not certified for this parameter. [a]
Redox Potential Vs H2		ASTM D1498-76M	SO	SGS is not certified for this parameter. [b]
Specific Conductivity @ 25 C		SM2510 B-11/SW 9050A	SO	SGS is not certified for this parameter. [b]
Sulfide Reactivity		SW846 CHAP7/9034	SO	SGS is not certified for this parameter. [a]

(a) Reactivity analyzed following SW846 Chapter 7 is no longer recognized by regulatory agencies. Use of results should be verified through the program to which the data is being submitted.
(b) Lab cert for analyte not supported by NJDEP, OQA. Only methods/analytes required for reporting by the State of NJ can be certified in NJ. Use of this analyte for compliance must be verified through the appropriate regulatory office.

Certification exceptions shown are based on the New Jersey DEP certifications. Applicability in other states may vary. Please contact your laboratory representative if additional information is required for a specific regulatory program.

CHAIN OF CUSTODY

JE21772 Page 1 of 1

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200
www.sgs.com/ehsusa

FED EX Tracking #: 471992850273
Bottle Order Control #: HF-101625-60
SGS Quote #:
SGS Job #:

Client / Reporting Information	Project Information	Analysis Requested
Company Name: WSP	Project Name: MWRA Water Tunnel	
Street Address: 100 Summer St, 13th Floor	Street: 116 Gould St	Billing Information (If different from Report to):
City / State / Zip: Boston, MA, 02110	City / State: Needham / MA	Company Name:
Project Contact / E-mail: Dan Martin (dan.martin@wsp.com)	Project #: USD04105.1397	Street Address:
Phone #: 973-407-1394	Client Purchase Order #: P13532445001	City / State / Zip:
Sampler(s) Name(s) / Phone #: J. Viscardo 518-354-0290	Project Manager:	Attention:

Analysis Requested: VB260MCP, AB270MCP, BMS-PFR; BB015DRO, BMEPHR, PB082MCP; VMWPHR, PM13, XXCRA, SCON; IGN; SREAC; CREAC; VB015GRO; [illegible]

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB - Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection: Date	Time	Sampled by	Grab (G) / Comp (C)	Source: Potable (P) / Non-Potable (N)	Matrix	Number of Bottles: # of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	pH Check (Lab Use Only)	LAB USE ONLY
1	SB-FD-542_8.0-14.0		10/23/25	1200	JDV	C	N	S	9						X	X		X X X X X X X	
	END																		

Turn Around Time (Business Days) — Approved By (SGS PM) / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via SGS Engage. * Approval needed for 1-3 BD TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJDKQP
- [ ] NJGW Criteria 2025 *new*
- [ ] NYASP Category A
- [ ] NYASP Category B
- [X] MA MCP Criteria ___
- [ ] CTRCP Criteria ___
- [ ] State Forms
- [ ] EDD Format ___

Commercial "A" = Results only, Commercial "B" = Results + QC Summary, Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

* XXCRA: Includes Ethyl-MTBE to be Analyzed within 24hrs for MCP

SGS Service Center
Northborough, MA

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished By	Date / Time	Received By
1		10/23/25 1445	
2		10/23/25 1700	Fedex
3	Fedex	10/24/25 7:40 AM	
4			

Custody Seal # cs03966 ☐ Intact

Therm ID: Onics — Cooler Temp. °C: 0.9C IR-50

EHSA-QAC-0020.01 Rev. Date 12/5/2025

SGS Sample Receipt Summary

Job Number: JE21772 **Client:** WSP USA INC. **Project:** MWRA WATER TUNNEL

Date / Time Received: 10/24/2025 7:40:00 AM **Delivery Method:** FEDEX **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (0.9);

Cooler Temps (Corrected) °C: Cooler 1: (1.0);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR-50		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☑	☐
2. Trip Blank listed on COC:	☐		☑	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☑

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JE21772: Chain of Custody
Page 2 of 3

Job Change Order: JE21772

Requested Date:	11/21/2025	**Received Date:**	10/24/2025
Account Name:	WSP USA Environment & Infrastr	**Due Date:**	11/21/2025
Project Description:	MWRA Water Tunnel	**Deliverable:**	MAMCP
C/O Initiated By:	VIKTORIYA_ **PM:** VP	**TAT (Days):**	7

Sample #: JE21772-1 **Dept:**

Client ID: SB-FD-542_8.0-14.0 **TAT:** 7

Change: Revise ID to 'SB-FD-541_8.0-14.0' and re-issue the report.

Above Changes Per: Dan Martin **Date/Time:** 11/21/2025

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

Page 1 of 1

5.2

5

JE21772: Chain of Custody
Page 3 of 3

Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup	WSC-CAM	Exhibit VII A
	July 1, 2010	Revision No. 1
	Final	

Exhibit VII A-2: MassDEP Analytical Protocol Certification Form

MassDEP Analytical Protocol Certification Form

Laboratory Name:	SGS North America Inc. - Dayton	Project #:	JE21772
Project Location:	MWRA Water Tunnel	MADEP RTN	None

This form provides certifications for the following data set: list Laboratory Sample ID Numbers(s)

JE21772-1

Matrices: Groundwater/Surface Water ( ) Soil/Sediment (x) Drinking Water ( ) Air ( ) Other ( )

CAM Protocol (check all that apply below):

8260 VOC (X) CAM IIA	7470/7471 Hg (X) CAM III B	MassDEP VPH (X) CAM IV A	8081 Pesticides ( ) CAM V B	7196 Hex Cr (X) CAM VI B	Mass DEP APH ( ) CAM IX A
8270 SVOC (X) CAM II B	7010 Metals ( ) CAM III C	MassDEP EPH (X) CAM IV B	8151 Herbicides ( ) CAM V C	8330 Explosives ( ) CAM VIII A	TO-15 VOC ( ) CAM IX B
6010 Metals (X) CAM III A	6020 Metals ( ) CAM III D	8082 PCB (X) CAM V A	9014 Total Cyanide/PAC ( ) CAM VI A	6860 Perchlorate ( ) CAM VIII B	

Affirmative Responses to Questions A Through F are required for "Presumptive Certainty status

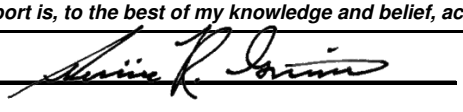
A	Were all samples received in a condition consistent with those described on the Chain-of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☑ Yes	☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes	☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes	☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑ Yes	☐ No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☑ Yes	☐ No
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes	☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☑ Yes	☐ No

Responses to questions G, H, and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols	☐ Yes	☑ No [1]
	Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data useability and representativeness requirements described in 310 CMR 40.1056(2)(k) and WSC-07-350.		
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	☐ Yes	☑ No [1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☑ Yes	☐ No [1]

[1] ***All Negative responses must be addressed in an attached Environmental Laboratory case narrative.***

I the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature:  **Position:** **Technical Director**

Printed Name: Olga Azarian **Date:** **07-Nov-25**

MADEP EPH FORM

Matrix	**Aqueous** ☐	**Soil** ☑	**Sediment** ☐	**Other** ☐			
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐				
Aqueous Preservatives	**N/A** ☑	**pH <= 2** ☐	**pH > 2** ☐				
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☐	**Other** ☑	Rec'd at 4 Deg. C			
Extraction Method	**SW846 3546**						

Method for Ranges: MADEP EPH REV 2.1
Method for Targets: MADEP EPH REV 2.1
EPH Surrogate Stds. Aliphatic: 1-Chlorooctadecane
Aromatic: o-Terphenyl
EPH Fractionation Surrogate Standards. 2-Fluorobiphenyl

Client ID: SB-FD-542_8.0-14.0 **Lab ID:** JE21772-1
Date Collected: 10/23/2025 **Date Received:** 10/24/2025
Date Extracted: 10/24/2025 2:00:00 PM
First Date Run: 11/6/2025
Last Date Run: N/A
% Solids: 95.6
Low Dilution: 1
High Dilution: N/A

Unadjusted Ranges	CAS #	Units	Result		RDL	Q
C11-C22 Aromatics (Unadj.)		ug/kg	50100	A	6400	

Adjusted Ranges					
C9-C18 Aliphatics	ug/kg	3460	A	6400	J
C19-C36 Aliphatics	ug/kg	22400	A	6400	
C11-C22 Aromatics	ug/kg	44600	C	6400	
Surrogate Recoveries				**Acceptance Range**	
1-Chlorooctadecane	%	36	E	40-140 %	
o-Terphenyl	%	47		40-140 %	
2-Fluorobiphenyl	%	138		40-140 %	

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

C Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

E Outside of in house control limits.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the EPH Method followed?	☑ **Yes** ☐	**No- Details Attatched**
Were all performance/acceptance standards for required QA/QC procedures achieved?	☐ **Yes** ☑	**No- Details Attatched**
Were any significant modifications made to the EPH method, as specified in Sect. 11.3?	☑ **No** ☐	**Yes- Details Attatched**

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtainig the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** **General Managerr**

Printed Name **David Chastain** **Date** **11/7/2025**

MADEP VPH FORM

Matrix	**Aqueous** ☐	**Soil** ☑	**Sediment** ☐	**Other** ☐				
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐					
Aqueous Preservatives	**N/A** ☑	**pH <= 2** ☐	**pH > 2** ☐					
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☐	**Other** ☑	Rec'd at 4 Deg. C				
Methanol	**Methanol Covering Soil. (mL Methanol/g soil: 1:1 +/- 25%)**							

Method for Ranges: MADEP VPH REV 2.1
Method for Target Analytes: MADEP VPH REV 2.1
VPH Surrogate Standards
PID:
FID:

Client ID: SB-FD-542_8.0-14.0 **Lab ID:** JE21772-1
Date Collected: 10/23/2025 **Date Received:** 10/24/2025

Date Extracted:	First Date Run:	Last Date Run:
N/A	10/24/2025	N/A
% Solids:	**Low Dilution:**	**High Dilution:**
95.6	1	N/A

Unadjusted Ranges	CAS #	Elution Range	Units	Result		RDL	Q
C5- C8 Aliphatics (Unadj.)		N/A	ug/kg	ND	A	6500	
C9- C12 Aliphatics (Unadj.)		N/A	ug/kg	ND	A	6500	
Adjusted Ranges							
C5- C8 Aliphatics		N/A	ug/kg	ND	B	6500	
C9- C12 Aliphatics		N/A	ug/kg	ND	D	6500	
C9- C10 Aromatics			ug/kg	ND		6500	

Surrogate Recoveries			Acceptance Range
FID:2,3,4-Trifluorotoluene	%	98	70-130 %
PID:2,3,4-Trifluorotoluene	%	103	70-130 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

B Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range.

D Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C9-C12 aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the VPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the VPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** **General Managerr**

Printed Name **David Chastain** **Date** **11/7/2025**

Internal Sample Tracking Chronicle

WSP USA Environment & Infrastructure Inc

Job No: JE21772

MWRA Water Tunnel
Project No: US0041005.1387 PO#P13532445001

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JE21772-1	Collected: 23-OCT-25 12:00 By: JDV		Received: 24-OCT-25 By: KG			
SB-FD-541_8.0-14.0						
JE21772-1	SW846 9045D	24-OCT-25 15:02	DB			PHTEMP
JE21772-1	SW846 1010B/ASTM D93	24-OCT-25 15:04	DB			IGN
JE21772-1	ASTM D1498-76M	24-OCT-25 15:07	DB			EH
JE21772-1	MADEP VPH REV 2.1	24-OCT-25 21:23	JN			VMAVPHR
JE21772-1	SW846 8260D	24-OCT-25 21:36	PS			V8260MCP
JE21772-1	SW846 8270E	26-OCT-25 19:58	TL	25-OCT-25	IS	AB8270MCP
JE21772-1	SW846 7471B	27-OCT-25 13:02	MK	27-OCT-25	MK	HG
JE21772-1	SM2540 G 18TH ED MOD	27-OCT-25 14:10	RB			SOL104
JE21772-1	SW846 8015D	27-OCT-25 19:52	JN			V8015GRO
JE21772-1	SW846 8082A	28-OCT-25 13:56	EA	26-OCT-25	IS	P8082MCP
JE21772-1	SW846 8015D	28-OCT-25 16:06	CB	26-OCT-25	IS	B8015DRO
JE21772-1	SW846 CHAP7/9012 B	28-OCT-25 21:13	JD	28-OCT-25	KG	CREAC
JE21772-1	SW846 CHAP7/9034	29-OCT-25 09:12	GT	28-OCT-25	KG	SREAC
JE21772-1	SM2510 B-11/SW 9050A	29-OCT-25 10:20	GTT			SCON
JE21772-1	SW846 3060A/7196A	31-OCT-25 18:20	RI	29-OCT-25	JM	XCRA
JE21772-1	SW846 6010D	04-NOV-25 18:47	MM	31-OCT-25	SK	AG,AS,BE,CD,CR,CU,NI,PB,SB,SE,TL,ZN
JE21772-1	MADEP EPH REV 2.1	06-NOV-25 01:52	CB	24-OCT-25	BA	BMAEPHR

QC Evaluation: MA MCP Limits

Job Number: JE21772
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/23/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9398	**SW846 8260D**						
VY9398-BS	67-64-1	Acetone	BSP	REC	91	%	70-130
VY9398-BS	71-43-2	Benzene	BSP	REC	107	%	70-130
VY9398-BS	108-86-1	Bromobenzene	BSP	REC	98	%	70-130
VY9398-BS	74-97-5	Bromochloromethane	BSP	REC	117	%	70-130
VY9398-BS	75-27-4	Bromodichloromethane	BSP	REC	110	%	70-130
VY9398-BS	75-25-2	Bromoform	BSP	REC	98	%	70-130
VY9398-BS	74-83-9	Bromomethane	BSP	REC	112	%	70-130
VY9398-BS	78-93-3	2-Butanone (MEK)	BSP	REC	118	%	70-130
VY9398-BS	104-51-8	n-Butylbenzene	BSP	REC	110	%	70-130
VY9398-BS	135-98-8	sec-Butylbenzene	BSP	REC	104	%	70-130
VY9398-BS	98-06-6	tert-Butylbenzene	BSP	REC	102	%	70-130
VY9398-BS	75-15-0	Carbon disulfide	BSP	REC	113	%	70-130
VY9398-BS	56-23-5	Carbon tetrachloride	BSP	REC	119	%	70-130
VY9398-BS	108-90-7	Chlorobenzene	BSP	REC	106	%	70-130
VY9398-BS	75-00-3	Chloroethane	BSP	REC	83	%	70-130
VY9398-BS	67-66-3	Chloroform	BSP	REC	106	%	70-130
VY9398-BS	74-87-3	Chloromethane	BSP	REC	95	%	70-130
VY9398-BS	95-49-8	o-Chlorotoluene	BSP	REC	104	%	70-130
VY9398-BS	106-43-4	p-Chlorotoluene	BSP	REC	101	%	70-130
VY9398-BS	108-20-3	Di-Isopropyl ether	BSP	REC	94	%	70-130
VY9398-BS	96-12-8	1,2-Dibromo-3-chloropropane	BSP	REC	97	%	70-130
VY9398-BS	124-48-1	Dibromochloromethane	BSP	REC	106	%	70-130
VY9398-BS	106-93-4	1,2-Dibromoethane	BSP	REC	103	%	70-130
VY9398-BS	95-50-1	1,2-Dichlorobenzene	BSP	REC	103	%	70-130
VY9398-BS	541-73-1	1,3-Dichlorobenzene	BSP	REC	103	%	70-130
VY9398-BS	106-46-7	1,4-Dichlorobenzene	BSP	REC	102	%	70-130
VY9398-BS	75-71-8	Dichlorodifluoromethane	BSP	REC	119	%	70-130
VY9398-BS	75-34-3	1,1-Dichloroethane	BSP	REC	112	%	70-130
VY9398-BS	107-06-2	1,2-Dichloroethane	BSP	REC	111	%	70-130
VY9398-BS	75-35-4	1,1-Dichloroethene	BSP	REC	120	%	70-130
VY9398-BS	156-59-2	cis-1,2-Dichloroethene	BSP	REC	120 [a]	%	70-130
VY9398-BS	156-60-5	trans-1,2-Dichloroethene	BSP	REC	124 [b]	%	70-130
VY9398-BS	78-87-5	1,2-Dichloropropane	BSP	REC	102	%	70-130
VY9398-BS	142-28-9	1,3-Dichloropropane	BSP	REC	105	%	70-130
VY9398-BS	594-20-7	2,2-Dichloropropane	BSP	REC	110	%	70-130
VY9398-BS	563-58-6	1,1-Dichloropropene	BSP	REC	113	%	70-130
VY9398-BS	10061-01-5	cis-1,3-Dichloropropene	BSP	REC	103	%	70-130
VY9398-BS	10061-02-6	trans-1,3-Dichloropropene	BSP	REC	103	%	70-130
VY9398-BS	123-91-1	1,4-Dioxane	BSP	REC	114	%	70-130
VY9398-BS	60-29-7	Ethyl Ether	BSP	REC	123	%	70-130
VY9398-BS	100-41-4	Ethylbenzene	BSP	REC	107	%	70-130
VY9398-BS	87-68-3	Hexachlorobutadiene	BSP	REC	99	%	70-130

*** Sample used for QC is not from job JE21772**

QC Evaluation: MA MCP Limits

Job Number: JE21772
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/23/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9398-BS	591-78-6	2-Hexanone	BSP	REC	100	%	70-130
VY9398-BS	98-82-8	Isopropylbenzene	BSP	REC	102	%	70-130
VY9398-BS	99-87-6	p-Isopropyltoluene	BSP	REC	103	%	70-130
VY9398-BS	1634-04-4	Methyl Tert Butyl Ether	BSP	REC	125	%	70-130
VY9398-BS	108-10-1	4-Methyl-2-pentanone(MIBK)	BSP	REC	102	%	70-130
VY9398-BS	74-95-3	Methylene bromide	BSP	REC	115	%	70-130
VY9398-BS	75-09-2	Methylene chloride	BSP	REC	113	%	70-130
VY9398-BS	91-20-3	Naphthalene	BSP	REC	107	%	70-130
VY9398-BS	103-65-1	n-Propylbenzene	BSP	REC	107	%	70-130
VY9398-BS	100-42-5	Styrene	BSP	REC	105	%	70-130
VY9398-BS	994-05-8	tert-Amyl Methyl Ether	BSP	REC	100	%	70-130
VY9398-BS	637-92-3	tert-Butyl Ethyl Ether	BSP	REC	102	%	70-130
VY9398-BS	630-20-6	1,1,1,2-Tetrachloroethane	BSP	REC	99	%	70-130
VY9398-BS	79-34-5	1,1,2,2-Tetrachloroethane	BSP	REC	101	%	70-130
VY9398-BS	127-18-4	Tetrachloroethene	BSP	REC	99	%	70-130
VY9398-BS	109-99-9	Tetrahydrofuran	BSP	REC	108	%	70-130
VY9398-BS	108-88-3	Toluene	BSP	REC	108	%	70-130
VY9398-BS	87-61-6	1,2,3-Trichlorobenzene	BSP	REC	107	%	70-130
VY9398-BS	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	102	%	70-130
VY9398-BS	71-55-6	1,1,1-Trichloroethane	BSP	REC	122	%	70-130
VY9398-BS	79-00-5	1,1,2-Trichloroethane	BSP	REC	102	%	70-130
VY9398-BS	79-01-6	Trichloroethene	BSP	REC	113	%	70-130
VY9398-BS	75-69-4	Trichlorofluoromethane	BSP	REC	102	%	70-130
VY9398-BS	96-18-4	1,2,3-Trichloropropane	BSP	REC	97	%	70-130
VY9398-BS	95-63-6	1,2,4-Trimethylbenzene	BSP	REC	103	%	70-130
VY9398-BS	108-67-8	1,3,5-Trimethylbenzene	BSP	REC	102	%	70-130
VY9398-BS	75-01-4	Vinyl chloride	BSP	REC	103	%	70-130
VY9398-BS		m,p-Xylene	BSP	REC	105	%	70-130
VY9398-BS	95-47-6	o-Xylene	BSP	REC	106	%	70-130
VY9398-BS	1330-20-7	Xylene (total)	BSP	REC	105	%	70-130
VY9398-BS	1868-53-7	Dibromofluoromethane	BSP	SURR	114	%	70-130
VY9398-BS	2037-26-5	Toluene-D8	BSP	SURR	105	%	70-130
VY9398-BS	460-00-4	4-Bromofluorobenzene	BSP	SURR	100	%	70-130
VY9398-BSD	67-64-1	Acetone	BSD	REC	85	%	70-130
VY9398-BSD	67-64-1	Acetone	BSD	RPD	7	%	20
VY9398-BSD	71-43-2	Benzene	BSD	REC	103	%	70-130
VY9398-BSD	71-43-2	Benzene	BSD	RPD	5	%	20
VY9398-BSD	108-86-1	Bromobenzene	BSD	REC	94	%	70-130
VY9398-BSD	108-86-1	Bromobenzene	BSD	RPD	4	%	20
VY9398-BSD	74-97-5	Bromochloromethane	BSD	REC	110	%	70-130
VY9398-BSD	74-97-5	Bromochloromethane	BSD	RPD	6	%	20
VY9398-BSD	75-27-4	Bromodichloromethane	BSD	REC	103	%	70-130
VY9398-BSD	75-27-4	Bromodichloromethane	BSD	RPD	6	%	20
VY9398-BSD	75-25-2	Bromoform	BSD	REC	93	%	70-130
VY9398-BSD	75-25-2	Bromoform	BSD	RPD	5	%	20

*** Sample used for QC is not from job JE21772**

QC Evaluation: MA MCP Limits

Job Number: JE21772
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/23/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9398-BSD	74-83-9	Bromomethane	BSD	REC	105	%	70-130
VY9398-BSD	74-83-9	Bromomethane	BSD	RPD	7	%	20
VY9398-BSD	78-93-3	2-Butanone (MEK)	BSD	REC	109	%	70-130
VY9398-BSD	78-93-3	2-Butanone (MEK)	BSD	RPD	8	%	20
VY9398-BSD	104-51-8	n-Butylbenzene	BSD	REC	104	%	70-130
VY9398-BSD	104-51-8	n-Butylbenzene	BSD	RPD	6	%	20
VY9398-BSD	135-98-8	sec-Butylbenzene	BSD	REC	98	%	70-130
VY9398-BSD	135-98-8	sec-Butylbenzene	BSD	RPD	6	%	20
VY9398-BSD	98-06-6	tert-Butylbenzene	BSD	REC	97	%	70-130
VY9398-BSD	98-06-6	tert-Butylbenzene	BSD	RPD	5	%	20
VY9398-BSD	75-15-0	Carbon disulfide	BSD	REC	105	%	70-130
VY9398-BSD	75-15-0	Carbon disulfide	BSD	RPD	7	%	20
VY9398-BSD	56-23-5	Carbon tetrachloride	BSD	REC	110	%	70-130
VY9398-BSD	56-23-5	Carbon tetrachloride	BSD	RPD	8	%	20
VY9398-BSD	108-90-7	Chlorobenzene	BSD	REC	102	%	70-130
VY9398-BSD	108-90-7	Chlorobenzene	BSD	RPD	4	%	20
VY9398-BSD	75-00-3	Chloroethane	BSD	REC	76	%	70-130
VY9398-BSD	75-00-3	Chloroethane	BSD	RPD	8	%	20
VY9398-BSD	67-66-3	Chloroform	BSD	REC	99	%	70-130
VY9398-BSD	67-66-3	Chloroform	BSD	RPD	6	%	20
VY9398-BSD	74-87-3	Chloromethane	BSD	REC	91	%	70-130
VY9398-BSD	74-87-3	Chloromethane	BSD	RPD	4	%	20
VY9398-BSD	95-49-8	o-Chlorotoluene	BSD	REC	98	%	70-130
VY9398-BSD	95-49-8	o-Chlorotoluene	BSD	RPD	6	%	20
VY9398-BSD	106-43-4	p-Chlorotoluene	BSD	REC	97	%	70-130
VY9398-BSD	106-43-4	p-Chlorotoluene	BSD	RPD	5	%	20
VY9398-BSD	108-20-3	Di-Isopropyl ether	BSD	REC	88	%	70-130
VY9398-BSD	108-20-3	Di-Isopropyl ether	BSD	RPD	6	%	20
VY9398-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	REC	95	%	70-130
VY9398-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	RPD	2	%	20
VY9398-BSD	124-48-1	Dibromochloromethane	BSD	REC	102	%	70-130
VY9398-BSD	124-48-1	Dibromochloromethane	BSD	RPD	4	%	20
VY9398-BSD	106-93-4	1,2-Dibromoethane	BSD	REC	99	%	70-130
VY9398-BSD	106-93-4	1,2-Dibromoethane	BSD	RPD	4	%	20
VY9398-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	99	%	70-130
VY9398-BSD	95-50-1	1,2-Dichlorobenzene	BSD	RPD	4	%	20
VY9398-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	99	%	70-130
VY9398-BSD	541-73-1	1,3-Dichlorobenzene	BSD	RPD	4	%	20
VY9398-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	99	%	70-130
VY9398-BSD	106-46-7	1,4-Dichlorobenzene	BSD	RPD	4	%	20
VY9398-BSD	75-71-8	Dichlorodifluoromethane	BSD	REC	109	%	70-130
VY9398-BSD	75-71-8	Dichlorodifluoromethane	BSD	RPD	9	%	20
VY9398-BSD	75-34-3	1,1-Dichloroethane	BSD	REC	104	%	70-130
VY9398-BSD	75-34-3	1,1-Dichloroethane	BSD	RPD	7	%	20
VY9398-BSD	107-06-2	1,2-Dichloroethane	BSD	REC	107	%	70-130

*** Sample used for QC is not from job JE21772**

QC Evaluation: MA MCP Limits

Job Number: JE21772
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/23/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9398-BSD	107-06-2	1,2-Dichloroethane	BSD	RPD	3	%	20
VY9398-BSD	75-35-4	1,1-Dichloroethene	BSD	REC	111	%	70-130
VY9398-BSD	75-35-4	1,1-Dichloroethene	BSD	RPD	7	%	20
VY9398-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	REC	114	%	70-130
VY9398-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	RPD	6	%	20
VY9398-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	REC	116	%	70-130
VY9398-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	RPD	7	%	20
VY9398-BSD	78-87-5	1,2-Dichloropropane	BSD	REC	97	%	70-130
VY9398-BSD	78-87-5	1,2-Dichloropropane	BSD	RPD	5	%	20
VY9398-BSD	142-28-9	1,3-Dichloropropane	BSD	REC	100	%	70-130
VY9398-BSD	142-28-9	1,3-Dichloropropane	BSD	RPD	5	%	20
VY9398-BSD	594-20-7	2,2-Dichloropropane	BSD	REC	102	%	70-130
VY9398-BSD	594-20-7	2,2-Dichloropropane	BSD	RPD	7	%	20
VY9398-BSD	563-58-6	1,1-Dichloropropene	BSD	REC	105	%	70-130
VY9398-BSD	563-58-6	1,1-Dichloropropene	BSD	RPD	7	%	20
VY9398-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	REC	99	%	70-130
VY9398-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	RPD	4	%	20
VY9398-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	REC	97	%	70-130
VY9398-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	RPD	5	%	20
VY9398-BSD	123-91-1	1,4-Dioxane	BSD	REC	108	%	70-130
VY9398-BSD	123-91-1	1,4-Dioxane	BSD	RPD	5	%	20
VY9398-BSD	60-29-7	Ethyl Ether	BSD	REC	118	%	70-130
VY9398-BSD	60-29-7	Ethyl Ether	BSD	RPD	4	%	20
VY9398-BSD	100-41-4	Ethylbenzene	BSD	REC	101	%	70-130
VY9398-BSD	100-41-4	Ethylbenzene	BSD	RPD	6	%	20
VY9398-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	95	%	70-130
VY9398-BSD	87-68-3	Hexachlorobutadiene	BSD	RPD	4	%	20
VY9398-BSD	591-78-6	2-Hexanone	BSD	REC	95	%	70-130
VY9398-BSD	591-78-6	2-Hexanone	BSD	RPD	5	%	20
VY9398-BSD	98-82-8	Isopropylbenzene	BSD	REC	97	%	70-130
VY9398-BSD	98-82-8	Isopropylbenzene	BSD	RPD	5	%	20
VY9398-BSD	99-87-6	p-Isopropyltoluene	BSD	REC	100	%	70-130
VY9398-BSD	99-87-6	p-Isopropyltoluene	BSD	RPD	4	%	20
VY9398-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	REC	111	%	70-130
VY9398-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	RPD	12	%	20
VY9398-BSD	108-10-1	4-Methyl-2-pentanone(MIBK)	BSD	REC	96	%	70-130
VY9398-BSD	108-10-1	4-Methyl-2-pentanone(MIBK)	BSD	RPD	7	%	20
VY9398-BSD	74-95-3	Methylene bromide	BSD	REC	108	%	70-130
VY9398-BSD	74-95-3	Methylene bromide	BSD	RPD	7	%	20
VY9398-BSD	75-09-2	Methylene chloride	BSD	REC	106	%	70-130
VY9398-BSD	75-09-2	Methylene chloride	BSD	RPD	7	%	20
VY9398-BSD	91-20-3	Naphthalene	BSD	REC	102	%	70-130
VY9398-BSD	91-20-3	Naphthalene	BSD	RPD	4	%	20
VY9398-BSD	103-65-1	n-Propylbenzene	BSD	REC	100	%	70-130
VY9398-BSD	103-65-1	n-Propylbenzene	BSD	RPD	6	%	20

*** Sample used for QC is not from job JE21772**

QC Evaluation: MA MCP Limits

Job Number: JE21772
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/23/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9398-BSD	100-42-5	Styrene	BSD	REC	100	%	70-130
VY9398-BSD	100-42-5	Styrene	BSD	RPD	5	%	20
VY9398-BSD	994-05-8	tert-Amyl Methyl Ether	BSD	REC	97	%	70-130
VY9398-BSD	994-05-8	tert-Amyl Methyl Ether	BSD	RPD	3	%	20
VY9398-BSD	637-92-3	tert-Butyl Ethyl Ether	BSD	REC	97	%	70-130
VY9398-BSD	637-92-3	tert-Butyl Ethyl Ether	BSD	RPD	6	%	20
VY9398-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	REC	93	%	70-130
VY9398-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	RPD	6	%	20
VY9398-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	REC	96	%	70-130
VY9398-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	RPD	5	%	20
VY9398-BSD	127-18-4	Tetrachloroethene	BSD	REC	95	%	70-130
VY9398-BSD	127-18-4	Tetrachloroethene	BSD	RPD	4	%	20
VY9398-BSD	109-99-9	Tetrahydrofuran	BSD	REC	86	%	70-130
VY9398-BSD	109-99-9	Tetrahydrofuran	BSD	RPD	23 [c]	%	20
VY9398-BSD	108-88-3	Toluene	BSD	REC	103	%	70-130
VY9398-BSD	108-88-3	Toluene	BSD	RPD	5	%	20
VY9398-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	REC	103	%	70-130
VY9398-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	RPD	4	%	20
VY9398-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	99	%	70-130
VY9398-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	RPD	3	%	20
VY9398-BSD	71-55-6	1,1,1-Trichloroethane	BSD	REC	113	%	70-130
VY9398-BSD	71-55-6	1,1,1-Trichloroethane	BSD	RPD	8	%	20
VY9398-BSD	79-00-5	1,1,2-Trichloroethane	BSD	REC	97	%	70-130
VY9398-BSD	79-00-5	1,1,2-Trichloroethane	BSD	RPD	5	%	20
VY9398-BSD	79-01-6	Trichloroethene	BSD	REC	108	%	70-130
VY9398-BSD	79-01-6	Trichloroethene	BSD	RPD	4	%	20
VY9398-BSD	75-69-4	Trichlorofluoromethane	BSD	REC	100	%	70-130
VY9398-BSD	75-69-4	Trichlorofluoromethane	BSD	RPD	2	%	20
VY9398-BSD	96-18-4	1,2,3-Trichloropropane	BSD	REC	93	%	70-130
VY9398-BSD	96-18-4	1,2,3-Trichloropropane	BSD	RPD	3	%	20
VY9398-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	REC	98	%	70-130
VY9398-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	RPD	5	%	20
VY9398-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	REC	97	%	70-130
VY9398-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	RPD	5	%	20
VY9398-BSD	75-01-4	Vinyl chloride	BSD	REC	95	%	70-130
VY9398-BSD	75-01-4	Vinyl chloride	BSD	RPD	8	%	20
VY9398-BSD		m,p-Xylene	BSD	REC	99	%	70-130
VY9398-BSD		m,p-Xylene	BSD	RPD	6	%	20
VY9398-BSD	95-47-6	o-Xylene	BSD	REC	101	%	70-130
VY9398-BSD	95-47-6	o-Xylene	BSD	RPD	4	%	20
VY9398-BSD	1330-20-7	Xylene (total)	BSD	REC	100	%	70-130
VY9398-BSD	1330-20-7	Xylene (total)	BSD	RPD	5	%	20
VY9398-BSD	1868-53-7	Dibromofluoromethane	BSD	SURR	112	%	70-130
VY9398-BSD	2037-26-5	Toluene-D8	BSD	SURR	105	%	70-130
VY9398-BSD	460-00-4	4-Bromofluorobenzene	BSD	SURR	101	%	70-130

*** Sample used for QC is not from job JE21772**

QC Evaluation: MA MCP Limits

Job Number: JE21772
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/23/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9398-MB	1868-53-7	Dibromofluoromethane	MB	SURR	107	%	70-130
VY9398-MB	2037-26-5	Toluene-D8	MB	SURR	102	%	70-130
VY9398-MB	460-00-4	4-Bromofluorobenzene	MB	SURR	105	%	70-130
JE21772-1	1868-53-7	Dibromofluoromethane	SAMP	SURR	112	%	70-130
JE21772-1	2037-26-5	Toluene-D8	SAMP	SURR	102	%	70-130
JE21772-1	460-00-4	4-Bromofluorobenzene	SAMP	SURR	105	%	70-130
OP68514	SW846 8270E						
OP68514-BS1	65-85-0	Benzoic acid	BSP	REC	81	%	30-130
OP68514-BS1	95-57-8	2-Chlorophenol	BSP	REC	68	%	30-130
OP68514-BS1	59-50-7	4-Chloro-3-methyl phenol	BSP	REC	78	%	30-130
OP68514-BS1	120-83-2	2,4-Dichlorophenol	BSP	REC	77	%	30-130
OP68514-BS1	105-67-9	2,4-Dimethylphenol	BSP	REC	74	%	30-130
OP68514-BS1	51-28-5	2,4-Dinitrophenol	BSP	REC	70	%	30-130
OP68514-BS1	534-52-1	4,6-Dinitro-o-cresol	BSP	REC	94	%	30-130
OP68514-BS1	95-48-7	2-Methylphenol	BSP	REC	67	%	30-130
OP68514-BS1		3&4-Methylphenol	BSP	REC	69	%	30-130
OP68514-BS1	88-75-5	2-Nitrophenol	BSP	REC	82	%	30-130
OP68514-BS1	100-02-7	4-Nitrophenol	BSP	REC	76	%	30-130
OP68514-BS1	87-86-5	Pentachlorophenol	BSP	REC	86	%	30-130
OP68514-BS1	108-95-2	Phenol	BSP	REC	67	%	30-130
OP68514-BS1	95-95-4	2,4,5-Trichlorophenol	BSP	REC	80	%	30-130
OP68514-BS1	88-06-2	2,4,6-Trichlorophenol	BSP	REC	83	%	30-130
OP68514-BS1	83-32-9	Acenaphthene	BSP	REC	75	%	40-140
OP68514-BS1	208-96-8	Acenaphthylene	BSP	REC	75	%	40-140
OP68514-BS1	98-86-2	Acetophenone	BSP	REC	62	%	40-140
OP68514-BS1	62-53-3	Aniline	BSP	REC	65	%	40-140
OP68514-BS1	120-12-7	Anthracene	BSP	REC	77	%	40-140
OP68514-BS1	56-55-3	Benzo(a)anthracene	BSP	REC	80	%	40-140
OP68514-BS1	50-32-8	Benzo(a)pyrene	BSP	REC	79	%	40-140
OP68514-BS1	205-99-2	Benzo(b)fluoranthene	BSP	REC	84	%	40-140
OP68514-BS1	191-24-2	Benzo(g,h,i)perylene	BSP	REC	72	%	40-140
OP68514-BS1	207-08-9	Benzo(k)fluoranthene	BSP	REC	73	%	40-140
OP68514-BS1	101-55-3	4-Bromophenyl phenyl ether	BSP	REC	82	%	40-140
OP68514-BS1	85-68-7	Butyl benzyl phthalate	BSP	REC	97	%	40-140
OP68514-BS1	91-58-7	2-Chloronaphthalene	BSP	REC	73	%	40-140
OP68514-BS1	106-47-8	4-Chloroaniline	BSP	REC	25	%	40-140
OP68514-BS1	218-01-9	Chrysene	BSP	REC	78	%	40-140
OP68514-BS1	111-91-1	bis(2-Chloroethoxy)methane	BSP	REC	67	%	40-140
OP68514-BS1	111-44-4	bis(2-Chloroethyl)ether	BSP	REC	61	%	40-140
OP68514-BS1	108-60-1	2,2'-Oxybis(1-chloropropane)	BSP	REC	61	%	40-140
OP68514-BS1	7005-72-3	4-Chlorophenyl phenyl ether	BSP	REC	80	%	40-140
OP68514-BS1	95-50-1	1,2-Dichlorobenzene	BSP	REC	61	%	40-140
OP68514-BS1	122-66-7	1,2-Diphenylhydrazine	BSP	REC	75	%	40-140

*** Sample used for QC is not from job JE21772**

QC Evaluation: MA MCP Limits

Job Number: JE21772
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/23/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP68514-BS1	541-73-1	1,3-Dichlorobenzene	BSP	REC	59	%	40-140
OP68514-BS1	106-46-7	1,4-Dichlorobenzene	BSP	REC	60	%	40-140
OP68514-BS1	121-14-2	2,4-Dinitrotoluene	BSP	REC	90	%	40-140
OP68514-BS1	606-20-2	2,6-Dinitrotoluene	BSP	REC	91	%	40-140
OP68514-BS1	91-94-1	3,3'-Dichlorobenzidine	BSP	REC	65	%	40-140
OP68514-BS1	53-70-3	Dibenzo(a,h)anthracene	BSP	REC	73	%	40-140
OP68514-BS1	132-64-9	Dibenzofuran	BSP	REC	75	%	40-140
OP68514-BS1	84-74-2	Di-n-butyl phthalate	BSP	REC	80	%	40-140
OP68514-BS1	117-84-0	Di-n-octyl phthalate	BSP	REC	94	%	40-140
OP68514-BS1	84-66-2	Diethyl phthalate	BSP	REC	77	%	40-140
OP68514-BS1	131-11-3	Dimethyl phthalate	BSP	REC	79	%	40-140
OP68514-BS1	117-81-7	bis(2-Ethylhexyl)phthalate	BSP	REC	88	%	40-140
OP68514-BS1	206-44-0	Fluoranthene	BSP	REC	75	%	40-140
OP68514-BS1	86-73-7	Fluorene	BSP	REC	76	%	40-140
OP68514-BS1	118-74-1	Hexachlorobenzene	BSP	REC	82	%	40-140
OP68514-BS1	87-68-3	Hexachlorobutadiene	BSP	REC	70	%	40-140
OP68514-BS1	77-47-4	Hexachlorocyclopentadiene	BSP	REC	83	%	40-140
OP68514-BS1	67-72-1	Hexachloroethane	BSP	REC	63	%	40-140
OP68514-BS1	193-39-5	Indeno(1,2,3-cd)pyrene	BSP	REC	73	%	40-140
OP68514-BS1	78-59-1	Isophorone	BSP	REC	67	%	40-140
OP68514-BS1	91-57-6	2-Methylnaphthalene	BSP	REC	71	%	40-140
OP68514-BS1	91-20-3	Naphthalene	BSP	REC	68	%	40-140
OP68514-BS1	98-95-3	Nitrobenzene	BSP	REC	67	%	40-140
OP68514-BS1	62-75-9	n-Nitrosodimethylamine	BSP	REC	61	%	40-140
OP68514-BS1	621-64-7	N-Nitroso-di-n-propylamine	BSP	REC	65	%	40-140
OP68514-BS1	86-30-6	N-Nitrosodiphenylamine	BSP	REC	84	%	40-140
OP68514-BS1	85-01-8	Phenanthrene	BSP	REC	76	%	40-140
OP68514-BS1	129-00-0	Pyrene	BSP	REC	89	%	40-140
OP68514-BS1	110-86-1	Pyridine	BSP	REC	49	%	40-140
OP68514-BS1	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	67	%	40-140
OP68514-BS1	367-12-4	2-Fluorophenol	BSP	SURR	64	%	30-130
OP68514-BS1	4165-62-2	Phenol-d5	BSP	SURR	68	%	30-130
OP68514-BS1	118-79-6	2,4,6-Tribromophenol	BSP	SURR	87	%	30-130
OP68514-BS1	4165-60-0	Nitrobenzene-d5	BSP	SURR	59	%	30-130
OP68514-BS1	321-60-8	2-Fluorobiphenyl	BSP	SURR	76	%	30-130
OP68514-BS1	1718-51-0	Terphenyl-d14	BSP	SURR	86	%	30-130
OP68514-BSD	65-85-0	Benzoic acid	BSD	REC	86	%	30-130
OP68514-BSD	65-85-0	Benzoic acid	BSD	RPD	6	%	30
OP68514-BSD	95-57-8	2-Chlorophenol	BSD	REC	71	%	30-130
OP68514-BSD	95-57-8	2-Chlorophenol	BSD	RPD	5	%	30
OP68514-BSD	59-50-7	4-Chloro-3-methyl phenol	BSD	REC	80	%	30-130
OP68514-BSD	59-50-7	4-Chloro-3-methyl phenol	BSD	RPD	3	%	30
OP68514-BSD	120-83-2	2,4-Dichlorophenol	BSD	REC	78	%	30-130
OP68514-BSD	120-83-2	2,4-Dichlorophenol	BSD	RPD	2	%	30
OP68514-BSD	105-67-9	2,4-Dimethylphenol	BSD	REC	76	%	30-130

*** Sample used for QC is not from job JE21772**

QC Evaluation: MA MCP Limits

Job Number: JE21772
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/23/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP68514-BSD	105-67-9	2,4-Dimethylphenol	BSD	RPD	2	%	30
OP68514-BSD	51-28-5	2,4-Dinitrophenol	BSD	REC	75	%	30-130
OP68514-BSD	51-28-5	2,4-Dinitrophenol	BSD	RPD	7	%	30
OP68514-BSD	534-52-1	4,6-Dinitro-o-cresol	BSD	REC	98	%	30-130
OP68514-BSD	534-52-1	4,6-Dinitro-o-cresol	BSD	RPD	5	%	30
OP68514-BSD	95-48-7	2-Methylphenol	BSD	REC	70	%	30-130
OP68514-BSD	95-48-7	2-Methylphenol	BSD	RPD	4	%	30
OP68514-BSD		3&4-Methylphenol	BSD	REC	71	%	30-130
OP68514-BSD		3&4-Methylphenol	BSD	RPD	3	%	30
OP68514-BSD	88-75-5	2-Nitrophenol	BSD	REC	85	%	30-130
OP68514-BSD	88-75-5	2-Nitrophenol	BSD	RPD	4	%	30
OP68514-BSD	100-02-7	4-Nitrophenol	BSD	REC	79	%	30-130
OP68514-BSD	100-02-7	4-Nitrophenol	BSD	RPD	3	%	30
OP68514-BSD	87-86-5	Pentachlorophenol	BSD	REC	94	%	30-130
OP68514-BSD	87-86-5	Pentachlorophenol	BSD	RPD	9	%	30
OP68514-BSD	108-95-2	Phenol	BSD	REC	70	%	30-130
OP68514-BSD	108-95-2	Phenol	BSD	RPD	5	%	30
OP68514-BSD	95-95-4	2,4,5-Trichlorophenol	BSD	REC	85	%	30-130
OP68514-BSD	95-95-4	2,4,5-Trichlorophenol	BSD	RPD	7	%	30
OP68514-BSD	88-06-2	2,4,6-Trichlorophenol	BSD	REC	84	%	30-130
OP68514-BSD	88-06-2	2,4,6-Trichlorophenol	BSD	RPD	1	%	30
OP68514-BSD	83-32-9	Acenaphthene	BSD	REC	77	%	40-140
OP68514-BSD	83-32-9	Acenaphthene	BSD	RPD	2	%	30
OP68514-BSD	208-96-8	Acenaphthylene	BSD	REC	78	%	40-140
OP68514-BSD	208-96-8	Acenaphthylene	BSD	RPD	4	%	30
OP68514-BSD	98-86-2	Acetophenone	BSD	REC	65	%	40-140
OP68514-BSD	98-86-2	Acetophenone	BSD	RPD	5	%	30
OP68514-BSD	62-53-3	Aniline	BSD	REC	70	%	40-140
OP68514-BSD	62-53-3	Aniline	BSD	RPD	6	%	30
OP68514-BSD	120-12-7	Anthracene	BSD	REC	82	%	40-140
OP68514-BSD	120-12-7	Anthracene	BSD	RPD	5	%	30
OP68514-BSD	56-55-3	Benzo(a)anthracene	BSD	REC	84	%	40-140
OP68514-BSD	56-55-3	Benzo(a)anthracene	BSD	RPD	5	%	30
OP68514-BSD	50-32-8	Benzo(a)pyrene	BSD	REC	84	%	40-140
OP68514-BSD	50-32-8	Benzo(a)pyrene	BSD	RPD	7	%	30
OP68514-BSD	205-99-2	Benzo(b)fluoranthene	BSD	REC	89	%	40-140
OP68514-BSD	205-99-2	Benzo(b)fluoranthene	BSD	RPD	6	%	30
OP68514-BSD	191-24-2	Benzo(g,h,i)perylene	BSD	REC	78	%	40-140
OP68514-BSD	191-24-2	Benzo(g,h,i)perylene	BSD	RPD	8	%	30
OP68514-BSD	207-08-9	Benzo(k)fluoranthene	BSD	REC	79	%	40-140
OP68514-BSD	207-08-9	Benzo(k)fluoranthene	BSD	RPD	8	%	30
OP68514-BSD	101-55-3	4-Bromophenyl phenyl ether	BSD	REC	87	%	40-140
OP68514-BSD	101-55-3	4-Bromophenyl phenyl ether	BSD	RPD	6	%	30
OP68514-BSD	85-68-7	Butyl benzyl phthalate	BSD	REC	99	%	40-140
OP68514-BSD	85-68-7	Butyl benzyl phthalate	BSD	RPD	2	%	30

*** Sample used for QC is not from job JE21772**

QC Evaluation: MA MCP Limits

Job Number: JE21772
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/23/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP68514-BSD	91-58-7	2-Chloronaphthalene	BSD	REC	77	%	40-140
OP68514-BSD	91-58-7	2-Chloronaphthalene	BSD	RPD	5	%	30
OP68514-BSD	106-47-8	4-Chloroaniline	BSD	REC	30	%	40-140
OP68514-BSD	106-47-8	4-Chloroaniline	BSD	RPD	18	%	30
OP68514-BSD	218-01-9	Chrysene	BSD	REC	80	%	40-140
OP68514-BSD	218-01-9	Chrysene	BSD	RPD	3	%	30
OP68514-BSD	111-91-1	bis(2-Chloroethoxy)methane	BSD	REC	70	%	40-140
OP68514-BSD	111-91-1	bis(2-Chloroethoxy)methane	BSD	RPD	4	%	30
OP68514-BSD	111-44-4	bis(2-Chloroethyl)ether	BSD	REC	64	%	40-140
OP68514-BSD	111-44-4	bis(2-Chloroethyl)ether	BSD	RPD	5	%	30
OP68514-BSD	108-60-1	2,2'-Oxybis(1-chloropropane)	BSD	REC	65	%	40-140
OP68514-BSD	108-60-1	2,2'-Oxybis(1-chloropropane)	BSD	RPD	7	%	30
OP68514-BSD	7005-72-3	4-Chlorophenyl phenyl ether	BSD	REC	81	%	40-140
OP68514-BSD	7005-72-3	4-Chlorophenyl phenyl ether	BSD	RPD	1	%	30
OP68514-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	63	%	40-140
OP68514-BSD	95-50-1	1,2-Dichlorobenzene	BSD	RPD	4	%	30
OP68514-BSD	122-66-7	1,2-Diphenylhydrazine	BSD	REC	77	%	40-140
OP68514-BSD	122-66-7	1,2-Diphenylhydrazine	BSD	RPD	3	%	30
OP68514-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	62	%	40-140
OP68514-BSD	541-73-1	1,3-Dichlorobenzene	BSD	RPD	4	%	30
OP68514-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	63	%	40-140
OP68514-BSD	106-46-7	1,4-Dichlorobenzene	BSD	RPD	5	%	30
OP68514-BSD	121-14-2	2,4-Dinitrotoluene	BSD	REC	92	%	40-140
OP68514-BSD	121-14-2	2,4-Dinitrotoluene	BSD	RPD	2	%	30
OP68514-BSD	606-20-2	2,6-Dinitrotoluene	BSD	REC	95	%	40-140
OP68514-BSD	606-20-2	2,6-Dinitrotoluene	BSD	RPD	5	%	30
OP68514-BSD	91-94-1	3,3'-Dichlorobenzidine	BSD	REC	70	%	40-140
OP68514-BSD	91-94-1	3,3'-Dichlorobenzidine	BSD	RPD	6	%	30
OP68514-BSD	53-70-3	Dibenzo(a,h)anthracene	BSD	REC	79	%	40-140
OP68514-BSD	53-70-3	Dibenzo(a,h)anthracene	BSD	RPD	7	%	30
OP68514-BSD	132-64-9	Dibenzofuran	BSD	REC	77	%	40-140
OP68514-BSD	132-64-9	Dibenzofuran	BSD	RPD	2	%	30
OP68514-BSD	84-74-2	Di-n-butyl phthalate	BSD	REC	84	%	40-140
OP68514-BSD	84-74-2	Di-n-butyl phthalate	BSD	RPD	5	%	30
OP68514-BSD	117-84-0	Di-n-octyl phthalate	BSD	REC	99	%	40-140
OP68514-BSD	117-84-0	Di-n-octyl phthalate	BSD	RPD	5	%	30
OP68514-BSD	84-66-2	Diethyl phthalate	BSD	REC	78	%	40-140
OP68514-BSD	84-66-2	Diethyl phthalate	BSD	RPD	2	%	30
OP68514-BSD	131-11-3	Dimethyl phthalate	BSD	REC	80	%	40-140
OP68514-BSD	131-11-3	Dimethyl phthalate	BSD	RPD	2	%	30
OP68514-BSD	117-81-7	bis(2-Ethylhexyl)phthalate	BSD	REC	92	%	40-140
OP68514-BSD	117-81-7	bis(2-Ethylhexyl)phthalate	BSD	RPD	5	%	30
OP68514-BSD	206-44-0	Fluoranthene	BSD	REC	80	%	40-140
OP68514-BSD	206-44-0	Fluoranthene	BSD	RPD	6	%	30
OP68514-BSD	86-73-7	Fluorene	BSD	REC	78	%	40-140

*** Sample used for QC is not from job JE21772**

QC Evaluation: MA MCP Limits

Job Number: JE21772
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/23/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP68514-BSD	86-73-7	Fluorene	BSD	RPD	3	%	30
OP68514-BSD	118-74-1	Hexachlorobenzene	BSD	REC	83	%	40-140
OP68514-BSD	118-74-1	Hexachlorobenzene	BSD	RPD	1	%	30
OP68514-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	74	%	40-140
OP68514-BSD	87-68-3	Hexachlorobutadiene	BSD	RPD	6	%	30
OP68514-BSD	77-47-4	Hexachlorocyclopentadiene	BSD	REC	89	%	40-140
OP68514-BSD	77-47-4	Hexachlorocyclopentadiene	BSD	RPD	6	%	30
OP68514-BSD	67-72-1	Hexachloroethane	BSD	REC	66	%	40-140
OP68514-BSD	67-72-1	Hexachloroethane	BSD	RPD	5	%	30
OP68514-BSD	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	REC	79	%	40-140
OP68514-BSD	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	RPD	8	%	30
OP68514-BSD	78-59-1	Isophorone	BSD	REC	68	%	40-140
OP68514-BSD	78-59-1	Isophorone	BSD	RPD	3	%	30
OP68514-BSD	91-57-6	2-Methylnaphthalene	BSD	REC	75	%	40-140
OP68514-BSD	91-57-6	2-Methylnaphthalene	BSD	RPD	6	%	30
OP68514-BSD	91-20-3	Naphthalene	BSD	REC	72	%	40-140
OP68514-BSD	91-20-3	Naphthalene	BSD	RPD	6	%	30
OP68514-BSD	98-95-3	Nitrobenzene	BSD	REC	70	%	40-140
OP68514-BSD	98-95-3	Nitrobenzene	BSD	RPD	5	%	30
OP68514-BSD	62-75-9	n-Nitrosodimethylamine	BSD	REC	62	%	40-140
OP68514-BSD	62-75-9	n-Nitrosodimethylamine	BSD	RPD	1	%	30
OP68514-BSD	621-64-7	N-Nitroso-di-n-propylamine	BSD	REC	68	%	40-140
OP68514-BSD	621-64-7	N-Nitroso-di-n-propylamine	BSD	RPD	4	%	30
OP68514-BSD	86-30-6	N-Nitrosodiphenylamine	BSD	REC	87	%	40-140
OP68514-BSD	86-30-6	N-Nitrosodiphenylamine	BSD	RPD	4	%	30
OP68514-BSD	85-01-8	Phenanthrene	BSD	REC	80	%	40-140
OP68514-BSD	85-01-8	Phenanthrene	BSD	RPD	5	%	30
OP68514-BSD	129-00-0	Pyrene	BSD	REC	91	%	40-140
OP68514-BSD	129-00-0	Pyrene	BSD	RPD	3	%	30
OP68514-BSD	110-86-1	Pyridine	BSD	REC	49	%	40-140
OP68514-BSD	110-86-1	Pyridine	BSD	RPD	1	%	30
OP68514-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	73	%	40-140
OP68514-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	RPD	9	%	30
OP68514-BSD	367-12-4	2-Fluorophenol	BSD	SURR	71	%	30-130
OP68514-BSD	4165-62-2	Phenol-d5	BSD	SURR	72	%	30-130
OP68514-BSD	118-79-6	2,4,6-Tribromophenol	BSD	SURR	94	%	30-130
OP68514-BSD	4165-60-0	Nitrobenzene-d5	BSD	SURR	66	%	30-130
OP68514-BSD	321-60-8	2-Fluorobiphenyl	BSD	SURR	80	%	30-130
OP68514-BSD	1718-51-0	Terphenyl-d14	BSD	SURR	91	%	30-130
OP68514-MB1	367-12-4	2-Fluorophenol	MB	SURR	67	%	30-130
OP68514-MB1	4165-62-2	Phenol-d5	MB	SURR	68	%	30-130
OP68514-MB1	118-79-6	2,4,6-Tribromophenol	MB	SURR	70	%	30-130
OP68514-MB1	4165-60-0	Nitrobenzene-d5	MB	SURR	60	%	30-130
OP68514-MB1	321-60-8	2-Fluorobiphenyl	MB	SURR	68	%	30-130
OP68514-MB1	1718-51-0	Terphenyl-d14	MB	SURR	83	%	30-130

*** Sample used for QC is not from job JE21772**

QC Evaluation: MA MCP Limits

Job Number: JE21772
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 10/23/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
JE21772-1	367-12-4	2-Fluorophenol	SAMP	SURR	27	%	30-130
JE21772-1	4165-62-2	Phenol-d5	SAMP	SURR	30	%	30-130
JE21772-1	118-79-6	2,4,6-Tribromophenol	SAMP	SURR	43	%	30-130
JE21772-1	4165-60-0	Nitrobenzene-d5	SAMP	SURR	26	%	30-130
JE21772-1	321-60-8	2-Fluorobiphenyl	SAMP	SURR	31	%	30-130
JE21772-1	1718-51-0	Terphenyl-d14	SAMP	SURR	40	%	30-130

(a) Outside of in house control limits, but within reasonable method recovery limits.
(b) High percent recovery and no associated positive reported in the QC batch.
(c) Outside in house control limits.

* Sample used for QC is not from job JE21772

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Internal Standard Area Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9398-MB	Y218647.D	1	10/24/25	PS	n/a	n/a	VY9398

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE21772-1

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.1	ug/kg	
71-43-2	Benzene	ND	0.50	0.46	ug/kg	
108-86-1	Bromobenzene	ND	5.0	0.55	ug/kg	
74-97-5	Bromochloromethane	ND	5.0	0.56	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.43	ug/kg	
75-25-2	Bromoform	ND	5.0	1.4	ug/kg	
74-83-9	Bromomethane	ND	5.0	0.76	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	2.4	ug/kg	
104-51-8	n-Butylbenzene	ND	2.0	0.41	ug/kg	
135-98-8	sec-Butylbenzene	ND	2.0	0.43	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.0	0.50	ug/kg	
75-15-0	Carbon disulfide	ND	2.0	0.54	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.62	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.46	ug/kg	
75-00-3	Chloroethane	ND	5.0	0.59	ug/kg	
67-66-3	Chloroform	ND	2.0	1.0	ug/kg	
74-87-3	Chloromethane	ND	5.0	2.0	ug/kg	
95-49-8	o-Chlorotoluene	ND	2.0	0.54	ug/kg	
106-43-4	p-Chlorotoluene	ND	2.0	0.44	ug/kg	
108-20-3	Di-Isopropyl ether	ND	2.0	0.50	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.56	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.42	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.55	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.49	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.0	0.73	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.47	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.66	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.84	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.61	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.47	ug/kg	
142-28-9	1,3-Dichloropropane	ND	2.0	0.52	ug/kg	
594-20-7	2,2-Dichloropropane	ND	2.0	0.43	ug/kg	
563-58-6	1,1-Dichloropropene	ND	2.0	0.47	ug/kg	

Method Blank Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9398-MB	Y218647.D	1	10/24/25	PS	n/a	n/a	VY9398

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE21772-1

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.48	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.46	ug/kg	
123-91-1	1,4-Dioxane	ND	130	37	ug/kg	
60-29-7	Ethyl Ether	ND	2.0	0.46	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.45	ug/kg	
87-68-3	Hexachlorobutadiene	ND	5.0	0.66	ug/kg	
591-78-6	2-Hexanone	ND	5.0	2.1	ug/kg	
98-82-8	Isopropylbenzene	ND	2.0	1.4	ug/kg	
99-87-6	p-Isopropyltoluene	ND	2.0	0.40	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.47	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	2.3	ug/kg	
74-95-3	Methylene bromide	ND	5.0	0.53	ug/kg	
75-09-2	Methylene chloride	ND	5.0	2.6	ug/kg	
91-20-3	Naphthalene	ND	5.0	2.5	ug/kg	
103-65-1	n-Propylbenzene	ND	2.0	0.47	ug/kg	
100-42-5	Styrene	ND	2.0	0.40	ug/kg	
994-05-8	tert-Amyl Methyl Ether	ND	2.0	0.50	ug/kg	
637-92-3	tert-Butyl Ethyl Ether	ND	2.0	0.49	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	2.0	0.42	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.60	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.58	ug/kg	
109-99-9	Tetrahydrofuran	ND	10	3.0	ug/kg	
108-88-3	Toluene	ND	1.0	0.53	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	2.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	2.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.48	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.55	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.76	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.0	0.68	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.56	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.50	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.43	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.48	ug/kg	
	m,p-Xylene	ND	1.0	0.90	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.46	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.46	ug/kg	

Method Blank Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9398-MB	Y218647.D	1	10/24/25	PS	n/a	n/a	VY9398

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE21772-1

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	107%	80-124%
17060-07-0	1,2-Dichloroethane-D4	103%	75-133%
2037-26-5	Toluene-D8	102%	79-125%
460-00-4	4-Bromofluorobenzene	105%	58-148%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9398-BS	Y218644.D	1	10/24/25	PS	n/a	n/a	VY9398
VY9398-BSD	Y218645.D	1	10/24/25	PS	n/a	n/a	VY9398

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE21772-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	200	181	91	169	85	7	52-156/12
71-43-2	Benzene	50	53.7	107	51.3	103	5	82-119/10
108-86-1	Bromobenzene	50	48.9	98	47.2	94	4	82-115/10
74-97-5	Bromochloromethane	50	58.5	117	54.9	110	6	82-123/10
75-27-4	Bromodichloromethane	50	54.8	110	51.7	103	6	83-121/10
75-25-2	Bromoform	50	48.9	98	46.6	93	5	74-138/10
74-83-9	Bromomethane	50	56.2	112	52.6	105	7	56-150/12
78-93-3	2-Butanone (MEK)	200	236	118	218	109	8	72-138/10
104-51-8	n-Butylbenzene	50	55.1	110	52.1	104	6	81-124/11
135-98-8	sec-Butylbenzene	50	52.0	104	49.1	98	6	78-120/10
98-06-6	tert-Butylbenzene	50	50.9	102	48.5	97	5	78-121/10
75-15-0	Carbon disulfide	50	56.6	113	52.7	105	7	67-131/11
56-23-5	Carbon tetrachloride	50	59.5	119	55.1	110	8	72-130/11
108-90-7	Chlorobenzene	50	53.1	106	50.9	102	4	83-114/10
75-00-3	Chloroethane	50	41.3	83	38.0	76	8	67-141/12
67-66-3	Chloroform	50	52.9	106	49.6	99	6	76-115/10
74-87-3	Chloromethane	50	47.4	95	45.4	91	4	57-141/13
95-49-8	o-Chlorotoluene	50	52.0	104	48.9	98	6	81-118/10
106-43-4	p-Chlorotoluene	50	50.6	101	48.3	97	5	78-117/10
108-20-3	Di-Isopropyl ether	50	46.9	94	44.2	88	6	66-138/10
96-12-8	1,2-Dibromo-3-chloropropane	50	48.3	97	47.3	95	2	72-131/11
124-48-1	Dibromochloromethane	50	53.1	106	50.9	102	4	80-128/10
106-93-4	1,2-Dibromoethane	50	51.6	103	49.7	99	4	58-145/10
95-50-1	1,2-Dichlorobenzene	50	51.5	103	49.6	99	4	83-117/10
541-73-1	1,3-Dichlorobenzene	50	51.3	103	49.3	99	4	82-114/10
106-46-7	1,4-Dichlorobenzene	50	51.1	102	49.3	99	4	79-114/10
75-71-8	Dichlorodifluoromethane	50	59.4	119	54.5	109	9	49-146/13
75-34-3	1,1-Dichloroethane	50	56.0	112	52.2	104	7	76-126/10
107-06-2	1,2-Dichloroethane	50	55.5	111	53.6	107	3	76-118/10
75-35-4	1,1-Dichloroethene	50	59.8	120	55.6	111	7	72-125/11
156-59-2	cis-1,2-Dichloroethene	50	60.2	120* [a]	56.8	114	6	80-118/10
156-60-5	trans-1,2-Dichloroethene	50	61.8	124* [b]	57.8	116	7	76-122/10
78-87-5	1,2-Dichloropropane	50	51.0	102	48.6	97	5	82-123/10
142-28-9	1,3-Dichloropropane	50	52.3	105	49.9	100	5	84-120/10
594-20-7	2,2-Dichloropropane	50	55.0	110	51.1	102	7	66-130/11
563-58-6	1,1-Dichloropropene	50	56.3	113	52.7	105	7	78-122/10

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9398-BS	Y218644.D	1	10/24/25	PS	n/a	n/a	VY9398
VY9398-BSD	Y218645.D	1	10/24/25	PS	n/a	n/a	VY9398

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE21772-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	50	51.5	103	49.6	99	4	83-123/10
10061-02-6	trans-1,3-Dichloropropene	50	51.3	103	48.7	97	5	83-123/10
123-91-1	1,4-Dioxane	1250	1420	114	1350	108	5	64-163/20
60-29-7	Ethyl Ether	50	61.7	123	59.1	118	4	78-131/10
100-41-4	Ethylbenzene	50	53.5	107	50.4	101	6	83-115/10
87-68-3	Hexachlorobutadiene	50	49.4	99	47.5	95	4	65-130/11
591-78-6	2-Hexanone	200	200	100	190	95	5	73-138/10
98-82-8	Isopropylbenzene	50	51.0	102	48.6	97	5	81-122/11
99-87-6	p-Isopropyltoluene	50	51.7	103	49.8	100	4	80-120/10
1634-04-4	Methyl Tert Butyl Ether	50	62.7	125	55.4	111	12	75-126/12
108-10-1	4-Methyl-2-pentanone(MIBK)	200	204	102	191	96	7	71-138/10
74-95-3	Methylene bromide	50	57.6	115	53.9	108	7	81-122/10
75-09-2	Methylene chloride	50	56.5	113	52.9	106	7	73-122/10
91-20-3	Naphthalene	50	53.5	107	51.2	102	4	71-129/14
103-65-1	n-Propylbenzene	50	53.3	107	50.1	100	6	77-120/10
100-42-5	Styrene	50	52.5	105	50.1	100	5	84-122/10
994-05-8	tert-Amyl Methyl Ether	50	50.0	100	48.4	97	3	77-125/11
637-92-3	tert-Butyl Ethyl Ether	50	51.2	102	48.3	97	6	75-131/10
630-20-6	1,1,1,2-Tetrachloroethane	50	49.6	99	46.6	93	6	81-125/10
79-34-5	1,1,2,2-Tetrachloroethane	50	50.4	101	48.1	96	5	75-127/10
127-18-4	Tetrachloroethene	50	49.4	99	47.5	95	4	73-125/11
109-99-9	Tetrahydrofuran	50	53.8	108	42.9	86	23* [c]	61-136/11
108-88-3	Toluene	50	54.1	108	51.3	103	5	82-118/10
87-61-6	1,2,3-Trichlorobenzene	50	53.5	107	51.6	103	4	68-132/13
120-82-1	1,2,4-Trichlorobenzene	50	51.0	102	49.3	99	3	72-133/12
71-55-6	1,1,1-Trichloroethane	50	60.9	122	56.3	113	8	77-124/11
79-00-5	1,1,2-Trichloroethane	50	51.1	102	48.7	97	5	83-122/10
79-01-6	Trichloroethene	50	56.3	113	53.9	108	4	80-122/10
75-69-4	Trichlorofluoromethane	50	51.2	102	50.0	100	2	69-132/11
96-18-4	1,2,3-Trichloropropane	50	48.3	97	46.7	93	3	80-120/10
95-63-6	1,2,4-Trimethylbenzene	50	51.6	103	49.1	98	5	80-119/10
108-67-8	1,3,5-Trimethylbenzene	50	51.1	102	48.6	97	5	79-120/10
75-01-4	Vinyl chloride	50	51.7	103	47.6	95	8	60-144/13
	m,p-Xylene	100	105	105	98.9	99	6	82-119/10
95-47-6	o-Xylene	50	52.8	106	50.6	101	4	84-120/10
1330-20-7	Xylene (total)	150	157	105	150	100	5	83-119/10

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9398-BS	Y218644.D	1	10/24/25	PS	n/a	n/a	VY9398
VY9398-BSD	Y218645.D	1	10/24/25	PS	n/a	n/a	VY9398

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE21772-1

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	114%	112%	80-124%
17060-07-0	1,2-Dichloroethane-D4	109%	110%	75-133%
2037-26-5	Toluene-D8	105%	105%	79-125%
460-00-4	4-Bromofluorobenzene	100%	101%	58-148%

(a) Outside of in house control limits, but within reasonable method recovery limits.
(b) High percent recovery and no associated positive reported in the QC batch.
(c) Outside in house control limits.

* = Outside of Control Limits.

Internal Standard Area Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	VY9398-CC9360	**Injection Date:**	10/24/25
Lab File ID:	Y218642.D	**Injection Time:**	11:11
Instrument ID:	GCMSY	**Method:**	SW846 8260D

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	141178	1.70	293921	2.74	486918	3.27	393089	5.73	256010	7.62
Upper Limit [a]	282356	2.20	587842	3.24	973836	3.77	786178	6.23	512020	8.12
Lower Limit [b]	70589	1.20	146961	2.24	243459	2.77	196545	5.23	128005	7.12

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
VY9398-BS	131920	1.69	286639	2.74	483671	3.27	388951	5.73	255055	7.62
VY9398-BSD	136361	1.70	303789	2.74	500351	3.27	404376	5.73	262712	7.62
VY9398-MB	93667	1.69	280476	2.73	436017	3.26	376211	5.73	240146	7.62
ZZZZZZ	108854	1.69	268360	2.74	421310	3.27	367497	5.73	239070	7.62
JE21767-2	102999	1.69	268020	2.74	423366	3.27	363588	5.73	236640	7.62
JE21767-3	104553	1.70	264470	2.74	414610	3.27	360071	5.73	236424	7.62
ZZZZZZ	105587	1.70	262315	2.74	415849	3.27	358657	5.73	231648	7.62
ZZZZZZ	93667	1.70	270338	2.74	423625	3.27	366282	5.73	234904	7.62
ZZZZZZ	100862	1.69	261305	2.73	408708	3.27	351077	5.73	214617	7.62
ZZZZZZ	97713	1.69	287203	2.74	448701	3.27	389605	5.73	249868	7.62
ZZZZZZ	96247	1.69	284288	2.74	448341	3.27	385083	5.73	241191	7.62
JE21767-2MS	109924	1.70	302898	2.74	502422	3.27	405332	5.73	254366	7.62
JE21767-3DUP	100024	1.69	278432	2.74	442831	3.26	375936	5.73	243961	7.62
ZZZZZZ	91647	1.69	282332	2.74	448790	3.27	377478	5.73	236304	7.62
ZZZZZZ	101786	1.69	280242	2.74	447139	3.27	383944	5.73	248530	7.62
ZZZZZZ	83096	1.70	276982	2.74	445516	3.27	375913	5.73	246194	7.62
ZZZZZZ	98781	1.70	273590	2.74	435879	3.27	375447	5.73	242872	7.62
ZZZZZZ	100375	1.70	272646	2.74	440833	3.27	377338	5.73	246301	7.62
ZZZZZZ	103464	1.70	271586	2.74	430732	3.27	366574	5.73	238909	7.62
JE21772-1	103853	1.69	268972	2.74	430666	3.27	366493	5.73	232995	7.62
ZZZZZZ	88200	1.69	264568	2.73	421155	3.26	367485	5.73	234936	7.62
ZZZZZZ	88446	1.69	263443	2.74	419542	3.27	363613	5.73	233999	7.62

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Surrogate Recovery Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8260D **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JE21772-1	Y218669.D	112	111	102	105
VY9398-BS	Y218644.D	114	109	105	100
VY9398-BSD	Y218645.D	112	110	105	101
VY9398-MB	Y218647.D	107	103	102	105

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	80-124%
S2 = 1,2-Dichloroethane-D4	75-133%
S3 = Toluene-D8	79-125%
S4 = 4-Bromofluorobenzene	58-148%

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Internal Standard Area Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68514-MB1	CT14627.D	1	10/26/25	TL	10/25/25	OP68514	ECT640

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE21772-1

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	670	55	ug/kg	
95-57-8	2-Chlorophenol	ND	67	16	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	20	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	28	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	59	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	36	ug/kg	
95-48-7	2-Methylphenol	ND	67	21	ug/kg	
	3&4-Methylphenol	ND	67	27	ug/kg	
88-75-5	2-Nitrophenol	ND	170	22	ug/kg	
100-02-7	4-Nitrophenol	ND	330	89	ug/kg	
87-86-5	Pentachlorophenol	ND	130	31	ug/kg	
108-95-2	Phenol	ND	67	17	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	25	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	20	ug/kg	
83-32-9	Acenaphthene	ND	33	11	ug/kg	
208-96-8	Acenaphthylene	ND	33	17	ug/kg	
98-86-2	Acetophenone	ND	170	7.2	ug/kg	
62-53-3	Aniline	ND	67	15	ug/kg	
120-12-7	Anthracene	ND	33	20	ug/kg	
56-55-3	Benzo(a)anthracene	ND	33	9.4	ug/kg	
50-32-8	Benzo(a)pyrene	ND	33	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	33	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	33	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	33	16	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	67	13	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	67	8.1	ug/kg	
91-58-7	2-Chloronaphthalene	ND	67	7.9	ug/kg	
106-47-8	4-Chloroaniline	ND	170	12	ug/kg	
218-01-9	Chrysene	ND	33	10	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	67	7.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	67	14	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	67	12	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	67	11	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	67	9.6	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	67	7.6	ug/kg	

Method Blank Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68514-MB1	CT14627.D	1	10/26/25	TL	10/25/25	OP68514	ECT640

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE21772-1

CAS No.	Compound	Result	RL	MDL	Units	Q
541-73-1	1,3-Dichlorobenzene	ND	67	7.1	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	67	8.1	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	33	10	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	33	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	67	28	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	15	ug/kg	
132-64-9	Dibenzofuran	ND	67	14	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	67	5.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	67	8.3	ug/kg	
84-66-2	Diethyl phthalate	ND	67	7.1	ug/kg	
131-11-3	Dimethyl phthalate	ND	67	5.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	67	7.8	ug/kg	
206-44-0	Fluoranthene	ND	33	15	ug/kg	
86-73-7	Fluorene	ND	33	15	ug/kg	
118-74-1	Hexachlorobenzene	ND	67	8.4	ug/kg	
87-68-3	Hexachlorobutadiene	ND	33	13	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	330	13	ug/kg	
67-72-1	Hexachloroethane	ND	170	16	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	33	16	ug/kg	
78-59-1	Isophorone	ND	67	7.1	ug/kg	
91-57-6	2-Methylnaphthalene	ND	33	7.5	ug/kg	
91-20-3	Naphthalene	ND	33	9.4	ug/kg	
98-95-3	Nitrobenzene	ND	67	13	ug/kg	
62-75-9	n-Nitrosodimethylamine	ND	67	12	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	67	9.6	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	12	ug/kg	
85-01-8	Phenanthrene	ND	33	11	ug/kg	
129-00-0	Pyrene	ND	33	11	ug/kg	
110-86-1	Pyridine	ND	67	11	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	67	8.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	67%	10-99%
4165-62-2	Phenol-d5	68%	10-96%

Method Blank Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68514-MB1	CT14627.D	1	10/26/25	TL	10/25/25	OP68514	ECT640

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE21772-1

CAS No.	Surrogate Recoveries		Limits
118-79-6	2,4,6-Tribromophenol	70%	10-123%
4165-60-0	Nitrobenzene-d5	60%	10-109%
321-60-8	2-Fluorobiphenyl	68%	11-109%
1718-51-0	Terphenyl-d14	83%	10-120%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
57-10-3	n-Hexadecanoic acid	8.08	470	ug/kg	JN
	Unknown	9.97	450	ug/kg	J
	Unknown	12.04	170	ug/kg	J
	Total TIC, Semi-Volatile		1090	ug/kg	J

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68514-BS1	CT14628.D	1	10/26/25	TL	10/25/25	OP68514	ECT640
OP68514-BSD	CT14629.D	1	10/26/25	TL	10/25/25	OP68514	ECT640

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE21772-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic acid	1670	1350	81	1430	86	6	10-146/45
95-57-8	2-Chlorophenol	1670	1130	68	1190	71	5	10-135/43
59-50-7	4-Chloro-3-methyl phenol	1670	1300	78	1340	80	3	10-141/46
120-83-2	2,4-Dichlorophenol	1670	1280	77	1300	78	2	10-139/43
105-67-9	2,4-Dimethylphenol	1670	1240	74	1270	76	2	10-141/44
51-28-5	2,4-Dinitrophenol	3330	2330	70	2500	75	7	10-138/90
534-52-1	4,6-Dinitro-o-cresol	1670	1560	94	1640	98	5	10-156/64
95-48-7	2-Methylphenol	1670	1120	67	1170	70	4	10-139/45
	3&4-Methylphenol	3330	2300	69	2380	71	3	10-174/46
88-75-5	2-Nitrophenol	1670	1360	82	1420	85	4	10-142/43
100-02-7	4-Nitrophenol	1670	1270	76	1310	79	3	10-144/51
87-86-5	Pentachlorophenol	3330	2860	86	3140	94	9	10-165/51
108-95-2	Phenol	1670	1110	67	1170	70	5	23-115/45
95-95-4	2,4,5-Trichlorophenol	1670	1330	80	1420	85	7	13-136/47
88-06-2	2,4,6-Trichlorophenol	1670	1390	83	1400	84	1	10-142/46
83-32-9	Acenaphthene	1670	1250	75	1280	77	2	10-141/45
208-96-8	Acenaphthylene	1670	1250	75	1300	78	4	10-133/45
98-86-2	Acetophenone	1670	1040	62	1090	65	5	23-115/44
62-53-3	Aniline	1670	1090	65	1160	70	6	10-113/63
120-12-7	Anthracene	1670	1290	77	1360	82	5	10-144/49
56-55-3	Benzo(a)anthracene	1670	1330	80	1400	84	5	11-139/48
50-32-8	Benzo(a)pyrene	1670	1310	79	1400	84	7	13-141/48
205-99-2	Benzo(b)fluoranthene	1670	1400	84	1480	89	6	14-140/48
191-24-2	Benzo(g,h,i)perylene	1670	1200	72	1300	78	8	13-138/50
207-08-9	Benzo(k)fluoranthene	1670	1220	73	1320	79	8	12-140/47
101-55-3	4-Bromophenyl phenyl ether	1670	1370	82	1450	87	6	10-146/47
85-68-7	Butyl benzyl phthalate	1670	1620	97	1650	99	2	10-150/48
91-58-7	2-Chloronaphthalene	1670	1220	73	1280	77	5	10-142/42
106-47-8	4-Chloroaniline	1670	416	25	500	30	18	10-108/56
218-01-9	Chrysene	1670	1300	78	1340	80	3	11-139/48
111-91-1	bis(2-Chloroethoxy)methane	1670	1120	67	1170	70	4	10-144/42
111-44-4	bis(2-Chloroethyl)ether	1670	1010	61	1060	64	5	10-145/43
108-60-1	2,2'-Oxybis(1-chloropropane)	1670	1020	61	1090	65	7	10-145/43
7005-72-3	4-Chlorophenyl phenyl ether	1670	1330	80	1350	81	1	10-145/46
95-50-1	1,2-Dichlorobenzene	1670	1010	61	1050	63	4	10-136/41
122-66-7	1,2-Diphenylhydrazine	1670	1250	75	1290	77	3	10-145/46

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68514-BS1	CT14628.D	1	10/26/25	TL	10/25/25	OP68514	ECT640
OP68514-BSD	CT14629.D	1	10/26/25	TL	10/25/25	OP68514	ECT640

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE21772-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
541-73-1	1,3-Dichlorobenzene	1670	990	59	1030	62	4	10-139/40
106-46-7	1,4-Dichlorobenzene	1670	997	60	1050	63	5	10-136/43
121-14-2	2,4-Dinitrotoluene	1670	1500	90	1530	92	2	10-148/49
606-20-2	2,6-Dinitrotoluene	1670	1510	91	1580	95	5	12-145/48
91-94-1	3,3'-Dichlorobenzidine	1670	1090	65	1160	70	6	10-100/62
53-70-3	Dibenzo(a,h)anthracene	1670	1220	73	1310	79	7	14-142/48
132-64-9	Dibenzofuran	1670	1250	75	1280	77	2	10-140/46
84-74-2	Di-n-butyl phthalate	1670	1330	80	1400	84	5	11-147/47
117-84-0	Di-n-octyl phthalate	1670	1570	94	1650	99	5	15-145/49
84-66-2	Diethyl phthalate	1670	1280	77	1300	78	2	10-145/46
131-11-3	Dimethyl phthalate	1670	1310	79	1340	80	2	10-144/47
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1460	88	1530	92	5	26-132/48
206-44-0	Fluoranthene	1670	1250	75	1330	80	6	10-147/48
86-73-7	Fluorene	1670	1260	76	1300	78	3	12-139/45
118-74-1	Hexachlorobenzene	1670	1370	82	1390	83	1	10-144/48
87-68-3	Hexachlorobutadiene	1670	1160	70	1230	74	6	10-142/41
77-47-4	Hexachlorocyclopentadiene	3330	2770	83	2950	89	6	10-120/53
67-72-1	Hexachloroethane	1670	1050	63	1100	66	5	10-141/41
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1220	73	1320	79	8	13-144/52
78-59-1	Isophorone	1670	1110	67	1140	68	3	10-139/44
91-57-6	2-Methylnaphthalene	1670	1180	71	1250	75	6	10-140/42
91-20-3	Naphthalene	1670	1130	68	1200	72	6	10-141/40
98-95-3	Nitrobenzene	1670	1110	67	1170	70	5	10-139/42
62-75-9	n-Nitrosodimethylamine	1670	1020	61	1030	62	1	10-140/41
621-64-7	N-Nitroso-di-n-propylamine	1670	1090	65	1140	68	4	10-143/41
86-30-6	N-Nitrosodiphenylamine	1670	1400	84	1450	87	4	10-145/45
85-01-8	Phenanthrene	1670	1260	76	1330	80	5	10-142/47
129-00-0	Pyrene	1670	1480	89	1520	91	3	13-141/46
110-86-1	Pyridine	1670	817	49	811	49	1	10-112/37
120-82-1	1,2,4-Trichlorobenzene	1670	1110	67	1210	73	9	10-141/41

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	64%	71%	10-99%
4165-62-2	Phenol-d5	68%	72%	10-96%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68514-BS1	CT14628.D	1	10/26/25	TL	10/25/25	OP68514	ECT640
OP68514-BSD	CT14629.D	1	10/26/25	TL	10/25/25	OP68514	ECT640

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE21772-1

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
118-79-6	2,4,6-Tribromophenol	87%	94%	10-123%
4165-60-0	Nitrobenzene-d5	59%	66%	10-109%
321-60-8	2-Fluorobiphenyl	76%	80%	11-109%
1718-51-0	Terphenyl-d14	86%	91%	10-120%

*** = Outside of Control Limits.**

Internal Standard Area Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	ECT640-CC635	**Injection Date:**	10/26/25
Lab File ID:	CT14624.D	**Injection Time:**	13:05
Instrument ID:	GCMSCT	**Method:**	SW846 8270E

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Initial Cal [a]	82988	4.55	337013	5.27	186984	6.41	329093	7.61	311326	10.11	339016	11.52
Check Std [b]	97084	4.55	370764	5.27	201976	6.41	343082	7.60	301546	10.11	352238	11.53
Upper Limit [c]	194168	4.72	741528	5.44	403952	6.58	686164	7.77	603092	10.28	704476	11.70
Lower Limit [d]	48542	4.38	185382	5.10	100988	6.24	171541	7.43	150773	9.94	176119	11.36
Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP68514-MB1	122313	4.55	476791	5.27	270514	6.41	460663	7.60	346369	10.10	345813	11.53
OP68514-BS1	125952	4.54	477450	5.27	260075	6.41	437319	7.60	333271	10.11	335157	11.53
OP68514-BSD	119786	4.55	450756	5.27	246273	6.41	409405	7.60	317166	10.11	316569	11.53
JE21766-3	119444	4.54	465718	5.27	256243	6.41	422540	7.60	323156	10.10	314724	11.52
OP68514-MS	122100	4.54	465824	5.27	251941	6.41	416506	7.60	317161	10.10	323511	11.53
OP68514-MSD	115218	4.55	440606	5.27	237533	6.41	391521	7.60	300516	10.10	323348	11.53
ZZZZZZ	100813	4.54	391326	5.27	213403	6.41	354550	7.60	298724	10.10	346990	11.52
ZZZZZZ	125007	4.55	461509	5.27	240549	6.41	383893	7.60	306469	10.11	377857	11.54
ZZZZZZ	119540	4.55	449481	5.27	234305	6.41	373359	7.61	299013	10.11	356783	11.53
ZZZZZZ	119621	4.55	450551	5.27	237407	6.41	380592	7.60	295158	10.11	347670	11.53
ZZZZZZ	122547	4.55	460427	5.27	245482	6.41	381246	7.60	289612	10.11	341332	11.53
ZZZZZZ	125351	4.55	459757	5.27	239459	6.41	390140	7.60	302622	10.11	371402	11.53
ZZZZZZ	124226	4.55	460799	5.27	234987	6.41	371770	7.61	331557	10.11	403676	11.53
ZZZZZZ	115591	4.55	412855	5.27	214285	6.41	344700	7.61	333309	10.11	412685	11.54
ZZZZZZ	118150	4.55	428414	5.27	227204	6.41	359609	7.61	355472	10.11	423994	11.54
ZZZZZZ	114540	4.55	413751	5.27	217528	6.41	354338	7.62	349650	10.12	420319	11.55
ZZZZZZ	113428	4.55	427390	5.27	231233	6.41	384334	7.62	377519	10.12	439067	11.55
ZZZZZZ	124090	4.55	445228	5.27	230372	6.41	373280	7.62	364485	10.12	428873	11.55
ZZZZZZ	108922	4.55	401566	5.27	217889	6.41	376240	7.62	377975	10.12	425011	11.55
JE21772-1 [e]	96488	4.55	378606	5.27	227683	6.42	412640	7.62	370256	10.12	415628	11.55

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Initial Cal is: ECT635-ICC635 CT14482.D 10/20/25 13:06
(b) Check Std Limit = -50 to + 100% of initial cal area.
(c) Upper Limit = + 100% of check standard area; Retention time + 0.167 minutes.
(d) Lower Limit = -50% of check standard area; Retention time -0.167 minutes.
(e) Dilution required due to viscosity of the extract matrix.

Surrogate Recovery Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8270E **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
JE21772-1	CT14646.D	27	30	43	26	31	40
OP68514-BS1	CT14628.D	64	68	87	59	76	86
OP68514-BSD	CT14629.D	71	72	94	66	80	91
OP68514-MB1	CT14627.D	67	68	70	60	68	83

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	10-99%
S2 = Phenol-d5	10-96%
S3 = 2,4,6-Tribromophenol	10-123%
S4 = Nitrobenzene-d5	10-109%
S5 = 2-Fluorobiphenyl	11-109%
S6 = Terphenyl-d14	10-120%

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GBH1964-MB	BH54934.D	1	10/24/25	JN	n/a	n/a	GBH1964

The QC reported here applies to the following samples: **Method: MADEP VPH REV 2.1**

JE21772-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	5000	2500	ug/kg	
	C9- C12 Aliphatics (Unadj.)	ND	5000	2500	ug/kg	
	C5- C8 Aliphatics	ND	5000	2500	ug/kg	
	C9- C12 Aliphatics	ND	5000	2500	ug/kg	
	C9- C10 Aromatics	ND	5000	2500	ug/kg	

CAS No.	Surrogate Recoveries		Limits
	2,3,4-Trifluorotoluene	108%	70-130%
	2,3,4-Trifluorotoluene	102%	70-130%

Method Blank Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKM602-MB2	KM14332.D	1	10/27/25	JN	n/a	n/a	GKM602

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE21772-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries		Limits
98-08-8	aaa-Trifluorotoluene	83%	70-116%

Method Blank Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKM602-MB	KM14323.D	1	10/27/25	JN	n/a	n/a	GKM602

The QC reported here applies to the following samples: **Method: SW846 8015D**

GKM602-BSD, GKM602-BS

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries		Limits
98-08-8	aaa-Trifluorotoluene	81%	70-116%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GBH1964-BS	BH54935.D	1	10/24/25	JN	n/a	n/a	GBH1964
GBH1964-BSD	BH54936.D	1	10/24/25	JN	n/a	n/a	GBH1964

The QC reported here applies to the following samples: **Method: MADEP VPH REV 2.1**

JE21772-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
	C5- C8 Aliphatics (Unadj.)	7500	7400	98	7400	99	1	70-130/25
	C9- C12 Aliphatics (Unadj.)	5000	3900	78	4000	80	3	70-130/25
	C9- C10 Aromatics	2500	2500	99	2500	100	1	70-130/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
	2,3,4-Trifluorotoluene	109%	109%	70-130%
	2,3,4-Trifluorotoluene	102%	101%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKM602-BS	KM14324.D	1	10/27/25	JN	n/a	n/a	GKM602
GKM602-BSD	KM14325.D	1	10/27/25	JN	n/a	n/a	GKM602

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE21772-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	400	389	97	391	98	1	75-126/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
98-08-8	aaa-Trifluorotoluene	99%	99%	70-116%

* = Outside of Control Limits.

Surrogate Recovery Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: MADEP VPH REV 2.1 **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
JE21772-1	BH54942.D	103	98
GBH1964-BS	BH54935.D	109	102
GBH1964-BSD	BH54936.D	109	101
GBH1964-MB	BH54934.D	108	102

Surrogate Compounds	Recovery Limits
S1 = 2,3,4-Trifluorotoluene	70-130%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

Surrogate Recovery Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8015D **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]
JE21772-1	KM14340.D	83
GKM602-BS	KM14324.D	99
GKM602-BSD	KM14325.D	99
GKM602-MB2	KM14332.D	83
GKM602-MB	KM14323.D	81

Surrogate Compounds	Recovery Limits
S1 = aaa-Trifluorotoluene	70-116%

(a) Recovery from GC signal #1

GC/LC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68512-MB1	4Y93420.D	1	11/05/25	CB	10/24/25	OP68512	G4Y3526

The QC reported here applies to the following samples: **Method: MADEP EPH REV 2.1**

JE21772-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	ND	6700	580	ug/kg	
	C9-C18 Aliphatics	ND	6700	190	ug/kg	
	C11-C22 Aromatics	ND	6700	580	ug/kg	
	C19-C36 Aliphatics	ND	6700	450	ug/kg	

CAS No.	Surrogate Recoveries		Limits
3386-33-2	1-Chlorooctadecane	73%	40-140%
84-15-1	o-Terphenyl	78%	40-140%
321-60-8	2-Fluorobiphenyl	115%	40-140%

Method Blank Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68508-MB1	RL32530.D	1	10/28/25	EA	10/26/25	OP68508	GRL825

The QC reported here applies to the following samples: **Method: SW846 8082A**

JE21772-1

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	8.5	ug/kg	
11104-28-2	Aroclor 1221	ND	20	6.7	ug/kg	
11141-16-5	Aroclor 1232	ND	20	17	ug/kg	
53469-21-9	Aroclor 1242	ND	20	12	ug/kg	
12672-29-6	Aroclor 1248	ND	20	4.3	ug/kg	
11097-69-1	Aroclor 1254	ND	20	2.2	ug/kg	
11096-82-5	Aroclor 1260	ND	20	6.9	ug/kg	
11100-14-4	Aroclor 1268	ND	20	2.0	ug/kg	
37324-23-5	Aroclor 1262	ND	20	1.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
877-09-8	Tetrachloro-m-xylene	93%	35-154%
877-09-8	Tetrachloro-m-xylene	61%	35-154%
2051-24-3	Decachlorobiphenyl	105%	24-176%
2051-24-3	Decachlorobiphenyl	53%	24-176%

Method Blank Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68517-MB1	3Y97374.D	1	10/28/25	CB	10/26/25	OP68517	G3Y3754

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE21772-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	4.0	2.6	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	98%	50-150%
438-22-2	5a-Androstane	101%	50-150%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68512-BS1	4Y93421.D	1	11/05/25	CB	10/24/25	OP68512	G4Y3526
OP68512-BSD	4Y93422.D	1	11/06/25	CB	10/24/25	OP68512	G4Y3526

The QC reported here applies to the following samples: **Method: MADEP EPH REV 2.1**

JE21772-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
	C11-C22 Aromatics (Unadj.)	56700	42700	75	39600	70	8	50-150/30 [a]
	C9-C18 Aliphatics	20000	12200	61	12300	62	1	40-140/30
	C19-C36 Aliphatics	36700	27600	75	25300	69	9	40-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
3386-33-2	1-Chlorooctadecane	69%	61%	40-140%
84-15-1	o-Terphenyl	79%	73%	40-140%
321-60-8	2-Fluorobiphenyl	141%* [b]	124%	40-140%

Sample	Compound	Col #1	Col #2	Breakthrough	Limit
OP68512-BS1	2-Methylnaphthalene	1860	ND	0.0%	5.0
OP68512-BS1	Naphthalene	2070	ND	0.0%	5.0
OP68512-BSD	2-Methylnaphthalene	1820	ND	0.0%	5.0
OP68512-BSD	Naphthalene	2100	ND	0.0%	5.0

(a) Advisory control limits.
(b) Outside of in house control limits.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68508-BS1	RL32531.D	1	10/28/25	EA	10/26/25	OP68508	GRL825
OP68508-BSD	RL32532.D	1	10/28/25	EA	10/26/25	OP68508	GRL825

The QC reported here applies to the following samples: **Method: SW846 8082A**

JE21772-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
12674-11-2	Aroclor 1016	40	37.3	93	37.8	95	1	64-128/30
11104-28-2	Aroclor 1221		ND		ND		nc	50-150/30
11141-16-5	Aroclor 1232		ND		ND		nc	50-150/30
53469-21-9	Aroclor 1242		ND		ND		nc	50-150/30
12672-29-6	Aroclor 1248		ND		ND		nc	50-150/30
11097-69-1	Aroclor 1254		ND		ND		nc	50-150/30
11096-82-5	Aroclor 1260	40	39.2	98	38.4	96	2	62-132/30
11100-14-4	Aroclor 1268		ND		ND		nc	50-150/30
37324-23-5	Aroclor 1262		ND		ND		nc	50-150/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
877-09-8	Tetrachloro-m-xylene	91%	92%	35-154%
877-09-8	Tetrachloro-m-xylene	62%	62%	35-154%
2051-24-3	Decachlorobiphenyl	106%	103%	24-176%
2051-24-3	Decachlorobiphenyl	54%	54%	24-176%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP68517-BS1	3Y97375.D	1	10/28/25	CB	10/26/25	OP68517	G3Y3754
OP68517-BSD	3Y97376.D	1	10/28/25	CB	10/26/25	OP68517	G3Y3754

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE21772-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	500	778	156* [a]	769	154* [a]	1	50-150/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	141%	145%	50-150%
438-22-2	5a-Androstane	129%	135%	50-150%

(a) Outside control limits, but within reasonable method recovery limits.

*** = Outside of Control Limits.**

Surrogate Recovery Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: MADEP EPH REV 2.1 **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S2 [b]	S3 [b]
JE21772-1	4Y93425.D	36* [c]	47	138
OP68512-BS1	4Y93421.D	69	79	141* [c]
OP68512-BSD	4Y93422.D	61	73	124
OP68512-MB1	4Y93420.D	73	78	115

Surrogate Compounds	Recovery Limits
S1 = 1-Chlorooctadecane	40-140%
S2 = o-Terphenyl	40-140%
S3 = 2-Fluorobiphenyl	40-140%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1
(c) Outside of in house control limits.

Surrogate Recovery Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8082A **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]	S2 [a]	S2 [b]
JE21772-1	RL32545.D	85	58	99	55
OP68508-BS1	RL32531.D	91	62	106	54
OP68508-BSD	RL32532.D	92	62	103	54
OP68508-MB1	RL32530.D	93	61	105	53

Surrogate Compounds	Recovery Limits
S1 = Tetrachloro-m-xylene	35-154%
S2 = Decachlorobiphenyl	24-176%

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

Surrogate Recovery Summary

Job Number: JE21772
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8015D **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S2 [a]
JE21772-1	3Y97386.D	113	116
OP68517-BS1	3Y97375.D	141	129
OP68517-BSD	3Y97376.D	145	135
OP68517-MB1	3Y97374.D	98	101

Surrogate Compounds	Recovery Limits
S1 = o-Terphenyl	50-150%
S2 = 5a-Androstane	50-150%

(a) Recovery from GC signal #1

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Blank Spike and Lab Control Sample Summaries**
- **Serial Dilution Summaries**

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE21772
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58265 Methods: SW846 7471B
Matrix Type: SOLID Units: mg/kg

Prep Date: 10/27/25

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.033	.006	.015	-0.0033	<0.033

Associated samples MP58265: JE21772-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE21772
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58265
Matrix Type: SOLID

Methods: SW846 7471B
Units: mg/kg

Prep Date: 10/27/25

Metal	BSP Result	Spikelot HGPWS1	% Rec	QC Limits
Mercury	0.36	0.333	108.0	80-120

Associated samples MP58265: JE21772-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

POST DIGESTATE SPIKE SUMMARY

Login Number: JE21772
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58265
Matrix Type: SOLID

Methods: SW846 7471B
Units: ug/l

Prep Date: 10/27/25

Metal	Sample ml	Final ml	JE21768-5 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Mercury	49	50	1.628	1.59544	3.4601	1	100	2000	91.6	85-115

Associated samples MP58265: JE21772-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE21772
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 10/31/25

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.7	8.1		
Antimony	2.0	.17	.41	-0.030	<2.0
Arsenic	2.0	.21	.28	0.040	<2.0
Barium	20	.08	1.9		
Beryllium	0.20	.03	.08	-0.020	<0.20
Bismuth	2.0	.23	.52		
Boron	10	.23	3.7		
Cadmium	0.50	.03	.07	0.010	<0.50
Calcium	500	.66	21		
Chromium	1.0	.03	.37	0.030	<1.0
Cobalt	5.0	.04	.28		
Copper	2.5	.08	.84	0.24	<2.5
Iron	50	.53	19		
Lead	2.0	.11	.41	-0.040	<2.0
Lithium	5.0	.48	.92		
Magnesium	500	3.2	14		
Manganese	1.5	.01	.41		
Molybdenum	2.0	.06	.32		
Nickel	4.0	.04	.35	0.020	<4.0
Phosphorus	20	.12	3.3		
Potassium	1000	7.7	32		
Selenium	2.0	.32	.65	-0.050	<2.0
Silicon	20	.17	11		
Silver	0.50	.1	.17	0.010	<0.50
Sodium	1000	3.4	78		
Strontium	5.0	.03	.18		
Sulfur	10	.3	3.9		
Thallium	1.0	.18	.58	-0.29	<1.0
Tin	20	.08	3.8		
Titanium	1.0	.05	.34		
Tungsten	5.0	.26	1.8		
Vanadium	5.0	.06	.19		
Zinc	5.0	.01	2.3	0.38	<5.0

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE21772
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377 Methods: SW846 6010D
Matrix Type: SOLID Units: mg/kg

Prep Date: 10/31/25

Metal	RL	IDL	MDL	MB raw	final
Zirconium	2.0	.03	.54		

Associated samples MP58377: JE21772-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE21772
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date:			10/31/25				10/31/25	
Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits	LCS Result	Spikelot MPLC681022	% Rec	QC Limits
Aluminum								
Antimony	183	200	91.5	80-120	66.6	276	24.1	2-110
Arsenic	186	200	93.0	80-120	161	223	72.2	70-102
Barium								
Beryllium	192	200	96.0	80-120	110	131	84.0	76-108
Bismuth								
Boron								
Cadmium	188	200	94.0	80-120	181	226	80.1	74-105
Calcium								
Chromium	192	200	96.0	80-120	189	230	82.2	73-107
Cobalt								
Copper	181	200	90.5	80-120	187	239	78.2	75-106
Iron								
Lead	190	200	95.0	80-120	236	275	85.8	74-108
Lithium								
Magnesium								
Manganese								
Molybdenum								
Nickel	191	200	95.5	80-120	99.7	118	84.5	72-104
Phosphorus								
Potassium								
Selenium	176	200	88.0	80-120	107	137	78.1	71-109
Silicon								
Silver	24.0	25	96.0	80-120	61.3	75.3	81.4	72-110
Sodium								
Strontium								
Sulfur								
Thallium	187	200	93.5	80-120	139	165	84.2	71-107
Tin								
Titanium								
Tungsten								
Vanadium								
Zinc	193	200	96.5	80-120	236	286	82.5	76-112

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE21772
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date:				10/31/25				10/31/25
Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits	LCS Result	Spikelot MPLC681022	% Rec	QC Limits
Zirconium								

Associated samples MP58377: JE21772-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE21772
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 10/31/25

Metal	LCS Result	Spikelot MPLC681022	% Rec	QC Limits
Aluminum				
Antimony	65.2	276	23.6	2-110
Arsenic	162	223	72.6	70-102
Barium				
Beryllium	109	131	83.2	76-108
Bismuth				
Boron				
Cadmium	183	226	81.0	74-105
Calcium				
Chromium	190	230	82.6	73-107
Cobalt				
Copper	190	239	79.5	75-106
Iron				
Lead	239	275	86.9	74-108
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	101	118	85.6	72-104
Phosphorus				
Potassium				
Selenium	107	137	78.1	71-109
Silicon				
Silver	62.0	75.3	82.3	72-110
Sodium				
Strontium				
Sulfur				
Thallium	140	165	84.8	71-107
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc	238	286	83.2	76-112

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE21772
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: mg/kg

Prep Date: 10/31/25

Metal	LCS Result	Spikelot MPLC681022	% Rec	QC Limits
Zirconium				

Associated samples MP58377: JE21772-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE21772
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 10/31/25

Metal	JE21699-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony	3.40	0.00	100.0(a)	0-10
Arsenic	60.5	58.9	2.6	0-10
Barium				
Beryllium	2.70	2.70	0.0	0-10
Bismuth				
Boron				
Cadmium	3.50	2.80	20.0 (a)	0-10
Calcium				
Chromium	260	265	1.9	0-10
Cobalt				
Copper	259	255	1.7	0-10
Iron				
Lead	684	681	0.4	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	174	177	1.3	0-10
Phosphorus				
Potassium				
Selenium	0.00	0.00	NC	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium				
Strontium				
Sulfur				
Thallium	3.00	0.00	100.0(a)	0-10
Tin				
Titanium				
Tungsten				
Vanadium				
Zinc	520	531	2.1	0-10

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE21772
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377 Methods: SW846 6010D
Matrix Type: SOLID Units: ug/l

Prep Date: 10/31/25

Metal	JE21699-1 Original	SDL 1:5	%DIF	QC Limits
Zirconium				

Associated samples MP58377: JE21772-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

POST DIGESTATE SPIKE SUMMARY

Login Number: JE21772
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 10/31/25

Metal	Sample ml	Final ml	JE21699-1 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Aluminum										
Antimony	19.25	20	3.4	3.2725	1843	0.2	200	2000	92.0	80-120
Arsenic										
Barium										
Beryllium										
Bismuth										
Boron										
Cadmium										
Calcium										
Chromium										
Cobalt										
Copper										
Iron										
Lead	19.25	20	683.8	658.1575	2545	0.2	200	2000	94.3	80-120
Lithium										
Magnesium										
Manganese										
Molybdenum										
Nickel										
Phosphorus										
Potassium										
Selenium										
Silicon										
Silver										
Sodium										
Strontium										
Sulfur										
Thallium										
Tin										
Titanium										
Tungsten										
Vanadium										
Zinc										

POST DIGESTATE SPIKE SUMMARY

Login Number: JE21772
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP58377
Matrix Type: SOLID

Methods: SW846 6010D
Units: ug/l

Prep Date: 10/31/25

Metal	Sample ml	Final ml	JE21699-1 Raw	Corr.**	PS ug/l	Spike ml	Spike ug/ml	Spike ug/l	% Rec	QC Limits
Zirconium										

Associated samples MP58377: JE21772-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(**) Corr. sample result = Raw * (sample volume / final volume)
(anr) Analyte not requested

General Chemistry

QC Data Summaries

Includes the following where applicable:

- **Method Blank and Blank Spike Summaries**
- **Duplicate Summaries**
- **Matrix Spike Summaries**

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: JE21772
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP65113/GN75500	0.40	0.0	mg/kg	40	39.5	98.8	80-120%
Chromium, Hexavalent	GP65113/GN75500			mg/kg	843.069	759	90.0	80-120%
Cyanide Reactivity	GP65084/GN75378	10	0.0	mg/kg	100	3.03	3.4	.25-27%
Specific Conductivity @ 25 C	GN75383			umhos/cm	1412	1410	99.9	95-105%
Sulfide Reactivity	GP65083/GN75382	100	0.0	mg/kg	440	230	52.3	42-107%

Associated Samples:
Batch GN75383: JE21772-1
Batch GP65083: JE21772-1
Batch GP65084: JE21772-1
Batch GP65113: JE21772-1
(*) Outside of QC limits

The results set forth herein are provided by SGS North America Inc.

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Automated Report

Technical Report for

WSP USA Environment & Infrastructure Inc

MWRA Water Tunnel

US004105.1397; PO# P13532445001

SGS Job Number: JE23137

Sampling Date: 11/12/25



Report to:

WSP USA Inc.
100 Summer Street, 13th Floor
Boston, MA 02110
dan.martin@wsp.com

ATTN: Dan Martin

Total number of pages in report: 73

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Olga Azarian
Technical Director

Client Service contact: Victoria Pushkova 732-329-0200
Certifications: NJ(12129),NY(10983),CA,CO,CT,FL,HI,IL,IN,KY,LA (120428),MA,MD,ME,MN,NC,NH,NV, AK (UST-103),AZ (AZ0786),PA(68-00408),RI,SC,TX (T104704234),UT,VA,WA,WV

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Sample Summary

WSP USA Environment & Infrastructure Inc

Job No: JE23137

MWRA Water Tunnel
Project No: US004105.1397; PO# P13532445001

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JE23137-1	11/12/25	10:30	JV	11/12/25	SO	Soil	SB-FD-542-A(MW)_10-12

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	WSP USA Environment & Infrastructure Inc	**Job No:**	JE23137
Site:	MWRA Water Tunnel	**Report Date**	11/24/2025 5:49:54 P

On 11/12/2025, 1 sample(s), 0 Trip Blank(s), 0 Equip. Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 0.6 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of JE23137 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: SO **Batch ID:** VY9414

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- JE23137-1 for 1,1-Dichloroethene: Associated CCV outside of control limits high, sample was ND.
- JE23137-1 for Trichlorofluoromethane: This compound is outside the MCP limits in the associated BSD biased high.
- VY9414-BS for Tetrahydrofuran: Outside of in house control limits, but within reasonable method recovery limits.
- VY9414-BSD for Tetrahydrofuran: Outside in house control limits.
- JE23137-1 for 1,4-Dioxane: Associated CCV outside of control limits high, sample was ND.
- JE23137-1 for cis-1,2-Dichloroethene: Associated CCV outside of control limits high, sample was ND.
- JE23137-1 for 2-Butanone (MEK): Associated CCV outside of control limits high, sample was ND. Response factor for this compound is below 0.05 in the initial and continuing calibrations.
- JE23137-1 for Bromomethane: Associated CCV outside of control limits high, sample was ND. This compound is outside the MCP limits in the associated BS/BSD biased high.
- JE23137-1 for Chloromethane: Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.
- JE23137-1 for Di-Isopropyl ether: Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.
- JE23137-1 for 4-Methyl-2-pentanone(MIBK): Response factor for this compound is below 0.05 in the initial and continuing calibrations.
- JE23137-1 for Acetone: Response factor for this compound is below 0.05 in the initial and continuing calibrations.
- VY9414-BS for trans-1,2-Dichloroethene: Outside of in house control limits, but within reasonable method recovery limits.
- Not all RL meet the requirement.

MS Semi-volatiles By Method SW846 8270E

Matrix: SO **Batch ID:** OP69056

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- The blank spike (BS) recovery(s) of 4,6-Dinitro-o-cresol are outside control limits.
- OP69056-BS1 for 4,6-Dinitro-o-cresol: Outside control limits biased high, sample ND.
- JE23137-1 for 2,4-Dinitrophenol: Associated CCV outside of control limits high, sample was ND.
- JE23137-1 for 2,6-Dinitrotoluene: Associated CCV outside of control limits high, sample was ND.
- JE23137-1 for 2-Nitrophenol: Associated CCV outside of control limits high, sample was ND.
- JE23137-1 for 4,6-Dinitro-o-cresol: Associated CCV outside of control limits high, sample was ND.
- JE23137-1 for Benzoic acid: Associated CCV outside of control limits high, sample was ND.
- JE23137-1 for Nitrobenzene: Associated CCV outside of control limits high, sample was ND.
- JE23137-1 for 2,4-Dinitrotoluene: Associated CCV outside of control limits high, sample was ND.

GC Volatiles By Method MADEP VPH REV 2.1

Matrix: SO **Batch ID:** GBH1975

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

GC Volatiles By Method SW846 8015D

Matrix: SO **Batch ID:** GKM616

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

GC/LC Semi-volatiles By Method MADEP EPH REV 2.1

Matrix: SO **Batch ID:** OP69103

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- OP69103-BSD for o-Terphenyl: Outside of in house control limits.
- OP69103-BSD for C11-C22 Aromatics: Analytical precision exceeds in-house control limits.
- OP69103-BSD for C9-C18 Aliphatics: Analytical precision exceeds in-house control limits.
- OP69103-BSD for C11-C22 Aromatics (Unadj.): Analytical precision exceeds in-house control limits.

GC/LC Semi-volatiles By Method SW846 8015D

Matrix: SO **Batch ID:** OP69139

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

GC/LC Semi-volatiles By Method SW846 8082A

Matrix:	SO	Batch ID:	OP69055

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SM2540 G 18TH ED MOD

Matrix:	SO	Batch ID:	GN76029

- The data for SM2540 G 18TH ED MOD meets quality control requirements.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

Summary of Hits

Job Number: JE23137
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 11/12/25

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE23137-1	SB-FD-542-A(MW)_10-12					
n-Butylbenzene		0.88 J	2.4	0.49	ug/kg	SW846 8260D
Ethylbenzene		0.58 J	1.2	0.55	ug/kg	SW846 8260D
n-Propylbenzene		0.92 J	2.4	0.57	ug/kg	SW846 8260D
1,2,4-Trimethylbenzene		4.7	2.4	0.61	ug/kg	SW846 8260D
1,3,5-Trimethylbenzene		2.7	2.4	0.52	ug/kg	SW846 8260D
m,p-Xylene		1.7	1.2	1.1	ug/kg	SW846 8260D
o-Xylene		1.8	1.2	0.56	ug/kg	SW846 8260D
Xylene (total)		3.4	1.2	0.56	ug/kg	SW846 8260D
C9- C12 Aliphatics (Unadj.)		31000	8000	4000	ug/kg	MADEP VPH REV 2.1
C9- C12 Aliphatics		19500	8000	4000	ug/kg	MADEP VPH REV 2.1
C9- C10 Aromatics		11400	8000	4000	ug/kg	MADEP VPH REV 2.1
TPH-DRO (C10-C28)		247	5.0	3.3	mg/kg	SW846 8015D

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	SB-FD-542-A(MW)_10-12		
Lab Sample ID:	JE23137-1	**Date Sampled:**	11/12/25
Matrix:	SO - Soil	**Date Received:**	11/12/25
Method:	SW846 8260D	**Percent Solids:**	76.3
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Y219133.D	1	11/14/25 14:39	PS	n/a	n/a	VY9414
Run #2							

	Initial Weight
Run #1	5.4 g
Run #2	

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone [a]	ND	12	5.0	ug/kg	
71-43-2	Benzene	ND	0.61	0.55	ug/kg	
108-86-1	Bromobenzene	ND	6.1	0.67	ug/kg	
74-97-5	Bromochloromethane	ND	6.1	0.68	ug/kg	
75-27-4	Bromodichloromethane	ND	2.4	0.52	ug/kg	
75-25-2	Bromoform	ND	6.1	1.7	ug/kg	
74-83-9	Bromomethane [b]	ND	6.1	0.93	ug/kg	
78-93-3	2-Butanone (MEK) [c]	ND	12	2.9	ug/kg	
104-51-8	n-Butylbenzene	0.88	2.4	0.49	ug/kg	J
135-98-8	sec-Butylbenzene	ND	2.4	0.52	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.4	0.61	ug/kg	
75-15-0	Carbon disulfide	ND	2.4	0.65	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.4	0.75	ug/kg	
108-90-7	Chlorobenzene	ND	2.4	0.56	ug/kg	
75-00-3	Chloroethane	ND	6.1	0.72	ug/kg	
67-66-3	Chloroform	ND	2.4	1.2	ug/kg	
74-87-3	Chloromethane [d]	ND	6.1	2.4	ug/kg	
95-49-8	o-Chlorotoluene	ND	2.4	0.66	ug/kg	
106-43-4	p-Chlorotoluene	ND	2.4	0.54	ug/kg	
108-20-3	Di-Isopropyl ether [d]	ND	2.4	0.61	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.4	0.84	ug/kg	
124-48-1	Dibromochloromethane	ND	2.4	0.68	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.2	0.51	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.2	0.66	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.2	0.60	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.2	0.60	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	6.1	0.88	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.2	0.60	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.2	0.57	ug/kg	
75-35-4	1,1-Dichloroethene [e]	ND	1.2	0.79	ug/kg	
156-59-2	cis-1,2-Dichloroethene [e]	ND	1.2	1.0	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.2	0.74	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A(MW)_10-12		
Lab Sample ID:	JE23137-1	**Date Sampled:**	11/12/25
Matrix:	SO - Soil	**Date Received:**	11/12/25
Method:	SW846 8260D	**Percent Solids:**	76.3
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	2.4	0.57	ug/kg	
142-28-9	1,3-Dichloropropane	ND	2.4	0.63	ug/kg	
594-20-7	2,2-Dichloropropane	ND	2.4	0.52	ug/kg	
563-58-6	1,1-Dichloropropene	ND	2.4	0.57	ug/kg	
10061-01-5	cis-1,3-Dichloropropene	ND	2.4	0.58	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.4	0.55	ug/kg	
123-91-1	1,4-Dioxane [e]	ND	150	44	ug/kg	
60-29-7	Ethyl Ether	ND	2.4	0.55	ug/kg	
100-41-4	Ethylbenzene	0.58	1.2	0.55	ug/kg	J
87-68-3	Hexachlorobutadiene	ND	6.1	0.80	ug/kg	
591-78-6	2-Hexanone	ND	6.1	2.6	ug/kg	
98-82-8	Isopropylbenzene	ND	2.4	1.7	ug/kg	
99-87-6	p-Isopropyltoluene	ND	2.4	0.48	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.2	0.57	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK [a]	ND	6.1	2.8	ug/kg	
74-95-3	Methylene bromide	ND	6.1	0.64	ug/kg	
75-09-2	Methylene chloride	ND	6.1	3.2	ug/kg	
91-20-3	Naphthalene	ND	6.1	3.0	ug/kg	
103-65-1	n-Propylbenzene	0.92	2.4	0.57	ug/kg	J
100-42-5	Styrene	ND	2.4	0.49	ug/kg	
994-05-8	tert-Amyl Methyl Ether	ND	2.4	0.60	ug/kg	
637-92-3	tert-Butyl Ethyl Ether	ND	2.4	0.59	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	2.4	0.51	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.4	0.73	ug/kg	
127-18-4	Tetrachloroethene	ND	2.4	0.70	ug/kg	
109-99-9	Tetrahydrofuran	ND	12	3.6	ug/kg	
108-88-3	Toluene	ND	1.2	0.64	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	6.1	3.0	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	6.1	3.0	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.4	0.59	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.4	0.67	ug/kg	
79-01-6	Trichloroethene	ND	1.2	0.92	ug/kg	
75-69-4	Trichlorofluoromethane [f]	ND	6.1	0.83	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	6.1	0.67	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	4.7	2.4	0.61	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	2.7	2.4	0.52	ug/kg	
75-01-4	Vinyl chloride	ND	2.4	0.58	ug/kg	
	m,p-Xylene	1.7	1.2	1.1	ug/kg	
95-47-6	o-Xylene	1.8	1.2	0.56	ug/kg	
1330-20-7	Xylene (total)	3.4	1.2	0.56	ug/kg	

ND = Not detected **MDL =** Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A(MW)_10-12		
Lab Sample ID:	JE23137-1	**Date Sampled:**	11/12/25
Matrix:	SO - Soil	**Date Received:**	11/12/25
Method:	SW846 8260D	**Percent Solids:**	76.3
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		80-124%
17060-07-0	1,2-Dichloroethane-D4	101%		75-133%
2037-26-5	Toluene-D8	101%		79-125%
460-00-4	4-Bromofluorobenzene	102%		58-148%

(a) Response factor for this compound is below 0.05 in the initial and continuing calibrations.
(b) Associated CCV outside of control limits high, sample was ND. This compound is outside the MCP limits in the associated BS/BSD biased high.
(c) Associated CCV outside of control limits high, sample was ND. Response factor for this compound is below 0.05 in the initial and continuing calibrations.
(d) Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.
(e) Associated CCV outside of control limits high, sample was ND.
(f) This compound is outside the MCP limits in the associated BSD biased high.

Report of Analysis

Client Sample ID:	SB-FD-542-A(MW)_10-12		
Lab Sample ID:	JE23137-1	**Date Sampled:**	11/12/25
Matrix:	SO - Soil	**Date Received:**	11/12/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	76.3
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	6P524214.D	1	11/15/25 20:38	KLS	11/14/25 18:50	OP69056	E6P4520
Run #2							

	Initial Weight	Final Volume
Run #1	30.6 g	1.0 ml
Run #2		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid [a]	ND	860	71	ug/kg	
95-57-8	2-Chlorophenol	ND	86	21	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	210	26	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	210	37	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	210	76	ug/kg	
51-28-5	2,4-Dinitrophenol [a]	ND	210	160	ug/kg	
534-52-1	4,6-Dinitro-o-cresol [a]	ND	210	46	ug/kg	
95-48-7	2-Methylphenol	ND	86	27	ug/kg	
	3&4-Methylphenol	ND	86	35	ug/kg	
88-75-5	2-Nitrophenol [a]	ND	210	28	ug/kg	
100-02-7	4-Nitrophenol	ND	430	110	ug/kg	
87-86-5	Pentachlorophenol	ND	170	40	ug/kg	
108-95-2	Phenol	ND	86	22	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	210	32	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	210	26	ug/kg	
83-32-9	Acenaphthene	ND	43	15	ug/kg	
208-96-8	Acenaphthylene	ND	43	22	ug/kg	
98-86-2	Acetophenone	ND	210	9.2	ug/kg	
62-53-3	Aniline	ND	86	19	ug/kg	
120-12-7	Anthracene	ND	43	26	ug/kg	
56-55-3	Benzo(a)anthracene	ND	43	12	ug/kg	
50-32-8	Benzo(a)pyrene	ND	43	19	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	43	19	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	43	21	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	43	20	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	86	17	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	86	10	ug/kg	
91-58-7	2-Chloronaphthalene	ND	86	10	ug/kg	
106-47-8	4-Chloroaniline	ND	210	15	ug/kg	
218-01-9	Chrysene	ND	43	13	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	86	9.2	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	86	18	ug/kg	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A(MW)_10-12		
Lab Sample ID:	JE23137-1	**Date Sampled:**	11/12/25
Matrix:	SO - Soil	**Date Received:**	11/12/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	76.3
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	86	15	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	86	14	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	86	12	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	86	9.7	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	86	9.1	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	86	10	ug/kg	
121-14-2	2,4-Dinitrotoluene [a]	ND	43	13	ug/kg	
606-20-2	2,6-Dinitrotoluene [a]	ND	43	22	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	86	36	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	43	19	ug/kg	
132-64-9	Dibenzofuran	ND	86	17	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	86	7.0	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	86	11	ug/kg	
84-66-2	Diethyl phthalate	ND	86	9.1	ug/kg	
131-11-3	Dimethyl phthalate	ND	86	7.6	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	86	10	ug/kg	
206-44-0	Fluoranthene	ND	43	19	ug/kg	
86-73-7	Fluorene	ND	43	20	ug/kg	
118-74-1	Hexachlorobenzene	ND	86	11	ug/kg	
87-68-3	Hexachlorobutadiene	ND	43	17	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	430	17	ug/kg	
67-72-1	Hexachloroethane	ND	210	21	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	43	20	ug/kg	
78-59-1	Isophorone	ND	86	9.2	ug/kg	
91-57-6	2-Methylnaphthalene	ND	43	9.7	ug/kg	
91-20-3	Naphthalene	ND	43	12	ug/kg	
98-95-3	Nitrobenzene [a]	ND	86	17	ug/kg	
62-75-9	n-Nitrosodimethylamine	ND	86	15	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	86	12	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	210	16	ug/kg	
85-01-8	Phenanthrene	ND	43	14	ug/kg	
129-00-0	Pyrene	ND	43	14	ug/kg	
110-86-1	Pyridine	ND	86	15	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	86	11	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	71%		10-99%
4165-62-2	Phenol-d5	72%		10-96%
118-79-6	2,4,6-Tribromophenol	89%		10-123%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A(MW)_10-12		
Lab Sample ID:	JE23137-1	**Date Sampled:**	11/12/25
Matrix:	SO - Soil	**Date Received:**	11/12/25
Method:	SW846 8270E SW846 3546	**Percent Solids:**	76.3
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	94%		10-109%
321-60-8	2-Fluorobiphenyl	80%		11-109%
1718-51-0	Terphenyl-d14	70%		10-120%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A(MW)_10-12		
Lab Sample ID:	JE23137-1	**Date Sampled:**	11/12/25
Matrix:	SO - Soil	**Date Received:**	11/12/25
Method:	MADEP VPH REV 2.1	**Percent Solids:**	76.3
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BH55216.D	1	11/14/25 17:35	JN	n/a	n/a	GBH1975
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	10.2 g	10.0 ml	100 ul
Run #2			

MADEP VPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	8000	4000	ug/kg	
	C9- C12 Aliphatics (Unadj.)	31000	8000	4000	ug/kg	
	C5- C8 Aliphatics	ND	8000	4000	ug/kg	
	C9- C12 Aliphatics	19500	8000	4000	ug/kg	
	C9- C10 Aromatics	11400	8000	4000	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	2,3,4-Trifluorotoluene	104%		70-130%
	2,3,4-Trifluorotoluene	96%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A(MW)_10-12		
Lab Sample ID:	JE23137-1	**Date Sampled:**	11/12/25
Matrix:	SO - Soil	**Date Received:**	11/12/25
Method:	SW846 8015D	**Percent Solids:**	76.3
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KM14638.D	1	11/14/25 14:58	JN	n/a	n/a	GKM616
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	10.7 g	10.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	15	7.7	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
98-08-8	aaa-Trifluorotoluene	83%		70-116%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A(MW)_10-12		
Lab Sample ID:	JE23137-1	**Date Sampled:**	11/12/25
Matrix:	SO - Soil	**Date Received:**	11/12/25
Method:	MADEP EPH REV 2.1 SW846 3546	**Percent Solids:**	76.3
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5Y83103.D	1	11/20/25 12:09	CB	11/17/25 14:00	OP69103	G5Y4092
Run #2							

	Initial Weight	Final Volume
Run #1	15.0 g	2.0 ml
Run #2		

MAEPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	ND	8700	760	ug/kg	
	C9-C18 Aliphatics	ND	8700	240	ug/kg	
	C19-C36 Aliphatics	ND	8700	600	ug/kg	
	C11-C22 Aromatics	ND	8700	760	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3386-33-2	1-Chlorooctadecane	72%		40-140%
84-15-1	o-Terphenyl	80%		40-140%
321-60-8	2-Fluorobiphenyl	110%		40-140%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A(MW)_10-12		
Lab Sample ID:	JE23137-1	**Date Sampled:**	11/12/25
Matrix:	SO - Soil	**Date Received:**	11/12/25
Method:	SW846 8082A SW846 3570	**Percent Solids:**	76.3
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	RM42014.D	1	11/16/25 18:50	MLC	11/14/25 22:55	OP69055	GRM1019
Run #2							

	Initial Weight	Final Volume
Run #1	5.0 g	10.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	26	11	ug/kg	
11104-28-2	Aroclor 1221	ND	26	8.8	ug/kg	
11141-16-5	Aroclor 1232	ND	26	22	ug/kg	
53469-21-9	Aroclor 1242	ND	26	16	ug/kg	
12672-29-6	Aroclor 1248	ND	26	5.7	ug/kg	
11097-69-1	Aroclor 1254	ND	26	2.8	ug/kg	
11096-82-5	Aroclor 1260	ND	26	9.0	ug/kg	
11100-14-4	Aroclor 1268	ND	26	2.6	ug/kg	
37324-23-5	Aroclor 1262	ND	26	2.2	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	79%		35-154%
877-09-8	Tetrachloro-m-xylene	93%		35-154%
2051-24-3	Decachlorobiphenyl	77%		24-176%
2051-24-3	Decachlorobiphenyl	84%		24-176%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	SB-FD-542-A(MW)_10-12		
Lab Sample ID:	JE23137-1	**Date Sampled:**	11/12/25
Matrix:	SO - Soil	**Date Received:**	11/12/25
Method:	SW846 8015D SW846 3570	**Percent Solids:**	76.3
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3Y98023.D	1	11/18/25 18:38	CB	11/18/25 11:30	OP69139	G3Y3773
Run #2							

	Initial Weight	Final Volume
Run #1	5.2 g	10.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	247	5.0	3.3	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	117%		50-150%
438-22-2	5a-Androstane	105%		50-150%

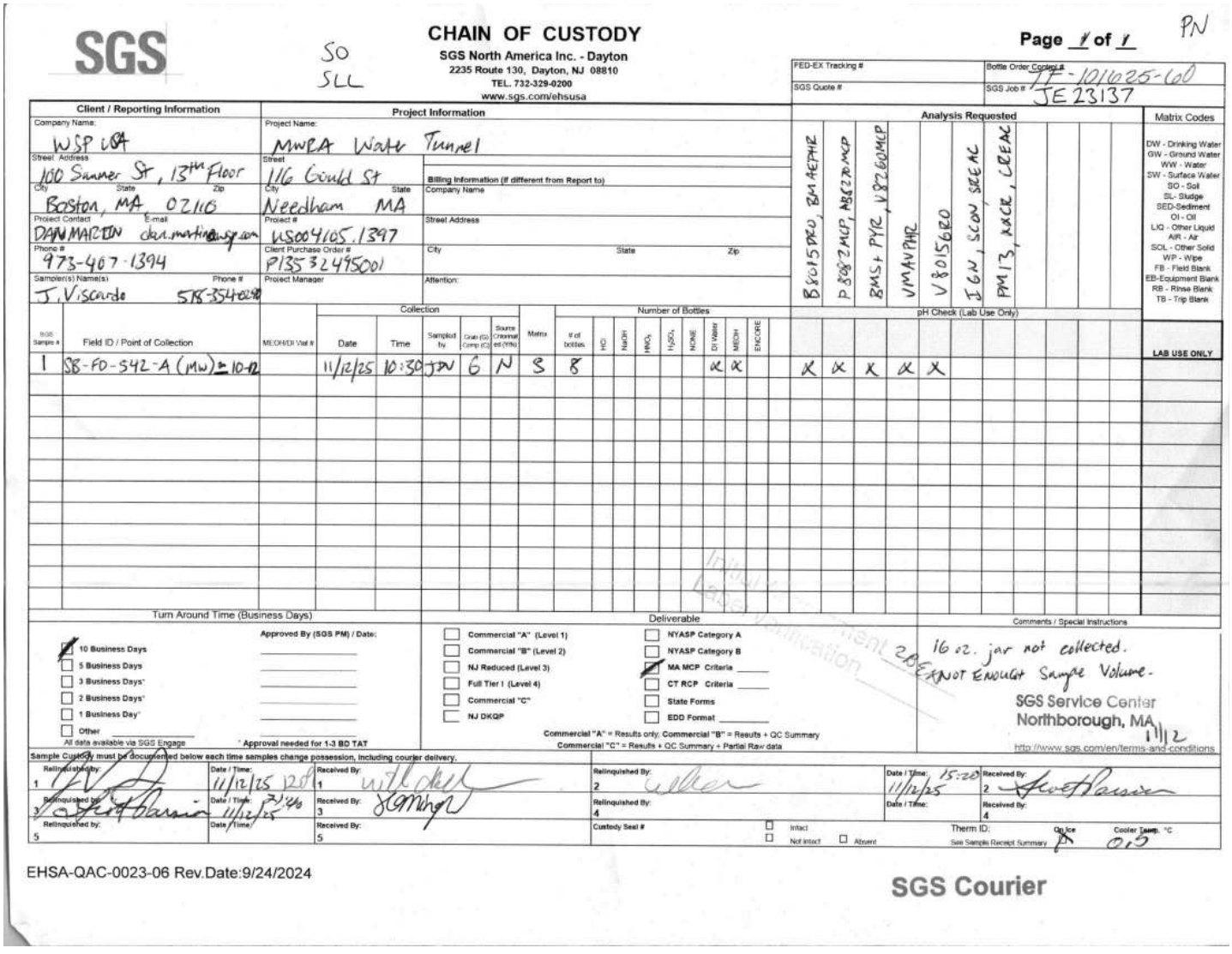
ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- **Chain of Custody**
- **MCP Form**
- **EPH Form**
- **VPH Form**
- **Sample Tracking Chronicle**
- **QC Evaluation: MA MCP Limits**



CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL. 732-329-0200
www.sgs.com/ehsusa

SO
SLL

PN

Page 1 of 1

FED-EX Tracking #:
Bottle Order Control #: JF-10102025-60
SGS Quote #:
SGS Job #: JE23137

Client / Reporting Information

Company Name: WSP USA
Street Address: 100 Summer St, 13th Floor
City: Boston, State: MA, Zip: 02110
Project Contact: DAN MARTIN, E-mail: dan.martin@wsp.com
Phone #: 973-407-1394
Sampler(s) Name(s): J. Viscardo, Phone #: 516-354-0298

Project Information

Project Name: MWRA Water Tunnel
Street: 116 Gould St
City: Needham, State: MA
Project #: WS004105.1397
Client Purchase Order #: P1353249500l
Project Manager:

Billing Information (if different from Report to)

Company Name:
Street Address:
City: State: Zip:
Attention:

Analysis Requested

Matrix Codes	B8015DRO, BM4EPHE	P8082MCP, NB82MCP	BMS+ PVOC, V8260MCP	VMAVPHC	V8015GRO	IGN, SCOV, SCEAC	PM13, MACR, CREAC
DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED-Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB-Equipment Blank RB - Rinse Blank TB - Trip Blank							

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Source Code (Drinking Water)	Matrix	# of bottles	HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	pH Check (Lab Use Only)	LAB USE ONLY
1	SB-FD-542-A (MW) 10-12		11/12/25	10:30	JDV	G	N	S	8						X	X		X X X X X	

Turn Around Time (Business Days)

Approved By (SGS PM) / Date:

- [X] 10 Business Days
- [ ] 5 Business Days
- [ ] 3 Business Days*
- [ ] 2 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via SGS Engage. * Approval needed for 1-3 BD TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] Commercial "C"
- [ ] NJ DKQP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [X] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] State Forms
- [ ] EDD Format

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

16 oz. jar not collected. NOT ENOUGH Sample Volume.

SGS Service Center
Northborough, MA
11/12

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by:	Date / Time:	Received By:
1		11/12/25 20	1
2		11/12/25 15:20	2
3		11/12/25	3
4			4
5			5

Custody Seal #: [ ] Intact [ ] Not Intact [ ] Absent
Therm ID: See Sample Receipt Summary
On Ice: X
Cooler Temp. °C: 0.5

EHSA-QAC-0023-06 Rev.Date:9/24/2024

SGS Courier

5.1.5

JE23137: Chain of Custody
Page 1 of 3

SGS Sample Receipt Summary

Job Number: je23137 **Client:** WSP USA INC. **Project:** MWRA WATER TUNNEL

Date / Time Received: 11/12/2025 3:20:00 PM **Delivery Method:** SGS COURIER **Airbill #'s:**

Cooler Temps (Raw Measured) °C: Cooler 1: (0.5);

Cooler Temps (Corrected) °C: Cooler 1: (0.6);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR-50		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservatio	Y	or	N	N/A
1. Trip Blank present / cooler:	☐		☐	☑
2. Trip Blank listed on COC:	☐		☐	☑
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☐		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify)

Comments: IGN, SCON, SREAC, PM13, XXCR, CREAC analyses are listed on the COC, but are not crossed to indicate they are requested. Please confirm if these analyses are to be run.

Responded to by: VP

Response Date: 11/13

Analyze only for the tests checked off on the coc.
IGN, SCON, SREAC, PM13, XXCR, CREAC - not needed per Dan Martin

JE23137: Chain of Custody
Page 3 of 3

Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup	WSC-CAM	Exhibit VII A
	July 1, 2010	Revision No. 1
	Final	

Exhibit VII A-2: MassDEP Analytical Protocol Certification Form

MassDEP Analytical Protocol Certification Form

Laboratory Name:	SGS North America Inc. - Dayton	Project #:	JE23137
Project Location:	MWRA Water Tunnel	MADEP RTN	None

This form provides certifications for the following data set: list Laboratory Sample ID Numbers(s)

JE23137-1

Matrices: Groundwater/Surface Water ( ) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other (X)

CAM Protocol (check all that apply below):

8260 VOC (X) CAM IIA	7470/7471 Hg ( ) CAM III B	MassDEP VPH (X) CAM IV A	8081 Pesticides ( ) CAM V B	7196 Hex Cr ( ) CAM VI B	Mass DEP APH ( ) CAM IX A
8270 SVOC (X) CAM II B	7010 Metals ( ) CAM III C	MassDEP EPH (X) CAM IV B	8151 Herbicides ( ) CAM V C	8330 Explosives ( ) CAM VIII A	TO-15 VOC ( ) CAM IX B
6010 Metals ( ) CAM III A	6020 Metals ( ) CAM III D	8082 PCB (X) CAM V A	9014 Total Cyanide/PAC ( ) CAM VI A	6860 Perchlorate ( ) CAM VIII B	

Affirmative Responses to Questions A Through F are required for "Presumptive Certainty status

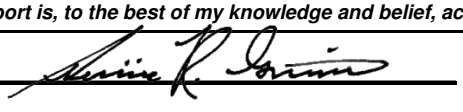
A	Were all samples received in a condition consistent with those described on the Chain-of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☑	Yes	☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑	Yes	☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑	Yes	☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑	Yes	☐ No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☑	Yes	☐ No
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐	Yes	☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☑	Yes	☐ No

Responses to questions G, H, and I below is required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols	☐	Yes	☑ No [1]
	Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data useability and representativeness requirements described in 310 CMR 40.1056(2)(k) and WSC-07-350.			
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	☐	Yes	☑ No [1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☑	Yes	☐ No [1]

[1] ***All Negative responses must be addressed in an attached Environmental Laboratory case narrative.***

I the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature:  **Position:** **Technical Director**

Printed Name: Olga Azarian **Date:** **24-Nov-25**

MADEP EPH FORM

Matrix	**Aqueous** ☐	**Soil** ☑	**Sediment** ☐	**Other** ☐			
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐				
Aqueous Preservatives	**N/A** ☑	**pH <= 2** ☐	**pH > 2** ☐				
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☐	**Other** ☑	Rec'd at 0.6 Deg. C			
Extraction Method	**SW846 3546**						

Method for Ranges: MADEP EPH REV 2.1
Method for Targets: MADEP EPH REV 2.1
EPH Surrogate Stds. Aliphatic: 1-Chlorooctadecane
Aromatic: o-Terphenyl
EPH Fractionation Surrogate Standards. 2-Fluorobiphenyl

Client ID: SB-FD-542-A(MW)_10-12 **Lab ID:** JE23137-1
Date Collected: 11/12/2025 **Date Received:** 11/12/2025
Date Extracted: 11/17/2025 2:00:00 PM
First Date Run: 11/20/2025
Last Date Run: N/A
% Solids: 76.3
Low Dilution: 1
High Dilution: N/A

Unadjusted Ranges	CAS #	Units	Result		RDL	Q
C11-C22 Aromatics (Unadj.)		ug/kg	ND	A	8700	

Adjusted Ranges					
C9-C18 Aliphatics		ug/kg	ND	A	8700
C19-C36 Aliphatics		ug/kg	ND	A	8700
C11-C22 Aromatics		ug/kg	ND	C	8700
Surrogate Recoveries					**Acceptance Range**
1-Chlorooctadecane		%	72		40-140 %
o-Terphenyl		%	80		40-140 %
2-Fluorobiphenyl		%	110		40-140 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

C Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the EPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the EPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtainig the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** General Managerr

Printed Name David Chastain **Date** 11/24/2025

MADEP VPH FORM

Matrix	**Aqueous** ☐	**Soil** ☑	**Sediment** ☐	**Other** ☐				
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐					
Aqueous Preservatives	**N/A** ☑	**pH <= 2** ☐	**pH > 2** ☐					
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☐	**Other** ☑	Rec'd at 0.6 Deg. C				
Methanol	**Methanol Covering Soil. (mL Methanol/g soil: 1:1 +/- 25%)**							

Method for Ranges: MADEP VPH REV 2.1
Method for Target Analytes: MADEP VPH REV 2.1
VPH Surrogate Standards
PID:
FID:

Client ID: SB-FD-542-A(MW)_10-12 **Lab ID:** JE23137-1
Date Collected: 11/12/2025 **Date Received:** 11/12/2025

Date Extracted:	First Date Run:	Last Date Run:
N/A	11/14/2025	N/A
% Solids:	**Low Dilution:**	**High Dilution:**
76.3	1	N/A

Unadjusted Ranges	CAS #	Elution Range	Units	Result		RDL	Q
C5- C8 Aliphatics (Unadj.)		N/A	ug/kg	ND	A	8000	
C9- C12 Aliphatics (Unadj.)		N/A	ug/kg	31000	A	8000	
Adjusted Ranges							
C5- C8 Aliphatics		N/A	ug/kg	ND	B	8000	
C9- C12 Aliphatics		N/A	ug/kg	19500	D	8000	
C9- C10 Aromatics			ug/kg	11400		8000	

Surrogate Recoveries			Acceptance Range
FID:2,3,4-Trifluorotoluene	%	96	70-130 %
PID:2,3,4-Trifluorotoluene	%	104	70-130 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

B Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range.

D Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C9-C12 aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the VPH Method followed?	☑ **Yes** ☐	**No- Details Attatched**
Were all performance/acceptance standards for required QA/QC procedures achieved?	☑ **Yes** ☐	**No- Details Attatched**
Were any significant modifications made to the VPH method, as specified in Sect. 11.3?	☑ **No** ☐	**Yes- Details Attatched**

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** **General Managerr**

Printed Name **David Chastain** **Date** **11/24/2025**

Internal Sample Tracking Chronicle

WSP USA Environment & Infrastructure Inc

Job No: JE23137

MWRA Water Tunnel
Project No: US004105.1397; PO# P13532445001

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JE23137-1	Collected: 12-NOV-25 10:30 By: JV		Received: 12-NOV-25 By: JW			
SB-FD-542-A(MW)_10-12						
JE23137-1	SM2540 G 18TH ED MOD	13-NOV-25 16:35	RB			SOL104
JE23137-1	SW846 8260D	14-NOV-25 14:39	PS			V8260MCP
JE23137-1	SW846 8015D	14-NOV-25 14:58	JN			V8015GRO
JE23137-1	MADEP VPH REV 2.1	14-NOV-25 17:35	JN			VMAVPHR
JE23137-1	SW846 8270E	15-NOV-25 20:38	KLS	14-NOV-25	BD	AB8270MCP
JE23137-1	SW846 8082A	16-NOV-25 18:50	MLC	14-NOV-25	IS	P8082MCP
JE23137-1	SW846 8015D	18-NOV-25 18:38	CB	18-NOV-25	PG	B8015DRO
JE23137-1	MADEP EPH REV 2.1	20-NOV-25 12:09	CB	17-NOV-25	ZR	BMAEPHR

QC Evaluation: MA MCP Limits

Job Number: JE23137
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 11/12/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9414	**SW846 8260D**						
VY9414-BS	67-64-1	Acetone	BSP	REC	105	%	70-130
VY9414-BS	71-43-2	Benzene	BSP	REC	104	%	70-130
VY9414-BS	108-86-1	Bromobenzene	BSP	REC	96	%	70-130
VY9414-BS	74-97-5	Bromochloromethane	BSP	REC	120	%	70-130
VY9414-BS	75-27-4	Bromodichloromethane	BSP	REC	107	%	70-130
VY9414-BS	75-25-2	Bromoform	BSP	REC	100	%	70-130
VY9414-BS	74-83-9	Bromomethane	BSP	REC	144	%	70-130
VY9414-BS	78-93-3	2-Butanone (MEK)	BSP	REC	122	%	70-130
VY9414-BS	104-51-8	n-Butylbenzene	BSP	REC	99	%	70-130
VY9414-BS	135-98-8	sec-Butylbenzene	BSP	REC	96	%	70-130
VY9414-BS	98-06-6	tert-Butylbenzene	BSP	REC	95	%	70-130
VY9414-BS	75-15-0	Carbon disulfide	BSP	REC	112	%	70-130
VY9414-BS	56-23-5	Carbon tetrachloride	BSP	REC	116	%	70-130
VY9414-BS	108-90-7	Chlorobenzene	BSP	REC	104	%	70-130
VY9414-BS	75-00-3	Chloroethane	BSP	REC	95	%	70-130
VY9414-BS	67-66-3	Chloroform	BSP	REC	103	%	70-130
VY9414-BS	74-87-3	Chloromethane	BSP	REC	76	%	70-130
VY9414-BS	95-49-8	o-Chlorotoluene	BSP	REC	101	%	70-130
VY9414-BS	106-43-4	p-Chlorotoluene	BSP	REC	103	%	70-130
VY9414-BS	108-20-3	Di-Isopropyl ether	BSP	REC	78	%	70-130
VY9414-BS	96-12-8	1,2-Dibromo-3-chloropropane	BSP	REC	103	%	70-130
VY9414-BS	124-48-1	Dibromochloromethane	BSP	REC	104	%	70-130
VY9414-BS	106-93-4	1,2-Dibromoethane	BSP	REC	102	%	70-130
VY9414-BS	95-50-1	1,2-Dichlorobenzene	BSP	REC	101	%	70-130
VY9414-BS	541-73-1	1,3-Dichlorobenzene	BSP	REC	99	%	70-130
VY9414-BS	106-46-7	1,4-Dichlorobenzene	BSP	REC	100	%	70-130
VY9414-BS	75-71-8	Dichlorodifluoromethane	BSP	REC	126	%	70-130
VY9414-BS	75-34-3	1,1-Dichloroethane	BSP	REC	102	%	70-130
VY9414-BS	107-06-2	1,2-Dichloroethane	BSP	REC	104	%	70-130
VY9414-BS	75-35-4	1,1-Dichloroethene	BSP	REC	119	%	70-130
VY9414-BS	156-59-2	cis-1,2-Dichloroethene	BSP	REC	118	%	70-130
VY9414-BS	156-60-5	trans-1,2-Dichloroethene	BSP	REC	114 [a]	%	70-130
VY9414-BS	78-87-5	1,2-Dichloropropane	BSP	REC	93	%	70-130
VY9414-BS	142-28-9	1,3-Dichloropropane	BSP	REC	100	%	70-130
VY9414-BS	594-20-7	2,2-Dichloropropane	BSP	REC	102	%	70-130
VY9414-BS	563-58-6	1,1-Dichloropropene	BSP	REC	112	%	70-130
VY9414-BS	10061-01-5	cis-1,3-Dichloropropene	BSP	REC	99	%	70-130
VY9414-BS	10061-02-6	trans-1,3-Dichloropropene	BSP	REC	94	%	70-130
VY9414-BS	123-91-1	1,4-Dioxane	BSP	REC	121	%	70-130
VY9414-BS	60-29-7	Ethyl Ether	BSP	REC	118	%	70-130
VY9414-BS	100-41-4	Ethylbenzene	BSP	REC	99	%	70-130
VY9414-BS	87-68-3	Hexachlorobutadiene	BSP	REC	97	%	70-130

*** Sample used for QC is not from job JE23137**

QC Evaluation: MA MCP Limits

Job Number: JE23137
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 11/12/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9414-BS	591-78-6	2-Hexanone	BSP	REC	88	%	70-130
VY9414-BS	98-82-8	Isopropylbenzene	BSP	REC	96	%	70-130
VY9414-BS	99-87-6	p-Isopropyltoluene	BSP	REC	100	%	70-130
VY9414-BS	1634-04-4	Methyl Tert Butyl Ether	BSP	REC	111	%	70-130
VY9414-BS	108-10-1	4-Methyl-2-pentanone(MIBK)	BSP	REC	98	%	70-130
VY9414-BS	74-95-3	Methylene bromide	BSP	REC	114	%	70-130
VY9414-BS	75-09-2	Methylene chloride	BSP	REC	113	%	70-130
VY9414-BS	91-20-3	Naphthalene	BSP	REC	108	%	70-130
VY9414-BS	103-65-1	n-Propylbenzene	BSP	REC	97	%	70-130
VY9414-BS	100-42-5	Styrene	BSP	REC	100	%	70-130
VY9414-BS	994-05-8	tert-Amyl Methyl Ether	BSP	REC	93	%	70-130
VY9414-BS	637-92-3	tert-Butyl Ethyl Ether	BSP	REC	87	%	70-130
VY9414-BS	630-20-6	1,1,1,2-Tetrachloroethane	BSP	REC	97	%	70-130
VY9414-BS	79-34-5	1,1,2,2-Tetrachloroethane	BSP	REC	98	%	70-130
VY9414-BS	127-18-4	Tetrachloroethene	BSP	REC	96	%	70-130
VY9414-BS	109-99-9	Tetrahydrofuran	BSP	REC	96 [a]	%	70-130
VY9414-BS	108-88-3	Toluene	BSP	REC	99	%	70-130
VY9414-BS	87-61-6	1,2,3-Trichlorobenzene	BSP	REC	111	%	70-130
VY9414-BS	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	106	%	70-130
VY9414-BS	71-55-6	1,1,1-Trichloroethane	BSP	REC	114	%	70-130
VY9414-BS	79-00-5	1,1,2-Trichloroethane	BSP	REC	100	%	70-130
VY9414-BS	79-01-6	Trichloroethene	BSP	REC	108	%	70-130
VY9414-BS	75-69-4	Trichlorofluoromethane	BSP	REC	126	%	70-130
VY9414-BS	96-18-4	1,2,3-Trichloropropane	BSP	REC	96	%	70-130
VY9414-BS	95-63-6	1,2,4-Trimethylbenzene	BSP	REC	95	%	70-130
VY9414-BS	108-67-8	1,3,5-Trimethylbenzene	BSP	REC	94	%	70-130
VY9414-BS	75-01-4	Vinyl chloride	BSP	REC	85	%	70-130
VY9414-BS		m,p-Xylene	BSP	REC	100	%	70-130
VY9414-BS	95-47-6	o-Xylene	BSP	REC	97	%	70-130
VY9414-BS	1330-20-7	Xylene (total)	BSP	REC	99	%	70-130
VY9414-BS	1868-53-7	Dibromofluoromethane	BSP	SURR	119	%	70-130
VY9414-BS	2037-26-5	Toluene-D8	BSP	SURR	104	%	70-130
VY9414-BS	460-00-4	4-Bromofluorobenzene	BSP	SURR	98	%	70-130
VY9414-BSD	67-64-1	Acetone	BSD	REC	106	%	70-130
VY9414-BSD	67-64-1	Acetone	BSD	RPD	1	%	20
VY9414-BSD	71-43-2	Benzene	BSD	REC	104	%	70-130
VY9414-BSD	71-43-2	Benzene	BSD	RPD	0	%	20
VY9414-BSD	108-86-1	Bromobenzene	BSD	REC	98	%	70-130
VY9414-BSD	108-86-1	Bromobenzene	BSD	RPD	2	%	20
VY9414-BSD	74-97-5	Bromochloromethane	BSD	REC	119	%	70-130
VY9414-BSD	74-97-5	Bromochloromethane	BSD	RPD	1	%	20
VY9414-BSD	75-27-4	Bromodichloromethane	BSD	REC	106	%	70-130
VY9414-BSD	75-27-4	Bromodichloromethane	BSD	RPD	0	%	20
VY9414-BSD	75-25-2	Bromoform	BSD	REC	103	%	70-130
VY9414-BSD	75-25-2	Bromoform	BSD	RPD	3	%	20

*** Sample used for QC is not from job JE23137**

QC Evaluation: MA MCP Limits

Job Number: JE23137
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 11/12/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9414-BSD	74-83-9	Bromomethane	BSD	REC	146	%	70-130
VY9414-BSD	74-83-9	Bromomethane	BSD	RPD	1	%	20
VY9414-BSD	78-93-3	2-Butanone (MEK)	BSD	REC	126	%	70-130
VY9414-BSD	78-93-3	2-Butanone (MEK)	BSD	RPD	4	%	20
VY9414-BSD	104-51-8	n-Butylbenzene	BSD	REC	101	%	70-130
VY9414-BSD	104-51-8	n-Butylbenzene	BSD	RPD	2	%	20
VY9414-BSD	135-98-8	sec-Butylbenzene	BSD	REC	99	%	70-130
VY9414-BSD	135-98-8	sec-Butylbenzene	BSD	RPD	2	%	20
VY9414-BSD	98-06-6	tert-Butylbenzene	BSD	REC	99	%	70-130
VY9414-BSD	98-06-6	tert-Butylbenzene	BSD	RPD	4	%	20
VY9414-BSD	75-15-0	Carbon disulfide	BSD	REC	113	%	70-130
VY9414-BSD	75-15-0	Carbon disulfide	BSD	RPD	0	%	20
VY9414-BSD	56-23-5	Carbon tetrachloride	BSD	REC	119	%	70-130
VY9414-BSD	56-23-5	Carbon tetrachloride	BSD	RPD	2	%	20
VY9414-BSD	108-90-7	Chlorobenzene	BSD	REC	104	%	70-130
VY9414-BSD	108-90-7	Chlorobenzene	BSD	RPD	1	%	20
VY9414-BSD	75-00-3	Chloroethane	BSD	REC	98	%	70-130
VY9414-BSD	75-00-3	Chloroethane	BSD	RPD	3	%	20
VY9414-BSD	67-66-3	Chloroform	BSD	REC	105	%	70-130
VY9414-BSD	67-66-3	Chloroform	BSD	RPD	1	%	20
VY9414-BSD	74-87-3	Chloromethane	BSD	REC	70	%	70-130
VY9414-BSD	74-87-3	Chloromethane	BSD	RPD	7	%	20
VY9414-BSD	95-49-8	o-Chlorotoluene	BSD	REC	104	%	70-130
VY9414-BSD	95-49-8	o-Chlorotoluene	BSD	RPD	3	%	20
VY9414-BSD	106-43-4	p-Chlorotoluene	BSD	REC	105	%	70-130
VY9414-BSD	106-43-4	p-Chlorotoluene	BSD	RPD	3	%	20
VY9414-BSD	108-20-3	Di-Isopropyl ether	BSD	REC	78	%	70-130
VY9414-BSD	108-20-3	Di-Isopropyl ether	BSD	RPD	1	%	20
VY9414-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	REC	105	%	70-130
VY9414-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	RPD	2	%	20
VY9414-BSD	124-48-1	Dibromochloromethane	BSD	REC	105	%	70-130
VY9414-BSD	124-48-1	Dibromochloromethane	BSD	RPD	2	%	20
VY9414-BSD	106-93-4	1,2-Dibromoethane	BSD	REC	104	%	70-130
VY9414-BSD	106-93-4	1,2-Dibromoethane	BSD	RPD	2	%	20
VY9414-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	102	%	70-130
VY9414-BSD	95-50-1	1,2-Dichlorobenzene	BSD	RPD	2	%	20
VY9414-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	100	%	70-130
VY9414-BSD	541-73-1	1,3-Dichlorobenzene	BSD	RPD	1	%	20
VY9414-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	101	%	70-130
VY9414-BSD	106-46-7	1,4-Dichlorobenzene	BSD	RPD	1	%	20
VY9414-BSD	75-71-8	Dichlorodifluoromethane	BSD	REC	127	%	70-130
VY9414-BSD	75-71-8	Dichlorodifluoromethane	BSD	RPD	1	%	20
VY9414-BSD	75-34-3	1,1-Dichloroethane	BSD	REC	102	%	70-130
VY9414-BSD	75-34-3	1,1-Dichloroethane	BSD	RPD	1	%	20
VY9414-BSD	107-06-2	1,2-Dichloroethane	BSD	REC	105	%	70-130

*** Sample used for QC is not from job JE23137**

QC Evaluation: MA MCP Limits

Job Number: JE23137
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 11/12/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9414-BSD	107-06-2	1,2-Dichloroethane	BSD	RPD	0	%	20
VY9414-BSD	75-35-4	1,1-Dichloroethene	BSD	REC	121	%	70-130
VY9414-BSD	75-35-4	1,1-Dichloroethene	BSD	RPD	1	%	20
VY9414-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	REC	118	%	70-130
VY9414-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	RPD	0	%	20
VY9414-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	REC	124 [b]	%	70-130
VY9414-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	RPD	8	%	20
VY9414-BSD	78-87-5	1,2-Dichloropropane	BSD	REC	93	%	70-130
VY9414-BSD	78-87-5	1,2-Dichloropropane	BSD	RPD	1	%	20
VY9414-BSD	142-28-9	1,3-Dichloropropane	BSD	REC	100	%	70-130
VY9414-BSD	142-28-9	1,3-Dichloropropane	BSD	RPD	1	%	20
VY9414-BSD	594-20-7	2,2-Dichloropropane	BSD	REC	105	%	70-130
VY9414-BSD	594-20-7	2,2-Dichloropropane	BSD	RPD	3	%	20
VY9414-BSD	563-58-6	1,1-Dichloropropene	BSD	REC	112	%	70-130
VY9414-BSD	563-58-6	1,1-Dichloropropene	BSD	RPD	0	%	20
VY9414-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	REC	98	%	70-130
VY9414-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	RPD	1	%	20
VY9414-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	REC	96	%	70-130
VY9414-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	RPD	2	%	20
VY9414-BSD	123-91-1	1,4-Dioxane	BSD	REC	127	%	70-130
VY9414-BSD	123-91-1	1,4-Dioxane	BSD	RPD	5	%	20
VY9414-BSD	60-29-7	Ethyl Ether	BSD	REC	125	%	70-130
VY9414-BSD	60-29-7	Ethyl Ether	BSD	RPD	6	%	20
VY9414-BSD	100-41-4	Ethylbenzene	BSD	REC	99	%	70-130
VY9414-BSD	100-41-4	Ethylbenzene	BSD	RPD	0	%	20
VY9414-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	99	%	70-130
VY9414-BSD	87-68-3	Hexachlorobutadiene	BSD	RPD	3	%	20
VY9414-BSD	591-78-6	2-Hexanone	BSD	REC	92	%	70-130
VY9414-BSD	591-78-6	2-Hexanone	BSD	RPD	5	%	20
VY9414-BSD	98-82-8	Isopropylbenzene	BSD	REC	96	%	70-130
VY9414-BSD	98-82-8	Isopropylbenzene	BSD	RPD	0	%	20
VY9414-BSD	99-87-6	p-Isopropyltoluene	BSD	REC	101	%	70-130
VY9414-BSD	99-87-6	p-Isopropyltoluene	BSD	RPD	2	%	20
VY9414-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	REC	119	%	70-130
VY9414-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	RPD	7	%	20
VY9414-BSD	108-10-1	4-Methyl-2-pentanone(MIBK)	BSD	REC	102	%	70-130
VY9414-BSD	108-10-1	4-Methyl-2-pentanone(MIBK)	BSD	RPD	4	%	20
VY9414-BSD	74-95-3	Methylene bromide	BSD	REC	114	%	70-130
VY9414-BSD	74-95-3	Methylene bromide	BSD	RPD	0	%	20
VY9414-BSD	75-09-2	Methylene chloride	BSD	REC	111	%	70-130
VY9414-BSD	75-09-2	Methylene chloride	BSD	RPD	1	%	20
VY9414-BSD	91-20-3	Naphthalene	BSD	REC	109	%	70-130
VY9414-BSD	91-20-3	Naphthalene	BSD	RPD	1	%	20
VY9414-BSD	103-65-1	n-Propylbenzene	BSD	REC	99	%	70-130
VY9414-BSD	103-65-1	n-Propylbenzene	BSD	RPD	2	%	20

*** Sample used for QC is not from job JE23137**

QC Evaluation: MA MCP Limits

Job Number: JE23137
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 11/12/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9414-BSD	100-42-5	Styrene	BSD	REC	101	%	70-130
VY9414-BSD	100-42-5	Styrene	BSD	RPD	1	%	20
VY9414-BSD	994-05-8	tert-Amyl Methyl Ether	BSD	REC	95	%	70-130
VY9414-BSD	994-05-8	tert-Amyl Methyl Ether	BSD	RPD	1	%	20
VY9414-BSD	637-92-3	tert-Butyl Ethyl Ether	BSD	REC	88	%	70-130
VY9414-BSD	637-92-3	tert-Butyl Ethyl Ether	BSD	RPD	2	%	20
VY9414-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	REC	99	%	70-130
VY9414-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	RPD	3	%	20
VY9414-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	REC	103	%	70-130
VY9414-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	RPD	5	%	20
VY9414-BSD	127-18-4	Tetrachloroethene	BSD	REC	98	%	70-130
VY9414-BSD	127-18-4	Tetrachloroethene	BSD	RPD	2	%	20
VY9414-BSD	109-99-9	Tetrahydrofuran	BSD	REC	85	%	70-130
VY9414-BSD	109-99-9	Tetrahydrofuran	BSD	RPD	13 [c]	%	20
VY9414-BSD	108-88-3	Toluene	BSD	REC	101	%	70-130
VY9414-BSD	108-88-3	Toluene	BSD	RPD	2	%	20
VY9414-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	REC	113	%	70-130
VY9414-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	RPD	1	%	20
VY9414-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	105	%	70-130
VY9414-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	RPD	1	%	20
VY9414-BSD	71-55-6	1,1,1-Trichloroethane	BSD	REC	117	%	70-130
VY9414-BSD	71-55-6	1,1,1-Trichloroethane	BSD	RPD	2	%	20
VY9414-BSD	79-00-5	1,1,2-Trichloroethane	BSD	REC	100	%	70-130
VY9414-BSD	79-00-5	1,1,2-Trichloroethane	BSD	RPD	0	%	20
VY9414-BSD	79-01-6	Trichloroethene	BSD	REC	110	%	70-130
VY9414-BSD	79-01-6	Trichloroethene	BSD	RPD	1	%	20
VY9414-BSD	75-69-4	Trichlorofluoromethane	BSD	REC	132	%	70-130
VY9414-BSD	75-69-4	Trichlorofluoromethane	BSD	RPD	4	%	20
VY9414-BSD	96-18-4	1,2,3-Trichloropropane	BSD	REC	100	%	70-130
VY9414-BSD	96-18-4	1,2,3-Trichloropropane	BSD	RPD	4	%	20
VY9414-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	REC	97	%	70-130
VY9414-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	RPD	2	%	20
VY9414-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	REC	97	%	70-130
VY9414-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	RPD	3	%	20
VY9414-BSD	75-01-4	Vinyl chloride	BSD	REC	87	%	70-130
VY9414-BSD	75-01-4	Vinyl chloride	BSD	RPD	2	%	20
VY9414-BSD		m,p-Xylene	BSD	REC	101	%	70-130
VY9414-BSD		m,p-Xylene	BSD	RPD	1	%	20
VY9414-BSD	95-47-6	o-Xylene	BSD	REC	96	%	70-130
VY9414-BSD	95-47-6	o-Xylene	BSD	RPD	0	%	20
VY9414-BSD	1330-20-7	Xylene (total)	BSD	REC	99	%	70-130
VY9414-BSD	1330-20-7	Xylene (total)	BSD	RPD	0	%	20
VY9414-BSD	1868-53-7	Dibromofluoromethane	BSD	SURR	118	%	70-130
VY9414-BSD	2037-26-5	Toluene-D8	BSD	SURR	105	%	70-130
VY9414-BSD	460-00-4	4-Bromofluorobenzene	BSD	SURR	99	%	70-130

*** Sample used for QC is not from job JE23137**

QC Evaluation: MA MCP Limits

Job Number: JE23137
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 11/12/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
VY9414-MB	1868-53-7	Dibromofluoromethane	MB	SURR	112	%	70-130
VY9414-MB	2037-26-5	Toluene-D8	MB	SURR	101	%	70-130
VY9414-MB	460-00-4	4-Bromofluorobenzene	MB	SURR	102	%	70-130
JE23137-1	1868-53-7	Dibromofluoromethane	SAMP	SURR	110	%	70-130
JE23137-1	2037-26-5	Toluene-D8	SAMP	SURR	101	%	70-130
JE23137-1	460-00-4	4-Bromofluorobenzene	SAMP	SURR	102	%	70-130
OP69056	SW846 8270E						
OP69056-BS1	65-85-0	Benzoic acid	BSP	REC	65	%	30-130
OP69056-BS1	95-57-8	2-Chlorophenol	BSP	REC	73	%	30-130
OP69056-BS1	59-50-7	4-Chloro-3-methyl phenol	BSP	REC	79	%	30-130
OP69056-BS1	120-83-2	2,4-Dichlorophenol	BSP	REC	80	%	30-130
OP69056-BS1	105-67-9	2,4-Dimethylphenol	BSP	REC	75	%	30-130
OP69056-BS1	51-28-5	2,4-Dinitrophenol	BSP	REC	98	%	30-130
OP69056-BS1	534-52-1	4,6-Dinitro-o-cresol	BSP	REC	163 [d]	%	30-130
OP69056-BS1	95-48-7	2-Methylphenol	BSP	REC	71	%	30-130
OP69056-BS1		3&4-Methylphenol	BSP	REC	72	%	30-130
OP69056-BS1	88-75-5	2-Nitrophenol	BSP	REC	114	%	30-130
OP69056-BS1	100-02-7	4-Nitrophenol	BSP	REC	79	%	30-130
OP69056-BS1	87-86-5	Pentachlorophenol	BSP	REC	83	%	30-130
OP69056-BS1	108-95-2	Phenol	BSP	REC	73	%	30-130
OP69056-BS1	95-95-4	2,4,5-Trichlorophenol	BSP	REC	85	%	30-130
OP69056-BS1	88-06-2	2,4,6-Trichlorophenol	BSP	REC	86	%	30-130
OP69056-BS1	83-32-9	Acenaphthene	BSP	REC	78	%	40-140
OP69056-BS1	208-96-8	Acenaphthylene	BSP	REC	79	%	40-140
OP69056-BS1	98-86-2	Acetophenone	BSP	REC	67	%	40-140
OP69056-BS1	62-53-3	Aniline	BSP	REC	69	%	40-140
OP69056-BS1	120-12-7	Anthracene	BSP	REC	80	%	40-140
OP69056-BS1	56-55-3	Benzo(a)anthracene	BSP	REC	79	%	40-140
OP69056-BS1	50-32-8	Benzo(a)pyrene	BSP	REC	81	%	40-140
OP69056-BS1	205-99-2	Benzo(b)fluoranthene	BSP	REC	84	%	40-140
OP69056-BS1	191-24-2	Benzo(g,h,i)perylene	BSP	REC	70	%	40-140
OP69056-BS1	207-08-9	Benzo(k)fluoranthene	BSP	REC	82	%	40-140
OP69056-BS1	101-55-3	4-Bromophenyl phenyl ether	BSP	REC	82	%	40-140
OP69056-BS1	85-68-7	Butyl benzyl phthalate	BSP	REC	97	%	40-140
OP69056-BS1	91-58-7	2-Chloronaphthalene	BSP	REC	79	%	40-140
OP69056-BS1	106-47-8	4-Chloroaniline	BSP	REC	28	%	40-140
OP69056-BS1	218-01-9	Chrysene	BSP	REC	77	%	40-140
OP69056-BS1	111-91-1	bis(2-Chloroethoxy)methane	BSP	REC	73	%	40-140
OP69056-BS1	111-44-4	bis(2-Chloroethyl)ether	BSP	REC	67	%	40-140
OP69056-BS1	108-60-1	2,2'-Oxybis(1-chloropropane)	BSP	REC	68	%	40-140
OP69056-BS1	7005-72-3	4-Chlorophenyl phenyl ether	BSP	REC	80	%	40-140
OP69056-BS1	95-50-1	1,2-Dichlorobenzene	BSP	REC	62	%	40-140
OP69056-BS1	122-66-7	1,2-Diphenylhydrazine	BSP	REC	77	%	40-140

*** Sample used for QC is not from job JE23137**

QC Evaluation: MA MCP Limits

Job Number: JE23137
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 11/12/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP69056-BS1	541-73-1	1,3-Dichlorobenzene	BSP	REC	61	%	40-140
OP69056-BS1	106-46-7	1,4-Dichlorobenzene	BSP	REC	62	%	40-140
OP69056-BS1	121-14-2	2,4-Dinitrotoluene	BSP	REC	122	%	40-140
OP69056-BS1	606-20-2	2,6-Dinitrotoluene	BSP	REC	115	%	40-140
OP69056-BS1	91-94-1	3,3'-Dichlorobenzidine	BSP	REC	65	%	40-140
OP69056-BS1	53-70-3	Dibenzo(a,h)anthracene	BSP	REC	71	%	40-140
OP69056-BS1	132-64-9	Dibenzofuran	BSP	REC	78	%	40-140
OP69056-BS1	84-74-2	Di-n-butyl phthalate	BSP	REC	81	%	40-140
OP69056-BS1	117-84-0	Di-n-octyl phthalate	BSP	REC	106	%	40-140
OP69056-BS1	84-66-2	Diethyl phthalate	BSP	REC	80	%	40-140
OP69056-BS1	131-11-3	Dimethyl phthalate	BSP	REC	79	%	40-140
OP69056-BS1	117-81-7	bis(2-Ethylhexyl)phthalate	BSP	REC	96	%	40-140
OP69056-BS1	206-44-0	Fluoranthene	BSP	REC	75	%	40-140
OP69056-BS1	86-73-7	Fluorene	BSP	REC	79	%	40-140
OP69056-BS1	118-74-1	Hexachlorobenzene	BSP	REC	79	%	40-140
OP69056-BS1	87-68-3	Hexachlorobutadiene	BSP	REC	68	%	40-140
OP69056-BS1	77-47-4	Hexachlorocyclopentadiene	BSP	REC	84	%	40-140
OP69056-BS1	67-72-1	Hexachloroethane	BSP	REC	66	%	40-140
OP69056-BS1	193-39-5	Indeno(1,2,3-cd)pyrene	BSP	REC	82	%	40-140
OP69056-BS1	78-59-1	Isophorone	BSP	REC	70	%	40-140
OP69056-BS1	91-57-6	2-Methylnaphthalene	BSP	REC	71	%	40-140
OP69056-BS1	91-20-3	Naphthalene	BSP	REC	68	%	40-140
OP69056-BS1	98-95-3	Nitrobenzene	BSP	REC	88	%	40-140
OP69056-BS1	62-75-9	n-Nitrosodimethylamine	BSP	REC	65	%	40-140
OP69056-BS1	621-64-7	N-Nitroso-di-n-propylamine	BSP	REC	71	%	40-140
OP69056-BS1	86-30-6	N-Nitrosodiphenylamine	BSP	REC	87	%	40-140
OP69056-BS1	85-01-8	Phenanthrene	BSP	REC	76	%	40-140
OP69056-BS1	129-00-0	Pyrene	BSP	REC	88	%	40-140
OP69056-BS1	110-86-1	Pyridine	BSP	REC	52	%	40-140
OP69056-BS1	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	70	%	40-140
OP69056-BS1	367-12-4	2-Fluorophenol	BSP	SURR	72	%	30-130
OP69056-BS1	4165-62-2	Phenol-d5	BSP	SURR	75	%	30-130
OP69056-BS1	118-79-6	2,4,6-Tribromophenol	BSP	SURR	96	%	30-130
OP69056-BS1	4165-60-0	Nitrobenzene-d5	BSP	SURR	96	%	30-130
OP69056-BS1	321-60-8	2-Fluorobiphenyl	BSP	SURR	82	%	30-130
OP69056-BS1	1718-51-0	Terphenyl-d14	BSP	SURR	84	%	30-130
OP69056-BSD	65-85-0	Benzoic acid	BSD	REC	53	%	30-130
OP69056-BSD	65-85-0	Benzoic acid	BSD	RPD	21	%	30
OP69056-BSD	95-57-8	2-Chlorophenol	BSD	REC	64	%	30-130
OP69056-BSD	95-57-8	2-Chlorophenol	BSD	RPD	12	%	30
OP69056-BSD	59-50-7	4-Chloro-3-methyl phenol	BSD	REC	73	%	30-130
OP69056-BSD	59-50-7	4-Chloro-3-methyl phenol	BSD	RPD	8	%	30
OP69056-BSD	120-83-2	2,4-Dichlorophenol	BSD	REC	73	%	30-130
OP69056-BSD	120-83-2	2,4-Dichlorophenol	BSD	RPD	9	%	30
OP69056-BSD	105-67-9	2,4-Dimethylphenol	BSD	REC	69	%	30-130

*** Sample used for QC is not from job JE23137**

QC Evaluation: MA MCP Limits

Job Number: JE23137
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 11/12/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP69056-BSD	105-67-9	2,4-Dimethylphenol	BSD	RPD	8	%	30
OP69056-BSD	51-28-5	2,4-Dinitrophenol	BSD	REC	77	%	30-130
OP69056-BSD	51-28-5	2,4-Dinitrophenol	BSD	RPD	25	%	30
OP69056-BSD	534-52-1	4,6-Dinitro-o-cresol	BSD	REC	146	%	30-130
OP69056-BSD	534-52-1	4,6-Dinitro-o-cresol	BSD	RPD	10	%	30
OP69056-BSD	95-48-7	2-Methylphenol	BSD	REC	64	%	30-130
OP69056-BSD	95-48-7	2-Methylphenol	BSD	RPD	10	%	30
OP69056-BSD		3&4-Methylphenol	BSD	REC	67	%	30-130
OP69056-BSD		3&4-Methylphenol	BSD	RPD	8	%	30
OP69056-BSD	88-75-5	2-Nitrophenol	BSD	REC	106	%	30-130
OP69056-BSD	88-75-5	2-Nitrophenol	BSD	RPD	8	%	30
OP69056-BSD	100-02-7	4-Nitrophenol	BSD	REC	75	%	30-130
OP69056-BSD	100-02-7	4-Nitrophenol	BSD	RPD	5	%	30
OP69056-BSD	87-86-5	Pentachlorophenol	BSD	REC	77	%	30-130
OP69056-BSD	87-86-5	Pentachlorophenol	BSD	RPD	7	%	30
OP69056-BSD	108-95-2	Phenol	BSD	REC	70	%	30-130
OP69056-BSD	108-95-2	Phenol	BSD	RPD	5	%	30
OP69056-BSD	95-95-4	2,4,5-Trichlorophenol	BSD	REC	81	%	30-130
OP69056-BSD	95-95-4	2,4,5-Trichlorophenol	BSD	RPD	5	%	30
OP69056-BSD	88-06-2	2,4,6-Trichlorophenol	BSD	REC	82	%	30-130
OP69056-BSD	88-06-2	2,4,6-Trichlorophenol	BSD	RPD	6	%	30
OP69056-BSD	83-32-9	Acenaphthene	BSD	REC	76	%	40-140
OP69056-BSD	83-32-9	Acenaphthene	BSD	RPD	3	%	30
OP69056-BSD	208-96-8	Acenaphthylene	BSD	REC	75	%	40-140
OP69056-BSD	208-96-8	Acenaphthylene	BSD	RPD	5	%	30
OP69056-BSD	98-86-2	Acetophenone	BSD	REC	61	%	40-140
OP69056-BSD	98-86-2	Acetophenone	BSD	RPD	9	%	30
OP69056-BSD	62-53-3	Aniline	BSD	REC	70	%	40-140
OP69056-BSD	62-53-3	Aniline	BSD	RPD	1	%	30
OP69056-BSD	120-12-7	Anthracene	BSD	REC	77	%	40-140
OP69056-BSD	120-12-7	Anthracene	BSD	RPD	4	%	30
OP69056-BSD	56-55-3	Benzo(a)anthracene	BSD	REC	74	%	40-140
OP69056-BSD	56-55-3	Benzo(a)anthracene	BSD	RPD	6	%	30
OP69056-BSD	50-32-8	Benzo(a)pyrene	BSD	REC	78	%	40-140
OP69056-BSD	50-32-8	Benzo(a)pyrene	BSD	RPD	4	%	30
OP69056-BSD	205-99-2	Benzo(b)fluoranthene	BSD	REC	79	%	40-140
OP69056-BSD	205-99-2	Benzo(b)fluoranthene	BSD	RPD	6	%	30
OP69056-BSD	191-24-2	Benzo(g,h,i)perylene	BSD	REC	68	%	40-140
OP69056-BSD	191-24-2	Benzo(g,h,i)perylene	BSD	RPD	3	%	30
OP69056-BSD	207-08-9	Benzo(k)fluoranthene	BSD	REC	79	%	40-140
OP69056-BSD	207-08-9	Benzo(k)fluoranthene	BSD	RPD	4	%	30
OP69056-BSD	101-55-3	4-Bromophenyl phenyl ether	BSD	REC	79	%	40-140
OP69056-BSD	101-55-3	4-Bromophenyl phenyl ether	BSD	RPD	4	%	30
OP69056-BSD	85-68-7	Butyl benzyl phthalate	BSD	REC	89	%	40-140
OP69056-BSD	85-68-7	Butyl benzyl phthalate	BSD	RPD	8	%	30

*** Sample used for QC is not from job JE23137**

QC Evaluation: MA MCP Limits

Job Number: JE23137
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 11/12/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP69056-BSD	91-58-7	2-Chloronaphthalene	BSD	REC	76	%	40-140
OP69056-BSD	91-58-7	2-Chloronaphthalene	BSD	RPD	4	%	30
OP69056-BSD	106-47-8	4-Chloroaniline	BSD	REC	50	%	40-140
OP69056-BSD	106-47-8	4-Chloroaniline	BSD	RPD	56	%	30
OP69056-BSD	218-01-9	Chrysene	BSD	REC	74	%	40-140
OP69056-BSD	218-01-9	Chrysene	BSD	RPD	4	%	30
OP69056-BSD	111-91-1	bis(2-Chloroethoxy)methane	BSD	REC	68	%	40-140
OP69056-BSD	111-91-1	bis(2-Chloroethoxy)methane	BSD	RPD	6	%	30
OP69056-BSD	111-44-4	bis(2-Chloroethyl)ether	BSD	REC	60	%	40-140
OP69056-BSD	111-44-4	bis(2-Chloroethyl)ether	BSD	RPD	11	%	30
OP69056-BSD	108-60-1	2,2'-Oxybis(1-chloropropane)	BSD	REC	60	%	40-140
OP69056-BSD	108-60-1	2,2'-Oxybis(1-chloropropane)	BSD	RPD	12	%	30
OP69056-BSD	7005-72-3	4-Chlorophenyl phenyl ether	BSD	REC	76	%	40-140
OP69056-BSD	7005-72-3	4-Chlorophenyl phenyl ether	BSD	RPD	5	%	30
OP69056-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	57	%	40-140
OP69056-BSD	95-50-1	1,2-Dichlorobenzene	BSD	RPD	8	%	30
OP69056-BSD	122-66-7	1,2-Diphenylhydrazine	BSD	REC	76	%	40-140
OP69056-BSD	122-66-7	1,2-Diphenylhydrazine	BSD	RPD	2	%	30
OP69056-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	57	%	40-140
OP69056-BSD	541-73-1	1,3-Dichlorobenzene	BSD	RPD	6	%	30
OP69056-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	57	%	40-140
OP69056-BSD	106-46-7	1,4-Dichlorobenzene	BSD	RPD	8	%	30
OP69056-BSD	121-14-2	2,4-Dinitrotoluene	BSD	REC	116	%	40-140
OP69056-BSD	121-14-2	2,4-Dinitrotoluene	BSD	RPD	5	%	30
OP69056-BSD	606-20-2	2,6-Dinitrotoluene	BSD	REC	111	%	40-140
OP69056-BSD	606-20-2	2,6-Dinitrotoluene	BSD	RPD	3	%	30
OP69056-BSD	91-94-1	3,3'-Dichlorobenzidine	BSD	REC	72	%	40-140
OP69056-BSD	91-94-1	3,3'-Dichlorobenzidine	BSD	RPD	10	%	30
OP69056-BSD	53-70-3	Dibenzo(a,h)anthracene	BSD	REC	70	%	40-140
OP69056-BSD	53-70-3	Dibenzo(a,h)anthracene	BSD	RPD	2	%	30
OP69056-BSD	132-64-9	Dibenzofuran	BSD	REC	74	%	40-140
OP69056-BSD	132-64-9	Dibenzofuran	BSD	RPD	5	%	30
OP69056-BSD	84-74-2	Di-n-butyl phthalate	BSD	REC	77	%	40-140
OP69056-BSD	84-74-2	Di-n-butyl phthalate	BSD	RPD	5	%	30
OP69056-BSD	117-84-0	Di-n-octyl phthalate	BSD	REC	100	%	40-140
OP69056-BSD	117-84-0	Di-n-octyl phthalate	BSD	RPD	6	%	30
OP69056-BSD	84-66-2	Diethyl phthalate	BSD	REC	76	%	40-140
OP69056-BSD	84-66-2	Diethyl phthalate	BSD	RPD	6	%	30
OP69056-BSD	131-11-3	Dimethyl phthalate	BSD	REC	76	%	40-140
OP69056-BSD	131-11-3	Dimethyl phthalate	BSD	RPD	5	%	30
OP69056-BSD	117-81-7	bis(2-Ethylhexyl)phthalate	BSD	REC	89	%	40-140
OP69056-BSD	117-81-7	bis(2-Ethylhexyl)phthalate	BSD	RPD	7	%	30
OP69056-BSD	206-44-0	Fluoranthene	BSD	REC	71	%	40-140
OP69056-BSD	206-44-0	Fluoranthene	BSD	RPD	6	%	30
OP69056-BSD	86-73-7	Fluorene	BSD	REC	76	%	40-140

*** Sample used for QC is not from job JE23137**

QC Evaluation: MA MCP Limits

Job Number: JE23137
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 11/12/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP69056-BSD	86-73-7	Fluorene	BSD	RPD	5	%	30
OP69056-BSD	118-74-1	Hexachlorobenzene	BSD	REC	77	%	40-140
OP69056-BSD	118-74-1	Hexachlorobenzene	BSD	RPD	3	%	30
OP69056-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	64	%	40-140
OP69056-BSD	87-68-3	Hexachlorobutadiene	BSD	RPD	6	%	30
OP69056-BSD	77-47-4	Hexachlorocyclopentadiene	BSD	REC	82	%	40-140
OP69056-BSD	77-47-4	Hexachlorocyclopentadiene	BSD	RPD	3	%	30
OP69056-BSD	67-72-1	Hexachloroethane	BSD	REC	62	%	40-140
OP69056-BSD	67-72-1	Hexachloroethane	BSD	RPD	7	%	30
OP69056-BSD	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	REC	80	%	40-140
OP69056-BSD	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	RPD	1	%	30
OP69056-BSD	78-59-1	Isophorone	BSD	REC	66	%	40-140
OP69056-BSD	78-59-1	Isophorone	BSD	RPD	6	%	30
OP69056-BSD	91-57-6	2-Methylnaphthalene	BSD	REC	67	%	40-140
OP69056-BSD	91-57-6	2-Methylnaphthalene	BSD	RPD	5	%	30
OP69056-BSD	91-20-3	Naphthalene	BSD	REC	64	%	40-140
OP69056-BSD	91-20-3	Naphthalene	BSD	RPD	7	%	30
OP69056-BSD	98-95-3	Nitrobenzene	BSD	REC	82	%	40-140
OP69056-BSD	98-95-3	Nitrobenzene	BSD	RPD	7	%	30
OP69056-BSD	62-75-9	n-Nitrosodimethylamine	BSD	REC	60	%	40-140
OP69056-BSD	62-75-9	n-Nitrosodimethylamine	BSD	RPD	8	%	30
OP69056-BSD	621-64-7	N-Nitroso-di-n-propylamine	BSD	REC	65	%	40-140
OP69056-BSD	621-64-7	N-Nitroso-di-n-propylamine	BSD	RPD	10	%	30
OP69056-BSD	86-30-6	N-Nitrosodiphenylamine	BSD	REC	85	%	40-140
OP69056-BSD	86-30-6	N-Nitrosodiphenylamine	BSD	RPD	3	%	30
OP69056-BSD	85-01-8	Phenanthrene	BSD	REC	74	%	40-140
OP69056-BSD	85-01-8	Phenanthrene	BSD	RPD	3	%	30
OP69056-BSD	129-00-0	Pyrene	BSD	REC	81	%	40-140
OP69056-BSD	129-00-0	Pyrene	BSD	RPD	8	%	30
OP69056-BSD	110-86-1	Pyridine	BSD	REC	50	%	40-140
OP69056-BSD	110-86-1	Pyridine	BSD	RPD	3	%	30
OP69056-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	65	%	40-140
OP69056-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	RPD	8	%	30
OP69056-BSD	367-12-4	2-Fluorophenol	BSD	SURR	65	%	30-130
OP69056-BSD	4165-62-2	Phenol-d5	BSD	SURR	68	%	30-130
OP69056-BSD	118-79-6	2,4,6-Tribromophenol	BSD	SURR	91	%	30-130
OP69056-BSD	4165-60-0	Nitrobenzene-d5	BSD	SURR	88	%	30-130
OP69056-BSD	321-60-8	2-Fluorobiphenyl	BSD	SURR	78	%	30-130
OP69056-BSD	1718-51-0	Terphenyl-d14	BSD	SURR	78	%	30-130
OP69056-MB1	367-12-4	2-Fluorophenol	MB	SURR	53	%	30-130
OP69056-MB1	4165-62-2	Phenol-d5	MB	SURR	57	%	30-130
OP69056-MB1	118-79-6	2,4,6-Tribromophenol	MB	SURR	61	%	30-130
OP69056-MB1	4165-60-0	Nitrobenzene-d5	MB	SURR	70	%	30-130
OP69056-MB1	321-60-8	2-Fluorobiphenyl	MB	SURR	60	%	30-130
OP69056-MB1	1718-51-0	Terphenyl-d14	MB	SURR	63	%	30-130

*** Sample used for QC is not from job JE23137**

QC Evaluation: MA MCP Limits

Job Number: JE23137
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 11/12/25

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
JE23137-1	367-12-4	2-Fluorophenol	SAMP	SURR	71	%	30-130
JE23137-1	4165-62-2	Phenol-d5	SAMP	SURR	72	%	30-130
JE23137-1	118-79-6	2,4,6-Tribromophenol	SAMP	SURR	89	%	30-130
JE23137-1	4165-60-0	Nitrobenzene-d5	SAMP	SURR	94	%	30-130
JE23137-1	321-60-8	2-Fluorobiphenyl	SAMP	SURR	80	%	30-130
JE23137-1	1718-51-0	Terphenyl-d14	SAMP	SURR	70	%	30-130

(a) Outside of in house control limits, but within reasonable method recovery limits.
(b) Outside of in house control limits, but within the marginal exceedance limits.
(c) Outside in house control limits.
(d) Outside control limits biased high, sample ND.

* Sample used for QC is not from job JE23137

MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Internal Standard Area Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9414-MB	Y219129.D	1	11/14/25	PS	n/a	n/a	VY9414

The QC reported here applies to the following samples: Method: SW846 8260D

JE23137-1

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	4.1	ug/kg	
71-43-2	Benzene	ND	0.50	0.46	ug/kg	
108-86-1	Bromobenzene	ND	5.0	0.55	ug/kg	
74-97-5	Bromochloromethane	ND	5.0	0.56	ug/kg	
75-27-4	Bromodichloromethane	ND	2.0	0.43	ug/kg	
75-25-2	Bromoform	ND	5.0	1.4	ug/kg	
74-83-9	Bromomethane	ND	5.0	0.76	ug/kg	
78-93-3	2-Butanone (MEK)	ND	10	2.4	ug/kg	
104-51-8	n-Butylbenzene	ND	2.0	0.41	ug/kg	
135-98-8	sec-Butylbenzene	ND	2.0	0.43	ug/kg	
98-06-6	tert-Butylbenzene	ND	2.0	0.50	ug/kg	
75-15-0	Carbon disulfide	ND	2.0	0.54	ug/kg	
56-23-5	Carbon tetrachloride	ND	2.0	0.62	ug/kg	
108-90-7	Chlorobenzene	ND	2.0	0.46	ug/kg	
75-00-3	Chloroethane	ND	5.0	0.59	ug/kg	
67-66-3	Chloroform	ND	2.0	1.0	ug/kg	
74-87-3	Chloromethane	ND	5.0	2.0	ug/kg	
95-49-8	o-Chlorotoluene	ND	2.0	0.54	ug/kg	
106-43-4	p-Chlorotoluene	ND	2.0	0.44	ug/kg	
108-20-3	Di-Isopropyl ether	ND	2.0	0.50	ug/kg	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.69	ug/kg	
124-48-1	Dibromochloromethane	ND	2.0	0.56	ug/kg	
106-93-4	1,2-Dibromoethane	ND	1.0	0.42	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.55	ug/kg	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.50	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.49	ug/kg	
75-71-8	Dichlorodifluoromethane	ND	5.0	0.73	ug/kg	
75-34-3	1,1-Dichloroethane	ND	1.0	0.50	ug/kg	
107-06-2	1,2-Dichloroethane	ND	1.0	0.47	ug/kg	
75-35-4	1,1-Dichloroethene	ND	1.0	0.66	ug/kg	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.84	ug/kg	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.61	ug/kg	
78-87-5	1,2-Dichloropropane	ND	2.0	0.47	ug/kg	
142-28-9	1,3-Dichloropropane	ND	2.0	0.52	ug/kg	
594-20-7	2,2-Dichloropropane	ND	2.0	0.43	ug/kg	
563-58-6	1,1-Dichloropropene	ND	2.0	0.47	ug/kg	

Method Blank Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9414-MB	Y219129.D	1	11/14/25	PS	n/a	n/a	VY9414

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE23137-1

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	2.0	0.48	ug/kg	
10061-02-6	trans-1,3-Dichloropropene	ND	2.0	0.46	ug/kg	
123-91-1	1,4-Dioxane	ND	130	37	ug/kg	
60-29-7	Ethyl Ether	ND	2.0	0.46	ug/kg	
100-41-4	Ethylbenzene	ND	1.0	0.45	ug/kg	
87-68-3	Hexachlorobutadiene	ND	5.0	0.66	ug/kg	
591-78-6	2-Hexanone	ND	5.0	2.1	ug/kg	
98-82-8	Isopropylbenzene	ND	2.0	1.4	ug/kg	
99-87-6	p-Isopropyltoluene	ND	2.0	0.40	ug/kg	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.47	ug/kg	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	2.3	ug/kg	
74-95-3	Methylene bromide	ND	5.0	0.53	ug/kg	
75-09-2	Methylene chloride	ND	5.0	2.6	ug/kg	
91-20-3	Naphthalene	ND	5.0	2.5	ug/kg	
103-65-1	n-Propylbenzene	ND	2.0	0.47	ug/kg	
100-42-5	Styrene	ND	2.0	0.40	ug/kg	
994-05-8	tert-Amyl Methyl Ether	ND	2.0	0.50	ug/kg	
637-92-3	tert-Butyl Ethyl Ether	ND	2.0	0.49	ug/kg	
630-20-6	1,1,1,2-Tetrachloroethane	ND	2.0	0.42	ug/kg	
79-34-5	1,1,2,2-Tetrachloroethane	ND	2.0	0.60	ug/kg	
127-18-4	Tetrachloroethene	ND	2.0	0.58	ug/kg	
109-99-9	Tetrahydrofuran	ND	10	3.0	ug/kg	
108-88-3	Toluene	ND	1.0	0.53	ug/kg	
87-61-6	1,2,3-Trichlorobenzene	ND	5.0	2.5	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	5.0	2.5	ug/kg	
71-55-6	1,1,1-Trichloroethane	ND	2.0	0.48	ug/kg	
79-00-5	1,1,2-Trichloroethane	ND	2.0	0.55	ug/kg	
79-01-6	Trichloroethene	ND	1.0	0.76	ug/kg	
75-69-4	Trichlorofluoromethane	ND	5.0	0.68	ug/kg	
96-18-4	1,2,3-Trichloropropane	ND	5.0	0.56	ug/kg	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	0.50	ug/kg	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	0.43	ug/kg	
75-01-4	Vinyl chloride	ND	2.0	0.48	ug/kg	
	m,p-Xylene	ND	1.0	0.90	ug/kg	
95-47-6	o-Xylene	ND	1.0	0.46	ug/kg	
1330-20-7	Xylene (total)	ND	1.0	0.46	ug/kg	

Method Blank Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9414-MB	Y219129.D	1	11/14/25	PS	n/a	n/a	VY9414

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE23137-1

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	112%	80-124%
17060-07-0	1,2-Dichloroethane-D4	103%	75-133%
2037-26-5	Toluene-D8	101%	79-125%
460-00-4	4-Bromofluorobenzene	102%	58-148%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/kg	

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9414-BS	Y219126.D	1	11/14/25	PS	n/a	n/a	VY9414
VY9414-BSD	Y219127.D	1	11/14/25	PS	n/a	n/a	VY9414

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE23137-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	200	209	105	211	106	1	52-156/12
71-43-2	Benzene	50	52.2	104	52.0	104	0	82-119/10
108-86-1	Bromobenzene	50	48.0	96	49.2	98	2	82-115/10
74-97-5	Bromochloromethane	50	59.8	120	59.3	119	1	82-123/10
75-27-4	Bromodichloromethane	50	53.4	107	53.2	106	0	83-121/10
75-25-2	Bromoform	50	50.0	100	51.7	103	3	74-138/10
74-83-9	Bromomethane	50	72.2	144	72.9	146	1	56-150/12
78-93-3	2-Butanone (MEK)	200	243	122	252	126	4	72-138/10
104-51-8	n-Butylbenzene	50	49.5	99	50.4	101	2	81-124/11
135-98-8	sec-Butylbenzene	50	48.2	96	49.4	99	2	78-120/10
98-06-6	tert-Butylbenzene	50	47.7	95	49.5	99	4	78-121/10
75-15-0	Carbon disulfide	50	56.1	112	56.3	113	0	67-131/11
56-23-5	Carbon tetrachloride	50	58.1	116	59.3	119	2	72-130/11
108-90-7	Chlorobenzene	50	51.8	104	52.2	104	1	83-114/10
75-00-3	Chloroethane	50	47.5	95	48.8	98	3	67-141/12
67-66-3	Chloroform	50	51.6	103	52.3	105	1	76-115/10
74-87-3	Chloromethane	50	37.8	76	35.2	70	7	57-141/13
95-49-8	o-Chlorotoluene	50	50.6	101	52.0	104	3	81-118/10
106-43-4	p-Chlorotoluene	50	51.3	103	52.7	105	3	78-117/10
108-20-3	Di-Isopropyl ether	50	38.8	78	39.1	78	1	66-138/10
96-12-8	1,2-Dibromo-3-chloropropane	50	51.3	103	52.3	105	2	72-131/11
124-48-1	Dibromochloromethane	50	51.9	104	52.7	105	2	80-128/10
106-93-4	1,2-Dibromoethane	50	50.9	102	51.9	104	2	58-145/10
95-50-1	1,2-Dichlorobenzene	50	50.3	101	51.2	102	2	83-117/10
541-73-1	1,3-Dichlorobenzene	50	49.5	99	50.1	100	1	82-114/10
106-46-7	1,4-Dichlorobenzene	50	50.0	100	50.4	101	1	79-114/10
75-71-8	Dichlorodifluoromethane	50	62.9	126	63.4	127	1	49-146/13
75-34-3	1,1-Dichloroethane	50	50.9	102	51.2	102	1	76-126/10
107-06-2	1,2-Dichloroethane	50	52.1	104	52.3	105	0	76-118/10
75-35-4	1,1-Dichloroethene	50	59.7	119	60.5	121	1	72-125/11
156-59-2	cis-1,2-Dichloroethene	50	59.0	118	58.8	118	0	80-118/10
156-60-5	trans-1,2-Dichloroethene	50	57.1	114 [a]	62.0	124* [b]	8	76-122/10
78-87-5	1,2-Dichloropropane	50	46.3	93	46.7	93	1	82-123/10
142-28-9	1,3-Dichloropropane	50	50.1	100	49.8	100	1	84-120/10
594-20-7	2,2-Dichloropropane	50	51.0	102	52.7	105	3	66-130/11
563-58-6	1,1-Dichloropropene	50	55.8	112	56.0	112	0	78-122/10

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9414-BS	Y219126.D	1	11/14/25	PS	n/a	n/a	VY9414
VY9414-BSD	Y219127.D	1	11/14/25	PS	n/a	n/a	VY9414

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE23137-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	50	49.4	99	48.9	98	1	83-123/10
10061-02-6	trans-1,3-Dichloropropene	50	47.1	94	47.9	96	2	83-123/10
123-91-1	1,4-Dioxane	1250	1510	121	1590	127	5	64-163/20
60-29-7	Ethyl Ether	50	59.0	118	62.5	125	6	78-131/10
100-41-4	Ethylbenzene	50	49.4	99	49.4	99	0	83-115/10
87-68-3	Hexachlorobutadiene	50	48.3	97	49.6	99	3	65-130/11
591-78-6	2-Hexanone	200	175	88	184	92	5	73-138/10
98-82-8	Isopropylbenzene	50	47.9	96	48.1	96	0	81-122/11
99-87-6	p-Isopropyltoluene	50	49.9	100	50.7	101	2	80-120/10
1634-04-4	Methyl Tert Butyl Ether	50	55.4	111	59.5	119	7	75-126/12
108-10-1	4-Methyl-2-pentanone(MIBK)	200	196	98	204	102	4	71-138/10
74-95-3	Methylene bromide	50	57.0	114	56.8	114	0	81-122/10
75-09-2	Methylene chloride	50	56.4	113	55.6	111	1	73-122/10
91-20-3	Naphthalene	50	54.0	108	54.7	109	1	71-129/14
103-65-1	n-Propylbenzene	50	48.5	97	49.7	99	2	77-120/10
100-42-5	Styrene	50	50.0	100	50.6	101	1	84-122/10
994-05-8	tert-Amyl Methyl Ether	50	46.6	93	47.3	95	1	77-125/11
637-92-3	tert-Butyl Ethyl Ether	50	43.3	87	44.0	88	2	75-131/10
630-20-6	1,1,1,2-Tetrachloroethane	50	48.4	97	49.7	99	3	81-125/10
79-34-5	1,1,2,2-Tetrachloroethane	50	49.0	98	51.6	103	5	75-127/10
127-18-4	Tetrachloroethene	50	48.0	96	49.0	98	2	73-125/11
109-99-9	Tetrahydrofuran	50	48.1	96 [a]	42.4	85	13* [c]	61-136/11
108-88-3	Toluene	50	49.6	99	50.5	101	2	82-118/10
87-61-6	1,2,3-Trichlorobenzene	50	55.5	111	56.3	113	1	68-132/13
120-82-1	1,2,4-Trichlorobenzene	50	53.0	106	52.7	105	1	72-133/12
71-55-6	1,1,1-Trichloroethane	50	57.1	114	58.5	117	2	77-124/11
79-00-5	1,1,2-Trichloroethane	50	49.9	100	50.0	100	0	83-122/10
79-01-6	Trichloroethene	50	54.2	108	54.9	110	1	80-122/10
75-69-4	Trichlorofluoromethane	50	63.2	126	65.9	132	4	69-132/11
96-18-4	1,2,3-Trichloropropane	50	48.0	96	49.9	100	4	80-120/10
95-63-6	1,2,4-Trimethylbenzene	50	47.7	95	48.6	97	2	80-119/10
108-67-8	1,3,5-Trimethylbenzene	50	46.9	94	48.3	97	3	79-120/10
75-01-4	Vinyl chloride	50	42.7	85	43.7	87	2	60-144/13
	m,p-Xylene	100	100	100	101	101	1	82-119/10
95-47-6	o-Xylene	50	48.3	97	48.1	96	0	84-120/10
1330-20-7	Xylene (total)	150	149	99	149	99	0	83-119/10

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
VY9414-BS	Y219126.D	1	11/14/25	PS	n/a	n/a	VY9414
VY9414-BSD	Y219127.D	1	11/14/25	PS	n/a	n/a	VY9414

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE23137-1

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	119%	118%	80-124%
17060-07-0	1,2-Dichloroethane-D4	107%	106%	75-133%
2037-26-5	Toluene-D8	104%	105%	79-125%
460-00-4	4-Bromofluorobenzene	98%	99%	58-148%

(a) Outside of in house control limits, but within reasonable method recovery limits.
(b) Outside of in house control limits, but within the marginal exceedance limits.
(c) Outside in house control limits.

* = Outside of Control Limits.

Internal Standard Area Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	VY9414-CC9360	**Injection Date:**	11/14/25
Lab File ID:	Y219124.D	**Injection Time:**	10:45
Instrument ID:	GCMSY	**Method:**	SW846 8260D

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	177373	1.70	417024	2.74	693349	3.27	568276	5.73	374503	7.62
Upper Limit [a]	354746	2.20	834048	3.24	1386698	3.77	1136552	6.23	749006	8.12
Lower Limit [b]	88687	1.20	208512	2.24	346675	2.77	284138	5.23	187252	7.12
Lab Sample ID	**IS 1 AREA**	**RT**	**IS 2 AREA**	**RT**	**IS 3 AREA**	**RT**	**IS 4 AREA**	**RT**	**IS 5 AREA**	**RT**
VY9414-BS	185957	1.70	431726	2.74	717066	3.27	590233	5.73	388735	7.62
VY9414-BSD	183403	1.70	436411	2.74	729023	3.27	593597	5.73	382458	7.62
VY9414-MB	149387	1.69	421236	2.74	662367	3.26	568409	5.73	354485	7.62
ZZZZZZ	165218	1.70	411869	2.74	643612	3.27	555481	5.73	349736	7.62
JE23128-1	150987	1.70	413558	2.74	666620	3.27	567169	5.73	346933	7.62
JE23137-1	124775	1.69	411256	2.74	645713	3.27	568476	5.73	352039	7.62
ZZZZZZ	140119	1.70	380948	2.74	587287	3.27	511075	5.73	290753	7.62
JE23137-1MS	132714	1.69	428593	2.74	720994	3.27	595306	5.73	392752	7.62
JE23128-1DUP	123683	1.70	382941	2.74	602731	3.27	541999	5.73	344662	7.62
ZZZZZZ	117348	1.69	369147	2.73	578904	3.26	521854	5.73	335294	7.62
ZZZZZZ	133052	1.69	377227	2.74	594085	3.26	539236	5.73	334652	7.62
ZZZZZZ	125800	1.69	360866	2.74	565443	3.27	512064	5.73	325292	7.62
ZZZZZZ	127568	1.70	377218	2.74	599519	3.27	536796	5.73	341434	7.62
ZZZZZZ	130765	1.69	369899	2.73	579374	3.26	521692	5.73	331162	7.62
ZZZZZZ	111418	1.69	363753	2.74	569871	3.26	502746	5.73	310094	7.62
ZZZZZZ	129182	1.69	387396	2.74	614406	3.27	536778	5.73	329180	7.62
ZZZZZZ	122782	1.70	379186	2.74	594429	3.27	539166	5.73	335033	7.62
ZZZZZZ	114464	1.70	375572	2.74	588721	3.27	527583	5.73	335323	7.62
ZZZZZZ	116712	1.69	362826	2.73	570306	3.26	504337	5.73	316345	7.62
ZZZZZZ	110176	1.69	395072	2.74	627538	3.27	564080	5.73	355831	7.62
ZZZZZZ	132666	1.69	384988	2.74	609843	3.27	536367	5.73	349793	7.62
ZZZZZZ	140295	1.70	423982	2.74	720771	3.27	591884	5.73	377010	7.62

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Surrogate Recovery Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8260D **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JE23137-1	Y219133.D	110	101	101	102
VY9414-BS	Y219126.D	119	107	104	98
VY9414-BSD	Y219127.D	118	106	105	99
VY9414-MB	Y219129.D	112	103	101	102

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	80-124%
S2 = 1,2-Dichloroethane-D4	75-133%
S3 = Toluene-D8	79-125%
S4 = 4-Bromofluorobenzene	58-148%

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Internal Standard Area Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69056-MB1	6P524196.D	1	11/15/25	KLS	11/14/25	OP69056	E6P4520

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE23137-1

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic acid	ND	670	55	ug/kg	
95-57-8	2-Chlorophenol	ND	67	16	ug/kg	
59-50-7	4-Chloro-3-methyl phenol	ND	170	20	ug/kg	
120-83-2	2,4-Dichlorophenol	ND	170	28	ug/kg	
105-67-9	2,4-Dimethylphenol	ND	170	59	ug/kg	
51-28-5	2,4-Dinitrophenol	ND	170	130	ug/kg	
534-52-1	4,6-Dinitro-o-cresol	ND	170	36	ug/kg	
95-48-7	2-Methylphenol	ND	67	21	ug/kg	
	3&4-Methylphenol	ND	67	27	ug/kg	
88-75-5	2-Nitrophenol	ND	170	22	ug/kg	
100-02-7	4-Nitrophenol	ND	330	89	ug/kg	
87-86-5	Pentachlorophenol	ND	130	31	ug/kg	
108-95-2	Phenol	ND	67	17	ug/kg	
95-95-4	2,4,5-Trichlorophenol	ND	170	25	ug/kg	
88-06-2	2,4,6-Trichlorophenol	ND	170	20	ug/kg	
83-32-9	Acenaphthene	ND	33	11	ug/kg	
208-96-8	Acenaphthylene	ND	33	17	ug/kg	
98-86-2	Acetophenone	ND	170	7.2	ug/kg	
62-53-3	Aniline	ND	67	15	ug/kg	
120-12-7	Anthracene	ND	33	20	ug/kg	
56-55-3	Benzo(a)anthracene	ND	33	9.4	ug/kg	
50-32-8	Benzo(a)pyrene	ND	33	15	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	33	15	ug/kg	
191-24-2	Benzo(g,h,i)perylene	ND	33	17	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	33	16	ug/kg	
101-55-3	4-Bromophenyl phenyl ether	ND	67	13	ug/kg	
85-68-7	Butyl benzyl phthalate	ND	67	8.1	ug/kg	
91-58-7	2-Chloronaphthalene	ND	67	7.9	ug/kg	
106-47-8	4-Chloroaniline	ND	170	12	ug/kg	
218-01-9	Chrysene	ND	33	10	ug/kg	
111-91-1	bis(2-Chloroethoxy)methane	ND	67	7.1	ug/kg	
111-44-4	bis(2-Chloroethyl)ether	ND	67	14	ug/kg	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	67	12	ug/kg	
7005-72-3	4-Chlorophenyl phenyl ether	ND	67	11	ug/kg	
95-50-1	1,2-Dichlorobenzene	ND	67	9.6	ug/kg	
122-66-7	1,2-Diphenylhydrazine	ND	67	7.6	ug/kg	

Method Blank Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69056-MB1	6P524196.D	1	11/15/25	KLS	11/14/25	OP69056	E6P4520

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE23137-1

CAS No.	Compound	Result	RL	MDL	Units	Q
541-73-1	1,3-Dichlorobenzene	ND	67	7.1	ug/kg	
106-46-7	1,4-Dichlorobenzene	ND	67	8.1	ug/kg	
121-14-2	2,4-Dinitrotoluene	ND	33	10	ug/kg	
606-20-2	2,6-Dinitrotoluene	ND	33	17	ug/kg	
91-94-1	3,3'-Dichlorobenzidine	ND	67	28	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	33	15	ug/kg	
132-64-9	Dibenzofuran	ND	67	14	ug/kg	
84-74-2	Di-n-butyl phthalate	ND	67	5.4	ug/kg	
117-84-0	Di-n-octyl phthalate	ND	67	8.3	ug/kg	
84-66-2	Diethyl phthalate	ND	67	7.1	ug/kg	
131-11-3	Dimethyl phthalate	ND	67	5.9	ug/kg	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	67	7.8	ug/kg	
206-44-0	Fluoranthene	ND	33	15	ug/kg	
86-73-7	Fluorene	ND	33	15	ug/kg	
118-74-1	Hexachlorobenzene	ND	67	8.4	ug/kg	
87-68-3	Hexachlorobutadiene	ND	33	13	ug/kg	
77-47-4	Hexachlorocyclopentadiene	ND	330	13	ug/kg	
67-72-1	Hexachloroethane	ND	170	16	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	33	16	ug/kg	
78-59-1	Isophorone	ND	67	7.1	ug/kg	
91-57-6	2-Methylnaphthalene	ND	33	7.5	ug/kg	
91-20-3	Naphthalene	ND	33	9.4	ug/kg	
98-95-3	Nitrobenzene	ND	67	13	ug/kg	
62-75-9	n-Nitrosodimethylamine	ND	67	12	ug/kg	
621-64-7	N-Nitroso-di-n-propylamine	ND	67	9.6	ug/kg	
86-30-6	N-Nitrosodiphenylamine	ND	170	12	ug/kg	
85-01-8	Phenanthrene	ND	33	11	ug/kg	
129-00-0	Pyrene	ND	33	11	ug/kg	
110-86-1	Pyridine	ND	67	11	ug/kg	
120-82-1	1,2,4-Trichlorobenzene	ND	67	8.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	53%	10-99%
4165-62-2	Phenol-d5	57%	10-96%

Method Blank Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69056-MB1	6P524196.D	1	11/15/25	KLS	11/14/25	OP69056	E6P4520

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE23137-1

CAS No.	Surrogate Recoveries		Limits
118-79-6	2,4,6-Tribromophenol	61%	10-123%
4165-60-0	Nitrobenzene-d5	70%	10-109%
321-60-8	2-Fluorobiphenyl	60%	11-109%
1718-51-0	Terphenyl-d14	63%	10-120%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69056-BS1	6P524197.D	1	11/15/25	KLS	11/14/25	OP69056	E6P4520
OP69056-BSD	6P524198.D	1	11/15/25	KLS	11/14/25	OP69056	E6P4520

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE23137-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic acid	1670	1090	65	883	53	21	10-146/45
95-57-8	2-Chlorophenol	1670	1210	73	1070	64	12	10-135/43
59-50-7	4-Chloro-3-methyl phenol	1670	1310	79	1210	73	8	10-141/46
120-83-2	2,4-Dichlorophenol	1670	1330	80	1220	73	9	10-139/43
105-67-9	2,4-Dimethylphenol	1670	1250	75	1150	69	8	10-141/44
51-28-5	2,4-Dinitrophenol	3330	3280	98	2560	77	25	10-138/90
534-52-1	4,6-Dinitro-o-cresol	1670	2710	163* [a]	2440	146	10	10-156/64
95-48-7	2-Methylphenol	1670	1180	71	1070	64	10	10-139/45
	3&4-Methylphenol	3330	2410	72	2230	67	8	10-174/46
88-75-5	2-Nitrophenol	1670	1900	114	1760	106	8	10-142/43
100-02-7	4-Nitrophenol	1670	1320	79	1250	75	5	10-144/51
87-86-5	Pentachlorophenol	3330	2750	83	2570	77	7	10-165/51
108-95-2	Phenol	1670	1220	73	1160	70	5	23-115/45
95-95-4	2,4,5-Trichlorophenol	1670	1420	85	1350	81	5	13-136/47
88-06-2	2,4,6-Trichlorophenol	1670	1440	86	1360	82	6	10-142/46
83-32-9	Acenaphthene	1670	1300	78	1260	76	3	10-141/45
208-96-8	Acenaphthylene	1670	1310	79	1250	75	5	10-133/45
98-86-2	Acetophenone	1670	1120	67	1020	61	9	23-115/44
62-53-3	Aniline	1670	1150	69	1160	70	1	10-113/63
120-12-7	Anthracene	1670	1330	80	1280	77	4	10-144/49
56-55-3	Benzo(a)anthracene	1670	1310	79	1230	74	6	11-139/48
50-32-8	Benzo(a)pyrene	1670	1350	81	1300	78	4	13-141/48
205-99-2	Benzo(b)fluoranthene	1670	1400	84	1320	79	6	14-140/48
191-24-2	Benzo(g,h,i)perylene	1670	1160	70	1130	68	3	13-138/50
207-08-9	Benzo(k)fluoranthene	1670	1370	82	1320	79	4	12-140/47
101-55-3	4-Bromophenyl phenyl ether	1670	1360	82	1310	79	4	10-146/47
85-68-7	Butyl benzyl phthalate	1670	1610	97	1490	89	8	10-150/48
91-58-7	2-Chloronaphthalene	1670	1320	79	1270	76	4	10-142/42
106-47-8	4-Chloroaniline	1670	464	28	828	50	56	10-108/56
218-01-9	Chrysene	1670	1280	77	1230	74	4	11-139/48
111-91-1	bis(2-Chloroethoxy)methane	1670	1210	73	1140	68	6	10-144/42
111-44-4	bis(2-Chloroethyl)ether	1670	1110	67	998	60	11	10-145/43
108-60-1	2,2'-Oxybis(1-chloropropane)	1670	1130	68	1000	60	12	10-145/43
7005-72-3	4-Chlorophenyl phenyl ether	1670	1330	80	1260	76	5	10-145/46
95-50-1	1,2-Dichlorobenzene	1670	1040	62	956	57	8	10-136/41
122-66-7	1,2-Diphenylhydrazine	1670	1290	77	1260	76	2	10-145/46

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69056-BS1	6P524197.D	1	11/15/25	KLS	11/14/25	OP69056	E6P4520
OP69056-BSD	6P524198.D	1	11/15/25	KLS	11/14/25	OP69056	E6P4520

The QC reported here applies to the following samples: Method: SW846 8270E

JE23137-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
541-73-1	1,3-Dichlorobenzene	1670	1010	61	949	57	6	10-139/40
106-46-7	1,4-Dichlorobenzene	1670	1030	62	955	57	8	10-136/43
121-14-2	2,4-Dinitrotoluene	1670	2030	122	1930	116	5	10-148/49
606-20-2	2,6-Dinitrotoluene	1670	1910	115	1850	111	3	12-145/48
91-94-1	3,3'-Dichlorobenzidine	1670	1090	65	1200	72	10	10-100/62
53-70-3	Dibenzo(a,h)anthracene	1670	1180	71	1160	70	2	14-142/48
132-64-9	Dibenzofuran	1670	1300	78	1240	74	5	10-140/46
84-74-2	Di-n-butyl phthalate	1670	1350	81	1290	77	5	11-147/47
117-84-0	Di-n-octyl phthalate	1670	1760	106	1660	100	6	15-145/49
84-66-2	Diethyl phthalate	1670	1340	80	1260	76	6	10-145/46
131-11-3	Dimethyl phthalate	1670	1320	79	1260	76	5	10-144/47
117-81-7	bis(2-Ethylhexyl)phthalate	1670	1600	96	1490	89	7	26-132/48
206-44-0	Fluoranthene	1670	1250	75	1180	71	6	10-147/48
86-73-7	Fluorene	1670	1320	79	1260	76	5	12-139/45
118-74-1	Hexachlorobenzene	1670	1320	79	1280	77	3	10-144/48
87-68-3	Hexachlorobutadiene	1670	1140	68	1070	64	6	10-142/41
77-47-4	Hexachlorocyclopentadiene	3330	2800	84	2720	82	3	10-120/53
67-72-1	Hexachloroethane	1670	1100	66	1030	62	7	10-141/41
193-39-5	Indeno(1,2,3-cd)pyrene	1670	1360	82	1340	80	1	13-144/52
78-59-1	Isophorone	1670	1170	70	1100	66	6	10-139/44
91-57-6	2-Methylnaphthalene	1670	1180	71	1120	67	5	10-140/42
91-20-3	Naphthalene	1670	1140	68	1060	64	7	10-141/40
98-95-3	Nitrobenzene	1670	1470	88	1370	82	7	10-139/42
62-75-9	n-Nitrosodimethylamine	1670	1080	65	1000	60	8	10-140/41
621-64-7	N-Nitroso-di-n-propylamine	1670	1190	71	1080	65	10	10-143/41
86-30-6	N-Nitrosodiphenylamine	1670	1450	87	1410	85	3	10-145/45
85-01-8	Phenanthrene	1670	1270	76	1230	74	3	10-142/47
129-00-0	Pyrene	1670	1460	88	1350	81	8	13-141/46
110-86-1	Pyridine	1670	866	52	840	50	3	10-112/37
120-82-1	1,2,4-Trichlorobenzene	1670	1170	70	1080	65	8	10-141/41

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	72%	65%	10-99%
4165-62-2	Phenol-d5	75%	68%	10-96%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69056-BS1	6P524197.D	1	11/15/25	KLS	11/14/25	OP69056	E6P4520
OP69056-BSD	6P524198.D	1	11/15/25	KLS	11/14/25	OP69056	E6P4520

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE23137-1

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
118-79-6	2,4,6-Tribromophenol	96%	91%	10-123%
4165-60-0	Nitrobenzene-d5	96%	88%	10-109%
321-60-8	2-Fluorobiphenyl	82%	78%	11-109%
1718-51-0	Terphenyl-d14	84%	78%	10-120%

(a) Outside control limits biased high, sample ND.

* = Outside of Control Limits.

Internal Standard Area Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	E6P4520-CC4503	**Injection Date:**	11/15/25
Lab File ID:	6P524193.D	**Injection Time:**	12:03
Instrument ID:	GCMS6P	**Method:**	SW846 8270E

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Initial Cal [a]	66374	4.78	276261	5.57	150668	6.85	266506	8.23	243018	11.24	272064	12.86
Check Std [b]	117310	4.77	474330	5.56	237785	6.84	391661	8.23	312948	11.26	340398	12.88
Upper Limit [c]	234620	4.94	948660	5.73	475570	7.01	783322	8.40	625896	11.43	680796	13.05
Lower Limit [d]	58655	4.60	237165	5.39	118893	6.67	195831	8.06	156474	11.09	170199	12.71
Lab Sample ID	**IS 1 AREA**	**RT**	**IS 2 AREA**	**RT**	**IS 3 AREA**	**RT**	**IS 4 AREA**	**RT**	**IS 5 AREA**	**RT**	**IS 6 AREA**	**RT**
OP69056-MB1	133518	4.77	535683	5.56	263662	6.83	441952	8.22	327208	11.25	309136	12.88
OP69056-BS1	111036	4.77	443690	5.56	217683	6.83	372041	8.22	270810	11.24	259756	12.87
OP69056-BSD	108505	4.77	422245	5.56	199810	6.83	335798	8.22	248608	11.24	240040	12.86
ZZZZZZ	104050	4.77	413685	5.56	197772	6.82	325870	8.21	235226	11.23	232451	12.86
ZZZZZZ	117041	4.77	471158	5.56	224033	6.82	370763	8.21	266126	11.23	252507	12.86
ZZZZZZ	107623	4.77	435768	5.56	214779	6.82	362255	8.21	262458	11.23	250852	12.86
ZZZZZZ	113449	4.77	452894	5.55	223802	6.82	368821	8.21	267075	11.23	254051	12.86
ZZZZZZ	109339	4.77	434472	5.55	209507	6.82	341894	8.21	250171	11.23	241248	12.86
ZZZZZZ	116213	4.77	459896	5.55	215771	6.82	349410	8.21	256360	11.23	243121	12.85
ZZZZZZ	92218	4.77	354827	5.55	165394	6.82	271580	8.21	222489	11.23	256340	12.86
ZZZZZZ	104158	4.77	403587	5.56	192266	6.82	310027	8.21	222695	11.23	248793	12.86
ZZZZZZ	101322	4.77	394917	5.56	190843	6.82	313425	8.21	229394	11.23	257520	12.86
JE23178-2	85525	4.77	335842	5.55	159915	6.82	264059	8.21	215646	11.23	256224	12.86
ZZZZZZ	82034	4.77	325834	5.56	156952	6.82	264106	8.21	255611	11.24	281759	12.87
ZZZZZZ	94802	4.77	365652	5.56	174234	6.83	281033	8.21	231559	11.23	275779	12.87
ZZZZZZ	80714	4.77	322805	5.56	157140	6.83	270865	8.22	256986	11.25	281426	12.88
ZZZZZZ	88424	4.77	336236	5.56	160102	6.83	266196	8.22	247878	11.24	289810	12.87
ZZZZZZ	103122	4.77	393417	5.56	178885	6.83	281530	8.22	222887	11.24	263129	12.88
JE23137-1	96159	4.77	378095	5.56	176210	6.83	287764	8.22	231469	11.24	272556	12.87
OP69056-MS	84453	4.77	330874	5.56	158162	6.83	257879	8.22	231578	11.24	267352	12.88
OP69056-MSD	80160	4.77	324043	5.56	154676	6.83	267784	8.22	254651	11.24	282075	12.87

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Initial Cal is: E6P4503-ICC4503 6P523786.D 10/22/25 13:12
(b) Check Std Limit = -50 to + 100% of initial cal area.
(c) Upper Limit = + 100% of check standard area; Retention time + 0.167 minutes.
(d) Lower Limit = -50% of check standard area; Retention time -0.167 minutes.

Surrogate Recovery Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8270E **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
JE23137-1	6P524214.D	71	72	89	94	80	70
OP69056-BS1	6P524197.D	72	75	96	96	82	84
OP69056-BSD	6P524198.D	65	68	91	88	78	78
OP69056-MB1	6P524196.D	53	57	61	70	60	63

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	10-99%
S2 = Phenol-d5	10-96%
S3 = 2,4,6-Tribromophenol	10-123%
S4 = Nitrobenzene-d5	10-109%
S5 = 2-Fluorobiphenyl	11-109%
S6 = Terphenyl-d14	10-120%

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GBH1975-MB	BH55211.D	1	11/14/25	JN	n/a	n/a	GBH1975

The QC reported here applies to the following samples: **Method: MADEP VPH REV 2.1**

JE23137-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	5000	2500	ug/kg	
	C9- C12 Aliphatics (Unadj.)	ND	5000	2500	ug/kg	
	C5- C8 Aliphatics	ND	5000	2500	ug/kg	
	C9- C12 Aliphatics	ND	5000	2500	ug/kg	
	C9- C10 Aromatics	ND	5000	2500	ug/kg	

CAS No.	Surrogate Recoveries		Limits
	2,3,4-Trifluorotoluene	114%	70-130%
	2,3,4-Trifluorotoluene	105%	70-130%

Method Blank Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKM616-MB	KM14633.D	1	11/14/25	JN	n/a	n/a	GKM616

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE23137-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries		Limits
98-08-8	aaa-Trifluorotoluene	85%	70-116%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GBH1975-BS	BH55212.D	1	11/14/25	JN	n/a	n/a	GBH1975
GBH1975-BSD	BH55213.D	1	11/14/25	JN	n/a	n/a	GBH1975

The QC reported here applies to the following samples: **Method: MADEP VPH REV 2.1**

JE23137-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
	C5- C8 Aliphatics (Unadj.)	7500	7480	100	7440	99	1	70-130/25
	C9- C12 Aliphatics (Unadj.)	5000	3580	72	3550	71	1	70-130/25
	C9- C10 Aromatics	2500	2490	100	2490	100	0	70-130/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
	2,3,4-Trifluorotoluene	117%	113%	70-130%
	2,3,4-Trifluorotoluene	108%	105%	70-130%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKM616-BS	KM14634.D	1	11/14/25	JN	n/a	n/a	GKM616
GKM616-BSD	KM14635.D	1	11/14/25	JN	n/a	n/a	GKM616

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE23137-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	400	419	105	417	104	0	75-126/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
98-08-8	aaa-Trifluorotoluene	101%	100%	70-116%

* = Outside of Control Limits.

Surrogate Recovery Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: MADEP VPH REV 2.1 **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
JE23137-1	BH55216.D	104	96
GBH1975-BS	BH55212.D	117	108
GBH1975-BSD	BH55213.D	113	105
GBH1975-MB	BH55211.D	114	105

Surrogate Compounds	Recovery Limits
S1 = 2,3,4-Trifluorotoluene	70-130%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

Surrogate Recovery Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8015D **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]
JE23137-1	KM14638.D	83
GKM616-BS	KM14634.D	101
GKM616-BSD	KM14635.D	100
GKM616-MB	KM14633.D	85

Surrogate Compounds	Recovery Limits
S1 = aaa-Trifluorotoluene	70-116%

(a) Recovery from GC signal #1

GC/LC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69103-MB1	5Y83100.D	1	11/20/25	CB	11/17/25	OP69103	G5Y4092

The QC reported here applies to the following samples: **Method: MADEP EPH REV 2.1**

JE23137-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	ND	6700	580	ug/kg	
	C9-C18 Aliphatics	ND	6700	190	ug/kg	
	C11-C22 Aromatics	ND	6700	580	ug/kg	
	C19-C36 Aliphatics	ND	6700	450	ug/kg	

CAS No.	Surrogate Recoveries		Limits
3386-33-2	1-Chlorooctadecane	80%	40-140%
84-15-1	o-Terphenyl	75%	40-140%
321-60-8	2-Fluorobiphenyl	93%	40-140%

Method Blank Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69055-MB1	RM42003.D	1	11/16/25	MLC	11/14/25	OP69055	GRM1019

The QC reported here applies to the following samples: **Method: SW846 8082A**

JE23137-1

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	20	8.5	ug/kg	
11104-28-2	Aroclor 1221	ND	20	6.7	ug/kg	
11141-16-5	Aroclor 1232	ND	20	17	ug/kg	
53469-21-9	Aroclor 1242	ND	20	12	ug/kg	
12672-29-6	Aroclor 1248	ND	20	4.3	ug/kg	
11097-69-1	Aroclor 1254	ND	20	2.2	ug/kg	
11096-82-5	Aroclor 1260	ND	20	6.9	ug/kg	
11100-14-4	Aroclor 1268	ND	20	2.0	ug/kg	
37324-23-5	Aroclor 1262	ND	20	1.7	ug/kg	

CAS No.	Surrogate Recoveries		Limits
877-09-8	Tetrachloro-m-xylene	104%	35-154%
877-09-8	Tetrachloro-m-xylene	116%	35-154%
2051-24-3	Decachlorobiphenyl	111%	24-176%
2051-24-3	Decachlorobiphenyl	109%	24-176%

Method Blank Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69139-MB1	3Y98020.D	1	11/18/25	CB	11/18/25	OP69139	G3Y3773

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE23137-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	4.0	2.6	mg/kg	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	99%	50-150%
438-22-2	5a-Androstane	88%	50-150%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69103-BS1	5Y83101.D	1	11/20/25	CB	11/17/25	OP69103	G5Y4092
OP69103-BSD	5Y83102.D	1	11/20/25	CB	11/17/25	OP69103	G5Y4092

The QC reported here applies to the following samples: **Method: MADEP EPH REV 2.1**

JE23137-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
	C11-C22 Aromatics (Unadj.)	56700	49900	88	27300	48* [a]	59* [b]	50-150/30 [c]
	C9-C18 Aliphatics	20000	15800	79	11100	56	35* [b]	40-140/30
	C11-C22 Aromatics		7420		5090		37* [b]	50-150/30 [c]
	C19-C36 Aliphatics	36700	39000	106	30800	84	23	40-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
3386-33-2	1-Chlorooctadecane	75%	52%	40-140%
84-15-1	o-Terphenyl	75%	39%* [a]	40-140%
321-60-8	2-Fluorobiphenyl	114%	74%	40-140%

Sample	Compound	Col #1	Col #2	Breakthrough	Limit
OP69103-BS1	2-Methylnaphthalene	1950	ND	0.0%	5.0
OP69103-BS1	Naphthalene	2120	ND	0.0%	5.0
OP69103-BSD	2-Methylnaphthalene	1020	ND	0.0%	5.0
OP69103-BSD	Naphthalene	1140	ND	0.0%	5.0

(a) Outside of in house control limits.
(b) Analytical precision exceeds in-house control limits.
(c) Advisory control limits.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69055-BS1	RM42004.D	1	11/16/25	MLC	11/14/25	OP69055	GRM1019
OP69055-BSD	RM42005.D	1	11/16/25	MLC	11/14/25	OP69055	GRM1019

The QC reported here applies to the following samples: **Method: SW846 8082A**

JE23137-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	BSD ug/kg	BSD %	RPD	Limits Rec/RPD
12674-11-2	Aroclor 1016	40	39.4	99	41.6	104	5	64-128/30
11104-28-2	Aroclor 1221		ND		ND		nc	50-150/30
11141-16-5	Aroclor 1232		ND		ND		nc	50-150/30
53469-21-9	Aroclor 1242		ND		ND		nc	50-150/30
12672-29-6	Aroclor 1248		ND		ND		nc	50-150/30
11097-69-1	Aroclor 1254		ND		ND		nc	50-150/30
11096-82-5	Aroclor 1260	40	42.6	107	43.9	110	3	62-132/30
11100-14-4	Aroclor 1268		ND		ND		nc	50-150/30
37324-23-5	Aroclor 1262		ND		ND		nc	50-150/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
877-09-8	Tetrachloro-m-xylene	99%	103%	35-154%
877-09-8	Tetrachloro-m-xylene	105%	108%	35-154%
2051-24-3	Decachlorobiphenyl	105%	108%	24-176%
2051-24-3	Decachlorobiphenyl	103%	106%	24-176%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP69139-BS1	3Y98021.D	1	11/18/25	CB	11/18/25	OP69139	G3Y3773
OP69139-BSD	3Y98022.D	1	11/18/25	CB	11/18/25	OP69139	G3Y3773

The QC reported here applies to the following samples: **Method: SW846 8015D**

JE23137-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	BSD mg/kg	BSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	500	595	119	606	121	2	50-150/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
84-15-1	o-Terphenyl	140%	139%	50-150%
438-22-2	5a-Androstane	119%	116%	50-150%

* = Outside of Control Limits.

Surrogate Recovery Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: MADEP EPH REV 2.1 **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S2 [b]	S3 [b]
JE23137-1	5Y83103.D	72	80	110
OP69103-BS1	5Y83101.D	75	75	114
OP69103-BSD	5Y83102.D	52	39* [c]	74
OP69103-MB1	5Y83100.D	80	75	93

Surrogate Compounds	Recovery Limits
S1 = 1-Chlorooctadecane	40-140%
S2 = o-Terphenyl	40-140%
S3 = 2-Fluorobiphenyl	40-140%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1
(c) Outside of in house control limits.

Surrogate Recovery Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8082A **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]	S2 [a]	S2 [b]
JE23137-1	RM42014.D	79	93	77	84
OP69055-BS1	RM42004.D	99	105	105	103
OP69055-BSD	RM42005.D	103	108	108	106
OP69055-MB1	RM42003.D	104	116	111	109

Surrogate Compounds	Recovery Limits
S1 = Tetrachloro-m-xylene	35-154%
S2 = Decachlorobiphenyl	24-176%

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

Surrogate Recovery Summary

Job Number: JE23137
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8015D **Matrix:** SO

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S2 [a]
JE23137-1	3Y98023.D	117	105
OP69139-BS1	3Y98021.D	140	119
OP69139-BSD	3Y98022.D	139	116
OP69139-MB1	3Y98020.D	99	88

Surrogate Compounds	Recovery Limits
S1 = o-Terphenyl	50-150%
S2 = 5a-Androstane	50-150%

(a) Recovery from GC signal #1

The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

WSP USA Environment & Infrastructure Inc

MWRA Water Tunnel

41005.1387

SGS Job Number: JE31948

Sampling Date: 04/10/26



Report to:

WSP USA Inc.
100 Summer Street, 13th Floor
Boston, MA 02110
dan.martin@wsp.com; andrew.k.nelson@wsp.com

ATTN: Dan Martin

Total number of pages in report: 112

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

Olga Azarian
Technical Director

Client Service contact: Victoria Pushkova 732-329-0200
Certifications: NJ(12129),NY(10983),CA,CO,CT,FL,HI,IL,IN,KY,LA (120428),MA,MD,ME,MN,NC,NH,NV, AK (UST-103),AZ (AZ0786),PA(68-00408),RI,SC,TX (T104704234),UT,VA,WA,WV

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Test results relate only to samples analyzed.

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SGS North America Inc.

Sample Summary

WSP USA Environment & Infrastructure Inc

Job No: JE31948

MWRA Water Tunnel
Project No: 41005.1387

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
JE31948-1	04/10/26	10:40	JCR	04/10/26	AQ	Ground Water	B-GSS-465
JE31948-2	04/10/26	13:00	JCR	04/10/26	AQ	Ground Water	B-GSS-412(MW)

This report contains results reported as ND = Not detected. The following applies:
Organics ND = Not detected above the MDL

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	WSP USA Environment & Infrastructure Inc	**Job No:**	JE31948
Site:	MWRA Water Tunnel	**Report Date**	5/1/2026 3:53:30 PM

On 04/10/2026, 2 sample(s), 0 Trip Blank(s), 0 Equip. Blank(s) and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 1.1 C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of JE31948 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260D

Matrix: AQ **Batch ID:** V1F848

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- JE31948-1 for Tetrahydrofuran: Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.
- JE31948-1 for Bromomethane: Associated CCV outside of control limits high, sample was ND. This compound is outside the MCP limits in the associated BS/BSD biased high.

Matrix: AQ **Batch ID:** V2F848

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- JE31948-2 for Bromomethane: This compound is outside the MCP limits in the associated BSD biased high.
- JE31948-2 for Chloroform: Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.

MS Semi-volatiles By Method SW846 8270E

Matrix: AQ **Batch ID:** OP72510

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- JE31948-2: There are compounds in BSD were outside MCP limits biased low. BS met acceptable criteria.
- JE31948-1: There are compounds in BSD were outside MCP limits biased low. BS met acceptable criteria.
- JE31948-2 for Nitrobenzene-d5: Outside of in house control limits. Sample was ND.
- JE31948-2 for Benzo(g,h,i)perylene: Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.
- JE31948-2 for 4,6-Dinitro-o-cresol: Associated CCV outside of control limits high. This compound in BS/BSD is outside in house QC limits bias high. Sample was ND. Quadratic regression was employed for this compound in associated ICAL.
- JE31948-2 for 2,4-Dinitrophenol: Associated CCV outside of control limits high, sample was ND. This compound is outside the MCP limits in the associated BS/BSD biased high. Sample was ND.
- JE31948-2 for 2-Nitrophenol: Associated CCV outside of control limits high, sample was ND.
- JE31948-1 for 2,4-Dinitrophenol: Associated CCV outside of control limits high, sample was ND. This compound is outside the MCP limits in the associated BS/BSD biased high. Sample was ND.
- JE31948-1 for Benzo(g,h,i)perylene: Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.
- JE31948-1 for 4,6-Dinitro-o-cresol: Associated CCV outside of control limits high. This compound in BS/BSD is outside in house QC limits bias high. Sample was ND. Quadratic regression was employed for this compound in associated ICAL.
- JE31948-2 for 2,4-Dinitrotoluene: Quadratic regression was employed for this compound in associated ICAL.Associated CCV outside of control limits high,sample was ND.
- JE31948-1 for 2,4-Dinitrotoluene: Quadratic regression was employed for this compound in associated ICAL.Associated CCV outside of control limits high,sample was ND.
- JE31948-1 for 2-Nitrophenol: Associated CCV outside of control limits high, sample was ND.
- OP72510-BSD for Aniline: Analytical precision exceeds in-house control limits.
- OP72510-BSD for 4-Chloroaniline: Analytical precision exceeds in-house control limits.
- OP72510-BS1 for 4,6-Dinitro-o-cresol: Outside of in house control limits.
- OP72510-BSD for 3,3'-Dichlorobenzidine: Analytical precision exceeds in-house control limits.

MS Semi-volatiles By Method SW846 8270E BY SIM

Matrix: AQ **Batch ID:** OP72510A

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- JE31948-2 for Benzo(a)anthracene: Associated CCV outside of control limits high, sample was ND.
- OP72510A-BSD12 for Indeno(1,2,3-cd)pyrene: Analytical precision exceeds in-house control limits.
- OP72510A-BSD12 for Dibenzo(a,h)anthracene: Analytical precision exceeds in-house control limits.
- OP72510A-BSD12 for Benzo(g,h,i)perylene: Analytical precision exceeds in-house control limits.
- JE31948-1 for Benzo(a)anthracene: Associated CCV outside of control limits high, sample was ND.

GC Volatiles By Method MADEP VPH REV 2.1

Matrix: AQ **Batch ID:** GBH2051

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

GC/LC Semi-volatiles By Method MADEP EPH REV 2.1

Matrix: AQ **Batch ID:** OP72504

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- JE31948-2 for 1-Chlorooctadecane: Outside of in house control limits.
- OP72504-BS1 for 1-Chlorooctadecane: Outside of in house control limits.
- OP72504-BS1 for C9-C18 Aliphatics: Outside of in house control limits.
- OP72504-MB1 for 1-Chlorooctadecane: Outside of in house control limits.
- JE31948-1 for 1-Chlorooctadecane: Outside of in house control limits.

GC/LC Semi-volatiles By Method SW846 8082A

Matrix: AQ **Batch ID:** OP72560

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Metals Analysis By Method SW846 6010D

Matrix: AQ **Batch ID:** MP61349

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JE31971-1SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Antimony, Arsenic, Cadmium, Chromium, Lead, Selenium, Thallium, Zinc are outside control limits. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- JE31948-1 for Thallium: Elevated detection limit due to dilution required for matrix interference.

Metals Analysis By Method SW846 7470A

Matrix: AQ **Batch ID:** MP61381

- All samples were digested within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SM2540 D-15/20

Matrix: AQ **Batch ID:** GN81851

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SM4500CL G-11

Matrix: AQ **Batch ID:** GN82326

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- JE31948-1 for Total Residual Chlorine: Field analysis required. Received out of hold time and analyzed by request.
- JE31948-2 for Total Residual Chlorine: Field analysis required. Received out of hold time and analyzed by request.

General Chemistry By Method SM4500H+ B-11/21

Matrix:	AQ	Batch ID:	GN81750

- The data for SM4500H+ B-11/21 meets quality control requirements.
- JE31948-2 for pH: Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 21.41 Deg. C
- JE31948-1 for pH: Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 21.46 Deg. C

General Chemistry By Method SW846 7196A

Matrix:	AQ	Batch ID:	GN81719

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

Summary of Hits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
JE31948-1	B-GSS-465					
Antimony		6.2	6.0		ug/l	SW846 6010D
Chromium		68.2	10		ug/l	SW846 6010D
Nickel		36.2	10		ug/l	SW846 6010D
Solids, Total Suspended		4.3	4.0		mg/l	SM2540 D-15/20
pH [a]		6.99			su	SM4500H+ B-11/21
JE31948-2	B-GSS-412(MW)					
Chromium		15.1	10		ug/l	SW846 6010D
pH [b]		7.04			su	SM4500H+ B-11/21

(a) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 21.46 Deg. C
(b) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 21.41 Deg. C

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	B-GSS-465		
Lab Sample ID:	JE31948-1	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	1F27849.D	1	04/14/26 16:05	NW	n/a	n/a	V1F848
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	3.1	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.55	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	0.98	0.45	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	2.0	0.52	ug/l	
135-98-8	sec-Butylbenzene	ND	2.0	0.62	ug/l	
98-06-6	tert-Butylbenzene	ND	2.0	0.69	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.8	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
95-49-8	o-Chlorotoluene	ND	2.0	0.63	ug/l	
106-43-4	p-Chlorotoluene	ND	2.0	0.60	ug/l	
108-20-3	Di-Isopropyl ether	ND	2.0	0.68	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.53	ug/l	
124-48-1	Dibromochloromethane	ND	0.78	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.56	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-465		
Lab Sample ID:	JE31948-1	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.92	0.51	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.52	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.42	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.43	ug/l	
123-91-1	1,4-Dioxane	ND	130	39	ug/l	
60-29-7	Ethyl Ether	ND	2.0	0.52	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	0.54	ug/l	
591-78-6	2-Hexanone	ND	5.0	4.8	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
99-87-6	p-Isopropyltoluene	ND	2.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	4.9	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.48	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	4.4	ug/l	
103-65-1	n-Propylbenzene	ND	2.0	0.60	ug/l	
100-42-5	Styrene	ND	1.0	0.49	ug/l	
994-05-8	tert-Amyl Methyl Ether	ND	2.0	0.85	ug/l	
637-92-3	tert-Butyl Ethyl Ether	ND	2.0	0.56	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.56	ug/l	
109-99-9	Tetrahydrofuran [b]	ND	10	3.2	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.58	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	2.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.52	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-465		
Lab Sample ID:	JE31948-1	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	97%		80-120%
17060-07-0	1,2-Dichloroethane-D4	102%		80-120%
2037-26-5	Toluene-D8	96%		80-120%
460-00-4	4-Bromofluorobenzene	96%		82-114%

(a) Associated CCV outside of control limits high, sample was ND. This compound is outside the MCP limits in the associated BS/BSD biased high.

(b) Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-465		
Lab Sample ID:	JE31948-1	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	M209459.D	1	04/16/26 02:23	TL	04/14/26 13:00	OP72510	EM9045
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid [b]	ND	20	0.51	ug/l	
95-57-8	2-Chlorophenol	ND	4.0	0.37	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.0	0.53	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	0.52	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.0	0.67	ug/l	
51-28-5	2,4-Dinitrophenol [c]	ND	4.0	1.9	ug/l	
534-52-1	4,6-Dinitro-o-cresol [d]	ND	4.0	1.5	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.47	ug/l	
	3&4-Methylphenol	ND	2.0	1.5	ug/l	
88-75-5	2-Nitrophenol [e]	ND	4.0	0.40	ug/l	
100-02-7	4-Nitrophenol	ND	8.0	0.45	ug/l	
87-86-5	Pentachlorophenol [e]	ND	4.0	1.2	ug/l	
108-95-2	Phenol	ND	2.0	0.26	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.0	0.49	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	2.0	0.59	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.61	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.42	ug/l	
98-86-2	Acetophenone	ND	2.0	0.52	ug/l	
62-53-3	Aniline	ND	2.0	0.76	ug/l	
120-12-7	Anthracene	ND	1.0	0.56	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.51	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.63	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.57	ug/l	
191-24-2	Benzo(g,h,i)perylene [f]	ND	1.0	0.64	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.48	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.55	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.86	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.43	ug/l	
106-47-8	4-Chloroaniline	ND	4.0	0.53	ug/l	
218-01-9	Chrysene	ND	1.0	0.52	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.46	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.43	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
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Report of Analysis

Client Sample ID:	B-GSS-465		
Lab Sample ID:	JE31948-1	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.50	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.60	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.38	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	1.0	0.49	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.43	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.42	ug/l	
121-14-2	2,4-Dinitrotoluene [g]	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene [g]	ND	1.0	0.56	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	1.1	ug/l	
53-70-3	Dibenzo(a,h)anthracene [f]	ND	1.0	0.50	ug/l	
132-64-9	Dibenzofuran	ND	4.0	0.73	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.53	ug/l	
117-84-0	Di-n-octyl phthalate [e]	ND	2.0	1.6	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.58	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.55	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.3	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.58	ug/l	
86-73-7	Fluorene	ND	1.0	0.59	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.54	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.35	ug/l	
77-47-4	Hexachlorocyclopentadiene [e]	ND	8.0	0.98	ug/l	
67-72-1	Hexachloroethane	ND	1.0	0.55	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene [f]	ND	1.0	0.64	ug/l	
78-59-1	Isophorone	ND	2.0	0.39	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.64	ug/l	
91-20-3	Naphthalene	ND	1.0	0.44	ug/l	
98-95-3	Nitrobenzene [e]	ND	1.0	0.42	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	2.0	0.32	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	1.0	0.65	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.0	0.42	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.48	ug/l	
129-00-0	Pyrene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.36	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	53%		10-69%
4165-62-2	Phenol-d5	37%		10-47%
118-79-6	2,4,6-Tribromophenol	101%		17-144%
4165-60-0	Nitrobenzene-d5	124%		17-126%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-465		
Lab Sample ID:	JE31948-1	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	71%		23-124%
1718-51-0	Terphenyl-d14	91%		13-135%

(a) There are compounds in BSD were outside MCP limits biased low. BS met acceptable criteria.
(b) Quadratic regression was employed for this compound in associated ICAL.
(c) Associated CCV outside of control limits high, sample was ND. This compound is outside the MCP limits in the associated BS/BSD biased high. Sample was ND.
(d) Associated CCV outside of control limits high. This compound in BS/BSD is outside in house QC limits bias high. Sample was ND. Quadratic regression was employed for this compound in associated ICAL.
(e) Associated CCV outside of control limits high, sample was ND.
(f) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.
(g) Quadratic regression was employed for this compound in associated ICAL.Associated CCV outside of control limits high,sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-465		
Lab Sample ID:	JE31948-1	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z179282.D	1	04/14/26 22:18	AC	04/14/26 13:00	OP72510A	EZ8806
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.080	0.040	ug/l	
208-96-8	Acenaphthylene	ND	0.080	0.040	ug/l	
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene [a]	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.080	0.040	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.080	0.040	ug/l	
206-44-0	Fluoranthene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.080	0.040	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	71%		29-124%
321-60-8	2-Fluorobiphenyl	65%		23-122%
1718-51-0	Terphenyl-d14	74%		22-130%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-465		
Lab Sample ID:	JE31948-1	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	MADEP VPH REV 2.1	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BH57120.D	1	04/16/26 22:06	JN	n/a	n/a	GBH2051
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

MADEP VPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	100	50	ug/l	
	C9- C12 Aliphatics (Unadj.)	ND	100	50	ug/l	
	C5- C8 Aliphatics	ND	100	50	ug/l	
	C9- C12 Aliphatics	ND	100	50	ug/l	
	C9- C10 Aromatics	ND	100	50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	2,3,4-Trifluorotoluene	90%		70-130%
	2,3,4-Trifluorotoluene	97%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-465		
Lab Sample ID:	JE31948-1	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	MADEP EPH REV 2.1 SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Y95943.D	1	04/19/26 21:53	RK	04/14/26 13:30	OP72504	G4Y3607
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	2.0 ml
Run #2		

MAEPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	ND	100	13	ug/l	
	C11-C22 Aromatics	ND	100	13	ug/l	
	C9-C18 Aliphatics	ND	100	7.7	ug/l	
	C19-C36 Aliphatics	ND	100	12	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3386-33-2	1-Chlorooctadecane	34% [a]		40-140%
84-15-1	o-Terphenyl	56%		40-140%
321-60-8	2-Fluorobiphenyl	85%		40-140%

(a) Outside of in house control limits.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-465		
Lab Sample ID:	JE31948-1	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8082A SW846 3511	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	RM48097.D	1	04/16/26 17:10	JN	04/15/26 19:15	OP72560	GRM1161
Run #2							

	Initial Volume	Final Volume
Run #1	55.1 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.18	0.050	ug/l	
11104-28-2	Aroclor 1221	ND	0.18	0.095	ug/l	
11141-16-5	Aroclor 1232	ND	0.18	0.070	ug/l	
53469-21-9	Aroclor 1242	ND	0.18	0.039	ug/l	
12672-29-6	Aroclor 1248	ND	0.18	0.036	ug/l	
11097-69-1	Aroclor 1254	ND	0.18	0.067	ug/l	
11096-82-5	Aroclor 1260	ND	0.18	0.11	ug/l	
11100-14-4	Aroclor 1268	ND	0.18	0.062	ug/l	
37324-23-5	Aroclor 1262	ND	0.18	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	77%		50-150%
877-09-8	Tetrachloro-m-xylene	81%		50-150%
2051-24-3	Decachlorobiphenyl	61%		50-150%
2051-24-3	Decachlorobiphenyl	71%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-465		
Lab Sample ID:	JE31948-1	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
		Percent Solids:	n/a
Project:	MWRA Water Tunnel		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	6.2	6.0	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [4]
Arsenic	< 3.0	3.0	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [4]
Beryllium	< 1.0	1.0	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [4]
Cadmium	< 3.0	3.0	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [4]
Chromium	68.2	10	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [4]
Copper	< 10	10	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [4]
Lead	< 3.0	3.0	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [4]
Mercury	< 0.20	0.20	ug/l	1	04/14/26	04/14/26	MK	SW846 7470A [1]	SW846 7470A [5]
Nickel	36.2	10	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [4]
Selenium	< 10	10	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [4]
Silver	< 10	10	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [4]
Thallium [a]	< 20	20	ug/l	2	04/13/26	04/19/26	LM	SW846 6010D [3]	SW846 3010A [4]
Zinc	< 20	20	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [4]

(1) Instrument QC Batch: MA60639
(2) Instrument QC Batch: MA60658
(3) Instrument QC Batch: MA60669
(4) Prep QC Batch: MP61349
(5) Prep QC Batch: MP61381

(a) Elevated detection limit due to dilution required for matrix interference.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	**B-GSS-465**		
Lab Sample ID:	**JE31948-1**	**Date Sampled:**	**04/10/26**
Matrix:	**AQ - Ground Water**	**Date Received:**	**04/10/26**
		Percent Solids:	**n/a**
Project:	**MWRA Water Tunnel**		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.010	0.010	mg/l	1	04/11/26 09:46	LV	SW846 7196A
Solids, Total Suspended	4.3	4.0	mg/l	1	04/15/26 12:30	SD	SM2540 D-15/20
Total Residual Chlorine [a]	< 0.050	0.050	mg/l	1	04/11/26 18:32	DB	SM4500CL G-11
pH [b]	6.99		su	1	04/13/26 12:57	GT	SM4500H+ B-11/21

(a) Field analysis required. Received out of hold time and analyzed by request.
(b) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 21.46 Deg. C

RL = Reporting Limit

Report of Analysis

Client Sample ID:	B-GSS-412(MW)		
Lab Sample ID:	JE31948-2	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	2F27850.D	1	04/14/26 16:20	NW	n/a	n/a	V2F848
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	3.1	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.55	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	0.98	0.45	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane [a]	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	2.0	0.52	ug/l	
135-98-8	sec-Butylbenzene	ND	2.0	0.62	ug/l	
98-06-6	tert-Butylbenzene	ND	2.0	0.69	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.8	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform [b]	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
95-49-8	o-Chlorotoluene	ND	2.0	0.63	ug/l	
106-43-4	p-Chlorotoluene	ND	2.0	0.60	ug/l	
108-20-3	Di-Isopropyl ether	ND	2.0	0.68	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.53	ug/l	
124-48-1	Dibromochloromethane	ND	0.78	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.56	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-412(MW)		
Lab Sample ID:	JE31948-2	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Compound	Result	RL	MDL	Units	Q
78-87-5	1,2-Dichloropropane	ND	0.92	0.51	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.52	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.42	ug/l	
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.43	ug/l	
123-91-1	1,4-Dioxane	ND	130	39	ug/l	
60-29-7	Ethyl Ether	ND	2.0	0.52	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	0.54	ug/l	
591-78-6	2-Hexanone	ND	5.0	4.8	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
99-87-6	p-Isopropyltoluene	ND	2.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	4.9	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.48	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	4.4	ug/l	
103-65-1	n-Propylbenzene	ND	2.0	0.60	ug/l	
100-42-5	Styrene	ND	1.0	0.49	ug/l	
994-05-8	tert-Amyl Methyl Ether	ND	2.0	0.85	ug/l	
637-92-3	tert-Butyl Ethyl Ether	ND	2.0	0.56	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.56	ug/l	
109-99-9	Tetrahydrofuran	ND	10	3.2	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.58	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	2.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.52	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

ND = Not detected **MDL = Method Detection Limit** **J = Indicates an estimated value**
RL = Reporting Limit **B = Indicates analyte found in associated method blank**
E = Indicates value exceeds calibration range **N = Indicates presumptive evidence of a compound**

Report of Analysis

Client Sample ID:	B-GSS-412(MW)		
Lab Sample ID:	JE31948-2	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8260D	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

VOA MCP List

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	93%		80-120%
17060-07-0	1,2-Dichloroethane-D4	96%		80-120%
2037-26-5	Toluene-D8	99%		80-120%
460-00-4	4-Bromofluorobenzene	96%		82-114%

(a) This compound is outside the MCP limits in the associated BSD biased high.
(b) Associated CCV outside of control limits low. A sensitivity check was analyzed to demonstrate system suitability to detect affected analyte. Sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-412(MW)		
Lab Sample ID:	JE31948-2	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	M209460.D	1	04/16/26 02:45	TL	04/14/26 13:00	OP72510	EM9045
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid [b]	ND	20	0.51	ug/l	
95-57-8	2-Chlorophenol	ND	4.0	0.37	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.0	0.53	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	0.52	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.0	0.67	ug/l	
51-28-5	2,4-Dinitrophenol [c]	ND	4.0	1.9	ug/l	
534-52-1	4,6-Dinitro-o-cresol [d]	ND	4.0	1.5	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.47	ug/l	
	3&4-Methylphenol	ND	2.0	1.5	ug/l	
88-75-5	2-Nitrophenol [e]	ND	4.0	0.40	ug/l	
100-02-7	4-Nitrophenol	ND	8.0	0.45	ug/l	
87-86-5	Pentachlorophenol [e]	ND	4.0	1.2	ug/l	
108-95-2	Phenol	ND	2.0	0.26	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.0	0.49	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	2.0	0.59	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.61	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.42	ug/l	
98-86-2	Acetophenone	ND	2.0	0.52	ug/l	
62-53-3	Aniline	ND	2.0	0.76	ug/l	
120-12-7	Anthracene	ND	1.0	0.56	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.51	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.63	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.57	ug/l	
191-24-2	Benzo(g,h,i)perylene [f]	ND	1.0	0.64	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.48	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.55	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.86	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.43	ug/l	
106-47-8	4-Chloroaniline	ND	4.0	0.53	ug/l	
218-01-9	Chrysene	ND	1.0	0.52	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.46	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.43	ug/l	

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-412(MW)		
Lab Sample ID:	JE31948-2	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Compound	Result	RL	MDL	Units	Q
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.50	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.60	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.38	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	1.0	0.49	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.43	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.42	ug/l	
121-14-2	2,4-Dinitrotoluene [g]	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene [g]	ND	1.0	0.56	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	1.1	ug/l	
53-70-3	Dibenzo(a,h)anthracene [f]	ND	1.0	0.50	ug/l	
132-64-9	Dibenzofuran	ND	4.0	0.73	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.53	ug/l	
117-84-0	Di-n-octyl phthalate [e]	ND	2.0	1.6	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.58	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.55	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.3	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.58	ug/l	
86-73-7	Fluorene	ND	1.0	0.59	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.54	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.35	ug/l	
77-47-4	Hexachlorocyclopentadiene [e]	ND	8.0	0.98	ug/l	
67-72-1	Hexachloroethane	ND	1.0	0.55	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene [f]	ND	1.0	0.64	ug/l	
78-59-1	Isophorone	ND	2.0	0.39	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.64	ug/l	
91-20-3	Naphthalene	ND	1.0	0.44	ug/l	
98-95-3	Nitrobenzene [e]	ND	1.0	0.42	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	2.0	0.32	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	1.0	0.65	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.0	0.42	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.48	ug/l	
129-00-0	Pyrene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.36	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
367-12-4	2-Fluorophenol	58%		10-69%
4165-62-2	Phenol-d5	41%		10-47%
118-79-6	2,4,6-Tribromophenol	105%		17-144%
4165-60-0	Nitrobenzene-d5	130% [h]		17-126%

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-412(MW)		
Lab Sample ID:	JE31948-2	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8270E SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

ABN Semivolatiles MCP list

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
321-60-8	2-Fluorobiphenyl	75%		23-124%
1718-51-0	Terphenyl-d14	92%		13-135%

(a) There are compounds in BSD were outside MCP limits biased low. BS met acceptable criteria.
(b) Quadratic regression was employed for this compound in associated ICAL.
(c) Associated CCV outside of control limits high, sample was ND. This compound is outside the MCP limits in the associated BS/BSD biased high. Sample was ND.
(d) Associated CCV outside of control limits high. This compound in BS/BSD is outside in house QC limits bias high. Sample was ND. Quadratic regression was employed for this compound in associated ICAL.
(e) Associated CCV outside of control limits high, sample was ND.
(f) Associated CCV outside of control limits low. Low-level verification was analyzed to demonstrate system suitability to detect affected analytes. Sample was ND.
(g) Quadratic regression was employed for this compound in associated ICAL.Associated CCV outside of control limits high,sample was ND.
(h) Outside of in house control limits. Sample was ND.

ND = Not detected MDL = Method Detection Limit J = Indicates an estimated value
RL = Reporting Limit B = Indicates analyte found in associated method blank
E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-412(MW)		
Lab Sample ID:	JE31948-2	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8270E BY SIM SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	Z179283.D	1	04/14/26 22:44	AC	04/14/26 13:00	OP72510A	EZ8806
Run #2							

	Initial Volume	Final Volume
Run #1	250 ml	1.0 ml
Run #2		

BN PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.080	0.040	ug/l	
208-96-8	Acenaphthylene	ND	0.080	0.040	ug/l	
120-12-7	Anthracene	ND	0.080	0.040	ug/l	
56-55-3	Benzo(a)anthracene [a]	ND	0.040	0.024	ug/l	
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.080	0.040	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.080	0.040	ug/l	
206-44-0	Fluoranthene	ND	0.080	0.040	ug/l	
86-73-7	Fluorene	ND	0.080	0.040	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.080	0.040	ug/l	
91-57-6	2-Methylnaphthalene	ND	0.080	0.040	ug/l	
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	ND	0.080	0.040	ug/l	
129-00-0	Pyrene	ND	0.080	0.040	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	84%		29-124%
321-60-8	2-Fluorobiphenyl	78%		23-122%
1718-51-0	Terphenyl-d14	86%		22-130%

(a) Associated CCV outside of control limits high, sample was ND.

ND = Not detected MDL = Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-412(MW)		
Lab Sample ID:	JE31948-2	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	MADEP VPH REV 2.1	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	BH57121.D	1	04/16/26 22:48	JN	n/a	n/a	GBH2051
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

MADEP VPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	100	50	ug/l	
	C9- C12 Aliphatics (Unadj.)	ND	100	50	ug/l	
	C5- C8 Aliphatics	ND	100	50	ug/l	
	C9- C12 Aliphatics	ND	100	50	ug/l	
	C9- C10 Aromatics	ND	100	50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
	2,3,4-Trifluorotoluene	89%		70-130%
	2,3,4-Trifluorotoluene	96%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-412(MW)		
Lab Sample ID:	JE31948-2	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	MADEP EPH REV 2.1 SW846 3510C	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Y95944.D	1	04/19/26 22:26	RK	04/14/26 13:30	OP72504	G4Y3607
Run #2							

	Initial Volume	Final Volume
Run #1	1000 ml	2.0 ml
Run #2		

MAEPH List

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	ND	100	13	ug/l	
	C11-C22 Aromatics	ND	100	13	ug/l	
	C9-C18 Aliphatics	ND	100	7.7	ug/l	
	C19-C36 Aliphatics	ND	100	12	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
3386-33-2	1-Chlorooctadecane	18% [a]		40-140%
84-15-1	o-Terphenyl	46%		40-140%
321-60-8	2-Fluorobiphenyl	80%		40-140%

(a) Outside of in house control limits.

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-412(MW)		
Lab Sample ID:	JE31948-2	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
Method:	SW846 8082A SW846 3511	**Percent Solids:**	n/a
Project:	MWRA Water Tunnel		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	RM48098.D	1	04/16/26 17:26	JN	04/15/26 19:15	OP72560	GRM1161
Run #2							

	Initial Volume	Final Volume
Run #1	55.3 ml	2.0 ml
Run #2		

PCB List

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.18	0.050	ug/l	
11104-28-2	Aroclor 1221	ND	0.18	0.094	ug/l	
11141-16-5	Aroclor 1232	ND	0.18	0.069	ug/l	
53469-21-9	Aroclor 1242	ND	0.18	0.039	ug/l	
12672-29-6	Aroclor 1248	ND	0.18	0.036	ug/l	
11097-69-1	Aroclor 1254	ND	0.18	0.067	ug/l	
11096-82-5	Aroclor 1260	ND	0.18	0.11	ug/l	
11100-14-4	Aroclor 1268	ND	0.18	0.061	ug/l	
37324-23-5	Aroclor 1262	ND	0.18	0.039	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
877-09-8	Tetrachloro-m-xylene	70%		50-150%
877-09-8	Tetrachloro-m-xylene	73%		50-150%
2051-24-3	Decachlorobiphenyl	65%		50-150%
2051-24-3	Decachlorobiphenyl	73%		50-150%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	B-GSS-412(MW)		
Lab Sample ID:	JE31948-2	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
		Percent Solids:	n/a
Project:	MWRA Water Tunnel		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Antimony	< 6.0	6.0	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [3]
Arsenic	< 3.0	3.0	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [3]
Beryllium	< 1.0	1.0	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [3]
Cadmium	< 3.0	3.0	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [3]
Chromium	15.1	10	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [3]
Copper	< 10	10	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [3]
Lead	< 3.0	3.0	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [3]
Mercury	< 0.20	0.20	ug/l	1	04/14/26	04/14/26	MK	SW846 7470A [1]	SW846 7470A [4]
Nickel	< 10	10	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [3]
Selenium	< 10	10	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [3]
Silver	< 10	10	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [3]
Thallium	< 10	10	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [3]
Zinc	< 20	20	ug/l	1	04/13/26	04/17/26	LM	SW846 6010D [2]	SW846 3010A [3]

(1) Instrument QC Batch: MA60639
(2) Instrument QC Batch: MA60658
(3) Prep QC Batch: MP61349
(4) Prep QC Batch: MP61381

RL = Reporting Limit

Report of Analysis

Client Sample ID:	B-GSS-412(MW)		
Lab Sample ID:	JE31948-2	**Date Sampled:**	04/10/26
Matrix:	AQ - Ground Water	**Date Received:**	04/10/26
		Percent Solids:	n/a
Project:	MWRA Water Tunnel		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent	< 0.010	0.010	mg/l	1	04/11/26 09:46	LV	SW846 7196A
Solids, Total Suspended	< 4.0	4.0	mg/l	1	04/15/26 12:30	SD	SM2540 D-15/20
Total Residual Chlorine [a]	< 0.050	0.050	mg/l	1	04/11/26 18:32	DB	SM4500CL G-11
pH [b]	7.04		su	1	04/13/26 12:57	GT	SM4500H+ B-11/21

(a) Field analysis required. Received out of hold time and analyzed by request.
(b) Field analysis required. Received out of hold time and analyzed by request. Temp of pH Reading: 21.41 Deg. C

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- **Chain of Custody**
- **MCP Form**
- **EPH Form**
- **VPH Form**
- **Sample Tracking Chronicle**
- **QC Evaluation: MA MCP Limits**

GW
TB

CHAIN OF CUSTODY

SGS North America Inc. - Dayton
2235 Route 130, Dayton, NJ 08810
TEL 732-329-0200
www.sgs.com/ehsusa

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E

FED-EX Tracking #:
Bottle Order Control #: TF-121725-7
SGS Quote #:
SGS Job #: JE31948

Client / Reporting Information	Project Information
Company Name: WSP	Project Name: MWTP NS0041005.1387
Street Address: 100 Summer St	Street: 60 Charles St
City / State / Zip: Boston MA 02110	City / State: Needham MA
Project Contact / E-mail: Dan Martin dan.martin@wsp.com	Project #: 41005.1387
Phone #: 973-868-6611	Client Purchase Order #:
Sampler(s) Name(s): Jackson Rowell	Project Manager: Dan Phone #: 603-793-0247
	Billing Information (if different from Report to)
	Company Name:
	Street Address:
	City / State / Zip:
	Attention: Martin

Analysis Requested: TRC; XCR_PHTEMP; P8082_MCP; TSS; PM13; BLV8270SIMPAH+2MNP_MCP; V8260_MCP; VM4UPHR; BMAEPHR

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB-Equipment Blank; RB - Rinse Blank; TB - Trip Blank

SGS Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Grab (G) Comp (C)	Source Chlorinated (Y/N)	Matrix	Number of Bottles: # of bottles	HCl	H2SO4	HNO3	NaOH	DI Water	MEOH	ENCORE	Zn Ac	pH Check (Lab Use Only)	LAB USE ONLY
1	B-GSS-465		4/10/26	1040	JCR	G	N	GW	17	8		1					1	X X X X X X X X X X	
2	B-GSS-412(MW)		4/10/26	1300	JCR	G	N	GW	17	8		1					1	X X X X X X X X X X	
3	TRIP BLANK		4/16/25	~	~	~	~	~	3					2	1			X	

Turn Around Time (Business Days)

Approved By (SGS PM) / Date:

- [ ] 10 Business Days
- [x] 5 Business Days — Standard
- [ ] 3 Business Days*
- [ ] 1 Business Day*
- [ ] Other

All data available via SGS Engage

* Approval needed for 1-3 BD TAT

Deliverable

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] NJ Reduced (Level 3)
- [ ] Full Tier I (Level 4)
- [ ] NJ DKQP
- [ ] NJ/GW Criteria 2025 *new*
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] MA MCP Criteria
- [ ] CT RCP Criteria
- [ ] EDD Format

Commercial "A" = Results only; Commercial "B" = Results + QC Summary
Commercial "C" = Results + QC Summary + Partial Raw data

Comments / Special Instructions

SGS Courier

4/10 SGS Service Center Northborough, MA

http://www.sgs.com/en/terms-and-conditions

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished By:	Date / Time:	Received By:
1	SRowell	4/10/26 1413	
2			
3		4/10/26 23:55	
4			
5			

Custody Seal #: ☐ Intact ☐ Not Intact ☐ Absent

Therm ID: On Ice: X Cooler Temp. °C: 1.1

See Sample Receipt Summary

Ref No: G140222989

Job Change Order: JE31948

Requested Date:	4/28/2026	**Received Date:**	4/10/2026
Account Name:	WSP USA Environment & Infrastr	**Due Date:**	4/28/2026
Project Description:	MWRA Water Tunnel	**Deliverable:**	MAMCP
C/O Initiated By:	VIKTORIYA_ **PM:** VP	**TAT (Days):**	7

==========

Sample #: JE31948-3 **Dept:**

Client ID: TRIP BLANK **TAT:** 7

Change: Please cancel V8260MCP, incorrect volume received.

Above Changes Per: VP **Date/Time:** 4/28/2026

To Client: This Change Order is confirmation of the revisions, previously discussed with the Client Service Representative.

Page 1 of 1

5.1

5

JE31948: Chain of Custody
Page 2 of 3

SGS Sample Receipt Summary

Job Number: je31948 **Client:** WSP USA INC. **Project:** MWRA WATER TUNNEL

Date / Time Received: 4/10/2026 2:15:00 PM **Delivery Method:** SGS COURIER **Airbill #'s:**

Cooler Temps (Raw Measured) °C: 1.1 C

Cooler Temps (Corrected) °C:

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☐		☐
2. Cooler temp verification:	N/A		
3. Cooler media:	N/A		
4. No. Coolers:	N/A		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Test Strip Lot #s: pH 1-12: 231619 pH 12+: 203117A Other: (Specify)

Comments

SM089-03
Rev. Date 12/7/17

JE31948: Chain of Custody
Page 3 of 3

Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup	WSC-CAM	Exhibit VII A
	July 1, 2010	Revision No. 1
	Final	

Exhibit VII A-2: MassDEP Analytical Protocol Certification Form

MassDEP Analytical Protocol Certification Form

Laboratory Name:	SGS North America Inc. - Dayton	Project #:	JE31948
Project Location:	MWRA Water Tunnel	MADEP RTN	None

This form provides certifications for the following data set: list Laboratory Sample ID Numbers(s)

JE31948-1,JE31948-2

Matrices: Groundwater/Surface Water (X) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other ( )

CAM Protocol (check all that apply below):

8260 VOC (X) CAM IIA	7470/7471 Hg (X) CAM III B	MassDEP VPH (X) CAM IV A	8081 Pesticides ( ) CAM V B	7196 Hex Cr (X) CAM VI B	Mass DEP APH ( ) CAM IX A
8270 SVOC (X) CAM II B	7010 Metals ( ) CAM III C	MassDEP EPH (X) CAM IV B	8151 Herbicides ( ) CAM V C	8330 Explosives ( ) CAM VIII A	TO-15 VOC ( ) CAM IX B
6010 Metals (X) CAM III A	6020 Metals ( ) CAM III D	8082 PCB (X) CAM V A	9014 Total Cyanide/PAC ( ) CAM VI A	6860 Perchlorate ( ) CAM VIII B	

Affirmative Responses to Questions A Through F are required for "Presumptive Certainty status

A	Were all samples received in a condition consistent with those described on the Chain-of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☐ Yes	☑ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes	☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes	☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑ Yes	☐ No
E	VPH, EPH, APH, and TO-15 only: a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☑ Yes	☐ No
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes	☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☑ Yes	☐ No

Responses to questions G, H, and I below is required for "Presumptive Certainty" status

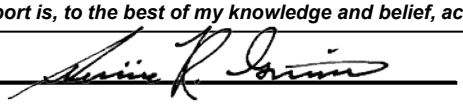
G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols	☑ Yes	☐ No [1]

Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data useability and representativeness requirements described in 310 CMR 40.1056(2)(k) and WSC-07-350.

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	☐ Yes	☑ No [1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes	☑ No [1]

[1] ***All Negative responses must be addressed in an attached Environmental Laboratory case narrative.***

I the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature:  **Position:** **Technical Director**

Printed Name: Olga Azarian **Date:** **01-May-26**

MADEP EPH FORM

Matrix	**Aqueous** ☑	**Soil** ☐	**Sediment** ☐	**Other** ☐			
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐				
Aqueous Preservatives	**N/A** ☐	**pH <= 2** ☑	**pH > 2** ☐				
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☐	**Other** ☑	Rec'd at 1.1 Deg. C			
Extraction Method	**SW846 3510C**						

Method for Ranges: MADEP EPH REV 2.1
Method for Targets: MADEP EPH REV 2.1
EPH Surrogate Stds. Aliphatic: 1-Chlorooctadecane
Aromatic: o-Terphenyl
EPH Fractionation Surrogate Standards. 2-Fluorobiphenyl

Client ID: B-GSS-465 **Lab ID:** JE31948-1
Date Collected: 4/10/2026 **Date Received:** 4/10/2026
Date Extracted: 4/14/2026 1:30:00 PM
First Date Run: 4/19/2026
Last Date Run: N/A
% Solids: N/A
Low Dilution: 1
High Dilution: N/A

Unadjusted Ranges	CAS #	Units	Result		RDL	Q
C11-C22 Aromatics (Unadj.)		ug/l	ND	A	100	

Adjusted Ranges					
C9-C18 Aliphatics		ug/l	ND	A	100
C19-C36 Aliphatics		ug/l	ND	A	100
C11-C22 Aromatics		ug/l	ND	C	100
Surrogate Recoveries					**Acceptance Range**
1-Chlorooctadecane		%	34	E	40-140 %
o-Terphenyl		%	56		40-140 %
2-Fluorobiphenyl		%	85		40-140 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

C Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

E Outside of in house control limits.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the EPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the EPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtainig the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** General Managerr

Printed Name David Chastain **Date** 5/1/2026

MADEP EPH FORM

Matrix	**Aqueous** ☑	**Soil** ☐	**Sediment** ☐	**Other** ☐			
Containers	**Satisfactory** ☑	**Broken** ☐	**Leaking** ☐				
Aqueous Preservatives	**N/A** ☐	**pH <= 2** ☑	**pH > 2** ☐				
Temperature	**Received on Ice** ☐	**Received at 4 Deg. C** ☐	**Other** ☑	Rec'd at 1.1 Deg. C			
Extraction Method	**SW846 3510C**						

Method for Ranges: MADEP EPH REV 2.1
Method for Targets: MADEP EPH REV 2.1
EPH Surrogate Stds. Aliphatic: 1-Chlorooctadecane
Aromatic: o-Terphenyl
EPH Fractionation Surrogate Standards. 2-Fluorobiphenyl

Client ID: B-GSS-412(MW) **Lab ID:** JE31948-2
Date Collected: 4/10/2026 **Date Received:** 4/10/2026
Date Extracted: 4/14/2026 1:30:00 PM
First Date Run: 4/19/2026
Last Date Run: N/A
% Solids: N/A
Low Dilution: 1
High Dilution: N/A

Unadjusted Ranges	CAS #	Units	Result		RDL	Q
C11-C22 Aromatics (Unadj.)		ug/l	ND	A	100	

Adjusted Ranges					
C9-C18 Aliphatics		ug/l	ND	A	100
C19-C36 Aliphatics		ug/l	ND	A	100
C11-C22 Aromatics		ug/l	ND	C	100
Surrogate Recoveries					**Acceptance Range**
1-Chlorooctadecane		%	18	E	40-140 %
o-Terphenyl		%	46		40-140 %
2-Fluorobiphenyl		%	80		40-140 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

C Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C11-C22 Aromatic Hydrocarbons exclude the concentration of Target PAH Analytes

E Outside of in house control limits.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the EPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the EPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtainig the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** **General Managerr**

Printed Name **David Chastain** **Date** **5/1/2026**

MADEP VPH FORM

Matrix	**Aqueous**	☑	**Soil**	☐	**Sediment**	☐	**Other**	☐	
Containers	**Satisfactory**	☑	**Broken**	☐	**Leaking**	☐			
Aqueous Preservatives	**N/A**	☐	**pH <= 2**	☑	**pH > 2**	☐			
Temperature	**Received on Ice**	☐	**Received at 4 Deg. C**	☐	**Other**	☑	Rec'd at 1.1 Deg. C		
Methanol	**N/A**								

Method for Ranges: MADEP VPH REV 2.1
Method for Target Analytes: MADEP VPH REV 2.1
VPH Surrogate Standards
PID:
FID:

Client ID: B-GSS-465 **Lab ID:** JE31948-1
Date Collected: 4/10/2026 **Date Received:** 4/10/2026

Date Extracted:	First Date Run:	Last Date Run:
N/A	4/16/2026	N/A
% Solids:	**Low Dilution:**	**High Dilution:**
N/A	1	N/A

Unadjusted Ranges	CAS #	Elution Range	Units	Result		RDL	Q
C5- C8 Aliphatics (Unadj.)		N/A	ug/l	ND	A	100	
C9- C12 Aliphatics (Unadj.)		N/A	ug/l	ND	A	100	
Adjusted Ranges							
C5- C8 Aliphatics		N/A	ug/l	ND	B	100	
C9- C12 Aliphatics		N/A	ug/l	ND	D	100	
C9- C10 Aromatics			ug/l	ND		100	

Surrogate Recoveries			Acceptance Range
FID:2,3,4-Trifluorotoluene	%	97	70-130 %
PID:2,3,4-Trifluorotoluene	%	90	70-130 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

B Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range.

D Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C9-C12 aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the VPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the VPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** **General Managerr**

Printed Name **David Chastain** **Date** **5/1/2026**

MADEP VPH FORM

Matrix	**Aqueous**	☑	**Soil**	☐	**Sediment**	☐	**Other**	☐	
Containers	**Satisfactory**	☑	**Broken**	☐	**Leaking**	☐			
Aqueous Preservatives	**N/A**	☐	**pH <= 2**	☑	**pH > 2**	☐			
Temperature	**Received on Ice**	☐			**Received at 4 Deg. C**	☐	**Other**	☑	Rec'd at 1.1 Deg. C
Methanol	**N/A**								

Method for Ranges: MADEP VPH REV 2.1
Method for Target Analytes: MADEP VPH REV 2.1
VPH Surrogate Standards
PID:
FID:

Client ID: B-GSS-412(MW) **Lab ID:** JE31948-2
Date Collected: 4/10/2026 **Date Received:** 4/10/2026

Date Extracted:	First Date Run:	Last Date Run:
N/A	4/16/2026	N/A
% Solids:	**Low Dilution:**	**High Dilution:**
N/A	1	N/A

Unadjusted Ranges	CAS #	Elution Range	Units	Result		RDL	Q
C5- C8 Aliphatics (Unadj.)		N/A	ug/l	ND	A	100	
C9- C12 Aliphatics (Unadj.)		N/A	ug/l	ND	A	100	
Adjusted Ranges							
C5- C8 Aliphatics		N/A	ug/l	ND	B	100	
C9- C12 Aliphatics		N/A	ug/l	ND	D	100	
C9- C10 Aromatics			ug/l	ND		100	

Surrogate Recoveries			Acceptance Range
FID:2,3,4-Trifluorotoluene	%	96	70-130 %
PID:2,3,4-Trifluorotoluene	%	89	70-130 %

Footnotes

A Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range

B Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C5-C8 Aliphatic Hydrocarbons exclude the concentration of Target Analytes eluting in that range.

D Hydrocarbon Range data exclude concentrations of any surrogate(s) and/or internal standards eluting in that range. C9-C12 aliphatic Hydrocarbons exclude conc of Target Analytes eluting in that range AND concentration of C9-C10 Aromatic Hydrocarbons.

Z A 'J' qualifier indicates an estimated value

Were all QA/QC procedures REQUIRED by the VPH Method followed? ☑ Yes ☐ No- Details Attatched
Were all performance/acceptance standards for required QA/QC procedures achieved? ☑ Yes ☐ No- Details Attatched
Were any significant modifications made to the VPH method, as specified in Sect. 11.3? ☑ No ☐ Yes- Details Attatched

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Signature _____ **Postition** **General Managerr**

Printed Name **David Chastain** **Date** **5/1/2026**

Internal Sample Tracking Chronicle

WSP USA Environment & Infrastructure Inc

Job No: JE31948

MWRA Water Tunnel
Project No: 41005.1387

Sample Number	Method	Analyzed	By	Prepped	By	Test Codes
JE31948-1 B-GSS-465	Collected: 10-APR-26 10:40 By: JCR		Received: 10-APR-26 By: JW			
JE31948-1	SW846 7196A	11-APR-26 09:46	LV			XCR
JE31948-1	SM4500CL G-11	11-APR-26 18:32	DB			TRCG
JE31948-1	SM4500H+ B-11/21	13-APR-26 12:57	GT			PHLABTEMP
JE31948-1	SW846 7470A	14-APR-26 14:08	MK	14-APR-26	MK	HG
JE31948-1	SW846 8260D	14-APR-26 16:05	NW			V8260MCP
JE31948-1	SW846 8270E BY SIM	14-APR-26 22:18	AC	14-APR-26	AM	BLV8270SIMPAH+ 2MNAP
JE31948-1	SM2540 D-15/20	15-APR-26 12:30	SD			TSS
JE31948-1	SW846 8270E	16-APR-26 02:23	TL	14-APR-26	AM	ABLV8270MCP
JE31948-1	SW846 8082A	16-APR-26 17:10	JN	15-APR-26	SGC	P8082MCP
JE31948-1	MADEP VPH REV 2.1	16-APR-26 22:06	JN			VMAVPHR
JE31948-1	SW846 6010D	17-APR-26 01:26	LM	13-APR-26	ZG	AG,AS,BE,CD,CR,CU,NI,PB,SB,SE,ZN
JE31948-1	SW846 6010D	19-APR-26 00:35	LM	13-APR-26	ZG	TL
JE31948-1	MADEP EPH REV 2.1	19-APR-26 21:53	RK	14-APR-26	NT	BMAEPHR
JE31948-2 B-GSS-412(MW)	Collected: 10-APR-26 13:00 By: JCR		Received: 10-APR-26 By: JW			
JE31948-2	SW846 7196A	11-APR-26 09:46	LV			XCR
JE31948-2	SM4500CL G-11	11-APR-26 18:32	DB			TRCG
JE31948-2	SM4500H+ B-11/21	13-APR-26 12:57	GT			PHLABTEMP
JE31948-2	SW846 7470A	14-APR-26 14:11	MK	14-APR-26	MK	HG
JE31948-2	SW846 8260D	14-APR-26 16:20	NW			V8260MCP
JE31948-2	SW846 8270E BY SIM	14-APR-26 22:44	AC	14-APR-26	AM	BLV8270SIMPAH+ 2MNAP
JE31948-2	SM2540 D-15/20	15-APR-26 12:30	SD			TSS
JE31948-2	SW846 8270E	16-APR-26 02:45	TL	14-APR-26	AM	ABLV8270MCP
JE31948-2	SW846 8082A	16-APR-26 17:26	JN	15-APR-26	SGC	P8082MCP
JE31948-2	MADEP VPH REV 2.1	16-APR-26 22:48	JN			VMAVPHR
JE31948-2	SW846 6010D	17-APR-26 01:32	LM	13-APR-26	ZG	AG,AS,BE,CD,CR,CU,NI,PB,SB,SE,TL,ZN
JE31948-2	MADEP EPH REV 2.1	19-APR-26 22:26	RK	14-APR-26	NT	BMAEPHR

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V1F848	**SW846 8260D**						
V1F848-BS	67-64-1	Acetone	BSP	REC	98	%	70-130
V1F848-BS	71-43-2	Benzene	BSP	REC	103	%	70-130
V1F848-BS	108-86-1	Bromobenzene	BSP	REC	103	%	70-130
V1F848-BS	74-97-5	Bromochloromethane	BSP	REC	98	%	70-130
V1F848-BS	75-27-4	Bromodichloromethane	BSP	REC	100	%	70-130
V1F848-BS	75-25-2	Bromoform	BSP	REC	104	%	70-130
V1F848-BS	74-83-9	Bromomethane	BSP	REC	135	%	70-130
V1F848-BS	78-93-3	2-Butanone (MEK)	BSP	REC	100	%	70-130
V1F848-BS	104-51-8	n-Butylbenzene	BSP	REC	100	%	70-130
V1F848-BS	135-98-8	sec-Butylbenzene	BSP	REC	102	%	70-130
V1F848-BS	98-06-6	tert-Butylbenzene	BSP	REC	101	%	70-130
V1F848-BS	75-15-0	Carbon disulfide	BSP	REC	98	%	70-130
V1F848-BS	56-23-5	Carbon tetrachloride	BSP	REC	90	%	70-130
V1F848-BS	108-90-7	Chlorobenzene	BSP	REC	98	%	70-130
V1F848-BS	75-00-3	Chloroethane	BSP	REC	97	%	70-130
V1F848-BS	67-66-3	Chloroform	BSP	REC	93	%	70-130
V1F848-BS	74-87-3	Chloromethane	BSP	REC	91	%	70-130
V1F848-BS	95-49-8	o-Chlorotoluene	BSP	REC	97	%	70-130
V1F848-BS	106-43-4	p-Chlorotoluene	BSP	REC	98	%	70-130
V1F848-BS	108-20-3	Di-Isopropyl ether	BSP	REC	97	%	70-130
V1F848-BS	96-12-8	1,2-Dibromo-3-chloropropane	BSP	REC	100	%	70-130
V1F848-BS	124-48-1	Dibromochloromethane	BSP	REC	102	%	70-130
V1F848-BS	106-93-4	1,2-Dibromoethane	BSP	REC	101	%	70-130
V1F848-BS	95-50-1	1,2-Dichlorobenzene	BSP	REC	104	%	70-130
V1F848-BS	541-73-1	1,3-Dichlorobenzene	BSP	REC	100	%	70-130
V1F848-BS	106-46-7	1,4-Dichlorobenzene	BSP	REC	100	%	70-130
V1F848-BS	75-71-8	Dichlorodifluoromethane	BSP	REC	88	%	70-130
V1F848-BS	75-34-3	1,1-Dichloroethane	BSP	REC	96	%	70-130
V1F848-BS	107-06-2	1,2-Dichloroethane	BSP	REC	97	%	70-130
V1F848-BS	75-35-4	1,1-Dichloroethene	BSP	REC	101	%	70-130
V1F848-BS	156-59-2	cis-1,2-Dichloroethene	BSP	REC	92	%	70-130
V1F848-BS	156-60-5	trans-1,2-Dichloroethene	BSP	REC	100	%	70-130
V1F848-BS	78-87-5	1,2-Dichloropropane	BSP	REC	100	%	70-130
V1F848-BS	142-28-9	1,3-Dichloropropane	BSP	REC	101	%	70-130
V1F848-BS	594-20-7	2,2-Dichloropropane	BSP	REC	94	%	70-130
V1F848-BS	563-58-6	1,1-Dichloropropene	BSP	REC	104	%	70-130
V1F848-BS	10061-01-5	cis-1,3-Dichloropropene	BSP	REC	99	%	70-130
V1F848-BS	10061-02-6	trans-1,3-Dichloropropene	BSP	REC	101	%	70-130
V1F848-BS	123-91-1	1,4-Dioxane	BSP	REC	97	%	70-130
V1F848-BS	60-29-7	Ethyl Ether	BSP	REC	105	%	70-130
V1F848-BS	100-41-4	Ethylbenzene	BSP	REC	98	%	70-130
V1F848-BS	87-68-3	Hexachlorobutadiene	BSP	REC	106	%	70-130

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V1F848-BS	591-78-6	2-Hexanone	BSP	REC	105	%	70-130
V1F848-BS	98-82-8	Isopropylbenzene	BSP	REC	99	%	70-130
V1F848-BS	99-87-6	p-Isopropyltoluene	BSP	REC	102	%	70-130
V1F848-BS	1634-04-4	Methyl Tert Butyl Ether	BSP	REC	103	%	70-130
V1F848-BS	108-10-1	4-Methyl-2-pentanone(MIBK)	BSP	REC	108	%	70-130
V1F848-BS	74-95-3	Methylene bromide	BSP	REC	99	%	70-130
V1F848-BS	75-09-2	Methylene chloride	BSP	REC	93	%	70-130
V1F848-BS	91-20-3	Naphthalene	BSP	REC	102	%	70-130
V1F848-BS	103-65-1	n-Propylbenzene	BSP	REC	100	%	70-130
V1F848-BS	100-42-5	Styrene	BSP	REC	101	%	70-130
V1F848-BS	994-05-8	tert-Amyl Methyl Ether	BSP	REC	102	%	70-130
V1F848-BS	637-92-3	tert-Butyl Ethyl Ether	BSP	REC	100	%	70-130
V1F848-BS	630-20-6	1,1,1,2-Tetrachloroethane	BSP	REC	104	%	70-130
V1F848-BS	79-34-5	1,1,2,2-Tetrachloroethane	BSP	REC	99	%	70-130
V1F848-BS	127-18-4	Tetrachloroethene	BSP	REC	104	%	70-130
V1F848-BS	109-99-9	Tetrahydrofuran	BSP	REC	90	%	70-130
V1F848-BS	108-88-3	Toluene	BSP	REC	100	%	70-130
V1F848-BS	87-61-6	1,2,3-Trichlorobenzene	BSP	REC	107	%	70-130
V1F848-BS	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	109	%	70-130
V1F848-BS	71-55-6	1,1,1-Trichloroethane	BSP	REC	98	%	70-130
V1F848-BS	79-00-5	1,1,2-Trichloroethane	BSP	REC	97	%	70-130
V1F848-BS	79-01-6	Trichloroethene	BSP	REC	108	%	70-130
V1F848-BS	75-69-4	Trichlorofluoromethane	BSP	REC	115	%	70-130
V1F848-BS	96-18-4	1,2,3-Trichloropropane	BSP	REC	101	%	70-130
V1F848-BS	95-63-6	1,2,4-Trimethylbenzene	BSP	REC	99	%	70-130
V1F848-BS	108-67-8	1,3,5-Trimethylbenzene	BSP	REC	99	%	70-130
V1F848-BS	75-01-4	Vinyl chloride	BSP	REC	100	%	70-130
V1F848-BS		m,p-Xylene	BSP	REC	100	%	70-130
V1F848-BS	95-47-6	o-Xylene	BSP	REC	98	%	70-130
V1F848-BS	1330-20-7	Xylene (total)	BSP	REC	99	%	70-130
V1F848-BS	1868-53-7	Dibromofluoromethane	BSP	SURR	94	%	70-130
V1F848-BS	2037-26-5	Toluene-D8	BSP	SURR	97	%	70-130
V1F848-BS	460-00-4	4-Bromofluorobenzene	BSP	SURR	96	%	70-130
V1F848-BSD	67-64-1	Acetone	BSD	REC	101	%	70-130
V1F848-BSD	67-64-1	Acetone	BSD	RPD	3	%	20
V1F848-BSD	71-43-2	Benzene	BSD	REC	101	%	70-130
V1F848-BSD	71-43-2	Benzene	BSD	RPD	2	%	20
V1F848-BSD	108-86-1	Bromobenzene	BSD	REC	101	%	70-130
V1F848-BSD	108-86-1	Bromobenzene	BSD	RPD	2	%	20
V1F848-BSD	74-97-5	Bromochloromethane	BSD	REC	95	%	70-130
V1F848-BSD	74-97-5	Bromochloromethane	BSD	RPD	4	%	20
V1F848-BSD	75-27-4	Bromodichloromethane	BSD	REC	99	%	70-130
V1F848-BSD	75-27-4	Bromodichloromethane	BSD	RPD	1	%	20
V1F848-BSD	75-25-2	Bromoform	BSD	REC	109	%	70-130
V1F848-BSD	75-25-2	Bromoform	BSD	RPD	4	%	20

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V1F848-BSD	74-83-9	Bromomethane	BSD	REC	134	%	70-130
V1F848-BSD	74-83-9	Bromomethane	BSD	RPD	1	%	20
V1F848-BSD	78-93-3	2-Butanone (MEK)	BSD	REC	99	%	70-130
V1F848-BSD	78-93-3	2-Butanone (MEK)	BSD	RPD	1	%	20
V1F848-BSD	104-51-8	n-Butylbenzene	BSD	REC	100	%	70-130
V1F848-BSD	104-51-8	n-Butylbenzene	BSD	RPD	0	%	20
V1F848-BSD	135-98-8	sec-Butylbenzene	BSD	REC	102	%	70-130
V1F848-BSD	135-98-8	sec-Butylbenzene	BSD	RPD	0	%	20
V1F848-BSD	98-06-6	tert-Butylbenzene	BSD	REC	100	%	70-130
V1F848-BSD	98-06-6	tert-Butylbenzene	BSD	RPD	1	%	20
V1F848-BSD	75-15-0	Carbon disulfide	BSD	REC	97	%	70-130
V1F848-BSD	75-15-0	Carbon disulfide	BSD	RPD	1	%	20
V1F848-BSD	56-23-5	Carbon tetrachloride	BSD	REC	92	%	70-130
V1F848-BSD	56-23-5	Carbon tetrachloride	BSD	RPD	1	%	20
V1F848-BSD	108-90-7	Chlorobenzene	BSD	REC	98	%	70-130
V1F848-BSD	108-90-7	Chlorobenzene	BSD	RPD	0	%	20
V1F848-BSD	75-00-3	Chloroethane	BSD	REC	96	%	70-130
V1F848-BSD	75-00-3	Chloroethane	BSD	RPD	1	%	20
V1F848-BSD	67-66-3	Chloroform	BSD	REC	90	%	70-130
V1F848-BSD	67-66-3	Chloroform	BSD	RPD	3	%	20
V1F848-BSD	74-87-3	Chloromethane	BSD	REC	90	%	70-130
V1F848-BSD	74-87-3	Chloromethane	BSD	RPD	2	%	20
V1F848-BSD	95-49-8	o-Chlorotoluene	BSD	REC	98	%	70-130
V1F848-BSD	95-49-8	o-Chlorotoluene	BSD	RPD	1	%	20
V1F848-BSD	106-43-4	p-Chlorotoluene	BSD	REC	97	%	70-130
V1F848-BSD	106-43-4	p-Chlorotoluene	BSD	RPD	0	%	20
V1F848-BSD	108-20-3	Di-Isopropyl ether	BSD	REC	97	%	70-130
V1F848-BSD	108-20-3	Di-Isopropyl ether	BSD	RPD	1	%	20
V1F848-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	REC	106	%	70-130
V1F848-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	RPD	5	%	20
V1F848-BSD	124-48-1	Dibromochloromethane	BSD	REC	104	%	70-130
V1F848-BSD	124-48-1	Dibromochloromethane	BSD	RPD	2	%	20
V1F848-BSD	106-93-4	1,2-Dibromoethane	BSD	REC	103	%	70-130
V1F848-BSD	106-93-4	1,2-Dibromoethane	BSD	RPD	2	%	20
V1F848-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	103	%	70-130
V1F848-BSD	95-50-1	1,2-Dichlorobenzene	BSD	RPD	1	%	20
V1F848-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	102	%	70-130
V1F848-BSD	541-73-1	1,3-Dichlorobenzene	BSD	RPD	2	%	20
V1F848-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	102	%	70-130
V1F848-BSD	106-46-7	1,4-Dichlorobenzene	BSD	RPD	2	%	20
V1F848-BSD	75-71-8	Dichlorodifluoromethane	BSD	REC	89	%	70-130
V1F848-BSD	75-71-8	Dichlorodifluoromethane	BSD	RPD	0	%	20
V1F848-BSD	75-34-3	1,1-Dichloroethane	BSD	REC	96	%	70-130
V1F848-BSD	75-34-3	1,1-Dichloroethane	BSD	RPD	0	%	20
V1F848-BSD	107-06-2	1,2-Dichloroethane	BSD	REC	93	%	70-130

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V1F848-BSD	107-06-2	1,2-Dichloroethane	BSD	RPD	4	%	20
V1F848-BSD	75-35-4	1,1-Dichloroethene	BSD	REC	102	%	70-130
V1F848-BSD	75-35-4	1,1-Dichloroethene	BSD	RPD	1	%	20
V1F848-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	REC	94	%	70-130
V1F848-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	RPD	3	%	20
V1F848-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	REC	96	%	70-130
V1F848-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	RPD	4	%	20
V1F848-BSD	78-87-5	1,2-Dichloropropane	BSD	REC	98	%	70-130
V1F848-BSD	78-87-5	1,2-Dichloropropane	BSD	RPD	1	%	20
V1F848-BSD	142-28-9	1,3-Dichloropropane	BSD	REC	101	%	70-130
V1F848-BSD	142-28-9	1,3-Dichloropropane	BSD	RPD	0	%	20
V1F848-BSD	594-20-7	2,2-Dichloropropane	BSD	REC	92	%	70-130
V1F848-BSD	594-20-7	2,2-Dichloropropane	BSD	RPD	2	%	20
V1F848-BSD	563-58-6	1,1-Dichloropropene	BSD	REC	105	%	70-130
V1F848-BSD	563-58-6	1,1-Dichloropropene	BSD	RPD	1	%	20
V1F848-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	REC	96	%	70-130
V1F848-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	RPD	3	%	20
V1F848-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	REC	107	%	70-130
V1F848-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	RPD	5	%	20
V1F848-BSD	123-91-1	1,4-Dioxane	BSD	REC	111	%	70-130
V1F848-BSD	123-91-1	1,4-Dioxane	BSD	RPD	14	%	20
V1F848-BSD	60-29-7	Ethyl Ether	BSD	REC	101	%	70-130
V1F848-BSD	60-29-7	Ethyl Ether	BSD	RPD	4	%	20
V1F848-BSD	100-41-4	Ethylbenzene	BSD	REC	101	%	70-130
V1F848-BSD	100-41-4	Ethylbenzene	BSD	RPD	3	%	20
V1F848-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	106	%	70-130
V1F848-BSD	87-68-3	Hexachlorobutadiene	BSD	RPD	0	%	20
V1F848-BSD	591-78-6	2-Hexanone	BSD	REC	109	%	70-130
V1F848-BSD	591-78-6	2-Hexanone	BSD	RPD	4	%	20
V1F848-BSD	98-82-8	Isopropylbenzene	BSD	REC	103	%	70-130
V1F848-BSD	98-82-8	Isopropylbenzene	BSD	RPD	3	%	20
V1F848-BSD	99-87-6	p-Isopropyltoluene	BSD	REC	104	%	70-130
V1F848-BSD	99-87-6	p-Isopropyltoluene	BSD	RPD	2	%	20
V1F848-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	REC	102	%	70-130
V1F848-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	RPD	1	%	20
V1F848-BSD	108-10-1	4-Methyl-2-pentanone(MIBK)	BSD	REC	107	%	70-130
V1F848-BSD	108-10-1	4-Methyl-2-pentanone(MIBK)	BSD	RPD	1	%	20
V1F848-BSD	74-95-3	Methylene bromide	BSD	REC	94	%	70-130
V1F848-BSD	74-95-3	Methylene bromide	BSD	RPD	5	%	20
V1F848-BSD	75-09-2	Methylene chloride	BSD	REC	92	%	70-130
V1F848-BSD	75-09-2	Methylene chloride	BSD	RPD	1	%	20
V1F848-BSD	91-20-3	Naphthalene	BSD	REC	102	%	70-130
V1F848-BSD	91-20-3	Naphthalene	BSD	RPD	1	%	20
V1F848-BSD	103-65-1	n-Propylbenzene	BSD	REC	101	%	70-130
V1F848-BSD	103-65-1	n-Propylbenzene	BSD	RPD	1	%	20

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V1F848-BSD	100-42-5	Styrene	BSD	REC	102	%	70-130
V1F848-BSD	100-42-5	Styrene	BSD	RPD	1	%	20
V1F848-BSD	994-05-8	tert-Amyl Methyl Ether	BSD	REC	101	%	70-130
V1F848-BSD	994-05-8	tert-Amyl Methyl Ether	BSD	RPD	1	%	20
V1F848-BSD	637-92-3	tert-Butyl Ethyl Ether	BSD	REC	101	%	70-130
V1F848-BSD	637-92-3	tert-Butyl Ethyl Ether	BSD	RPD	1	%	20
V1F848-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	REC	107	%	70-130
V1F848-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	RPD	3	%	20
V1F848-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	REC	101	%	70-130
V1F848-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	RPD	2	%	20
V1F848-BSD	127-18-4	Tetrachloroethene	BSD	REC	106	%	70-130
V1F848-BSD	127-18-4	Tetrachloroethene	BSD	RPD	2	%	20
V1F848-BSD	109-99-9	Tetrahydrofuran	BSD	REC	89	%	70-130
V1F848-BSD	109-99-9	Tetrahydrofuran	BSD	RPD	1	%	20
V1F848-BSD	108-88-3	Toluene	BSD	REC	104	%	70-130
V1F848-BSD	108-88-3	Toluene	BSD	RPD	3	%	20
V1F848-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	REC	106	%	70-130
V1F848-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	RPD	1	%	25
V1F848-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	108	%	70-130
V1F848-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	RPD	1	%	20
V1F848-BSD	71-55-6	1,1,1-Trichloroethane	BSD	REC	95	%	70-130
V1F848-BSD	71-55-6	1,1,1-Trichloroethane	BSD	RPD	2	%	20
V1F848-BSD	79-00-5	1,1,2-Trichloroethane	BSD	REC	100	%	70-130
V1F848-BSD	79-00-5	1,1,2-Trichloroethane	BSD	RPD	3	%	20
V1F848-BSD	79-01-6	Trichloroethene	BSD	REC	107	%	70-130
V1F848-BSD	79-01-6	Trichloroethene	BSD	RPD	1	%	20
V1F848-BSD	75-69-4	Trichlorofluoromethane	BSD	REC	112	%	70-130
V1F848-BSD	75-69-4	Trichlorofluoromethane	BSD	RPD	3	%	20
V1F848-BSD	96-18-4	1,2,3-Trichloropropane	BSD	REC	100	%	70-130
V1F848-BSD	96-18-4	1,2,3-Trichloropropane	BSD	RPD	1	%	20
V1F848-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	REC	100	%	70-130
V1F848-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	RPD	1	%	20
V1F848-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	REC	100	%	70-130
V1F848-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	RPD	1	%	20
V1F848-BSD	75-01-4	Vinyl chloride	BSD	REC	99	%	70-130
V1F848-BSD	75-01-4	Vinyl chloride	BSD	RPD	1	%	20
V1F848-BSD		m,p-Xylene	BSD	REC	101	%	70-130
V1F848-BSD		m,p-Xylene	BSD	RPD	1	%	20
V1F848-BSD	95-47-6	o-Xylene	BSD	REC	99	%	70-130
V1F848-BSD	95-47-6	o-Xylene	BSD	RPD	2	%	20
V1F848-BSD	1330-20-7	Xylene (total)	BSD	REC	101	%	70-130
V1F848-BSD	1330-20-7	Xylene (total)	BSD	RPD	1	%	20
V1F848-BSD	1868-53-7	Dibromofluoromethane	BSD	SURR	93	%	70-130
V1F848-BSD	2037-26-5	Toluene-D8	BSD	SURR	100	%	70-130
V1F848-BSD	460-00-4	4-Bromofluorobenzene	BSD	SURR	94	%	70-130

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V1F848-MB	1868-53-7	Dibromofluoromethane	MB	SURR	96	%	70-130
V1F848-MB	2037-26-5	Toluene-D8	MB	SURR	99	%	70-130
V1F848-MB	460-00-4	4-Bromofluorobenzene	MB	SURR	96	%	70-130
JE31948-1	1868-53-7	Dibromofluoromethane	SAMP	SURR	97	%	70-130
JE31948-1	2037-26-5	Toluene-D8	SAMP	SURR	96	%	70-130
JE31948-1	460-00-4	4-Bromofluorobenzene	SAMP	SURR	96	%	70-130
V2F848	SW846 8260D						
V2F848-BS	67-64-1	Acetone	BSP	REC	103	%	70-130
V2F848-BS	71-43-2	Benzene	BSP	REC	100	%	70-130
V2F848-BS	108-86-1	Bromobenzene	BSP	REC	99	%	70-130
V2F848-BS	74-97-5	Bromochloromethane	BSP	REC	94	%	70-130
V2F848-BS	75-27-4	Bromodichloromethane	BSP	REC	100	%	70-130
V2F848-BS	75-25-2	Bromoform	BSP	REC	104	%	70-130
V2F848-BS	74-83-9	Bromomethane	BSP	REC	127	%	70-130
V2F848-BS	78-93-3	2-Butanone (MEK)	BSP	REC	106	%	70-130
V2F848-BS	104-51-8	n-Butylbenzene	BSP	REC	103	%	70-130
V2F848-BS	135-98-8	sec-Butylbenzene	BSP	REC	99	%	70-130
V2F848-BS	98-06-6	tert-Butylbenzene	BSP	REC	102	%	70-130
V2F848-BS	75-15-0	Carbon disulfide	BSP	REC	103	%	70-130
V2F848-BS	56-23-5	Carbon tetrachloride	BSP	REC	97	%	70-130
V2F848-BS	108-90-7	Chlorobenzene	BSP	REC	99	%	70-130
V2F848-BS	75-00-3	Chloroethane	BSP	REC	103	%	70-130
V2F848-BS	67-66-3	Chloroform	BSP	REC	94	%	70-130
V2F848-BS	74-87-3	Chloromethane	BSP	REC	97	%	70-130
V2F848-BS	95-49-8	o-Chlorotoluene	BSP	REC	96	%	70-130
V2F848-BS	106-43-4	p-Chlorotoluene	BSP	REC	98	%	70-130
V2F848-BS	108-20-3	Di-Isopropyl ether	BSP	REC	102	%	70-130
V2F848-BS	96-12-8	1,2-Dibromo-3-chloropropane	BSP	REC	101	%	70-130
V2F848-BS	124-48-1	Dibromochloromethane	BSP	REC	105	%	70-130
V2F848-BS	106-93-4	1,2-Dibromoethane	BSP	REC	103	%	70-130
V2F848-BS	95-50-1	1,2-Dichlorobenzene	BSP	REC	102	%	70-130
V2F848-BS	541-73-1	1,3-Dichlorobenzene	BSP	REC	102	%	70-130
V2F848-BS	106-46-7	1,4-Dichlorobenzene	BSP	REC	102	%	70-130
V2F848-BS	75-71-8	Dichlorodifluoromethane	BSP	REC	94	%	70-130
V2F848-BS	75-34-3	1,1-Dichloroethane	BSP	REC	98	%	70-130
V2F848-BS	107-06-2	1,2-Dichloroethane	BSP	REC	98	%	70-130
V2F848-BS	75-35-4	1,1-Dichloroethene	BSP	REC	105	%	70-130
V2F848-BS	156-59-2	cis-1,2-Dichloroethene	BSP	REC	98	%	70-130
V2F848-BS	156-60-5	trans-1,2-Dichloroethene	BSP	REC	104	%	70-130
V2F848-BS	78-87-5	1,2-Dichloropropane	BSP	REC	102	%	70-130
V2F848-BS	142-28-9	1,3-Dichloropropane	BSP	REC	104	%	70-130
V2F848-BS	594-20-7	2,2-Dichloropropane	BSP	REC	95	%	70-130
V2F848-BS	563-58-6	1,1-Dichloropropene	BSP	REC	107	%	70-130

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V2F848-BS	10061-01-5	cis-1,3-Dichloropropene	BSP	REC	107	%	70-130
V2F848-BS	10061-02-6	trans-1,3-Dichloropropene	BSP	REC	101	%	70-130
V2F848-BS	123-91-1	1,4-Dioxane	BSP	REC	97	%	70-130
V2F848-BS	60-29-7	Ethyl Ether	BSP	REC	108	%	70-130
V2F848-BS	100-41-4	Ethylbenzene	BSP	REC	100	%	70-130
V2F848-BS	87-68-3	Hexachlorobutadiene	BSP	REC	102	%	70-130
V2F848-BS	591-78-6	2-Hexanone	BSP	REC	102	%	70-130
V2F848-BS	98-82-8	Isopropylbenzene	BSP	REC	103	%	70-130
V2F848-BS	99-87-6	p-Isopropyltoluene	BSP	REC	104	%	70-130
V2F848-BS	1634-04-4	Methyl Tert Butyl Ether	BSP	REC	108	%	70-130
V2F848-BS	108-10-1	4-Methyl-2-pentanone(MIBK)	BSP	REC	106	%	70-130
V2F848-BS	74-95-3	Methylene bromide	BSP	REC	93	%	70-130
V2F848-BS	75-09-2	Methylene chloride	BSP	REC	96	%	70-130
V2F848-BS	91-20-3	Naphthalene	BSP	REC	100	%	70-130
V2F848-BS	103-65-1	n-Propylbenzene	BSP	REC	100	%	70-130
V2F848-BS	100-42-5	Styrene	BSP	REC	104	%	70-130
V2F848-BS	994-05-8	tert-Amyl Methyl Ether	BSP	REC	101	%	70-130
V2F848-BS	637-92-3	tert-Butyl Ethyl Ether	BSP	REC	103	%	70-130
V2F848-BS	630-20-6	1,1,1,2-Tetrachloroethane	BSP	REC	106	%	70-130
V2F848-BS	79-34-5	1,1,2,2-Tetrachloroethane	BSP	REC	100	%	70-130
V2F848-BS	127-18-4	Tetrachloroethene	BSP	REC	109	%	70-130
V2F848-BS	109-99-9	Tetrahydrofuran	BSP	REC	92	%	70-130
V2F848-BS	108-88-3	Toluene	BSP	REC	100	%	70-130
V2F848-BS	87-61-6	1,2,3-Trichlorobenzene	BSP	REC	106	%	70-130
V2F848-BS	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	106	%	70-130
V2F848-BS	71-55-6	1,1,1-Trichloroethane	BSP	REC	99	%	70-130
V2F848-BS	79-00-5	1,1,2-Trichloroethane	BSP	REC	101	%	70-130
V2F848-BS	79-01-6	Trichloroethene	BSP	REC	107	%	70-130
V2F848-BS	75-69-4	Trichlorofluoromethane	BSP	REC	116	%	70-130
V2F848-BS	96-18-4	1,2,3-Trichloropropane	BSP	REC	99	%	70-130
V2F848-BS	95-63-6	1,2,4-Trimethylbenzene	BSP	REC	100	%	70-130
V2F848-BS	108-67-8	1,3,5-Trimethylbenzene	BSP	REC	101	%	70-130
V2F848-BS	75-01-4	Vinyl chloride	BSP	REC	101	%	70-130
V2F848-BS		m,p-Xylene	BSP	REC	102	%	70-130
V2F848-BS	95-47-6	o-Xylene	BSP	REC	99	%	70-130
V2F848-BS	1330-20-7	Xylene (total)	BSP	REC	101	%	70-130
V2F848-BS	1868-53-7	Dibromofluoromethane	BSP	SURR	97	%	70-130
V2F848-BS	2037-26-5	Toluene-D8	BSP	SURR	99	%	70-130
V2F848-BS	460-00-4	4-Bromofluorobenzene	BSP	SURR	96	%	70-130
V2F848-BSD	67-64-1	Acetone	BSD	REC	103	%	70-130
V2F848-BSD	67-64-1	Acetone	BSD	RPD	0	%	20
V2F848-BSD	71-43-2	Benzene	BSD	REC	101	%	70-130
V2F848-BSD	71-43-2	Benzene	BSD	RPD	0	%	20
V2F848-BSD	108-86-1	Bromobenzene	BSD	REC	101	%	70-130
V2F848-BSD	108-86-1	Bromobenzene	BSD	RPD	2	%	20

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V2F848-BSD	74-97-5	Bromochloromethane	BSD	REC	97	%	70-130
V2F848-BSD	74-97-5	Bromochloromethane	BSD	RPD	3	%	20
V2F848-BSD	75-27-4	Bromodichloromethane	BSD	REC	98	%	70-130
V2F848-BSD	75-27-4	Bromodichloromethane	BSD	RPD	2	%	20
V2F848-BSD	75-25-2	Bromoform	BSD	REC	105	%	70-130
V2F848-BSD	75-25-2	Bromoform	BSD	RPD	1	%	20
V2F848-BSD	74-83-9	Bromomethane	BSD	REC	136	%	70-130
V2F848-BSD	74-83-9	Bromomethane	BSD	RPD	7	%	20
V2F848-BSD	78-93-3	2-Butanone (MEK)	BSD	REC	104	%	70-130
V2F848-BSD	78-93-3	2-Butanone (MEK)	BSD	RPD	2	%	20
V2F848-BSD	104-51-8	n-Butylbenzene	BSD	REC	103	%	70-130
V2F848-BSD	104-51-8	n-Butylbenzene	BSD	RPD	0	%	20
V2F848-BSD	135-98-8	sec-Butylbenzene	BSD	REC	100	%	70-130
V2F848-BSD	135-98-8	sec-Butylbenzene	BSD	RPD	1	%	20
V2F848-BSD	98-06-6	tert-Butylbenzene	BSD	REC	101	%	70-130
V2F848-BSD	98-06-6	tert-Butylbenzene	BSD	RPD	1	%	20
V2F848-BSD	75-15-0	Carbon disulfide	BSD	REC	103	%	70-130
V2F848-BSD	75-15-0	Carbon disulfide	BSD	RPD	0	%	20
V2F848-BSD	56-23-5	Carbon tetrachloride	BSD	REC	94	%	70-130
V2F848-BSD	56-23-5	Carbon tetrachloride	BSD	RPD	3	%	20
V2F848-BSD	108-90-7	Chlorobenzene	BSD	REC	102	%	70-130
V2F848-BSD	108-90-7	Chlorobenzene	BSD	RPD	3	%	20
V2F848-BSD	75-00-3	Chloroethane	BSD	REC	97	%	70-130
V2F848-BSD	75-00-3	Chloroethane	BSD	RPD	6	%	20
V2F848-BSD	67-66-3	Chloroform	BSD	REC	94	%	70-130
V2F848-BSD	67-66-3	Chloroform	BSD	RPD	0	%	20
V2F848-BSD	74-87-3	Chloromethane	BSD	REC	95	%	70-130
V2F848-BSD	74-87-3	Chloromethane	BSD	RPD	2	%	20
V2F848-BSD	95-49-8	o-Chlorotoluene	BSD	REC	97	%	70-130
V2F848-BSD	95-49-8	o-Chlorotoluene	BSD	RPD	1	%	20
V2F848-BSD	106-43-4	p-Chlorotoluene	BSD	REC	96	%	70-130
V2F848-BSD	106-43-4	p-Chlorotoluene	BSD	RPD	2	%	20
V2F848-BSD	108-20-3	Di-Isopropyl ether	BSD	REC	103	%	70-130
V2F848-BSD	108-20-3	Di-Isopropyl ether	BSD	RPD	1	%	20
V2F848-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	REC	104	%	70-130
V2F848-BSD	96-12-8	1,2-Dibromo-3-chloropropane	BSD	RPD	3	%	20
V2F848-BSD	124-48-1	Dibromochloromethane	BSD	REC	106	%	70-130
V2F848-BSD	124-48-1	Dibromochloromethane	BSD	RPD	0	%	20
V2F848-BSD	106-93-4	1,2-Dibromoethane	BSD	REC	103	%	70-130
V2F848-BSD	106-93-4	1,2-Dibromoethane	BSD	RPD	0	%	20
V2F848-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	102	%	70-130
V2F848-BSD	95-50-1	1,2-Dichlorobenzene	BSD	RPD	0	%	20
V2F848-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	104	%	70-130
V2F848-BSD	541-73-1	1,3-Dichlorobenzene	BSD	RPD	2	%	20
V2F848-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	101	%	70-130

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V2F848-BSD	106-46-7	1,4-Dichlorobenzene	BSD	RPD	1	%	20
V2F848-BSD	75-71-8	Dichlorodifluoromethane	BSD	REC	95	%	70-130
V2F848-BSD	75-71-8	Dichlorodifluoromethane	BSD	RPD	1	%	20
V2F848-BSD	75-34-3	1,1-Dichloroethane	BSD	REC	97	%	70-130
V2F848-BSD	75-34-3	1,1-Dichloroethane	BSD	RPD	1	%	20
V2F848-BSD	107-06-2	1,2-Dichloroethane	BSD	REC	98	%	70-130
V2F848-BSD	107-06-2	1,2-Dichloroethane	BSD	RPD	0	%	20
V2F848-BSD	75-35-4	1,1-Dichloroethene	BSD	REC	105	%	70-130
V2F848-BSD	75-35-4	1,1-Dichloroethene	BSD	RPD	0	%	20
V2F848-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	REC	99	%	70-130
V2F848-BSD	156-59-2	cis-1,2-Dichloroethene	BSD	RPD	2	%	20
V2F848-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	REC	105	%	70-130
V2F848-BSD	156-60-5	trans-1,2-Dichloroethene	BSD	RPD	1	%	20
V2F848-BSD	78-87-5	1,2-Dichloropropane	BSD	REC	100	%	70-130
V2F848-BSD	78-87-5	1,2-Dichloropropane	BSD	RPD	2	%	20
V2F848-BSD	142-28-9	1,3-Dichloropropane	BSD	REC	104	%	70-130
V2F848-BSD	142-28-9	1,3-Dichloropropane	BSD	RPD	0	%	20
V2F848-BSD	594-20-7	2,2-Dichloropropane	BSD	REC	94	%	70-130
V2F848-BSD	594-20-7	2,2-Dichloropropane	BSD	RPD	1	%	20
V2F848-BSD	563-58-6	1,1-Dichloropropene	BSD	REC	107	%	70-130
V2F848-BSD	563-58-6	1,1-Dichloropropene	BSD	RPD	0	%	20
V2F848-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	REC	107	%	70-130
V2F848-BSD	10061-01-5	cis-1,3-Dichloropropene	BSD	RPD	0	%	20
V2F848-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	REC	106	%	70-130
V2F848-BSD	10061-02-6	trans-1,3-Dichloropropene	BSD	RPD	4	%	20
V2F848-BSD	123-91-1	1,4-Dioxane	BSD	REC	99	%	70-130
V2F848-BSD	123-91-1	1,4-Dioxane	BSD	RPD	2	%	20
V2F848-BSD	60-29-7	Ethyl Ether	BSD	REC	106	%	70-130
V2F848-BSD	60-29-7	Ethyl Ether	BSD	RPD	2	%	20
V2F848-BSD	100-41-4	Ethylbenzene	BSD	REC	100	%	70-130
V2F848-BSD	100-41-4	Ethylbenzene	BSD	RPD	0	%	20
V2F848-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	103	%	70-130
V2F848-BSD	87-68-3	Hexachlorobutadiene	BSD	RPD	1	%	20
V2F848-BSD	591-78-6	2-Hexanone	BSD	REC	106	%	70-130
V2F848-BSD	591-78-6	2-Hexanone	BSD	RPD	3	%	20
V2F848-BSD	98-82-8	Isopropylbenzene	BSD	REC	104	%	70-130
V2F848-BSD	98-82-8	Isopropylbenzene	BSD	RPD	1	%	20
V2F848-BSD	99-87-6	p-Isopropyltoluene	BSD	REC	103	%	70-130
V2F848-BSD	99-87-6	p-Isopropyltoluene	BSD	RPD	1	%	20
V2F848-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	REC	108	%	70-130
V2F848-BSD	1634-04-4	Methyl Tert Butyl Ether	BSD	RPD	1	%	20
V2F848-BSD	108-10-1	4-Methyl-2-pentanone(MIBK)	BSD	REC	108	%	70-130
V2F848-BSD	108-10-1	4-Methyl-2-pentanone(MIBK)	BSD	RPD	2	%	20
V2F848-BSD	74-95-3	Methylene bromide	BSD	REC	94	%	70-130
V2F848-BSD	74-95-3	Methylene bromide	BSD	RPD	1	%	20

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V2F848-BSD	75-09-2	Methylene chloride	BSD	REC	96	%	70-130
V2F848-BSD	75-09-2	Methylene chloride	BSD	RPD	0	%	20
V2F848-BSD	91-20-3	Naphthalene	BSD	REC	100	%	70-130
V2F848-BSD	91-20-3	Naphthalene	BSD	RPD	0	%	20
V2F848-BSD	103-65-1	n-Propylbenzene	BSD	REC	100	%	70-130
V2F848-BSD	103-65-1	n-Propylbenzene	BSD	RPD	0	%	20
V2F848-BSD	100-42-5	Styrene	BSD	REC	104	%	70-130
V2F848-BSD	100-42-5	Styrene	BSD	RPD	0	%	20
V2F848-BSD	994-05-8	tert-Amyl Methyl Ether	BSD	REC	100	%	70-130
V2F848-BSD	994-05-8	tert-Amyl Methyl Ether	BSD	RPD	1	%	20
V2F848-BSD	637-92-3	tert-Butyl Ethyl Ether	BSD	REC	104	%	70-130
V2F848-BSD	637-92-3	tert-Butyl Ethyl Ether	BSD	RPD	1	%	20
V2F848-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	REC	105	%	70-130
V2F848-BSD	630-20-6	1,1,1,2-Tetrachloroethane	BSD	RPD	1	%	20
V2F848-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	REC	101	%	70-130
V2F848-BSD	79-34-5	1,1,2,2-Tetrachloroethane	BSD	RPD	2	%	20
V2F848-BSD	127-18-4	Tetrachloroethene	BSD	REC	110	%	70-130
V2F848-BSD	127-18-4	Tetrachloroethene	BSD	RPD	1	%	20
V2F848-BSD	109-99-9	Tetrahydrofuran	BSD	REC	95	%	70-130
V2F848-BSD	109-99-9	Tetrahydrofuran	BSD	RPD	4	%	20
V2F848-BSD	108-88-3	Toluene	BSD	REC	102	%	70-130
V2F848-BSD	108-88-3	Toluene	BSD	RPD	2	%	20
V2F848-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	REC	106	%	70-130
V2F848-BSD	87-61-6	1,2,3-Trichlorobenzene	BSD	RPD	0	%	25
V2F848-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	108	%	70-130
V2F848-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	RPD	2	%	20
V2F848-BSD	71-55-6	1,1,1-Trichloroethane	BSD	REC	98	%	70-130
V2F848-BSD	71-55-6	1,1,1-Trichloroethane	BSD	RPD	1	%	20
V2F848-BSD	79-00-5	1,1,2-Trichloroethane	BSD	REC	100	%	70-130
V2F848-BSD	79-00-5	1,1,2-Trichloroethane	BSD	RPD	1	%	20
V2F848-BSD	79-01-6	Trichloroethene	BSD	REC	109	%	70-130
V2F848-BSD	79-01-6	Trichloroethene	BSD	RPD	2	%	20
V2F848-BSD	75-69-4	Trichlorofluoromethane	BSD	REC	115	%	70-130
V2F848-BSD	75-69-4	Trichlorofluoromethane	BSD	RPD	2	%	20
V2F848-BSD	96-18-4	1,2,3-Trichloropropane	BSD	REC	99	%	70-130
V2F848-BSD	96-18-4	1,2,3-Trichloropropane	BSD	RPD	0	%	20
V2F848-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	REC	99	%	70-130
V2F848-BSD	95-63-6	1,2,4-Trimethylbenzene	BSD	RPD	1	%	20
V2F848-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	REC	100	%	70-130
V2F848-BSD	108-67-8	1,3,5-Trimethylbenzene	BSD	RPD	1	%	20
V2F848-BSD	75-01-4	Vinyl chloride	BSD	REC	101	%	70-130
V2F848-BSD	75-01-4	Vinyl chloride	BSD	RPD	0	%	20
V2F848-BSD		m,p-Xylene	BSD	REC	100	%	70-130
V2F848-BSD		m,p-Xylene	BSD	RPD	2	%	20
V2F848-BSD	95-47-6	o-Xylene	BSD	REC	101	%	70-130

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
V2F848-BSD	95-47-6	o-Xylene	BSD	RPD	2	%	20
V2F848-BSD	1330-20-7	Xylene (total)	BSD	REC	101	%	70-130
V2F848-BSD	1330-20-7	Xylene (total)	BSD	RPD	0	%	20
V2F848-BSD	1868-53-7	Dibromofluoromethane	BSD	SURR	98	%	70-130
V2F848-BSD	2037-26-5	Toluene-D8	BSD	SURR	101	%	70-130
V2F848-BSD	460-00-4	4-Bromofluorobenzene	BSD	SURR	95	%	70-130
V2F848-MB	1868-53-7	Dibromofluoromethane	MB	SURR	97	%	70-130
V2F848-MB	2037-26-5	Toluene-D8	MB	SURR	99	%	70-130
V2F848-MB	460-00-4	4-Bromofluorobenzene	MB	SURR	95	%	70-130
JE31948-2	1868-53-7	Dibromofluoromethane	SAMP	SURR	93	%	70-130
JE31948-2	2037-26-5	Toluene-D8	SAMP	SURR	99	%	70-130
JE31948-2	460-00-4	4-Bromofluorobenzene	SAMP	SURR	96	%	70-130
OP72510	SW846 8270E						
OP72510-BS1	65-85-0	Benzoic Acid	BSP	REC	66	%	30-130
OP72510-BS1	95-57-8	2-Chlorophenol	BSP	REC	67	%	30-130
OP72510-BS1	59-50-7	4-Chloro-3-methyl phenol	BSP	REC	83	%	30-130
OP72510-BS1	120-83-2	2,4-Dichlorophenol	BSP	REC	76	%	30-130
OP72510-BS1	105-67-9	2,4-Dimethylphenol	BSP	REC	71	%	30-130
OP72510-BS1	51-28-5	2,4-Dinitrophenol	BSP	REC	153	%	30-130
OP72510-BS1	534-52-1	4,6-Dinitro-o-cresol	BSP	REC	142 [a]	%	30-130
OP72510-BS1	95-48-7	2-Methylphenol	BSP	REC	65	%	30-130
OP72510-BS1		3&4-Methylphenol	BSP	REC	65	%	30-130
OP72510-BS1	88-75-5	2-Nitrophenol	BSP	REC	104	%	30-130
OP72510-BS1	100-02-7	4-Nitrophenol	BSP	REC	67	%	30-130
OP72510-BS1	87-86-5	Pentachlorophenol	BSP	REC	108	%	30-130
OP72510-BS1	108-95-2	Phenol	BSP	REC	40	%	30-130
OP72510-BS1	95-95-4	2,4,5-Trichlorophenol	BSP	REC	85	%	30-130
OP72510-BS1	88-06-2	2,4,6-Trichlorophenol	BSP	REC	77	%	30-130
OP72510-BS1	83-32-9	Acenaphthene	BSP	REC	61	%	40-140
OP72510-BS1	208-96-8	Acenaphthylene	BSP	REC	64	%	40-140
OP72510-BS1	98-86-2	Acetophenone	BSP	REC	69	%	40-140
OP72510-BS1	62-53-3	Aniline	BSP	REC	46	%	40-140
OP72510-BS1	120-12-7	Anthracene	BSP	REC	83	%	40-140
OP72510-BS1	56-55-3	Benzo(a)anthracene	BSP	REC	90	%	40-140
OP72510-BS1	50-32-8	Benzo(a)pyrene	BSP	REC	85	%	40-140
OP72510-BS1	205-99-2	Benzo(b)fluoranthene	BSP	REC	90	%	40-140
OP72510-BS1	191-24-2	Benzo(g,h,i)perylene	BSP	REC	60	%	40-140
OP72510-BS1	207-08-9	Benzo(k)fluoranthene	BSP	REC	89	%	40-140
OP72510-BS1	101-55-3	4-Bromophenyl phenyl ether	BSP	REC	76	%	40-140
OP72510-BS1	85-68-7	Butyl benzyl phthalate	BSP	REC	115	%	40-140
OP72510-BS1	91-58-7	2-Chloronaphthalene	BSP	REC	55	%	40-140
OP72510-BS1	106-47-8	4-Chloroaniline	BSP	REC	71	%	40-140
OP72510-BS1	218-01-9	Chrysene	BSP	REC	87	%	40-140

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP72510-BS1	111-91-1	bis(2-Chloroethoxy)methane	BSP	REC	72	%	40-140
OP72510-BS1	111-44-4	bis(2-Chloroethyl)ether	BSP	REC	65	%	40-140
OP72510-BS1	108-60-1	2,2'-Oxybis(1-chloropropane)	BSP	REC	60	%	40-140
OP72510-BS1	7005-72-3	4-Chlorophenyl phenyl ether	BSP	REC	68	%	40-140
OP72510-BS1	95-50-1	1,2-Dichlorobenzene	BSP	REC	52	%	40-140
OP72510-BS1	122-66-7	1,2-Diphenylhydrazine	BSP	REC	75	%	40-140
OP72510-BS1	541-73-1	1,3-Dichlorobenzene	BSP	REC	49	%	40-140
OP72510-BS1	106-46-7	1,4-Dichlorobenzene	BSP	REC	50	%	40-140
OP72510-BS1	121-14-2	2,4-Dinitrotoluene	BSP	REC	132	%	40-140
OP72510-BS1	606-20-2	2,6-Dinitrotoluene	BSP	REC	123	%	40-140
OP72510-BS1	91-94-1	3,3'-Dichlorobenzidine	BSP	REC	99	%	40-140
OP72510-BS1	53-70-3	Dibenzo(a,h)anthracene	BSP	REC	66	%	40-140
OP72510-BS1	132-64-9	Dibenzofuran	BSP	REC	66	%	40-140
OP72510-BS1	84-74-2	Di-n-butyl phthalate	BSP	REC	93	%	40-140
OP72510-BS1	117-84-0	Di-n-octyl phthalate	BSP	REC	126	%	40-140
OP72510-BS1	84-66-2	Diethyl phthalate	BSP	REC	86	%	40-140
OP72510-BS1	131-11-3	Dimethyl phthalate	BSP	REC	81	%	40-140
OP72510-BS1	117-81-7	bis(2-Ethylhexyl)phthalate	BSP	REC	111	%	40-140
OP72510-BS1	206-44-0	Fluoranthene	BSP	REC	87	%	40-140
OP72510-BS1	86-73-7	Fluorene	BSP	REC	72	%	40-140
OP72510-BS1	118-74-1	Hexachlorobenzene	BSP	REC	81	%	40-140
OP72510-BS1	87-68-3	Hexachlorobutadiene	BSP	REC	44	%	40-140
OP72510-BS1	77-47-4	Hexachlorocyclopentadiene	BSP	REC	48	%	40-140
OP72510-BS1	67-72-1	Hexachloroethane	BSP	REC	46	%	40-140
OP72510-BS1	193-39-5	Indeno(1,2,3-cd)pyrene	BSP	REC	65	%	40-140
OP72510-BS1	78-59-1	Isophorone	BSP	REC	72	%	40-140
OP72510-BS1	91-57-6	2-Methylnaphthalene	BSP	REC	57	%	40-140
OP72510-BS1	91-20-3	Naphthalene	BSP	REC	57	%	40-140
OP72510-BS1	98-95-3	Nitrobenzene	BSP	REC	101	%	40-140
OP72510-BS1	62-75-9	n-Nitrosodimethylamine	BSP	REC	56	%	40-140
OP72510-BS1	621-64-7	N-Nitroso-di-n-propylamine	BSP	REC	72	%	40-140
OP72510-BS1	86-30-6	N-Nitrosodiphenylamine	BSP	REC	85	%	40-140
OP72510-BS1	85-01-8	Phenanthrene	BSP	REC	80	%	40-140
OP72510-BS1	129-00-0	Pyrene	BSP	REC	97	%	40-140
OP72510-BS1	120-82-1	1,2,4-Trichlorobenzene	BSP	REC	51	%	40-140
OP72510-BS1	367-12-4	2-Fluorophenol	BSP	SURR	53	%	15-110
OP72510-BS1	4165-62-2	Phenol-d5	BSP	SURR	42	%	15-110
OP72510-BS1	118-79-6	2,4,6-Tribromophenol	BSP	SURR	106	%	15-110
OP72510-BS1	4165-60-0	Nitrobenzene-d5	BSP	SURR	112	%	30-130
OP72510-BS1	321-60-8	2-Fluorobiphenyl	BSP	SURR	68	%	30-130
OP72510-BS1	1718-51-0	Terphenyl-d14	BSP	SURR	95	%	30-130
OP72510-BSD	65-85-0	Benzoic Acid	BSD	REC	57	%	30-130
OP72510-BSD	65-85-0	Benzoic Acid	BSD	RPD	15	%	20
OP72510-BSD	95-57-8	2-Chlorophenol	BSD	REC	54	%	30-130
OP72510-BSD	95-57-8	2-Chlorophenol	BSD	RPD	21	%	20

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP72510-BSD	59-50-7	4-Chloro-3-methyl phenol	BSD	REC	71	%	30-130
OP72510-BSD	59-50-7	4-Chloro-3-methyl phenol	BSD	RPD	16	%	20
OP72510-BSD	120-83-2	2,4-Dichlorophenol	BSD	REC	61	%	30-130
OP72510-BSD	120-83-2	2,4-Dichlorophenol	BSD	RPD	22	%	20
OP72510-BSD	105-67-9	2,4-Dimethylphenol	BSD	REC	61	%	30-130
OP72510-BSD	105-67-9	2,4-Dimethylphenol	BSD	RPD	15	%	20
OP72510-BSD	51-28-5	2,4-Dinitrophenol	BSD	REC	140	%	30-130
OP72510-BSD	51-28-5	2,4-Dinitrophenol	BSD	RPD	9	%	20
OP72510-BSD	534-52-1	4,6-Dinitro-o-cresol	BSD	REC	131	%	30-130
OP72510-BSD	534-52-1	4,6-Dinitro-o-cresol	BSD	RPD	8	%	20
OP72510-BSD	95-48-7	2-Methylphenol	BSD	REC	53	%	30-130
OP72510-BSD	95-48-7	2-Methylphenol	BSD	RPD	20	%	20
OP72510-BSD		3&4-Methylphenol	BSD	REC	54	%	30-130
OP72510-BSD		3&4-Methylphenol	BSD	RPD	19	%	20
OP72510-BSD	88-75-5	2-Nitrophenol	BSD	REC	83	%	30-130
OP72510-BSD	88-75-5	2-Nitrophenol	BSD	RPD	23	%	20
OP72510-BSD	100-02-7	4-Nitrophenol	BSD	REC	61	%	30-130
OP72510-BSD	100-02-7	4-Nitrophenol	BSD	RPD	9	%	20
OP72510-BSD	87-86-5	Pentachlorophenol	BSD	REC	103	%	30-130
OP72510-BSD	87-86-5	Pentachlorophenol	BSD	RPD	4	%	20
OP72510-BSD	108-95-2	Phenol	BSD	REC	31	%	30-130
OP72510-BSD	108-95-2	Phenol	BSD	RPD	25	%	20
OP72510-BSD	95-95-4	2,4,5-Trichlorophenol	BSD	REC	72	%	30-130
OP72510-BSD	95-95-4	2,4,5-Trichlorophenol	BSD	RPD	17	%	20
OP72510-BSD	88-06-2	2,4,6-Trichlorophenol	BSD	REC	65	%	30-130
OP72510-BSD	88-06-2	2,4,6-Trichlorophenol	BSD	RPD	16	%	20
OP72510-BSD	83-32-9	Acenaphthene	BSD	REC	54	%	40-140
OP72510-BSD	83-32-9	Acenaphthene	BSD	RPD	13	%	20
OP72510-BSD	208-96-8	Acenaphthylene	BSD	REC	51	%	40-140
OP72510-BSD	208-96-8	Acenaphthylene	BSD	RPD	21	%	20
OP72510-BSD	98-86-2	Acetophenone	BSD	REC	58	%	40-140
OP72510-BSD	98-86-2	Acetophenone	BSD	RPD	17	%	20
OP72510-BSD	62-53-3	Aniline	BSD	REC	0 [b]	%	40-140
OP72510-BSD	62-53-3	Aniline	BSD	RPD	200 [c]	%	20
OP72510-BSD	120-12-7	Anthracene	BSD	REC	73	%	40-140
OP72510-BSD	120-12-7	Anthracene	BSD	RPD	13	%	20
OP72510-BSD	56-55-3	Benzo(a)anthracene	BSD	REC	82	%	40-140
OP72510-BSD	56-55-3	Benzo(a)anthracene	BSD	RPD	9	%	20
OP72510-BSD	50-32-8	Benzo(a)pyrene	BSD	REC	69	%	40-140
OP72510-BSD	50-32-8	Benzo(a)pyrene	BSD	RPD	21	%	20
OP72510-BSD	205-99-2	Benzo(b)fluoranthene	BSD	REC	92	%	40-140
OP72510-BSD	205-99-2	Benzo(b)fluoranthene	BSD	RPD	2	%	20
OP72510-BSD	191-24-2	Benzo(g,h,i)perylene	BSD	REC	62	%	40-140
OP72510-BSD	191-24-2	Benzo(g,h,i)perylene	BSD	RPD	3	%	20
OP72510-BSD	207-08-9	Benzo(k)fluoranthene	BSD	REC	93	%	40-140

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP72510-BSD	207-08-9	Benzo(k)fluoranthene	BSD	RPD	5	%	20
OP72510-BSD	101-55-3	4-Bromophenyl phenyl ether	BSD	REC	67	%	40-140
OP72510-BSD	101-55-3	4-Bromophenyl phenyl ether	BSD	RPD	12	%	20
OP72510-BSD	85-68-7	Butyl benzyl phthalate	BSD	REC	106	%	40-140
OP72510-BSD	85-68-7	Butyl benzyl phthalate	BSD	RPD	8	%	20
OP72510-BSD	91-58-7	2-Chloronaphthalene	BSD	REC	48	%	40-140
OP72510-BSD	91-58-7	2-Chloronaphthalene	BSD	RPD	13	%	20
OP72510-BSD	106-47-8	4-Chloroaniline	BSD	REC	0 [b]	%	40-140
OP72510-BSD	106-47-8	4-Chloroaniline	BSD	RPD	200 [c]	%	20
OP72510-BSD	218-01-9	Chrysene	BSD	REC	83	%	40-140
OP72510-BSD	218-01-9	Chrysene	BSD	RPD	5	%	20
OP72510-BSD	111-91-1	bis(2-Chloroethoxy)methane	BSD	REC	54	%	40-140
OP72510-BSD	111-91-1	bis(2-Chloroethoxy)methane	BSD	RPD	28	%	20
OP72510-BSD	111-44-4	bis(2-Chloroethyl)ether	BSD	REC	51	%	40-140
OP72510-BSD	111-44-4	bis(2-Chloroethyl)ether	BSD	RPD	23	%	20
OP72510-BSD	108-60-1	2,2'-Oxybis(1-chloropropane)	BSD	REC	48	%	40-140
OP72510-BSD	108-60-1	2,2'-Oxybis(1-chloropropane)	BSD	RPD	22	%	20
OP72510-BSD	7005-72-3	4-Chlorophenyl phenyl ether	BSD	REC	61	%	40-140
OP72510-BSD	7005-72-3	4-Chlorophenyl phenyl ether	BSD	RPD	10	%	20
OP72510-BSD	95-50-1	1,2-Dichlorobenzene	BSD	REC	41	%	40-140
OP72510-BSD	95-50-1	1,2-Dichlorobenzene	BSD	RPD	25	%	20
OP72510-BSD	122-66-7	1,2-Diphenylhydrazine	BSD	REC	68	%	40-140
OP72510-BSD	122-66-7	1,2-Diphenylhydrazine	BSD	RPD	10	%	20
OP72510-BSD	541-73-1	1,3-Dichlorobenzene	BSD	REC	38	%	40-140
OP72510-BSD	541-73-1	1,3-Dichlorobenzene	BSD	RPD	25	%	20
OP72510-BSD	106-46-7	1,4-Dichlorobenzene	BSD	REC	39	%	40-140
OP72510-BSD	106-46-7	1,4-Dichlorobenzene	BSD	RPD	24	%	20
OP72510-BSD	121-14-2	2,4-Dinitrotoluene	BSD	REC	129	%	40-140
OP72510-BSD	121-14-2	2,4-Dinitrotoluene	BSD	RPD	2	%	20
OP72510-BSD	606-20-2	2,6-Dinitrotoluene	BSD	REC	112	%	40-140
OP72510-BSD	606-20-2	2,6-Dinitrotoluene	BSD	RPD	9	%	20
OP72510-BSD	91-94-1	3,3'-Dichlorobenzidine	BSD	REC	0 [b]	%	40-140
OP72510-BSD	91-94-1	3,3'-Dichlorobenzidine	BSD	RPD	200 [c]	%	20
OP72510-BSD	53-70-3	Dibenzo(a,h)anthracene	BSD	REC	66	%	40-140
OP72510-BSD	53-70-3	Dibenzo(a,h)anthracene	BSD	RPD	0	%	20
OP72510-BSD	132-64-9	Dibenzofuran	BSD	REC	59	%	40-140
OP72510-BSD	132-64-9	Dibenzofuran	BSD	RPD	11	%	20
OP72510-BSD	84-74-2	Di-n-butyl phthalate	BSD	REC	91	%	40-140
OP72510-BSD	84-74-2	Di-n-butyl phthalate	BSD	RPD	2	%	20
OP72510-BSD	117-84-0	Di-n-octyl phthalate	BSD	REC	132	%	40-140
OP72510-BSD	117-84-0	Di-n-octyl phthalate	BSD	RPD	4	%	20
OP72510-BSD	84-66-2	Diethyl phthalate	BSD	REC	83	%	40-140
OP72510-BSD	84-66-2	Diethyl phthalate	BSD	RPD	4	%	20
OP72510-BSD	131-11-3	Dimethyl phthalate	BSD	REC	78	%	40-140
OP72510-BSD	131-11-3	Dimethyl phthalate	BSD	RPD	4	%	20

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP72510-BSD	117-81-7	bis(2-Ethylhexyl)phthalate	BSD	REC	105	%	40-140
OP72510-BSD	117-81-7	bis(2-Ethylhexyl)phthalate	BSD	RPD	5	%	20
OP72510-BSD	206-44-0	Fluoranthene	BSD	REC	84	%	40-140
OP72510-BSD	206-44-0	Fluoranthene	BSD	RPD	4	%	20
OP72510-BSD	86-73-7	Fluorene	BSD	REC	66	%	40-140
OP72510-BSD	86-73-7	Fluorene	BSD	RPD	9	%	20
OP72510-BSD	118-74-1	Hexachlorobenzene	BSD	REC	73	%	40-140
OP72510-BSD	118-74-1	Hexachlorobenzene	BSD	RPD	9	%	20
OP72510-BSD	87-68-3	Hexachlorobutadiene	BSD	REC	32	%	40-140
OP72510-BSD	87-68-3	Hexachlorobutadiene	BSD	RPD	30	%	20
OP72510-BSD	77-47-4	Hexachlorocyclopentadiene	BSD	REC	38	%	40-140
OP72510-BSD	77-47-4	Hexachlorocyclopentadiene	BSD	RPD	23	%	20
OP72510-BSD	67-72-1	Hexachloroethane	BSD	REC	33	%	40-140
OP72510-BSD	67-72-1	Hexachloroethane	BSD	RPD	32	%	20
OP72510-BSD	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	REC	62	%	40-140
OP72510-BSD	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	RPD	4	%	20
OP72510-BSD	78-59-1	Isophorone	BSD	REC	61	%	40-140
OP72510-BSD	78-59-1	Isophorone	BSD	RPD	16	%	20
OP72510-BSD	91-57-6	2-Methylnaphthalene	BSD	REC	49	%	40-140
OP72510-BSD	91-57-6	2-Methylnaphthalene	BSD	RPD	16	%	20
OP72510-BSD	91-20-3	Naphthalene	BSD	REC	47	%	40-140
OP72510-BSD	91-20-3	Naphthalene	BSD	RPD	21	%	20
OP72510-BSD	98-95-3	Nitrobenzene	BSD	REC	80	%	40-140
OP72510-BSD	98-95-3	Nitrobenzene	BSD	RPD	23	%	20
OP72510-BSD	62-75-9	n-Nitrosodimethylamine	BSD	REC	40	%	40-140
OP72510-BSD	62-75-9	n-Nitrosodimethylamine	BSD	RPD	33	%	20
OP72510-BSD	621-64-7	N-Nitroso-di-n-propylamine	BSD	REC	62	%	40-140
OP72510-BSD	621-64-7	N-Nitroso-di-n-propylamine	BSD	RPD	16	%	20
OP72510-BSD	86-30-6	N-Nitrosodiphenylamine	BSD	REC	55	%	40-140
OP72510-BSD	86-30-6	N-Nitrosodiphenylamine	BSD	RPD	42	%	20
OP72510-BSD	85-01-8	Phenanthrene	BSD	REC	74	%	40-140
OP72510-BSD	85-01-8	Phenanthrene	BSD	RPD	8	%	20
OP72510-BSD	129-00-0	Pyrene	BSD	REC	86	%	40-140
OP72510-BSD	129-00-0	Pyrene	BSD	RPD	12	%	20
OP72510-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	REC	39	%	40-140
OP72510-BSD	120-82-1	1,2,4-Trichlorobenzene	BSD	RPD	27	%	20
OP72510-BSD	367-12-4	2-Fluorophenol	BSD	SURR	40	%	15-110
OP72510-BSD	4165-62-2	Phenol-d5	BSD	SURR	30	%	15-110
OP72510-BSD	118-79-6	2,4,6-Tribromophenol	BSD	SURR	87	%	15-110
OP72510-BSD	4165-60-0	Nitrobenzene-d5	BSD	SURR	85	%	30-130
OP72510-BSD	321-60-8	2-Fluorobiphenyl	BSD	SURR	56	%	30-130
OP72510-BSD	1718-51-0	Terphenyl-d14	BSD	SURR	86	%	30-130
OP72510-MB1	367-12-4	2-Fluorophenol	MB	SURR	46	%	15-110
OP72510-MB1	4165-62-2	Phenol-d5	MB	SURR	33	%	15-110
OP72510-MB1	118-79-6	2,4,6-Tribromophenol	MB	SURR	76	%	15-110

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP72510-MB1	4165-60-0	Nitrobenzene-d5	MB	SURR	106	%	30-130
OP72510-MB1	321-60-8	2-Fluorobiphenyl	MB	SURR	61	%	30-130
OP72510-MB1	1718-51-0	Terphenyl-d14	MB	SURR	85	%	30-130
JE31948-1	367-12-4	2-Fluorophenol	SAMP	SURR	53	%	15-110
JE31948-1	4165-62-2	Phenol-d5	SAMP	SURR	37	%	15-110
JE31948-1	118-79-6	2,4,6-Tribromophenol	SAMP	SURR	101	%	15-110
JE31948-1	4165-60-0	Nitrobenzene-d5	SAMP	SURR	124	%	30-130
JE31948-1	321-60-8	2-Fluorobiphenyl	SAMP	SURR	71	%	30-130
JE31948-1	1718-51-0	Terphenyl-d14	SAMP	SURR	91	%	30-130
JE31948-2	367-12-4	2-Fluorophenol	SAMP	SURR	58	%	15-110
JE31948-2	4165-62-2	Phenol-d5	SAMP	SURR	41	%	15-110
JE31948-2	118-79-6	2,4,6-Tribromophenol	SAMP	SURR	105	%	15-110
JE31948-2	4165-60-0	Nitrobenzene-d5	SAMP	SURR	130 [d]	%	30-130
JE31948-2	321-60-8	2-Fluorobiphenyl	SAMP	SURR	75	%	30-130
JE31948-2	1718-51-0	Terphenyl-d14	SAMP	SURR	92	%	30-130
OP72510A	**SW846 8270E BY SIM**						
OP72510A-BS12	83-32-9	Acenaphthene	BSP	REC	60	%	40-140
OP72510A-BS12	208-96-8	Acenaphthylene	BSP	REC	58	%	40-140
OP72510A-BS12	120-12-7	Anthracene	BSP	REC	64	%	40-140
OP72510A-BS12	56-55-3	Benzo(a)anthracene	BSP	REC	96	%	40-140
OP72510A-BS12	50-32-8	Benzo(a)pyrene	BSP	REC	59	%	40-140
OP72510A-BS12	205-99-2	Benzo(b)fluoranthene	BSP	REC	75	%	40-140
OP72510A-BS12	191-24-2	Benzo(g,h,i)perylene	BSP	REC	60	%	40-140
OP72510A-BS12	207-08-9	Benzo(k)fluoranthene	BSP	REC	73	%	40-140
OP72510A-BS12	218-01-9	Chrysene	BSP	REC	85	%	40-140
OP72510A-BS12	53-70-3	Dibenzo(a,h)anthracene	BSP	REC	72	%	40-140
OP72510A-BS12	206-44-0	Fluoranthene	BSP	REC	70	%	40-140
OP72510A-BS12	86-73-7	Fluorene	BSP	REC	60	%	40-140
OP72510A-BS12	193-39-5	Indeno(1,2,3-cd)pyrene	BSP	REC	69	%	40-140
OP72510A-BS12	91-57-6	2-Methylnaphthalene	BSP	REC	51	%	40-140
OP72510A-BS12	91-20-3	Naphthalene	BSP	REC	55	%	40-140
OP72510A-BS12	85-01-8	Phenanthrene	BSP	REC	63	%	40-140
OP72510A-BS12	129-00-0	Pyrene	BSP	REC	71	%	40-140
OP72510A-BS12	4165-60-0	Nitrobenzene-d5	BSP	SURR	59	%	30-130
OP72510A-BS12	321-60-8	2-Fluorobiphenyl	BSP	SURR	53	%	30-130
OP72510A-BS12	1718-51-0	Terphenyl-d14	BSP	SURR	67	%	30-130
OP72510A-BSD12	83-32-9	Acenaphthene	BSD	REC	70	%	40-140
OP72510A-BSD12	83-32-9	Acenaphthene	BSD	RPD	16	%	30
OP72510A-BSD12	208-96-8	Acenaphthylene	BSD	REC	69	%	40-140
OP72510A-BSD12	208-96-8	Acenaphthylene	BSD	RPD	16	%	30
OP72510A-BSD12	120-12-7	Anthracene	BSD	REC	75	%	40-140
OP72510A-BSD12	120-12-7	Anthracene	BSD	RPD	17	%	30
OP72510A-BSD12	56-55-3	Benzo(a)anthracene	BSD	REC	96	%	40-140

*** Sample used for QC is not from job JE31948**

QC Evaluation: MA MCP Limits

Job Number: JE31948
Account: WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel
Collected: 04/10/26

QC Sample ID	CAS#	Analyte	Sample Type	Result Type	Result	Units	Limits
OP72510A-BSD12	56-55-3	Benzo(a)anthracene	BSD	RPD	1	%	30
OP72510A-BSD12	50-32-8	Benzo(a)pyrene	BSD	REC	44	%	40-140
OP72510A-BSD12	50-32-8	Benzo(a)pyrene	BSD	RPD	30	%	30
OP72510A-BSD12	205-99-2	Benzo(b)fluoranthene	BSD	REC	59	%	40-140
OP72510A-BSD12	205-99-2	Benzo(b)fluoranthene	BSD	RPD	24	%	30
OP72510A-BSD12	191-24-2	Benzo(g,h,i)perylene	BSD	REC	31	%	40-140
OP72510A-BSD12	191-24-2	Benzo(g,h,i)perylene	BSD	RPD	64 [c]	%	30
OP72510A-BSD12	207-08-9	Benzo(k)fluoranthene	BSD	REC	56	%	40-140
OP72510A-BSD12	207-08-9	Benzo(k)fluoranthene	BSD	RPD	26	%	30
OP72510A-BSD12	218-01-9	Chrysene	BSD	REC	83	%	40-140
OP72510A-BSD12	218-01-9	Chrysene	BSD	RPD	2	%	30
OP72510A-BSD12	53-70-3	Dibenzo(a,h)anthracene	BSD	REC	38	%	40-140
OP72510A-BSD12	53-70-3	Dibenzo(a,h)anthracene	BSD	RPD	61 [c]	%	30
OP72510A-BSD12	206-44-0	Fluoranthene	BSD	REC	79	%	40-140
OP72510A-BSD12	206-44-0	Fluoranthene	BSD	RPD	12	%	30
OP72510A-BSD12	86-73-7	Fluorene	BSD	REC	70	%	40-140
OP72510A-BSD12	86-73-7	Fluorene	BSD	RPD	16	%	30
OP72510A-BSD12	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	REC	34	%	40-140
OP72510A-BSD12	193-39-5	Indeno(1,2,3-cd)pyrene	BSD	RPD	69 [c]	%	30
OP72510A-BSD12	91-57-6	2-Methylnaphthalene	BSD	REC	59	%	40-140
OP72510A-BSD12	91-57-6	2-Methylnaphthalene	BSD	RPD	16	%	30
OP72510A-BSD12	91-20-3	Naphthalene	BSD	REC	64	%	40-140
OP72510A-BSD12	91-20-3	Naphthalene	BSD	RPD	15	%	30
OP72510A-BSD12	85-01-8	Phenanthrene	BSD	REC	73	%	40-140
OP72510A-BSD12	85-01-8	Phenanthrene	BSD	RPD	14	%	30
OP72510A-BSD12	129-00-0	Pyrene	BSD	REC	78	%	40-140
OP72510A-BSD12	129-00-0	Pyrene	BSD	RPD	10	%	30
OP72510A-BSD12	4165-60-0	Nitrobenzene-d5	BSD	SURR	70	%	30-130
OP72510A-BSD12	321-60-8	2-Fluorobiphenyl	BSD	SURR	63	%	30-130
OP72510A-BSD12	1718-51-0	Terphenyl-d14	BSD	SURR	77	%	30-130
OP72510A-MB1	4165-60-0	Nitrobenzene-d5	MB	SURR	70	%	30-130
OP72510A-MB1	321-60-8	2-Fluorobiphenyl	MB	SURR	69	%	30-130
OP72510A-MB1	1718-51-0	Terphenyl-d14	MB	SURR	79	%	30-130
JE31948-1	4165-60-0	Nitrobenzene-d5	SAMP	SURR	71	%	30-130
JE31948-1	321-60-8	2-Fluorobiphenyl	SAMP	SURR	65	%	30-130
JE31948-1	1718-51-0	Terphenyl-d14	SAMP	SURR	74	%	30-130
JE31948-2	4165-60-0	Nitrobenzene-d5	SAMP	SURR	84	%	30-130
JE31948-2	321-60-8	2-Fluorobiphenyl	SAMP	SURR	78	%	30-130
JE31948-2	1718-51-0	Terphenyl-d14	SAMP	SURR	86	%	30-130

(a) Outside of in house control limits.
(b) Outside of in house control limits. BS met acceptable criteria.
(c) Analytical precision exceeds in-house control limits.
(d) Outside of in house control limits. Sample was ND.

* Sample used for QC is not from job JE31948

MS Volatiles

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QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Internal Standard Area Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2F848-MB	2F27839.D	1	04/14/26	NW	n/a	n/a	V2F848

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE31948-2

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	3.1	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.55	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	0.98	0.45	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	2.0	0.52	ug/l	
135-98-8	sec-Butylbenzene	ND	2.0	0.62	ug/l	
98-06-6	tert-Butylbenzene	ND	2.0	0.69	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.8	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
95-49-8	o-Chlorotoluene	ND	2.0	0.63	ug/l	
106-43-4	p-Chlorotoluene	ND	2.0	0.60	ug/l	
108-20-3	Di-Isopropyl ether	ND	2.0	0.68	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.53	ug/l	
124-48-1	Dibromochloromethane	ND	0.78	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.56	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.92	0.51	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.52	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.42	ug/l	

Method Blank Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2F848-MB	2F27839.D	1	04/14/26	NW	n/a	n/a	V2F848

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE31948-2

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.43	ug/l	
123-91-1	1,4-Dioxane	ND	130	39	ug/l	
60-29-7	Ethyl Ether	ND	2.0	0.52	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	0.54	ug/l	
591-78-6	2-Hexanone	ND	5.0	4.8	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
99-87-6	p-Isopropyltoluene	ND	2.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	4.9	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.48	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	4.4	ug/l	
103-65-1	n-Propylbenzene	ND	2.0	0.60	ug/l	
100-42-5	Styrene	ND	1.0	0.49	ug/l	
994-05-8	tert-Amyl Methyl Ether	ND	2.0	0.85	ug/l	
637-92-3	tert-Butyl Ethyl Ether	ND	2.0	0.56	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.56	ug/l	
109-99-9	Tetrahydrofuran	ND	10	3.2	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.58	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	2.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.52	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

Method Blank Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2F848-MB	2F27839.D	1	04/14/26	NW	n/a	n/a	V2F848

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE31948-2

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	97%	80-120%
17060-07-0	1,2-Dichloroethane-D4	100%	80-120%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	95%	82-114%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Method Blank Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1F848-MB	1F27840.D	1	04/14/26	NW	n/a	n/a	V1F848

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE31948-1

CAS No.	Compound	Result	RL	MDL	Units	Q
67-64-1	Acetone	ND	10	3.1	ug/l	
71-43-2	Benzene	ND	0.50	0.43	ug/l	
108-86-1	Bromobenzene	ND	1.0	0.55	ug/l	
74-97-5	Bromochloromethane	ND	1.0	0.48	ug/l	
75-27-4	Bromodichloromethane	ND	0.98	0.45	ug/l	
75-25-2	Bromoform	ND	1.0	0.63	ug/l	
74-83-9	Bromomethane	ND	2.0	1.6	ug/l	
78-93-3	2-Butanone (MEK)	ND	10	2.7	ug/l	
104-51-8	n-Butylbenzene	ND	2.0	0.52	ug/l	
135-98-8	sec-Butylbenzene	ND	2.0	0.62	ug/l	
98-06-6	tert-Butylbenzene	ND	2.0	0.69	ug/l	
75-15-0	Carbon disulfide	ND	2.0	1.8	ug/l	
56-23-5	Carbon tetrachloride	ND	1.0	0.55	ug/l	
108-90-7	Chlorobenzene	ND	1.0	0.56	ug/l	
75-00-3	Chloroethane	ND	1.0	0.73	ug/l	
67-66-3	Chloroform	ND	1.0	0.50	ug/l	
74-87-3	Chloromethane	ND	1.0	0.76	ug/l	
95-49-8	o-Chlorotoluene	ND	2.0	0.63	ug/l	
106-43-4	p-Chlorotoluene	ND	2.0	0.60	ug/l	
108-20-3	Di-Isopropyl ether	ND	2.0	0.68	ug/l	
96-12-8	1,2-Dibromo-3-chloropropane	ND	2.0	0.53	ug/l	
124-48-1	Dibromochloromethane	ND	0.78	0.56	ug/l	
106-93-4	1,2-Dibromoethane	ND	1.0	0.48	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.53	ug/l	
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.54	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.51	ug/l	
75-71-8	Dichlorodifluoromethane	ND	2.0	0.56	ug/l	
75-34-3	1,1-Dichloroethane	ND	1.0	0.57	ug/l	
107-06-2	1,2-Dichloroethane	ND	1.0	0.60	ug/l	
75-35-4	1,1-Dichloroethene	ND	1.0	0.59	ug/l	
156-59-2	cis-1,2-Dichloroethene	ND	1.0	0.51	ug/l	
156-60-5	trans-1,2-Dichloroethene	ND	1.0	0.54	ug/l	
78-87-5	1,2-Dichloropropane	ND	0.92	0.51	ug/l	
142-28-9	1,3-Dichloropropane	ND	1.0	0.89	ug/l	
594-20-7	2,2-Dichloropropane	ND	1.0	0.52	ug/l	
563-58-6	1,1-Dichloropropene	ND	1.0	0.42	ug/l	

Method Blank Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1F848-MB	1F27840.D	1	04/14/26	NW	n/a	n/a	V1F848

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE31948-1

CAS No.	Compound	Result	RL	MDL	Units	Q
10061-01-5	cis-1,3-Dichloropropene	ND	1.0	0.47	ug/l	
10061-02-6	trans-1,3-Dichloropropene	ND	0.50	0.43	ug/l	
123-91-1	1,4-Dioxane	ND	130	39	ug/l	
60-29-7	Ethyl Ether	ND	2.0	0.52	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.60	ug/l	
87-68-3	Hexachlorobutadiene	ND	2.0	0.54	ug/l	
591-78-6	2-Hexanone	ND	5.0	4.8	ug/l	
98-82-8	Isopropylbenzene	ND	1.0	0.65	ug/l	
99-87-6	p-Isopropyltoluene	ND	2.0	0.66	ug/l	
1634-04-4	Methyl Tert Butyl Ether	ND	1.0	0.51	ug/l	
108-10-1	4-Methyl-2-pentanone(MIBK)	ND	5.0	4.9	ug/l	
74-95-3	Methylene bromide	ND	1.0	0.48	ug/l	
75-09-2	Methylene chloride	ND	2.0	1.0	ug/l	
91-20-3	Naphthalene	ND	5.0	4.4	ug/l	
103-65-1	n-Propylbenzene	ND	2.0	0.60	ug/l	
100-42-5	Styrene	ND	1.0	0.49	ug/l	
994-05-8	tert-Amyl Methyl Ether	ND	2.0	0.85	ug/l	
637-92-3	tert-Butyl Ethyl Ether	ND	2.0	0.56	ug/l	
630-20-6	1,1,1,2-Tetrachloroethane	ND	1.0	0.60	ug/l	
79-34-5	1,1,2,2-Tetrachloroethane	ND	1.0	0.65	ug/l	
127-18-4	Tetrachloroethene	ND	1.0	0.56	ug/l	
109-99-9	Tetrahydrofuran	ND	10	3.2	ug/l	
108-88-3	Toluene	ND	1.0	0.49	ug/l	
87-61-6	1,2,3-Trichlorobenzene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.50	ug/l	
71-55-6	1,1,1-Trichloroethane	ND	1.0	0.54	ug/l	
79-00-5	1,1,2-Trichloroethane	ND	0.58	0.53	ug/l	
79-01-6	Trichloroethene	ND	1.0	0.53	ug/l	
75-69-4	Trichlorofluoromethane	ND	2.0	0.40	ug/l	
96-18-4	1,2,3-Trichloropropane	ND	2.0	0.70	ug/l	
95-63-6	1,2,4-Trimethylbenzene	ND	2.0	1.0	ug/l	
108-67-8	1,3,5-Trimethylbenzene	ND	2.0	1.0	ug/l	
75-01-4	Vinyl chloride	ND	1.0	0.52	ug/l	
	m,p-Xylene	ND	1.0	0.78	ug/l	
95-47-6	o-Xylene	ND	1.0	0.59	ug/l	
1330-20-7	Xylene (total)	ND	1.0	0.59	ug/l	

Method Blank Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1F848-MB	1F27840.D	1	04/14/26	NW	n/a	n/a	V1F848

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE31948-1

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	96%	80-120%
17060-07-0	1,2-Dichloroethane-D4	101%	80-120%
2037-26-5	Toluene-D8	99%	80-120%
460-00-4	4-Bromofluorobenzene	96%	82-114%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	Total TIC, Volatile		0	ug/l	

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1F848-BS	1F27834.D	1	04/14/26	NW	n/a	n/a	V1F848
V1F848-BSD	1F27836.D	1	04/14/26	NW	n/a	n/a	V1F848

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE31948-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	200	196	98	202	101	3	27-175/31
71-43-2	Benzene	50	51.6	103	50.5	101	2	80-115/11
108-86-1	Bromobenzene	50	51.3	103	50.4	101	2	79-119/11
74-97-5	Bromochloromethane	50	49.0	98	47.3	95	4	83-122/10
75-27-4	Bromodichloromethane	50	50.2	100	49.5	99	1	82-119/12
75-25-2	Bromoform	50	52.1	104	54.4	109	4	77-135/11
74-83-9	Bromomethane	50	67.5	135	67.1	134	1	40-162/23
78-93-3	2-Butanone (MEK)	200	200	100	198	99	1	61-150/16
104-51-8	n-Butylbenzene	50	50.2	100	50.0	100	0	77-124/12
135-98-8	sec-Butylbenzene	50	50.9	102	50.8	102	0	75-121/12
98-06-6	tert-Butylbenzene	50	50.4	101	50.0	100	1	74-120/11
75-15-0	Carbon disulfide	50	49.1	98	48.7	97	1	64-130/13
56-23-5	Carbon tetrachloride	50	45.2	90	45.8	92	1	75-127/11
108-90-7	Chlorobenzene	50	49.1	98	49.0	98	0	80-115/10
75-00-3	Chloroethane	50	48.5	97	48.2	96	1	56-144/14
67-66-3	Chloroform	50	46.4	93	45.2	90	3	75-116/10
74-87-3	Chloromethane	50	45.5	91	44.8	90	2	41-153/14
95-49-8	o-Chlorotoluene	50	48.6	97	49.0	98	1	79-119/11
106-43-4	p-Chlorotoluene	50	48.9	98	48.7	97	0	77-117/11
108-20-3	Di-Isopropyl ether	50	48.4	97	48.7	97	1	69-135/11
96-12-8	1,2-Dibromo-3-chloropropane	50	50.1	100	52.9	106	5	69-134/11
124-48-1	Dibromochloromethane	50	51.2	102	52.1	104	2	81-123/11
106-93-4	1,2-Dibromoethane	50	50.5	101	51.4	103	2	67-138/11
95-50-1	1,2-Dichlorobenzene	50	52.2	104	51.5	103	1	81-117/10
541-73-1	1,3-Dichlorobenzene	50	49.9	100	50.8	102	2	81-115/10
106-46-7	1,4-Dichlorobenzene	50	50.2	100	51.1	102	2	80-114/10
75-71-8	Dichlorodifluoromethane	50	44.2	88	44.3	89	0	43-152/16
75-34-3	1,1-Dichloroethane	50	48.2	96	48.1	96	0	75-125/11
107-06-2	1,2-Dichloroethane	50	48.5	97	46.6	93	4	73-117/10
75-35-4	1,1-Dichloroethene	50	50.5	101	51.0	102	1	70-124/12
156-59-2	cis-1,2-Dichloroethene	50	45.8	92	47.0	94	3	80-120/10
156-60-5	trans-1,2-Dichloroethene	50	50.1	100	48.2	96	4	77-121/12
78-87-5	1,2-Dichloropropane	50	49.8	100	49.1	98	1	79-121/10
142-28-9	1,3-Dichloropropane	50	50.3	101	50.4	101	0	81-117/11
594-20-7	2,2-Dichloropropane	50	47.1	94	46.2	92	2	70-131/12
563-58-6	1,1-Dichloropropene	50	51.9	104	52.4	105	1	77-122/10

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1F848-BS	1F27834.D	1	04/14/26	NW	n/a	n/a	V1F848
V1F848-BSD	1F27836.D	1	04/14/26	NW	n/a	n/a	V1F848

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE31948-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	50	49.5	99	48.0	96	3	83-123/11
10061-02-6	trans-1,3-Dichloropropene	50	50.6	101	53.3	107	5	83-122/12
123-91-1	1,4-Dioxane	1250	1210	97	1390	111	14	64-150/20
60-29-7	Ethyl Ether	50	52.7	105	50.7	101	4	74-132/11
100-41-4	Ethylbenzene	50	49.0	98	50.3	101	3	78-116/10
87-68-3	Hexachlorobutadiene	50	53.1	106	53.2	106	0	55-136/14
591-78-6	2-Hexanone	200	209	105	218	109	4	66-136/14
98-82-8	Isopropylbenzene	50	49.7	99	51.3	103	3	78-121/11
99-87-6	p-Isopropyltoluene	50	51.2	102	52.0	104	2	78-121/12
1634-04-4	Methyl Tert Butyl Ether	50	51.3	103	50.8	102	1	76-123/12
108-10-1	4-Methyl-2-pentanone(MIBK)	200	216	108	214	107	1	73-134/13
74-95-3	Methylene bromide	50	49.3	99	47.1	94	5	82-117/10
75-09-2	Methylene chloride	50	46.7	93	46.2	92	1	73-123/11
91-20-3	Naphthalene	50	50.9	102	51.2	102	1	64-136/13
103-65-1	n-Propylbenzene	50	50.0	100	50.5	101	1	75-121/11
100-42-5	Styrene	50	50.4	101	51.0	102	1	81-125/10
994-05-8	tert-Amyl Methyl Ether	50	51.2	102	50.7	101	1	80-119/11
637-92-3	tert-Butyl Ethyl Ether	50	49.9	100	50.4	101	1	77-124/10
630-20-6	1,1,1,2-Tetrachloroethane	50	52.1	104	53.7	107	3	81-124/10
79-34-5	1,1,2,2-Tetrachloroethane	50	49.6	99	50.4	101	2	73-126/12
127-18-4	Tetrachloroethene	50	51.9	104	52.9	106	2	73-119/12
109-99-9	Tetrahydrofuran	50	45.0	90	44.7	89	1	63-133/11
108-88-3	Toluene	50	50.2	100	51.9	104	3	79-116/12
87-61-6	1,2,3-Trichlorobenzene	50	53.6	107	53.1	106	1	63-137/13
120-82-1	1,2,4-Trichlorobenzene	50	54.7	109	53.9	108	1	68-135/12
71-55-6	1,1,1-Trichloroethane	50	48.9	98	47.7	95	2	76-124/11
79-00-5	1,1,2-Trichloroethane	50	48.3	97	50.0	100	3	83-117/11
79-01-6	Trichloroethene	50	54.2	108	53.7	107	1	80-118/11
75-69-4	Trichlorofluoromethane	50	57.6	115	56.0	112	3	67-134/13
96-18-4	1,2,3-Trichloropropane	50	50.5	101	49.8	100	1	75-123/11
95-63-6	1,2,4-Trimethylbenzene	50	49.5	99	50.0	100	1	78-120/10
108-67-8	1,3,5-Trimethylbenzene	50	49.3	99	49.9	100	1	77-120/11
75-01-4	Vinyl chloride	50	49.9	100	49.3	99	1	52-146/15
	m,p-Xylene	100	100	100	101	101	1	79-119/10
95-47-6	o-Xylene	50	48.8	98	49.6	99	2	81-119/10
1330-20-7	Xylene (total)	150	149	99	151	101	1	80-119/10

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V1F848-BS	1F27834.D	1	04/14/26	NW	n/a	n/a	V1F848
V1F848-BSD	1F27836.D	1	04/14/26	NW	n/a	n/a	V1F848

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE31948-1

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	94%	93%	80-120%
17060-07-0	1,2-Dichloroethane-D4	105%	96%	80-120%
2037-26-5	Toluene-D8	97%	100%	80-120%
460-00-4	4-Bromofluorobenzene	96%	94%	82-114%

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2F848-BS	2F27835.D	1	04/14/26	NW	n/a	n/a	V2F848
V2F848-BSD	2F27837.D	1	04/14/26	NW	n/a	n/a	V2F848

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE31948-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
67-64-1	Acetone	200	205	103	206	103	0	27-175/31
71-43-2	Benzene	50	50.2	100	50.3	101	0	80-115/11
108-86-1	Bromobenzene	50	49.5	99	50.3	101	2	79-119/11
74-97-5	Bromochloromethane	50	47.0	94	48.5	97	3	83-122/10
75-27-4	Bromodichloromethane	50	50.2	100	49.0	98	2	82-119/12
75-25-2	Bromoform	50	51.8	104	52.4	105	1	77-135/11
74-83-9	Bromomethane	50	63.4	127	68.1	136	7	40-162/23
78-93-3	2-Butanone (MEK)	200	211	106	207	104	2	61-150/16
104-51-8	n-Butylbenzene	50	51.6	103	51.4	103	0	77-124/12
135-98-8	sec-Butylbenzene	50	49.5	99	49.8	100	1	75-121/12
98-06-6	tert-Butylbenzene	50	51.0	102	50.4	101	1	74-120/11
75-15-0	Carbon disulfide	50	51.4	103	51.5	103	0	64-130/13
56-23-5	Carbon tetrachloride	50	48.5	97	47.0	94	3	75-127/11
108-90-7	Chlorobenzene	50	49.3	99	51.0	102	3	80-115/10
75-00-3	Chloroethane	50	51.4	103	48.3	97	6	56-144/14
67-66-3	Chloroform	50	46.8	94	46.9	94	0	75-116/10
74-87-3	Chloromethane	50	48.4	97	47.3	95	2	41-153/14
95-49-8	o-Chlorotoluene	50	48.1	96	48.5	97	1	79-119/11
106-43-4	p-Chlorotoluene	50	48.9	98	48.1	96	2	77-117/11
108-20-3	Di-Isopropyl ether	50	51.0	102	51.3	103	1	69-135/11
96-12-8	1,2-Dibromo-3-chloropropane	50	50.4	101	52.0	104	3	69-134/11
124-48-1	Dibromochloromethane	50	52.6	105	52.8	106	0	81-123/11
106-93-4	1,2-Dibromoethane	50	51.5	103	51.4	103	0	67-138/11
95-50-1	1,2-Dichlorobenzene	50	50.8	102	51.0	102	0	81-117/10
541-73-1	1,3-Dichlorobenzene	50	51.1	102	52.1	104	2	81-115/10
106-46-7	1,4-Dichlorobenzene	50	50.8	102	50.3	101	1	80-114/10
75-71-8	Dichlorodifluoromethane	50	46.9	94	47.4	95	1	43-152/16
75-34-3	1,1-Dichloroethane	50	49.2	98	48.7	97	1	75-125/11
107-06-2	1,2-Dichloroethane	50	49.0	98	48.8	98	0	73-117/10
75-35-4	1,1-Dichloroethene	50	52.5	105	52.3	105	0	70-124/12
156-59-2	cis-1,2-Dichloroethene	50	48.9	98	49.7	99	2	80-120/10
156-60-5	trans-1,2-Dichloroethene	50	51.8	104	52.3	105	1	77-121/12
78-87-5	1,2-Dichloropropane	50	50.9	102	49.8	100	2	79-121/10
142-28-9	1,3-Dichloropropane	50	52.1	104	52.1	104	0	81-117/11
594-20-7	2,2-Dichloropropane	50	47.5	95	47.0	94	1	70-131/12
563-58-6	1,1-Dichloropropene	50	53.7	107	53.7	107	0	77-122/10

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2F848-BS	2F27835.D	1	04/14/26	NW	n/a	n/a	V2F848
V2F848-BSD	2F27837.D	1	04/14/26	NW	n/a	n/a	V2F848

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE31948-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
10061-01-5	cis-1,3-Dichloropropene	50	53.4	107	53.5	107	0	83-123/11
10061-02-6	trans-1,3-Dichloropropene	50	50.7	101	52.9	106	4	83-122/12
123-91-1	1,4-Dioxane	1250	1210	97	1240	99	2	64-150/20
60-29-7	Ethyl Ether	50	53.8	108	52.8	106	2	74-132/11
100-41-4	Ethylbenzene	50	49.9	100	49.9	100	0	78-116/10
87-68-3	Hexachlorobutadiene	50	51.2	102	51.5	103	1	55-136/14
591-78-6	2-Hexanone	200	204	102	211	106	3	66-136/14
98-82-8	Isopropylbenzene	50	51.5	103	52.0	104	1	78-121/11
99-87-6	p-Isopropyltoluene	50	52.2	104	51.6	103	1	78-121/12
1634-04-4	Methyl Tert Butyl Ether	50	53.8	108	54.1	108	1	76-123/12
108-10-1	4-Methyl-2-pentanone(MIBK)	200	212	106	216	108	2	73-134/13
74-95-3	Methylene bromide	50	46.7	93	47.2	94	1	82-117/10
75-09-2	Methylene chloride	50	48.0	96	48.0	96	0	73-123/11
91-20-3	Naphthalene	50	49.9	100	49.8	100	0	64-136/13
103-65-1	n-Propylbenzene	50	50.1	100	50.0	100	0	75-121/11
100-42-5	Styrene	50	52.2	104	52.1	104	0	81-125/10
994-05-8	tert-Amyl Methyl Ether	50	50.5	101	50.2	100	1	80-119/11
637-92-3	tert-Butyl Ethyl Ether	50	51.3	103	51.8	104	1	77-124/10
630-20-6	1,1,1,2-Tetrachloroethane	50	53.1	106	52.6	105	1	81-124/10
79-34-5	1,1,2,2-Tetrachloroethane	50	49.9	100	50.7	101	2	73-126/12
127-18-4	Tetrachloroethene	50	54.3	109	55.0	110	1	73-119/12
109-99-9	Tetrahydrofuran	50	45.8	92	47.5	95	4	63-133/11
108-88-3	Toluene	50	50.0	100	50.8	102	2	79-116/12
87-61-6	1,2,3-Trichlorobenzene	50	53.0	106	53.0	106	0	63-137/13
120-82-1	1,2,4-Trichlorobenzene	50	53.0	106	53.9	108	2	68-135/12
71-55-6	1,1,1-Trichloroethane	50	49.3	99	49.0	98	1	76-124/11
79-00-5	1,1,2-Trichloroethane	50	50.6	101	50.2	100	1	83-117/11
79-01-6	Trichloroethene	50	53.6	107	54.7	109	2	80-118/11
75-69-4	Trichlorofluoromethane	50	58.2	116	57.3	115	2	67-134/13
96-18-4	1,2,3-Trichloropropane	50	49.3	99	49.4	99	0	75-123/11
95-63-6	1,2,4-Trimethylbenzene	50	49.8	100	49.4	99	1	78-120/10
108-67-8	1,3,5-Trimethylbenzene	50	50.7	101	50.0	100	1	77-120/11
75-01-4	Vinyl chloride	50	50.6	101	50.4	101	0	52-146/15
	m,p-Xylene	100	102	102	100	100	2	79-119/10
95-47-6	o-Xylene	50	49.4	99	50.3	101	2	81-119/10
1330-20-7	Xylene (total)	150	151	101	151	101	0	80-119/10

*** = Outside of Control Limits.**

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V2F848-BS	2F27835.D	1	04/14/26	NW	n/a	n/a	V2F848
V2F848-BSD	2F27837.D	1	04/14/26	NW	n/a	n/a	V2F848

The QC reported here applies to the following samples: **Method: SW846 8260D**

JE31948-2

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
1868-53-7	Dibromofluoromethane	97%	98%	80-120%
17060-07-0	1,2-Dichloroethane-D4	96%	98%	80-120%
2037-26-5	Toluene-D8	99%	101%	80-120%
460-00-4	4-Bromofluorobenzene	96%	95%	82-114%

*** = Outside of Control Limits.**

Internal Standard Area Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	V1F848-CC839	**Injection Date:**	04/14/26
Lab File ID:	1F27829.D	**Injection Time:**	10:41
Instrument ID:	GCMS1F	**Method:**	SW846 8260D

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	240559	1.76	328213	2.86	503130	3.23	414005	5.71	205961	7.49
Upper Limit [a]	481118	2.26	656426	3.36	1006260	3.73	828010	6.21	411922	7.99
Lower Limit [b]	120280	1.26	164107	2.36	251565	2.73	207003	5.21	102981	6.99

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
V1F848-BS	255235	1.77	342581	2.87	526619	3.23	444740	5.71	217982	7.49
V1F848-BSD	232149	1.77	348114	2.87	541711	3.23	436717	5.71	216802	7.49
V1F848-MB	241605	1.76	339799	2.87	512240	3.23	434117	5.71	214826	7.49
ZZZZZZ	223226	1.76	320403	2.86	497193	3.23	406181	5.71	198150	7.49
ZZZZZZ	153700	1.77	344320	2.87	522092	3.23	435336	5.71	216580	7.49
JE31621-3	179533	1.77	347202	2.87	537661	3.23	450441	5.71	218608	7.49
ZZZZZZ	205049	1.76	336345	2.87	514011	3.23	436068	5.71	214560	7.49
JE31948-1	221389	1.76	337414	2.87	516040	3.23	439027	5.71	217638	7.49
ZZZZZZ	224038	1.77	333848	2.87	506905	3.23	424678	5.71	210836	7.49
ZZZZZZ	248591	1.76	341501	2.87	522670	3.23	439168	5.71	216987	7.49
ZZZZZZ	261721	1.77	335266	2.87	516219	3.23	438965	5.71	215637	7.49
ZZZZZZ	269339	1.77	331305	2.87	516903	3.23	437112	5.71	215128	7.49
JE31621-3MS	273490	1.77	342610	2.87	537800	3.23	445332	5.71	223358	7.49
JE31621-3MSD	294114	1.77	363324	2.87	566258	3.23	468338	5.71	231496	7.49
ZZZZZZ	259373	1.76	350536	2.86	533113	3.23	442936	5.71	221419	7.49
ZZZZZZ	267393	1.77	345842	2.87	532529	3.23	447281	5.71	223371	7.49
ZZZZZZ	244719	1.77	346947	2.87	527831	3.23	446898	5.71	215782	7.49
ZZZZZZ	266385	1.77	342540	2.87	531119	3.23	448448	5.71	218612	7.49
ZZZZZZ	256018	1.76	337133	2.87	511586	3.23	424209	5.71	211920	7.49

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Internal Standard Area Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	V2F848-CC839	**Injection Date:**	04/14/26
Lab File ID:	2F27830.D	**Injection Time:**	10:55
Instrument ID:	GCMS2F	**Method:**	SW846 8260D

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
Check Std	204695	1.80	293868	2.89	452590	3.26	392191	5.72	211789	7.49
Upper Limit [a]	409390	2.30	587736	3.39	905180	3.76	784382	6.22	423578	7.99
Lower Limit [b]	102348	1.30	146934	2.39	226295	2.76	196096	5.22	105895	6.99

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT
V2F848-BS	231419	1.80	292522	2.89	463776	3.25	398974	5.72	216245	7.49
V2F848-BSD	236490	1.81	295673	2.89	471904	3.26	402196	5.72	220695	7.49
V2F848-MB	191665	1.80	295612	2.89	447183	3.25	392705	5.72	211232	7.49
ZZZZZZ	204109	1.80	282979	2.89	433727	3.25	384362	5.72	203749	7.49
JE31621-1	205260	1.80	300672	2.89	464302	3.25	403880	5.72	212445	7.49
ZZZZZZ	209389	1.80	298291	2.89	453245	3.25	398736	5.72	212288	7.49
JE31948-2	204471	1.80	295990	2.89	449433	3.26	387601	5.72	203678	7.49
ZZZZZZ	203854	1.80	290085	2.90	438861	3.26	380971	5.72	200668	7.49
ZZZZZZ	209379	1.80	293455	2.89	460697	3.25	397089	5.72	210129	7.49
ZZZZZZ	191675	1.80	286925	2.89	452740	3.25	387145	5.72	205355	7.49
JE31621-1MS	249287	1.80	305642	2.89	483929	3.25	417408	5.72	225046	7.49
JE31621-1MSD	260255	1.81	311862	2.89	489843	3.26	419254	5.72	232718	7.49
ZZZZZZ	204202	1.80	305026	2.89	465972	3.25	405123	5.72	213063	7.49
ZZZZZZ	203312	1.80	293846	2.89	443341	3.26	393561	5.72	206755	7.49
ZZZZZZ	187302	1.80	295066	2.89	445015	3.25	387417	5.72	203827	7.49
ZZZZZZ	187625	1.80	290871	2.89	438069	3.25	380685	5.72	200000	7.49

IS 1 = Tert Butyl Alcohol-D9
IS 2 = Pentafluorobenzene
IS 3 = 1,4-Difluorobenzene
IS 4 = Chlorobenzene-D5
IS 5 = 1,4-Dichlorobenzene-d4

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Surrogate Recovery Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8260D **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4
JE31948-1	1F27849.D	97	102	96	96
JE31948-2	2F27850.D	93	96	99	96
V1F848-BS	1F27834.D	94	105	97	96
V1F848-BSD	1F27836.D	93	96	100	94
V1F848-MB	1F27840.D	96	101	99	96
V2F848-BS	2F27835.D	97	96	99	96
V2F848-BSD	2F27837.D	98	98	101	95
V2F848-MB	2F27839.D	97	100	99	95

Surrogate Compounds	Recovery Limits
S1 = Dibromofluoromethane	80-120%
S2 = 1,2-Dichloroethane-D4	80-120%
S3 = Toluene-D8	80-120%
S4 = 4-Bromofluorobenzene	82-114%

MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Internal Standard Area Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72510-MB1	M209442.D	1	04/15/26	TL	04/14/26	OP72510	EM9045

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE31948-1, JE31948-2

CAS No.	Compound	Result	RL	MDL	Units	Q
65-85-0	Benzoic Acid	ND	20	0.51	ug/l	
95-57-8	2-Chlorophenol	ND	4.0	0.37	ug/l	
59-50-7	4-Chloro-3-methyl phenol	ND	4.0	0.53	ug/l	
120-83-2	2,4-Dichlorophenol	ND	2.0	0.52	ug/l	
105-67-9	2,4-Dimethylphenol	ND	4.0	0.67	ug/l	
51-28-5	2,4-Dinitrophenol	ND	4.0	1.9	ug/l	
534-52-1	4,6-Dinitro-o-cresol	ND	4.0	1.5	ug/l	
95-48-7	2-Methylphenol	ND	2.0	0.47	ug/l	
	3&4-Methylphenol	ND	2.0	1.5	ug/l	
88-75-5	2-Nitrophenol	ND	4.0	0.40	ug/l	
100-02-7	4-Nitrophenol	ND	8.0	0.45	ug/l	
87-86-5	Pentachlorophenol	ND	4.0	1.2	ug/l	
108-95-2	Phenol	ND	2.0	0.26	ug/l	
95-95-4	2,4,5-Trichlorophenol	ND	4.0	0.49	ug/l	
88-06-2	2,4,6-Trichlorophenol	ND	2.0	0.59	ug/l	
83-32-9	Acenaphthene	ND	1.0	0.61	ug/l	
208-96-8	Acenaphthylene	ND	1.0	0.42	ug/l	
98-86-2	Acetophenone	ND	2.0	0.52	ug/l	
62-53-3	Aniline	ND	2.0	0.76	ug/l	
120-12-7	Anthracene	ND	1.0	0.56	ug/l	
56-55-3	Benzo(a)anthracene	ND	1.0	0.51	ug/l	
50-32-8	Benzo(a)pyrene	ND	1.0	0.63	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	1.0	0.57	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	1.0	0.64	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	1.0	0.48	ug/l	
101-55-3	4-Bromophenyl phenyl ether	ND	2.0	0.55	ug/l	
85-68-7	Butyl benzyl phthalate	ND	2.0	0.86	ug/l	
91-58-7	2-Chloronaphthalene	ND	2.0	0.43	ug/l	
106-47-8	4-Chloroaniline	ND	4.0	0.53	ug/l	
218-01-9	Chrysene	ND	1.0	0.52	ug/l	
111-91-1	bis(2-Chloroethoxy)methane	ND	2.0	0.46	ug/l	
111-44-4	bis(2-Chloroethyl)ether	ND	2.0	0.43	ug/l	
108-60-1	2,2'-Oxybis(1-chloropropane)	ND	2.0	0.50	ug/l	
7005-72-3	4-Chlorophenyl phenyl ether	ND	2.0	0.60	ug/l	
95-50-1	1,2-Dichlorobenzene	ND	1.0	0.38	ug/l	
122-66-7	1,2-Diphenylhydrazine	ND	1.0	0.49	ug/l	

Method Blank Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72510-MB1	M209442.D	1	04/15/26	TL	04/14/26	OP72510	EM9045

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE31948-1, JE31948-2

CAS No.	Compound	Result	RL	MDL	Units	Q
541-73-1	1,3-Dichlorobenzene	ND	1.0	0.43	ug/l	
106-46-7	1,4-Dichlorobenzene	ND	1.0	0.42	ug/l	
121-14-2	2,4-Dinitrotoluene	ND	1.0	0.55	ug/l	
606-20-2	2,6-Dinitrotoluene	ND	1.0	0.56	ug/l	
91-94-1	3,3'-Dichlorobenzidine	ND	2.0	1.1	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	1.0	0.50	ug/l	
132-64-9	Dibenzofuran	ND	4.0	0.73	ug/l	
84-74-2	Di-n-butyl phthalate	ND	2.0	0.53	ug/l	
117-84-0	Di-n-octyl phthalate	ND	2.0	1.6	ug/l	
84-66-2	Diethyl phthalate	ND	2.0	0.58	ug/l	
131-11-3	Dimethyl phthalate	ND	2.0	0.55	ug/l	
117-81-7	bis(2-Ethylhexyl)phthalate	ND	2.0	1.3	ug/l	
206-44-0	Fluoranthene	ND	1.0	0.58	ug/l	
86-73-7	Fluorene	ND	1.0	0.59	ug/l	
118-74-1	Hexachlorobenzene	ND	1.0	0.54	ug/l	
87-68-3	Hexachlorobutadiene	ND	1.0	0.35	ug/l	
77-47-4	Hexachlorocyclopentadiene	ND	8.0	0.98	ug/l	
67-72-1	Hexachloroethane	ND	1.0	0.55	ug/l	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	1.0	0.64	ug/l	
78-59-1	Isophorone	ND	2.0	0.39	ug/l	
91-57-6	2-Methylnaphthalene	ND	1.0	0.64	ug/l	
91-20-3	Naphthalene	ND	1.0	0.44	ug/l	
98-95-3	Nitrobenzene	ND	1.0	0.42	ug/l	
62-75-9	n-Nitrosodimethylamine	ND	2.0	0.32	ug/l	
621-64-7	N-Nitroso-di-n-propylamine	ND	1.0	0.65	ug/l	
86-30-6	N-Nitrosodiphenylamine	ND	4.0	0.42	ug/l	
85-01-8	Phenanthrene	ND	1.0	0.48	ug/l	
129-00-0	Pyrene	ND	1.0	0.50	ug/l	
120-82-1	1,2,4-Trichlorobenzene	ND	1.0	0.36	ug/l	

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	46%	10-69%
4165-62-2	Phenol-d5	33%	10-47%
118-79-6	2,4,6-Tribromophenol	76%	17-144%

Method Blank Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72510-MB1	M209442.D	1	04/15/26	TL	04/14/26	OP72510	EM9045

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE31948-1, JE31948-2

CAS No.	Surrogate Recoveries		Limits
4165-60-0	Nitrobenzene-d5	106%	17-126%
321-60-8	2-Fluorobiphenyl	61%	23-124%
1718-51-0	Terphenyl-d14	85%	13-135%

CAS No.	Tentatively Identified Compounds	R.T.	Est. Conc.	Units	Q
	alkane	11.56	3.8	ug/l	J
	alkane	11.93	3.5	ug/l	J
	alkane	12.30	3.7	ug/l	J
	Internal standard added for SIM	12.83	3.3	ug/l	J
	Total TIC, Semi-Volatile		11	ug/l	J

Method Blank Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72510A-MB1	Z179273.D	1	04/14/26	AC	04/14/26	OP72510A	EZ8806

The QC reported here applies to the following samples: **Method: SW846 8270E BY SIM**

JE31948-1, JE31948-2

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	0.080	0.040	ug/l	
208-96-8	Acenaphthylene	ND	0.080	0.040	ug/l	
120-12-7	Anthracene	0.0436	0.080	0.040	ug/l	J
56-55-3	Benzo(a)anthracene	0.0247	0.040	0.024	ug/l	J
50-32-8	Benzo(a)pyrene	ND	0.040	0.024	ug/l	
205-99-2	Benzo(b)fluoranthene	ND	0.040	0.024	ug/l	
191-24-2	Benzo(g,h,i)perylene	ND	0.080	0.040	ug/l	
207-08-9	Benzo(k)fluoranthene	ND	0.080	0.040	ug/l	
218-01-9	Chrysene	ND	0.080	0.040	ug/l	
53-70-3	Dibenzo(a,h)anthracene	ND	0.080	0.040	ug/l	
206-44-0	Fluoranthene	0.0532	0.080	0.040	ug/l	J
86-73-7	Fluorene	0.0472	0.080	0.040	ug/l	J
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.080	0.040	ug/l	
91-57-6	2-Methylnaphthalene	0.0437	0.080	0.040	ug/l	J
91-20-3	Naphthalene	ND	0.080	0.040	ug/l	
85-01-8	Phenanthrene	0.0587	0.080	0.040	ug/l	J
129-00-0	Pyrene	0.0480	0.080	0.040	ug/l	J

CAS No.	Surrogate Recoveries		Limits
367-12-4	2-Fluorophenol	43%	15-110%
4165-62-2	Phenol-d5	27%	12-110%
118-79-6	2,4,6-Tribromophenol	109%	32-143%
4165-60-0	Nitrobenzene-d5	70%	29-124%
321-60-8	2-Fluorobiphenyl	69%	23-122%
1718-51-0	Terphenyl-d14	79%	22-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72510-BS1	M209445.D	1	04/15/26	TL	04/14/26	OP72510	EM9045
OP72510-BSD	M209446.D	1	04/15/26	TL	04/14/26	OP72510	EM9045

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE31948-1, JE31948-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
65-85-0	Benzoic Acid	40	26.3	66	22.6	57	15	10-107/99
95-57-8	2-Chlorophenol	40	26.7	67	21.6	54	21	18-114/63
59-50-7	4-Chloro-3-methyl phenol	40	33.2	83	28.4	71	16	31-128/48
120-83-2	2,4-Dichlorophenol	40	30.4	76	24.3	61	22	21-130/59
105-67-9	2,4-Dimethylphenol	40	28.3	71	24.3	61	15	18-124/52
51-28-5	2,4-Dinitrophenol	80	122	153	112	140	9	13-154/69
534-52-1	4,6-Dinitro-o-cresol	40	56.6	142* [a]	52.3	131	8	28-140/58
95-48-7	2-Methylphenol	40	25.8	65	21.2	53	20	14-109/55
	3&4-Methylphenol	80	52.2	65	43.0	54	19	10-119/55
88-75-5	2-Nitrophenol	40	41.5	104	33.0	83	23	22-128/63
100-02-7	4-Nitrophenol	40	26.6	67	24.4	61	9	10-104/70
87-86-5	Pentachlorophenol	80	86.1	108	82.7	103	4	10-155/56
108-95-2	Phenol	40	15.9	40	12.4	31	25	10-68/60
95-95-4	2,4,5-Trichlorophenol	40	34.0	85	28.8	72	17	29-134/57
88-06-2	2,4,6-Trichlorophenol	40	30.7	77	26.1	65	16	28-134/61
83-32-9	Acenaphthene	40	24.5	61	21.6	54	13	33-120/45
208-96-8	Acenaphthylene	40	25.4	64	20.5	51	21	15-119/46
98-86-2	Acetophenone	40	27.4	69	23.0	58	17	25-124/50
62-53-3	Aniline	40	18.3	46	ND	0* [b]	200* [c]	10-101/30
120-12-7	Anthracene	40	33.3	83	29.3	73	13	36-125/40
56-55-3	Benzo(a)anthracene	40	36.0	90	32.9	82	9	38-132/41
50-32-8	Benzo(a)pyrene	40	34.1	85	27.6	69	21	37-135/42
205-99-2	Benzo(b)fluoranthene	40	36.0	90	36.8	92	2	36-143/42
191-24-2	Benzo(g,h,i)perylene	40	24.0	60	24.7	62	3	32-140/47
207-08-9	Benzo(k)fluoranthene	40	35.5	89	37.3	93	5	34-135/40
101-55-3	4-Bromophenyl phenyl ether	40	30.3	76	26.8	67	12	31-131/43
85-68-7	Butyl benzyl phthalate	40	46.0	115	42.3	106	8	39-150/42
91-58-7	2-Chloronaphthalene	40	21.8	55	19.2	48	13	26-117/47
106-47-8	4-Chloroaniline	40	28.5	71	ND	0* [b]	200* [c]	13-118/78
218-01-9	Chrysene	40	34.8	87	33.2	83	5	37-126/41
111-91-1	bis(2-Chloroethoxy)methane	40	28.7	72	21.6	54	28	27-120/48
111-44-4	bis(2-Chloroethyl)ether	40	25.8	65	20.5	51	23	22-116/56
108-60-1	2,2'-Oxybis(1-chloropropane)	40	24.0	60	19.3	48	22	12-131/54
7005-72-3	4-Chlorophenyl phenyl ether	40	27.0	68	24.4	61	10	33-125/44
95-50-1	1,2-Dichlorobenzene	40	20.8	52	16.2	41	25	16-107/62
122-66-7	1,2-Diphenylhydrazine	40	29.9	75	27.0	68	10	30-127/42

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72510-BS1	M209445.D	1	04/15/26	TL	04/14/26	OP72510	EM9045
OP72510-BSD	M209446.D	1	04/15/26	TL	04/14/26	OP72510	EM9045

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE31948-1, JE31948-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
541-73-1	1,3-Dichlorobenzene	40	19.6	49	15.2	38	25	15-105/65
106-46-7	1,4-Dichlorobenzene	40	19.9	50	15.6	39	24	16-104/65
121-14-2	2,4-Dinitrotoluene	40	52.7	132	51.5	129	2	43-135/42
606-20-2	2,6-Dinitrotoluene	40	49.0	123	44.6	112	9	40-135/45
91-94-1	3,3'-Dichlorobenzidine	40	39.6	99	ND	0* [b]	200* [c]	17-127/60
53-70-3	Dibenzo(a,h)anthracene	40	26.4	66	26.4	66	0	34-143/45
132-64-9	Dibenzofuran	40	26.3	66	23.6	59	11	35-122/43
84-74-2	Di-n-butyl phthalate	40	37.1	93	36.3	91	2	36-142/46
117-84-0	Di-n-octyl phthalate	40	50.4	126	52.7	132	4	36-156/41
84-66-2	Diethyl phthalate	40	34.5	86	33.2	83	4	41-137/45
131-11-3	Dimethyl phthalate	40	32.5	81	31.1	78	4	39-130/44
117-81-7	bis(2-Ethylhexyl)phthalate	40	44.3	111	42.1	105	5	39-145/40
206-44-0	Fluoranthene	40	34.6	87	33.4	84	4	39-128/40
86-73-7	Fluorene	40	28.8	72	26.2	66	9	38-123/44
118-74-1	Hexachlorobenzene	40	32.2	81	29.3	73	9	32-129/42
87-68-3	Hexachlorobutadiene	40	17.5	44	12.9	32	30	13-121/57
77-47-4	Hexachlorocyclopentadiene	80	38.3	48	30.3	38	23	10-125/56
67-72-1	Hexachloroethane	40	18.4	46	13.3	33	32	10-109/67
193-39-5	Indeno(1,2,3-cd)pyrene	40	26.0	65	24.9	62	4	35-141/46
78-59-1	Isophorone	40	28.7	72	24.4	61	16	27-124/46
91-57-6	2-Methylnaphthalene	40	22.9	57	19.5	49	16	25-118/50
91-20-3	Naphthalene	40	22.9	57	18.6	47	21	24-113/52
98-95-3	Nitrobenzene	40	40.3	101	32.0	80	23	24-120/51
62-75-9	n-Nitrosodimethylamine	40	22.5	56	16.1	40	33	10-93/64
621-64-7	N-Nitroso-di-n-propylamine	40	28.9	72	24.6	62	16	26-125/49
86-30-6	N-Nitrosodiphenylamine	40	33.8	85	22.1	55	42	32-123/46
85-01-8	Phenanthrene	40	32.0	80	29.6	74	8	36-122/40
129-00-0	Pyrene	40	38.9	97	34.5	86	12	39-137/41
120-82-1	1,2,4-Trichlorobenzene	40	20.3	51	15.5	39	27	17-114/54

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	53%	40%	10-69%
4165-62-2	Phenol-d5	42%	30%	10-47%
118-79-6	2,4,6-Tribromophenol	106%	87%	17-144%

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72510-BS1	M209445.D	1	04/15/26	TL	04/14/26	OP72510	EM9045
OP72510-BSD	M209446.D	1	04/15/26	TL	04/14/26	OP72510	EM9045

The QC reported here applies to the following samples: **Method: SW846 8270E**

JE31948-1, JE31948-2

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
4165-60-0	Nitrobenzene-d5	112%	85%	17-126%
321-60-8	2-Fluorobiphenyl	68%	56%	23-124%
1718-51-0	Terphenyl-d14	95%	86%	13-135%

(a) Outside of in house control limits.
(b) Outside of in house control limits. BS met acceptable criteria.
(c) Analytical precision exceeds in-house control limits.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72510A-BS12	Z179275.D	1	04/14/26	AC	04/14/26	OP72510A	EZ8806
OP72510A-BSD12	Z179276.D	1	04/14/26	AC	04/14/26	OP72510A	EZ8806

The QC reported here applies to the following samples: **Method: SW846 8270E BY SIM**

JE31948-1, JE31948-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	0.8	0.476	60	0.556	70	16	31-135/38
208-96-8	Acenaphthylene	0.8	0.466	58	0.549	69	16	28-130/42
120-12-7	Anthracene	0.8	0.511	64	0.603	75	17	40-125/32
56-55-3	Benzo(a)anthracene	0.8	0.770	96	0.766	96	1	38-132/31
50-32-8	Benzo(a)pyrene	0.8	0.474	59	0.349	44	30	31-110/37
205-99-2	Benzo(b)fluoranthene	0.8	0.599	75	0.472	59	24	31-113/37
191-24-2	Benzo(g,h,i)perylene	0.8	0.480	60	0.246	31	64* [a]	18-110/54
207-08-9	Benzo(k)fluoranthene	0.8	0.580	73	0.447	56	26	31-119/43
218-01-9	Chrysene	0.8	0.680	85	0.667	83	2	43-119/33
53-70-3	Dibenzo(a,h)anthracene	0.8	0.572	72	0.303	38	61* [a]	20-112/50
206-44-0	Fluoranthene	0.8	0.556	70	0.629	79	12	48-118/27
86-73-7	Fluorene	0.8	0.477	60	0.560	70	16	42-123/34
193-39-5	Indeno(1,2,3-cd)pyrene	0.8	0.553	69	0.268	34	69* [a]	18-113/49
91-57-6	2-Methylnaphthalene	0.8	0.404	51	0.475	59	16	26-126/37
91-20-3	Naphthalene	0.8	0.440	55	0.513	64	15	30-114/40
85-01-8	Phenanthrene	0.8	0.507	63	0.581	73	14	45-125/31
129-00-0	Pyrene	0.8	0.566	71	0.627	78	10	48-125/29

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
367-12-4	2-Fluorophenol	39%	47%	15-110%
4165-62-2	Phenol-d5	27%	34%	12-110%
118-79-6	2,4,6-Tribromophenol	96%	115%	32-143%
4165-60-0	Nitrobenzene-d5	59%	70%	29-124%
321-60-8	2-Fluorobiphenyl	53%	63%	23-122%
1718-51-0	Terphenyl-d14	67%	77%	22-130%

(a) Analytical precision exceeds in-house control limits.

*** = Outside of Control Limits.**

Internal Standard Area Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	EM9045-CC9042	**Injection Date:**	04/15/26
Lab File ID:	M209437.D	**Injection Time:**	17:46
Instrument ID:	GCMSM	**Method:**	SW846 8270E

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
Check Std	43158	4.69	175036	5.49	90034	6.80	163575	8.23	138539	11.28	141414	12.94
Upper Limit [a]	86316	5.19	350072	5.99	180068	7.30	327150	8.73	277078	11.78	282828	13.44
Lower Limit [b]	21579	4.19	87518	4.99	45017	6.30	81788	7.73	69270	10.78	70707	12.44

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT	IS 5 AREA	RT	IS 6 AREA	RT
OP72512-MB1	40138	4.69	164474	5.49	90918	6.80	163992	8.22	139527	11.27	146482	12.93
OP72510-MB1	45967	4.69	187225	5.49	104269	6.80	185104	8.22	152246	11.27	161954	12.93
ZZZZZZ	41657	4.69	167608	5.49	92467	6.80	169756	8.22	150857	11.27	166238	12.93
ZZZZZZ	43578	4.69	175726	5.49	96183	6.80	174002	8.22	144377	11.27	157337	12.93
OP72510-BS1	45282	4.69	181250	5.49	100281	6.80	178292	8.22	140786	11.27	148866	12.94
OP72510-BSD	38925	4.69	160365	5.49	88098	6.80	162938	8.23	135909	11.28	130872	12.94
OP72512-BS1	42448	4.69	171095	5.49	93850	6.80	170186	8.22	143207	11.27	155409	12.93
OP72512-BSD	45160	4.69	182350	5.49	99953	6.80	178859	8.22	149813	11.27	169441	12.94
ZZZZZZ	46103	4.69	179083	5.49	97743	6.80	171918	8.22	144859	11.27	166940	12.93
ZZZZZZ	43347	4.69	181386	5.49	97754	6.80	172603	8.22	149656	11.27	167265	12.93
ZZZZZZ	45183	4.69	180933	5.49	98831	6.80	179445	8.22	158602	11.27	179804	12.93
ZZZZZZ	43865	4.69	176110	5.49	97471	6.80	175398	8.22	146194	11.27	161840	12.93
ZZZZZZ	43933	4.69	181427	5.49	100480	6.80	178577	8.22	146425	11.27	161678	12.93
ZZZZZZ	44340	4.69	178071	5.49	102231	6.80	185431	8.22	161925	11.27	169145	12.93
ZZZZZZ	44382	4.69	183111	5.49	99081	6.80	175801	8.22	153984	11.27	172971	12.93
ZZZZZZ	48572	4.69	194391	5.49	106717	6.80	186800	8.22	150007	11.27	169870	12.93
ZZZZZZ	46319	4.69	188708	5.49	104000	6.80	185372	8.22	152377	11.27	160967	12.93
JE31948-1 [c]	45775	4.69	185764	5.49	104283	6.80	192582	8.22	162418	11.27	174229	12.93
JE31948-2 [c]	42935	4.69	175781	5.49	98023	6.80	180346	8.22	154004	11.27	164241	12.93
ZZZZZZ	42141	4.69	173123	5.49	97733	6.80	178527	8.22	154817	11.27	162576	12.93
ZZZZZZ	45356	4.69	187871	5.49	100127	6.80	179738	8.22	154527	11.27	174084	12.93
ZZZZZZ	46496	4.69	192205	5.49	105521	6.80	191680	8.22	159516	11.27	168938	12.93
ZZZZZZ	47000	4.69	191269	5.49	104361	6.80	190614	8.22	157595	11.27	171563	12.93
ZZZZZZ	47901	4.69	190988	5.49	103041	6.80	180540	8.22	150951	11.27	168218	12.93
ZZZZZZ	48579	4.69	180769	5.49	106827	6.80	186538	8.22	155917	11.27	178908	12.94
ZZZZZZ	46651	4.69	192132	5.49	105308	6.80	181194	8.22	148886	11.27	161318	12.94

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-d10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.

Internal Standard Area Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	EM9045-CC9042	**Injection Date:**	04/15/26
Lab File ID:	M209437.D	**Injection Time:**	17:46
Instrument ID:	GCMSM	**Method:**	SW846 8270E

Lab	IS 1		IS 2		IS 3		IS 4		IS 5		IS 6	
Sample ID	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT	AREA	RT

(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) There are compounds in BSD were outside MCP limits biased low. BS met acceptable criteria.

Internal Standard Area Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Check Std:	EZ8806-CC8744	**Injection Date:**	04/14/26
Lab File ID:	Z179270.D	**Injection Time:**	16:38
Instrument ID:	GCMSZ	**Method:**	SW846 8270E BY SIM

	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT
Check Std	18709	6.21	25406	7.55	43969	10.30	36851	14.50
Upper Limit [a]	37418	6.71	50812	8.05	87938	10.80	73702	15.00
Lower Limit [b]	9355	5.71	12703	7.05	21985	9.80	18426	14.00

Lab Sample ID	IS 1 AREA	RT	IS 2 AREA	RT	IS 3 AREA	RT	IS 4 AREA	RT
OP72510A-MB1	18721	6.21	23470	7.55	41006	10.30	32465	14.50
ZZZZZZ	19139	6.21	23993	7.55	42295	10.30	33285	14.50
OP72510A-BS12	18808	6.21	25376	7.55	44025	10.30	34064	14.50
OP72510A-BSD12	19513	6.21	26237	7.55	44206	10.30	34432	14.50
ZZZZZZ	19464	6.21	25540	7.55	45127	10.30	35451	14.50
ZZZZZZ	20017	6.21	26047	7.55	45177	10.29	33905	14.50
ZZZZZZ	19251	6.21	25203	7.55	44623	10.30	34861	14.50
ZZZZZZ	20123	6.21	26208	7.55	46557	10.29	36312	14.50
JE31948-1	20900	6.21	27612	7.55	47687	10.29	37286	14.50
JE31948-2	17284	6.21	22158	7.55	38449	10.29	33102	14.50
ZZZZZZ	17849	6.21	23206	7.55	41009	10.29	34408	14.50
ZZZZZZ	19352	6.20	25206	7.55	43921	10.29	35806	14.50
ZZZZZZ	20034	6.20	25810	7.55	44856	10.29	36755	14.50
ZZZZZZ	19826	6.20	25926	7.55	43884	10.29	36397	14.50
ZZZZZZ	22248	6.20	30514	7.54	46964	10.29	45046	14.50
ZZZZZZ	20597	6.20	26316	7.55	46642	10.29	41721	14.50
ZZZZZZ	21061	6.20	31783	7.54	47078	10.29	52017	14.50

IS 1 = 1-Methylnaphthalene-d10
IS 2 = Fluorene-d10
IS 3 = Fluoranthene-d10
IS 4 = Benzo(a)pyrene-d12

(a) Upper Limit = + 100% of check standard area; Retention time + 0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

Surrogate Recovery Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8270E **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3	S4	S5	S6
JE31948-1	M209459.D	53	37	101	124	71	91
JE31948-2	M209460.D	58	41	105	130* [a]	75	92
OP72510-BS1	M209445.D	53	42	106	112	68	95
OP72510-BSD	M209446.D	40	30	87	85	56	86
OP72510-MB1	M209442.D	46	33	76	106	61	85

Surrogate Compounds	Recovery Limits
S1 = 2-Fluorophenol	10-69%
S2 = Phenol-d5	10-47%
S3 = 2,4,6-Tribromophenol	17-144%
S4 = Nitrobenzene-d5	17-126%
S5 = 2-Fluorobiphenyl	23-124%
S6 = Terphenyl-d14	13-135%

(a) Outside of in house control limits. Sample was ND.

Surrogate Recovery Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8270E BY SIM **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1	S2	S3
JE31948-1	Z179282.D	71	65	74
JE31948-2	Z179283.D	84	78	86
OP72510A-BS12	Z179275.D	59	53	67
OP72510A-BSD12	Z179276.D	70	63	77
OP72510A-MB1	Z179273.D	70	69	79

Surrogate Compounds	Recovery Limits
S1 = Nitrobenzene-d5	29-124%
S2 = 2-Fluorobiphenyl	23-122%
S3 = Terphenyl-d14	22-130%

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GBH2051-MB	BH57116.D	1	04/16/26	JN	n/a	n/a	GBH2051

The QC reported here applies to the following samples: **Method: MADEP VPH REV 2.1**

JE31948-1, JE31948-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	C5- C8 Aliphatics (Unadj.)	ND	100	50	ug/l	
	C9- C12 Aliphatics (Unadj.)	ND	100	50	ug/l	
	C5- C8 Aliphatics	ND	100	50	ug/l	
	C9- C12 Aliphatics	ND	100	50	ug/l	
	C9- C10 Aromatics	ND	100	50	ug/l	

CAS No.	Surrogate Recoveries		Limits
	2,3,4-Trifluorotoluene	91%	70-130%
	2,3,4-Trifluorotoluene	98%	70-130%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GBH2051-BS	BH57117.D	1	04/16/26	JN	n/a	n/a	GBH2051
GBH2051-BSD	BH57118.D	1	04/16/26	JN	n/a	n/a	GBH2051

The QC reported here applies to the following samples: **Method: MADEP VPH REV 2.1**

JE31948-1, JE31948-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
	C5- C8 Aliphatics (Unadj.)	150	140	93	136	91	3	70-130/25
	C9- C12 Aliphatics (Unadj.)	150	119	79	118	79	1	70-130/25
	C9- C10 Aromatics	50	43.9	88	43.3	87	1	70-130/25

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
	2,3,4-Trifluorotoluene	92%	93%	70-130%
	2,3,4-Trifluorotoluene	99%	100%	70-130%

* = Outside of Control Limits.

Surrogate Recovery Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: MADEP VPH REV 2.1 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]
JE31948-1	BH57120.D	90	97
JE31948-2	BH57121.D	89	96
GBH2051-BS	BH57117.D	92	99
GBH2051-BSD	BH57118.D	93	100
GBH2051-MB	BH57116.D	91	98

Surrogate Compounds	Recovery Limits
S1 = 2,3,4-Trifluorotoluene	70-130%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

GC/LC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Blank Spike Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Surrogate Recovery Summaries**

Method Blank Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72504-MB1	4Y95940.D	1	04/19/26	RK	04/14/26	OP72504	G4Y3607

The QC reported here applies to the following samples: **Method: MADEP EPH REV 2.1**

JE31948-1, JE31948-2

CAS No.	Compound	Result	RL	MDL	Units	Q
	C11-C22 Aromatics (Unadj.)	ND	100	13	ug/l	
	C11-C22 Aromatics	ND	100	13	ug/l	
	C9-C18 Aliphatics	ND	100	7.7	ug/l	
	C19-C36 Aliphatics	ND	100	12	ug/l	

CAS No.	Surrogate Recoveries		Limits
3386-33-2	1-Chlorooctadecane	21%* [a]	40-140%
84-15-1	o-Terphenyl	52%	40-140%
321-60-8	2-Fluorobiphenyl	80%	40-140%

(a) Outside of in house control limits.

Method Blank Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72560-MB1	RM48091.D	1	04/16/26	JN	04/15/26	OP72560	GRM1161

The QC reported here applies to the following samples: **Method: SW846 8082A**

JE31948-1, JE31948-2

CAS No.	Compound	Result	RL	MDL	Units	Q
12674-11-2	Aroclor 1016	ND	0.18	0.049	ug/l	
11104-28-2	Aroclor 1221	ND	0.18	0.094	ug/l	
11141-16-5	Aroclor 1232	ND	0.18	0.069	ug/l	
53469-21-9	Aroclor 1242	ND	0.18	0.039	ug/l	
12672-29-6	Aroclor 1248	ND	0.18	0.035	ug/l	
11097-69-1	Aroclor 1254	ND	0.18	0.067	ug/l	
11096-82-5	Aroclor 1260	ND	0.18	0.11	ug/l	
11100-14-4	Aroclor 1268	ND	0.18	0.061	ug/l	
37324-23-5	Aroclor 1262	ND	0.18	0.039	ug/l	

CAS No.	Surrogate Recoveries		Limits
877-09-8	Tetrachloro-m-xylene	74%	50-150%
877-09-8	Tetrachloro-m-xylene	75%	50-150%
2051-24-3	Decachlorobiphenyl	78%	50-150%
2051-24-3	Decachlorobiphenyl	85%	50-150%

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72504-BS1	4Y95941.D	1	04/19/26	RK	04/14/26	OP72504	G4Y3607
OP72504-BSD	4Y95942.D	1	04/19/26	RK	04/14/26	OP72504	G4Y3607

The QC reported here applies to the following samples: **Method: MADEP EPH REV 2.1**

JE31948-1, JE31948-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
	C11-C22 Aromatics (Unadj.)	850	547	64	726	85	28	50-150/30 [a]
	C9-C18 Aliphatics	300	116	39* [b]	132	44	13	40-140/30
	C19-C36 Aliphatics	550	393	71	508	92	26	40-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
3386-33-2	1-Chlorooctadecane	34%* [b]	42%	40-140%
84-15-1	o-Terphenyl	62%	82%	40-140%
321-60-8	2-Fluorobiphenyl	77%	109%	40-140%

Sample	Compound	Col #1	Col #2	Breakthrough	Limit
OP72504-BS1	2-Methylnaphthalene	8.8	ND	0.0%	5.0
OP72504-BS1	Naphthalene	6.6	ND	0.0%	5.0
OP72504-BSD	2-Methylnaphthalene	14.6	ND	0.0%	5.0
OP72504-BSD	Naphthalene	12.3	ND	0.0%	5.0

(a) Advisory control limits.
(b) Outside of in house control limits.

* = Outside of Control Limits.

Blank Spike/Blank Spike Duplicate Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP72560-BS1	RM48092.D	1	04/16/26	JN	04/15/26	OP72560	GRM1161
OP72560-BSD	RM48093.D	1	04/16/26	JN	04/15/26	OP72560	GRM1161

The QC reported here applies to the following samples: **Method: SW846 8082A**

JE31948-1, JE31948-2

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	BSD ug/l	BSD %	RPD	Limits Rec/RPD
12674-11-2	Aroclor 1016	3.98	3.3	83	2.8	78	16	60-140/30
11104-28-2	Aroclor 1221		ND		ND		nc	60-140/30
11141-16-5	Aroclor 1232		ND		ND		nc	60-140/30
53469-21-9	Aroclor 1242		ND		ND		nc	60-140/30
12672-29-6	Aroclor 1248		ND		ND		nc	60-140/30
11097-69-1	Aroclor 1254		ND		ND		nc	60-140/30
11096-82-5	Aroclor 1260	3.98	4.6	116	4.0	111	14	60-140/30
11100-14-4	Aroclor 1268		ND		ND		nc	60-140/30
37324-23-5	Aroclor 1262		ND		ND		nc	60-140/30

CAS No.	Surrogate Recoveries	BSP	BSD	Limits
877-09-8	Tetrachloro-m-xylene	81%	81%	50-150%
877-09-8	Tetrachloro-m-xylene	81%	78%	50-150%
2051-24-3	Decachlorobiphenyl	87%	86%	50-150%
2051-24-3	Decachlorobiphenyl	94%	91%	50-150%

*** = Outside of Control Limits.**

Surrogate Recovery Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: MADEP EPH REV 2.1 **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S2 [b]	S3 [b]
JE31948-1	4Y95943.D	34* [c]	56	85
JE31948-2	4Y95944.D	18* [c]	46	80
OP72504-BS1	4Y95941.D	34* [c]	62	77
OP72504-BSD	4Y95942.D	42	82	109
OP72504-MB1	4Y95940.D	21* [c]	52	80

Surrogate Compounds	Recovery Limits
S1 = 1-Chlorooctadecane	40-140%
S2 = o-Terphenyl	40-140%
S3 = 2-Fluorobiphenyl	40-140%

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1
(c) Outside of in house control limits.

Surrogate Recovery Summary

Job Number: JE31948
Account: WSPEMAW WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Method: SW846 8082A **Matrix:** AQ

Samples and QC shown here apply to the above method

Lab Sample ID	Lab File ID	S1 [a]	S1 [b]	S2 [a]	S2 [b]
JE31948-1	RM48097.D	77	81	61	71
JE31948-2	RM48098.D	70	73	65	73
OP72560-BS1	RM48092.D	81	81	87	94
OP72560-BSD	RM48093.D	81	78	86	91
OP72560-MB1	RM48091.D	74	75	78	85

Surrogate Compounds	Recovery Limits
S1 = Tetrachloro-m-xylene	50-150%
S2 = Decachlorobiphenyl	50-150%

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- **Method Blank Summaries**
- **Matrix Spike and Duplicate Summaries**
- **Blank Spike and Lab Control Sample Summaries**
- **Serial Dilution Summaries**

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE31948
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP61349
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 04/13/26

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	27	150		
Antimony	6.0	2.2	4.7	-0.40	<6.0
Arsenic	3.0	1.3	2.8	-0.80	<3.0
Barium	200	1	13		
Beryllium	1.0	.2	.5	-0.10	<1.0
Bismuth	20	2.1	8.6		
Boron	100	1	10		
Cadmium	3.0	.2	1	0.0	<3.0
Calcium	5000	7.7	99		
Cerium	100				
Chromium	10	.5	2	0.30	<10
Cobalt	50	.4	2.6		
Copper	10	6.8	5.9	-0.40	<10
Iron	100	15	32		
Lead	3.0	1.6	1.8	-0.50	<3.0
Lithium	50	3.7	7.3		
Magnesium	5000	54	140		
Manganese	15	.1	1.4		
Molybdenum	20	.5	3.6		
Nickel	10	.3	1.7	0.10	<10
Phosphorus	50	1.8	18		
Potassium	10000	77	200		
Selenium	10	2	4.9	0.20	<10
Silicon	200	1.3	32		
Silver	10	.9	6.1	-0.20	<10
Sodium	10000	23	570		
Strontium	10	.4	2.7		
Sulfur	50	4.1	45		
Thallium	10	1.6	1.8	0.90	<10
Tin	10	.9	3.7		
Titanium	10	.9	2.5		
Tungsten	50	2	40		
Vanadium	50	.8	1.8		

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE31948
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP61349 Methods: SW846 6010D
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 04/13/26

Metal	RL	IDL	MDL	MB raw	final
Zinc	20	.2	6.9	0.50	<20
Zirconium	10	.5	4.1		

Associated samples MP61349: JE31948-1, JE31948-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE31948
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP61349
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date:			04/13/26					04/13/26	
Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits	BSD Result	Spikelot MPSPK2	% Rec	BSD RPD	QC Limit
Aluminum	anr								
Antimony	1980	2000	99.0	80-120	1960	2000	98.0	1.0	20
Arsenic	2010	2000	100.5	80-120	1990	2000	99.5	1.0	20
Barium	anr								
Beryllium	2010	2000	100.5	80-120	1990	2000	99.5	1.0	20
Bismuth									
Boron									
Cadmium	2000	2000	100.0	80-120	1970	2000	98.5	1.5	20
Calcium	anr								
Cerium									
Chromium	2020	2000	101.0	80-120	2000	2000	100.0	1.0	20
Cobalt	anr								
Copper	1960	2000	98.0	80-120	1940	2000	97.0	1.0	20
Iron	anr								
Lead	2020	2000	101.0	80-120	2000	2000	100.0	1.0	20
Lithium									
Magnesium	anr								
Manganese	anr								
Molybdenum									
Nickel	2010	2000	100.5	80-120	1990	2000	99.5	1.0	20
Phosphorus									
Potassium	anr								
Selenium	1990	2000	99.5	80-120	1960	2000	98.0	1.5	20
Silicon									
Silver	249	250	99.6	80-120	247	250	98.8	0.8	20
Sodium	anr								
Strontium									
Sulfur									
Thallium	2070	2000	103.5	80-120	2030	2000	101.5	2.0	20
Tin									
Titanium									
Tungsten									
Vanadium	anr								

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE31948
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP61349
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 04/13/26 04/13/26

Metal	BSP Result	Spikelot MPSPK2	% Rec	QC Limits	BSD Result	Spikelot MPSPK2	% Rec	BSD RPD	QC Limit
Zinc	2060	2000	103.0	80-120	2040	2000	102.0	1.0	20
Zirconium									

Associated samples MP61349: JE31948-1, JE31948-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE31948
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP61349
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 04/13/26

Metal	JE31971-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony	5.70	11.6	103.5(a)	0-10
Arsenic	2.70	0.00	100.0(a)	0-10
Barium	anr			
Beryllium	0.00	0.00	NC	0-10
Bismuth				
Boron				
Cadmium	2.10	3.30	57.1 (a)	0-10
Calcium	anr			
Cerium				
Chromium	1.90	2.50	31.6 (a)	0-10
Cobalt	anr			
Copper	0.00	0.00	NC	0-10
Iron	anr			
Lead	2.40	0.00	100.0(a)	0-10
Lithium				
Magnesium	anr			
Manganese	anr			
Molybdenum				
Nickel	4.00	4.10	2.5	0-10
Phosphorus				
Potassium	anr			
Selenium	8.80	0.00	100.0(a)	0-10
Silicon				
Silver	0.00	0.00	NC	0-10
Sodium	anr			
Strontium				
Sulfur				
Thallium	13.9	17.9	28.8 (a)	0-10
Tin				
Titanium				
Tungsten				
Vanadium	anr			

SERIAL DILUTION RESULTS SUMMARY

Login Number: JE31948
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP61349
Matrix Type: AQUEOUS

Methods: SW846 6010D
Units: ug/l

Prep Date: 04/13/26

Metal	JE31971-1 Original	SDL 1:5	%DIF	QC Limits
Zinc	3.70	3.20	13.5 (a)	0-10
Zirconium				

Associated samples MP61349: JE31948-1, JE31948-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: JE31948
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP61381 Methods: SW846 7470A
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 04/14/26

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.20	.036	.095	-0.016	<0.20

Associated samples MP61381: JE31948-1, JE31948-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: JE31948
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

QC Batch ID: MP61381
Matrix Type: AQUEOUS

Methods: SW846 7470A
Units: ug/l

Prep Date: 04/14/26

Metal	BSP Result	Spikelot HGPW3	% Rec	QC Limits
Mercury	2.1	2	105.0	80-120

Associated samples MP61381: JE31948-1, JE31948-2

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

General Chemistry

QC Data Summaries

Includes the following where applicable:

- **Method Blank and Blank Spike Summaries**
- **Duplicate Summaries**
- **Matrix Spike Summaries**

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: JE31948
Account: WSPEMAW - WSP USA Environment & Infrastructure Inc
Project: MWRA Water Tunnel

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GN81719	0.010	0.0044	mg/l	0.150	0.163	108.7	90-110%
Solids, Total Suspended	GN81851	4.0	0.0	mg/l	50	49.8	99.6	84-111%
Total Residual Chlorine	GN82326	0.050	0.020	mg/l				

Associated Samples:
Batch GN81719: JE31948-1, JE31948-2
Batch GN81851: JE31948-1, JE31948-2
Batch GN82326: JE31948-1, JE31948-2
(*) Outside of QC limits

Environmental Testing
Results of HA-FD-501

JOB: L2579644 REPORT STYLE: Data Usability Report
0010: Analytical Report Cover Page - OK
0015: Sample Cross Reference Summary - OK
0050: MCP Response Action Analytical Report Certification - OK
0060: Case Narrative - OK
0070: QC Outlier Summary Report - OK
0100: Volatiles Cover Page - OK
0110: Volatiles Sample Results - OK
0120: Volatiles Method Blank Report - OK
0130: Volatiles LCS Report - OK
0400: Petroleum Cover Page - OK
0500: EPH/VPH Sample Results - OK
0510: EPH/VPH Method Blank Report - OK
0520: EPH/VPH LCS Report - OK
1005: Metals Sample Results - OK
1010: Metals Method Blank Report - OK
1020: Metals LCS Report - OK
1180: Inorganics Cover Page - OK
1200: Wet Chemistry Sample Results - OK
1250: Wet Chemistry Duplicate Report - OK
5100: Sample Receipt & Container Information Report - OK
5200: Glossary - OK
5400: References - OK

No results found for sample L2579644-01 for product A2-PAH/PCBCONG
No results found for sample L2579644-01 for product A3-GEO-9060-2REPS

ANALYTICAL REPORT

Lab Number:	L2579644
Client:	WSP USA Inc. 100 Summer Street 13th Floor Boston, MA 02110
ATTN:	Dan Martin
Phone:	(617) 960-4879
Project Name:	MWTP
Project Number:	US004105.1397
Report Date:	12/30/25

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Certifications & Approvals: MA (M-MA086), NH NELAP (2064), CT (PH-0826), IL (200077), IN (C-MA-03), KY (KY98045), ME (MA00086), MD (348), NJ (MA935), NY (11148), NC (25700/666), OR (MA-1316), PA (68-03671), RI (LAO00065), TX (T104704476), VT (VT-0935), VA (460195), USDA (Permit #525-23-122-91930A1).

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Lab Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L2579644-01	MA401WQ	SEDIMENT	CHARLES RIVER AT 161 HIGHLAND AVE, NEEDHAM, MA	12/15/25 11:30	12/15/25

Project Name:	MWTP	**Lab Number:**	L2579644
Project Number:	US004105.1397	**Report Date:**	12/30/25

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is required for "Presumptive Certainty" status		
A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	YES
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	YES
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data?"	YES
E 1.	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	YES
E 2.	PFAS Only: Were aqueous samples extracted without filtering?	N/A
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	YES

A response to questions G, H and I is required for "Presumptive Certainty" status		
G	Were the reporting limits/lower limits of quantitation at or below all CAM reporting limits/lower limits of quantitation specified in the selected CAM protocol(s)?	NO
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name:	MWTP	**Lab Number:**	L2579644
Project Number:	US004105.1397	**Report Date:**	12/30/25

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Pace Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively.

When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances, the specific failure is not narrated but noted in the associated QC Outlier Summary Report, located directly after the Case Narrative. QC information is also incorporated in the Data Usability Assessment table (Format 11) of our Data Merger tool, where it can be reviewed in conjunction with the sample result, associated regulatory criteria and any associated data usability implications.

Soil/sediments and solids are reported on a dry weight basis unless otherwise noted. Tissues are reported "as received" or on a wet weight basis, unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

HOLD POLICY - For samples submitted on hold, Pace's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Pace Project Manager and made arrangements for Pace to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Project Management at 800-624-9220 with any questions.

Project Name:	MWTP	**Lab Number:**	L2579644
Project Number:	US004105.1397	**Report Date:**	12/30/25

Case Narrative (continued)

Report Submission

December 30, 2025: This is a preliminary report.

December 23, 2025: This is a preliminary report.

MCP Related Narratives

Sample Receipt

In reference to question H:

A Matrix Spike was not submitted for the analysis of Total Metals.

Volatile Organics

L2579644-01: The sample was received in the appropriate containers (vials) for Volatile Organics by EPA Method 5035/8260; however, they could not be used for analysis. With the client's authorization, a sample aliquot was taken from an unpreserved container (jar) and preserved appropriately. A high-level analysis was performed and those results are also reported.

In reference to question G:

L2579644-01 High: One or more of the target analytes did not achieve the requested CAM reporting limits.

In reference to question H:

L2579644-01 Low and High: Initial Calibration did not meet:

Lowest Calibration Standard Minimum Response Factor: bromodichloromethane (0.2506), 1,4-dioxane (0.0008), cis-1,3-dichloropropene (0.2405), trans-1,3-dichloropropene (0.2829), 1,1,2-trichloroethane (0.1527), 1,2-dibromoethane (0.1527)

Average Response Factor: bromodichloromethane, 1,4-dioxane, 1,1,2-trichloroethane

Verification: acetone (57%)

L2579644-01 Low and High: The associated continuing calibration standard is outside the acceptance criteria for several compounds; however, it is within overall method allowances. Associated results are considered to be biased high if the %D is negative and biased low if the %D is positive. A copy of the continuing calibration standard is included as an addendum to this report.

Project Name:	MWTP	**Lab Number:**	L2579644
Project Number:	US004105.1397	**Report Date:**	12/30/25

Case Narrative (continued)

EPH

In reference to question I:

All samples were analyzed for a subset of MCP analytes per client request.

Non-MCP Related Narratives

Grain Size Analysis

The WG2155116-1 Laboratory Duplicate RPDs performed on L2579644-01 are outside the acceptance criteria for % coarse gravel (30%) and % total gravel (22%) due to the non-homogeneous nature of the native sample.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Kelly O'Neill

Title: Technical Director/Representative Date: 12/30/25

QC OUTLIER SUMMARY REPORT

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Method	Client ID (Native ID)	Lab ID	Parameter	QC Type	Recovery/RPD (%)	QC Limits (%)	Associated Samples	Data Quality Assessment
MCP Volatile Organics by EPA 5035/8260 High - Westborough Lab								
8260D	Batch QC	WG2159709-3	2-Hexanone	LCS	68	70-130	01	potential low bias
MCP Volatile Organics by EPA 5035/8260 Low - Westborough Lab								
8260D	Batch QC	WG2159702-3	2-Hexanone	LCS	68	70-130	01	potential low bias
Extractable Petroleum Hydrocarbons - Westborough Lab								
EPH-19-2.1	Batch QC	WG2158837-3	Acenaphthylene	LCSD	30	40-140	01	non-directional bias
EPH-19-2.1	Batch QC	WG2158837-3	Acenaphthene	LCSD	26	40-140	01	non-directional bias
Grain Size Analysis - East Longmeadow Lab								
D6913/D7928	Batch QC (L2579644-01)	WG2155116-1	% Coarse Gravel	Duplicate	30	NA	01	non-directional bias
D6913/D7928	Batch QC (L2579644-01)	WG2155116-1	% Total Gravel	Duplicate	22	NA	01	non-directional bias

ORGANICS

VOLATILES

Project Name: MWTP **Lab Number:** L2579644

Project Number: US004105.1397 **Report Date:** 12/30/25

SAMPLE RESULTS

Lab ID: L2579644-01 Date Collected: 12/15/25 11:30

Client ID: MA401WQ Date Received: 12/15/25

Sample Location: CHARLES RIVER AT 161 HIGHLAND AVE, NEEDHAM, MA Field Prep: Not Specified

Sample Depth:

Matrix: Sediment

Analytical Method: 141,8260D

Analytical Date: 12/29/25 09:51

Analyst: MJV

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035/8260 Low - Westborough Lab						
Methylene chloride	ND		ug/kg	4.7	--	1
1,1-Dichloroethane	ND		ug/kg	0.95	--	1
Chloroform	ND		ug/kg	1.4	--	1
Carbon tetrachloride	ND		ug/kg	0.95	--	1
1,2-Dichloropropane	ND		ug/kg	0.95	--	1
Dibromochloromethane	ND		ug/kg	0.95	--	1
1,1,2-Trichloroethane	ND		ug/kg	0.95	--	1
Tetrachloroethene	ND		ug/kg	0.47	--	1
Chlorobenzene	ND		ug/kg	0.47	--	1
Trichlorofluoromethane	ND		ug/kg	3.8	--	1
1,2-Dichloroethane	ND		ug/kg	0.95	--	1
1,1,1-Trichloroethane	ND		ug/kg	0.47	--	1
Bromodichloromethane	ND		ug/kg	0.47	--	1
trans-1,3-Dichloropropene	ND		ug/kg	0.95	--	1
cis-1,3-Dichloropropene	ND		ug/kg	0.47	--	1
1,3-Dichloropropene, Total	ND		ug/kg	0.47	--	1
1,1-Dichloropropene	ND		ug/kg	0.47	--	1
Bromoform	ND		ug/kg	3.8	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.47	--	1
Benzene	ND		ug/kg	0.47	--	1
Toluene	ND		ug/kg	0.95	--	1
Ethylbenzene	ND		ug/kg	0.95	--	1
Chloromethane	ND		ug/kg	3.8	--	1
Bromomethane	ND		ug/kg	1.9	--	1
Vinyl chloride	ND		ug/kg	0.95	--	1
Chloroethane	ND		ug/kg	1.9	--	1
1,1-Dichloroethene	ND		ug/kg	0.95	--	1
trans-1,2-Dichloroethene	ND		ug/kg	1.4	--	1

Project Name: MWTP **Lab Number:** L2579644

Project Number: US004105.1397 **Report Date:** 12/30/25

SAMPLE RESULTS

Lab ID: L2579644-01 Date Collected: 12/15/25 11:30

Client ID: MA401WQ Date Received: 12/15/25

Sample Location: CHARLES RIVER AT 161 HIGHLAND AVE, NEEDHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035/8260 Low - Westborough Lab						
Trichloroethene	ND		ug/kg	0.47	--	1
1,2-Dichlorobenzene	ND		ug/kg	1.9	--	1
1,3-Dichlorobenzene	ND		ug/kg	1.9	--	1
1,4-Dichlorobenzene	ND		ug/kg	1.9	--	1
Methyl tert butyl ether	ND		ug/kg	1.9	--	1
p/m-Xylene	ND		ug/kg	1.9	--	1
o-Xylene	ND		ug/kg	0.95	--	1
Xylenes, Total	ND		ug/kg	0.95	--	1
cis-1,2-Dichloroethene	ND		ug/kg	0.95	--	1
1,2-Dichloroethene, Total	ND		ug/kg	0.95	--	1
Dibromomethane	ND		ug/kg	1.9	--	1
1,2,3-Trichloropropane	ND		ug/kg	1.9	--	1
Styrene	ND		ug/kg	0.95	--	1
Dichlorodifluoromethane	ND		ug/kg	9.5	--	1
Acetone	ND		ug/kg	24	--	1
Carbon disulfide	ND		ug/kg	9.5	--	1
Methyl ethyl ketone	ND		ug/kg	9.5	--	1
Methyl isobutyl ketone	ND		ug/kg	9.5	--	1
2-Hexanone	ND		ug/kg	9.5	--	1
Bromochloromethane	ND		ug/kg	1.9	--	1
Tetrahydrofuran	ND		ug/kg	3.8	--	1
2,2-Dichloropropane	ND		ug/kg	1.9	--	1
1,2-Dibromoethane	ND		ug/kg	0.95	--	1
1,3-Dichloropropane	ND		ug/kg	1.9	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.47	--	1
Bromobenzene	ND		ug/kg	1.9	--	1
n-Butylbenzene	ND		ug/kg	0.95	--	1
sec-Butylbenzene	ND		ug/kg	0.95	--	1
tert-Butylbenzene	ND		ug/kg	1.9	--	1
o-Chlorotoluene	ND		ug/kg	1.9	--	1
p-Chlorotoluene	ND		ug/kg	1.9	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	2.8	--	1
Hexachlorobutadiene	ND		ug/kg	3.8	--	1
Isopropylbenzene	ND		ug/kg	0.95	--	1
p-Isopropyltoluene	ND		ug/kg	0.95	--	1
Naphthalene	ND		ug/kg	3.8	--	1
n-Propylbenzene	ND		ug/kg	0.95	--	1

Project Name: MWTP **Lab Number:** L2579644

Project Number: US004105.1397 **Report Date:** 12/30/25

SAMPLE RESULTS

Lab ID: L2579644-01 Date Collected: 12/15/25 11:30

Client ID: MA401WQ Date Received: 12/15/25

Sample Location: CHARLES RIVER AT 161 HIGHLAND AVE, NEEDHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035/8260 Low - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	1.9	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	1.9	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	1.9	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	1.9	--	1
Diethyl ether	ND		ug/kg	1.9	--	1
Diisopropyl Ether	ND		ug/kg	1.9	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/kg	1.9	--	1
Tertiary-Amyl Methyl Ether	ND		ug/kg	1.9	--	1
1,4-Dioxane	ND		ug/kg	76	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	96		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	91		70-130
Dibromofluoromethane	100		70-130

Project Name: MWTP **Lab Number:** L2579644

Project Number: US004105.1397 **Report Date:** 12/30/25

SAMPLE RESULTS

Lab ID: L2579644-01 Date Collected: 12/15/25 11:30

Client ID: MA401WQ Date Received: 12/15/25

Sample Location: CHARLES RIVER AT 161 HIGHLAND AVE, NEEDHAM, MA Field Prep: Not Specified

Sample Depth:

Matrix: Sediment

Analytical Method: 141,8260D

Analytical Date: 12/29/25 10:17

Analyst: MJV

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 High/8260 - Westborough Lab						
Methylene chloride	ND		ug/kg	200	--	1
1,1-Dichloroethane	ND		ug/kg	40	--	1
Chloroform	ND		ug/kg	60	--	1
Carbon tetrachloride	ND		ug/kg	40	--	1
1,2-Dichloropropane	ND		ug/kg	40	--	1
Dibromochloromethane	ND		ug/kg	40	--	1
1,1,2-Trichloroethane	ND		ug/kg	40	--	1
Tetrachloroethene	ND		ug/kg	20	--	1
Chlorobenzene	ND		ug/kg	20	--	1
Trichlorofluoromethane	ND		ug/kg	160	--	1
1,2-Dichloroethane	ND		ug/kg	40	--	1
1,1,1-Trichloroethane	ND		ug/kg	20	--	1
Bromodichloromethane	ND		ug/kg	20	--	1
trans-1,3-Dichloropropene	ND		ug/kg	40	--	1
cis-1,3-Dichloropropene	ND		ug/kg	20	--	1
1,3-Dichloropropene, Total	ND		ug/kg	20	--	1
1,1-Dichloropropene	ND		ug/kg	20	--	1
Bromoform	ND		ug/kg	160	--	1
1,1,2,2-Tetrachloroethane	ND		ug/kg	20	--	1
Benzene	ND		ug/kg	20	--	1
Toluene	ND		ug/kg	40	--	1
Ethylbenzene	ND		ug/kg	40	--	1
Chloromethane	ND		ug/kg	160	--	1
Bromomethane	ND		ug/kg	81	--	1
Vinyl chloride	ND		ug/kg	40	--	1
Chloroethane	ND		ug/kg	81	--	1
1,1-Dichloroethene	ND		ug/kg	40	--	1
trans-1,2-Dichloroethene	ND		ug/kg	60	--	1

Project Name: MWTP **Lab Number:** L2579644

Project Number: US004105.1397 **Report Date:** 12/30/25

SAMPLE RESULTS

Lab ID: L2579644-01 Date Collected: 12/15/25 11:30

Client ID: MA401WQ Date Received: 12/15/25

Sample Location: CHARLES RIVER AT 161 HIGHLAND AVE, NEEDHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 High/8260 - Westborough Lab						
Trichloroethene	ND		ug/kg	20	--	1
1,2-Dichlorobenzene	ND		ug/kg	81	--	1
1,3-Dichlorobenzene	ND		ug/kg	81	--	1
1,4-Dichlorobenzene	ND		ug/kg	81	--	1
Methyl tert butyl ether	ND		ug/kg	81	--	1
p/m-Xylene	ND		ug/kg	81	--	1
o-Xylene	ND		ug/kg	40	--	1
Xylenes, Total	ND		ug/kg	40	--	1
cis-1,2-Dichloroethene	ND		ug/kg	40	--	1
1,2-Dichloroethene, Total	ND		ug/kg	40	--	1
Dibromomethane	ND		ug/kg	81	--	1
1,2,3-Trichloropropane	ND		ug/kg	81	--	1
Styrene	ND		ug/kg	40	--	1
Dichlorodifluoromethane	ND		ug/kg	400	--	1
Acetone	ND		ug/kg	400	--	1
Carbon disulfide	ND		ug/kg	400	--	1
Methyl ethyl ketone	ND		ug/kg	400	--	1
Methyl isobutyl ketone	ND		ug/kg	400	--	1
2-Hexanone	ND		ug/kg	400	--	1
Bromochloromethane	ND		ug/kg	81	--	1
Tetrahydrofuran	ND		ug/kg	160	--	1
2,2-Dichloropropane	ND		ug/kg	81	--	1
1,2-Dibromoethane	ND		ug/kg	40	--	1
1,3-Dichloropropane	ND		ug/kg	81	--	1
1,1,1,2-Tetrachloroethane	ND		ug/kg	20	--	1
Bromobenzene	ND		ug/kg	81	--	1
n-Butylbenzene	ND		ug/kg	40	--	1
sec-Butylbenzene	ND		ug/kg	40	--	1
tert-Butylbenzene	ND		ug/kg	81	--	1
o-Chlorotoluene	ND		ug/kg	81	--	1
p-Chlorotoluene	ND		ug/kg	81	--	1
1,2-Dibromo-3-chloropropane	ND		ug/kg	120	--	1
Hexachlorobutadiene	ND		ug/kg	160	--	1
Isopropylbenzene	ND		ug/kg	40	--	1
p-Isopropyltoluene	ND		ug/kg	40	--	1
Naphthalene	ND		ug/kg	160	--	1
n-Propylbenzene	ND		ug/kg	40	--	1

Project Name: MWTP **Lab Number:** L2579644

Project Number: US004105.1397 **Report Date:** 12/30/25

SAMPLE RESULTS

Lab ID: L2579644-01 Date Collected: 12/15/25 11:30

Client ID: MA401WQ Date Received: 12/15/25

Sample Location: CHARLES RIVER AT 161 HIGHLAND AVE, NEEDHAM, MA Field Prep: Not Specified

Sample Depth:

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics by EPA 5035 High/8260 - Westborough Lab						
1,2,3-Trichlorobenzene	ND		ug/kg	81	--	1
1,2,4-Trichlorobenzene	ND		ug/kg	81	--	1
1,3,5-Trimethylbenzene	ND		ug/kg	81	--	1
1,2,4-Trimethylbenzene	ND		ug/kg	81	--	1
Diethyl ether	ND		ug/kg	81	--	1
Diisopropyl Ether	ND		ug/kg	81	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/kg	81	--	1
Tertiary-Amyl Methyl Ether	ND		ug/kg	81	--	1
1,4-Dioxane	ND		ug/kg	3200	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	97		70-130
Toluene-d8	94		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	98		70-130

Project Name: MWTP
Project Number: US004105.1397
Lab Number: L2579644
Report Date: 12/30/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 141,8260D
Analytical Date: 12/29/25 07:02
Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by EPA 5035/8260 Low - Westborough Lab for sample(s): 01 Batch: WG2159702-5					
Methylene chloride	ND		ug/kg	5.0	--
1,1-Dichloroethane	ND		ug/kg	1.0	--
Chloroform	ND		ug/kg	1.5	--
Carbon tetrachloride	ND		ug/kg	1.0	--
1,2-Dichloropropane	ND		ug/kg	1.0	--
Dibromochloromethane	ND		ug/kg	1.0	--
1,1,2-Trichloroethane	ND		ug/kg	1.0	--
Tetrachloroethene	ND		ug/kg	0.50	--
Chlorobenzene	ND		ug/kg	0.50	--
Trichlorofluoromethane	ND		ug/kg	4.0	--
1,2-Dichloroethane	ND		ug/kg	1.0	--
1,1,1-Trichloroethane	ND		ug/kg	0.50	--
Bromodichloromethane	ND		ug/kg	0.50	--
trans-1,3-Dichloropropene	ND		ug/kg	1.0	--
cis-1,3-Dichloropropene	ND		ug/kg	0.50	--
1,3-Dichloropropene, Total	ND		ug/kg	0.50	--
1,1-Dichloropropene	ND		ug/kg	0.50	--
Bromoform	ND		ug/kg	4.0	--
1,1,2,2-Tetrachloroethane	ND		ug/kg	0.50	--
Benzene	ND		ug/kg	0.50	--
Toluene	ND		ug/kg	1.0	--
Ethylbenzene	ND		ug/kg	1.0	--
Chloromethane	ND		ug/kg	4.0	--

Project Name: MWTP
Project Number: US004105.1397
Lab Number: L2579644
Report Date: 12/30/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 141,8260D
Analytical Date: 12/29/25 07:02
Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by EPA 5035/8260 Low - Westborough Lab for sample(s): 01 Batch: WG2159702-5					
Bromomethane	ND		ug/kg	2.0	--
Vinyl chloride	ND		ug/kg	1.0	--
Chloroethane	ND		ug/kg	2.0	--
1,1-Dichloroethene	ND		ug/kg	1.0	--
trans-1,2-Dichloroethene	ND		ug/kg	1.5	--
Trichloroethene	ND		ug/kg	0.50	--
1,2-Dichlorobenzene	ND		ug/kg	2.0	--
1,3-Dichlorobenzene	ND		ug/kg	2.0	--
1,4-Dichlorobenzene	ND		ug/kg	2.0	--
Methyl tert butyl ether	ND		ug/kg	2.0	--
p/m-Xylene	ND		ug/kg	2.0	--
o-Xylene	ND		ug/kg	1.0	--
Xylenes, Total	ND		ug/kg	1.0	--
cis-1,2-Dichloroethene	ND		ug/kg	1.0	--
1,2-Dichloroethene, Total	ND		ug/kg	1.0	--
Dibromomethane	ND		ug/kg	2.0	--
1,2,3-Trichloropropane	ND		ug/kg	2.0	--
Styrene	ND		ug/kg	1.0	--
Dichlorodifluoromethane	ND		ug/kg	10	--
Acetone	ND		ug/kg	25	--
Carbon disulfide	ND		ug/kg	10	--
Methyl ethyl ketone	ND		ug/kg	10	--
Methyl isobutyl ketone	ND		ug/kg	10	--

Project Name: MWTP **Lab Number:** L2579644

Project Number: US004105.1397 **Report Date:** 12/30/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 141,8260D
Analytical Date: 12/29/25 07:02
Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by EPA 5035/8260 Low - Westborough Lab for sample(s): 01 Batch: WG2159702-5					
2-Hexanone	ND		ug/kg	10	--
Bromochloromethane	ND		ug/kg	2.0	--
Tetrahydrofuran	ND		ug/kg	4.0	--
2,2-Dichloropropane	ND		ug/kg	2.0	--
1,2-Dibromoethane	ND		ug/kg	1.0	--
1,3-Dichloropropane	ND		ug/kg	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/kg	0.50	--
Bromobenzene	ND		ug/kg	2.0	--
n-Butylbenzene	ND		ug/kg	1.0	--
sec-Butylbenzene	ND		ug/kg	1.0	--
tert-Butylbenzene	ND		ug/kg	2.0	--
o-Chlorotoluene	ND		ug/kg	2.0	--
p-Chlorotoluene	ND		ug/kg	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/kg	3.0	--
Hexachlorobutadiene	ND		ug/kg	4.0	--
Isopropylbenzene	ND		ug/kg	1.0	--
p-Isopropyltoluene	ND		ug/kg	1.0	--
Naphthalene	ND		ug/kg	4.0	--
n-Propylbenzene	ND		ug/kg	1.0	--
1,2,3-Trichlorobenzene	ND		ug/kg	2.0	--
1,2,4-Trichlorobenzene	ND		ug/kg	2.0	--
1,3,5-Trimethylbenzene	ND		ug/kg	2.0	--
1,2,4-Trimethylbenzene	ND		ug/kg	2.0	--

Project Name:	MWTP	**Lab Number:**	L2579644
Project Number:	US004105.1397	**Report Date:**	12/30/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 141,8260D
Analytical Date: 12/29/25 07:02
Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by EPA 5035/8260 Low - Westborough Lab for sample(s): 01 Batch: WG2159702-5					
Diethyl ether	ND		ug/kg	2.0	--
Diisopropyl Ether	ND		ug/kg	2.0	--
Ethyl-Tert-Butyl-Ether	ND		ug/kg	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/kg	2.0	--
1,4-Dioxane	ND		ug/kg	80	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	96		70-130

Project Name: MWTP
Project Number: US004105.1397
Lab Number: L2579644
Report Date: 12/30/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 141,8260D
Analytical Date: 12/29/25 07:02
Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by EPA 5035/8260 High - Westborough Lab for sample(s): 01 Batch: WG2159709-5					
Methylene chloride	ND		ug/kg	250	--
1,1-Dichloroethane	ND		ug/kg	50	--
Chloroform	ND		ug/kg	75	--
Carbon tetrachloride	ND		ug/kg	50	--
1,2-Dichloropropane	ND		ug/kg	50	--
Dibromochloromethane	ND		ug/kg	50	--
1,1,2-Trichloroethane	ND		ug/kg	50	--
Tetrachloroethene	ND		ug/kg	25	--
Chlorobenzene	ND		ug/kg	25	--
Trichlorofluoromethane	ND		ug/kg	200	--
1,2-Dichloroethane	ND		ug/kg	50	--
1,1,1-Trichloroethane	ND		ug/kg	25	--
Bromodichloromethane	ND		ug/kg	25	--
trans-1,3-Dichloropropene	ND		ug/kg	50	--
cis-1,3-Dichloropropene	ND		ug/kg	25	--
1,3-Dichloropropene, Total	ND		ug/kg	25	--
1,1-Dichloropropene	ND		ug/kg	25	--
Bromoform	ND		ug/kg	200	--
1,1,2,2-Tetrachloroethane	ND		ug/kg	25	--
Benzene	ND		ug/kg	25	--
Toluene	ND		ug/kg	50	--
Ethylbenzene	ND		ug/kg	50	--
Chloromethane	ND		ug/kg	200	--

Project Name: MWTP
Project Number: US004105.1397
Lab Number: L2579644
Report Date: 12/30/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 141,8260D
Analytical Date: 12/29/25 07:02
Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by EPA 5035/8260 High - Westborough Lab for sample(s): 01 Batch: WG2159709-5					
Bromomethane	ND		ug/kg	100	--
Vinyl chloride	ND		ug/kg	50	--
Chloroethane	ND		ug/kg	100	--
1,1-Dichloroethene	ND		ug/kg	50	--
trans-1,2-Dichloroethene	ND		ug/kg	75	--
Trichloroethene	ND		ug/kg	25	--
1,2-Dichlorobenzene	ND		ug/kg	100	--
1,3-Dichlorobenzene	ND		ug/kg	100	--
1,4-Dichlorobenzene	ND		ug/kg	100	--
Methyl tert butyl ether	ND		ug/kg	100	--
p/m-Xylene	ND		ug/kg	100	--
o-Xylene	ND		ug/kg	50	--
Xylenes, Total	ND		ug/kg	50	--
cis-1,2-Dichloroethene	ND		ug/kg	50	--
1,2-Dichloroethene, Total	ND		ug/kg	50	--
Dibromomethane	ND		ug/kg	100	--
1,2,3-Trichloropropane	ND		ug/kg	100	--
Styrene	ND		ug/kg	50	--
Dichlorodifluoromethane	ND		ug/kg	500	--
Acetone	ND		ug/kg	500	--
Carbon disulfide	ND		ug/kg	500	--
Methyl ethyl ketone	ND		ug/kg	500	--
Methyl isobutyl ketone	ND		ug/kg	500	--

Project Name: MWTP
Project Number: US004105.1397
Lab Number: L2579644
Report Date: 12/30/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 141,8260D
Analytical Date: 12/29/25 07:02
Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by EPA 5035/8260 High - Westborough Lab for sample(s): 01 Batch: WG2159709-5					
2-Hexanone	ND		ug/kg	500	--
Bromochloromethane	ND		ug/kg	100	--
Tetrahydrofuran	ND		ug/kg	200	--
2,2-Dichloropropane	ND		ug/kg	100	--
1,2-Dibromoethane	ND		ug/kg	50	--
1,3-Dichloropropane	ND		ug/kg	100	--
1,1,1,2-Tetrachloroethane	ND		ug/kg	25	--
Bromobenzene	ND		ug/kg	100	--
n-Butylbenzene	ND		ug/kg	50	--
sec-Butylbenzene	ND		ug/kg	50	--
tert-Butylbenzene	ND		ug/kg	100	--
o-Chlorotoluene	ND		ug/kg	100	--
p-Chlorotoluene	ND		ug/kg	100	--
1,2-Dibromo-3-chloropropane	ND		ug/kg	150	--
Hexachlorobutadiene	ND		ug/kg	200	--
Isopropylbenzene	ND		ug/kg	50	--
p-Isopropyltoluene	ND		ug/kg	50	--
Naphthalene	ND		ug/kg	200	--
n-Propylbenzene	ND		ug/kg	50	--
1,2,3-Trichlorobenzene	ND		ug/kg	100	--
1,2,4-Trichlorobenzene	ND		ug/kg	100	--
1,3,5-Trimethylbenzene	ND		ug/kg	100	--
1,2,4-Trimethylbenzene	ND		ug/kg	100	--

Project Name: MWTP **Lab Number:** L2579644

Project Number: US004105.1397 **Report Date:** 12/30/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 141,8260D
Analytical Date: 12/29/25 07:02
Analyst: MJV

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics by EPA 5035/8260 High - Westborough Lab for sample(s): 01 Batch: WG2159709-5					
Diethyl ether	ND		ug/kg	100	--
Diisopropyl Ether	ND		ug/kg	100	--
Ethyl-Tert-Butyl-Ether	ND		ug/kg	100	--
Tertiary-Amyl Methyl Ether	ND		ug/kg	100	--
1,4-Dioxane	ND		ug/kg	4000	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	92		70-130
Toluene-d8	95		70-130
4-Bromofluorobenzene	93		70-130
Dibromofluoromethane	96		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035/8260 Low - Westborough Lab Associated sample(s): 01 Batch: WG2159702-3 WG2159702-4								
Methylene chloride	92		90		70-130	2		20
1,1-Dichloroethane	98		94		70-130	4		20
Chloroform	94		91		70-130	3		20
Carbon tetrachloride	93		90		70-130	3		20
1,2-Dichloropropane	99		98		70-130	1		20
Dibromochloromethane	93		91		70-130	2		20
1,1,2-Trichloroethane	95		94		70-130	1		20
Tetrachloroethene	103		97		70-130	6		20
Chlorobenzene	99		96		70-130	3		20
Trichlorofluoromethane	112		106		70-130	6		20
1,2-Dichloroethane	95		95		70-130	0		20
1,1,1-Trichloroethane	98		94		70-130	4		20
Bromodichloromethane	96		95		70-130	1		20
trans-1,3-Dichloropropene	89		88		70-130	1		20
cis-1,3-Dichloropropene	97		95		70-130	2		20
1,1-Dichloropropene	104		99		70-130	5		20
Bromoform	84		83		70-130	1		20
1,1,2,2-Tetrachloroethane	89		89		70-130	0		20
Benzene	102		99		70-130	3		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035/8260 Low - Westborough Lab Associated sample(s): 01 Batch: WG2159702-3 WG2159702-4								
Toluene	96		92		70-130	4		20
Ethylbenzene	98		93		70-130	5		20
Chloromethane	89		84		70-130	6		20
Bromomethane	104		94		70-130	10		20
Vinyl chloride	105		100		70-130	5		20
Chloroethane	114		109		70-130	4		20
1,1-Dichloroethene	102		97		70-130	5		20
trans-1,2-Dichloroethene	98		94		70-130	4		20
Trichloroethene	102		99		70-130	3		20
1,2-Dichlorobenzene	96		94		70-130	2		20
1,3-Dichlorobenzene	99		96		70-130	3		20
1,4-Dichlorobenzene	98		94		70-130	4		20
Methyl tert butyl ether	87		88		70-130	1		20
p/m-Xylene	102		98		70-130	4		20
o-Xylene	101		97		70-130	4		20
cis-1,2-Dichloroethene	99		96		70-130	3		20
Dibromomethane	97		97		70-130	0		20
1,2,3-Trichloropropane	86		88		70-130	2		20
Styrene	102		98		70-130	4		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035/8260 Low - Westborough Lab Associated sample(s): 01 Batch: WG2159702-3 WG2159702-4								
Dichlorodifluoromethane	78		75		70-130	4		20
Acetone	103		100		70-130	3		20
Carbon disulfide	94		89		70-130	5		20
Methyl ethyl ketone	82		94		70-130	14		20
Methyl isobutyl ketone	82		84		70-130	2		20
2-Hexanone	**68**	Q	71		70-130	4		20
Bromochloromethane	103		100		70-130	3		20
Tetrahydrofuran	81		84		70-130	4		20
2,2-Dichloropropane	91		87		70-130	4		20
1,2-Dibromoethane	95		96		70-130	1		20
1,3-Dichloropropane	94		93		70-130	1		20
1,1,1,2-Tetrachloroethane	97		94		70-130	3		20
Bromobenzene	93		90		70-130	3		20
n-Butylbenzene	102		97		70-130	5		20
sec-Butylbenzene	100		95		70-130	5		20
tert-Butylbenzene	96		92		70-130	4		20
o-Chlorotoluene	96		92		70-130	4		20
p-Chlorotoluene	95		91		70-130	4		20
1,2-Dibromo-3-chloropropane	75		77		70-130	3		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035/8260 Low - Westborough Lab Associated sample(s): 01 Batch: WG2159702-3 WG2159702-4								
Hexachlorobutadiene	92		87		70-130	6		20
Isopropylbenzene	97		92		70-130	5		20
p-Isopropyltoluene	100		95		70-130	5		20
Naphthalene	87		88		70-130	1		20
n-Propylbenzene	100		95		70-130	5		20
1,2,3-Trichlorobenzene	95		94		70-130	1		20
1,2,4-Trichlorobenzene	98		96		70-130	2		20
1,3,5-Trimethylbenzene	96		93		70-130	3		20
1,2,4-Trimethylbenzene	96		92		70-130	4		20
Diethyl ether	104		104		70-130	0		20
Diisopropyl Ether	95		93		70-130	2		20
Ethyl-Tert-Butyl-Ether	92		93		70-130	1		20
Tertiary-Amyl Methyl Ether	87		88		70-130	1		20
1,4-Dioxane	97		98		70-130	1		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035/8260 Low - Westborough Lab Associated sample(s): 01 Batch: WG2159702-3 WG2159702-4								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	92		94		70-130
Toluene-d8	97		95		70-130
4-Bromofluorobenzene	97		96		70-130
Dibromofluoromethane	99		100		70-130

Lab Control Sample Analysis
Batch Quality Control

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035/8260 High - Westborough Lab Associated sample(s): 01 Batch: WG2159709-3 WG2159709-4								
Methylene chloride	92		90		70-130	2		20
1,1-Dichloroethane	98		94		70-130	4		20
Chloroform	94		91		70-130	3		20
Carbon tetrachloride	93		90		70-130	3		20
1,2-Dichloropropane	99		98		70-130	1		20
Dibromochloromethane	93		91		70-130	2		20
1,1,2-Trichloroethane	95		94		70-130	1		20
Tetrachloroethene	103		97		70-130	6		20
Chlorobenzene	99		96		70-130	3		20
Trichlorofluoromethane	112		106		70-130	6		20
1,2-Dichloroethane	95		95		70-130	0		20
1,1,1-Trichloroethane	98		94		70-130	4		20
Bromodichloromethane	96		95		70-130	1		20
trans-1,3-Dichloropropene	89		88		70-130	1		20
cis-1,3-Dichloropropene	97		95		70-130	2		20
1,1-Dichloropropene	104		99		70-130	5		20
Bromoform	84		83		70-130	1		20
1,1,2,2-Tetrachloroethane	89		89		70-130	0		20
Benzene	102		99		70-130	3		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035/8260 High - Westborough Lab Associated sample(s): 01 Batch: WG2159709-3 WG2159709-4								
Toluene	96		92		70-130	4		20
Ethylbenzene	98		93		70-130	5		20
Chloromethane	89		84		70-130	6		20
Bromomethane	104		94		70-130	10		20
Vinyl chloride	105		100		70-130	5		20
Chloroethane	114		109		70-130	4		20
1,1-Dichloroethene	102		97		70-130	5		20
trans-1,2-Dichloroethene	98		94		70-130	4		20
Trichloroethene	102		99		70-130	3		20
1,2-Dichlorobenzene	96		94		70-130	2		20
1,3-Dichlorobenzene	99		96		70-130	3		20
1,4-Dichlorobenzene	98		94		70-130	4		20
Methyl tert butyl ether	87		88		70-130	1		20
p/m-Xylene	102		98		70-130	4		20
o-Xylene	101		97		70-130	4		20
cis-1,2-Dichloroethene	99		96		70-130	3		20
Dibromomethane	97		97		70-130	0		20
1,2,3-Trichloropropane	86		88		70-130	2		20
Styrene	102		98		70-130	4		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035/8260 High - Westborough Lab Associated sample(s): 01 Batch: WG2159709-3 WG2159709-4								
Dichlorodifluoromethane	78		75		70-130	4		20
Acetone	103		100		70-130	3		20
Carbon disulfide	94		89		70-130	5		20
Methyl ethyl ketone	82		94		70-130	14		20
Methyl isobutyl ketone	82		84		70-130	2		20
2-Hexanone	**68**	Q	71		70-130	4		20
Bromochloromethane	103		100		70-130	3		20
Tetrahydrofuran	81		84		70-130	4		20
2,2-Dichloropropane	91		87		70-130	4		20
1,2-Dibromoethane	95		96		70-130	1		20
1,3-Dichloropropane	94		93		70-130	1		20
1,1,1,2-Tetrachloroethane	97		94		70-130	3		20
Bromobenzene	93		90		70-130	3		20
n-Butylbenzene	102		97		70-130	5		20
sec-Butylbenzene	100		95		70-130	5		20
tert-Butylbenzene	96		92		70-130	4		20
o-Chlorotoluene	96		92		70-130	4		20
p-Chlorotoluene	95		91		70-130	4		20
1,2-Dibromo-3-chloropropane	75		77		70-130	3		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035/8260 High - Westborough Lab Associated sample(s): 01 Batch: WG2159709-3 WG2159709-4								
Hexachlorobutadiene	92		87		70-130	6		20
Isopropylbenzene	97		92		70-130	5		20
p-Isopropyltoluene	100		95		70-130	5		20
Naphthalene	87		88		70-130	1		20
n-Propylbenzene	100		95		70-130	5		20
1,2,3-Trichlorobenzene	95		94		70-130	1		20
1,2,4-Trichlorobenzene	98		96		70-130	2		20
1,3,5-Trimethylbenzene	96		93		70-130	3		20
1,2,4-Trimethylbenzene	96		92		70-130	4		20
Diethyl ether	104		104		70-130	0		20
Diisopropyl Ether	95		93		70-130	2		20
Ethyl-Tert-Butyl-Ether	92		93		70-130	1		20
Tertiary-Amyl Methyl Ether	87		88		70-130	1		20
1,4-Dioxane	97		98		70-130	1		20

Lab Control Sample Analysis
Batch Quality Control

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics by EPA 5035/8260 High - Westborough Lab Associated sample(s): 01 Batch: WG2159709-3 WG2159709-4								

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	92		94		70-130
Toluene-d8	97		95		70-130
4-Bromofluorobenzene	97		96		70-130
Dibromofluoromethane	99		100		70-130

PETROLEUM HYDROCARBONS

Project Name: MWTP **Lab Number:** L2579644

Project Number: US004105.1397 **Report Date:** 12/30/25

SAMPLE RESULTS

Lab ID:	L2579644-01	Date Collected:	12/15/25 11:30
Client ID:	MA401WQ	Date Received:	12/15/25
Sample Location:	CHARLES RIVER AT 161 HIGHLAND AVE, NEEDHAM, MA	Field Prep:	Not Specified
Sample Depth:			
Matrix:	Sediment	Extraction Method:	EPA 3546
Analytical Method:	135,EPH-19-2.1	Extraction Date:	12/26/25 12:39
Analytical Date:	12/28/25 17:43	Cleanup Method1:	EPH-19-2.1
Analyst:	MTC	Cleanup Date1:	12/28/25
Percent Solids:	84%		

Quality Control Information

Condition of sample received:	Satisfactory
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Extractable Petroleum Hydrocarbons - Westborough Lab						
C9-C18 Aliphatics	ND		mg/kg	7.74	--	1
C19-C36 Aliphatics	ND		mg/kg	7.74	--	1
C11-C22 Aromatics	ND		mg/kg	7.74	--	1
C11-C22 Aromatics, Adjusted	ND		mg/kg	7.74	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	52		40-140
o-Terphenyl	57		40-140
2-Fluorobiphenyl	74		40-140
2-Bromonaphthalene	74		40-140

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Method Blank Analysis
Batch Quality Control

Analytical Method: 135,EPH-19-2.1
Analytical Date: 12/28/25 16:53
Analyst: MTC

Extraction Method: EPA 3546
Extraction Date: 12/26/25 12:39
Cleanup Method: EPH-19-2.1
Cleanup Date: 12/28/25

Parameter	Result	Qualifier	Units	RL	MDL
Extractable Petroleum Hydrocarbons - Westborough Lab for sample(s): 01 Batch: WG2158837-1					
C9-C18 Aliphatics	ND		mg/kg	6.54	--
C19-C36 Aliphatics	ND		mg/kg	6.54	--
C11-C22 Aromatics	ND		mg/kg	6.54	--
C11-C22 Aromatics, Adjusted	ND		mg/kg	6.54	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	48		40-140
o-Terphenyl	48		40-140
2-Fluorobiphenyl	68		40-140
2-Bromonaphthalene	68		40-140

Lab Control Sample Analysis
Batch Quality Control

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Extractable Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01 Batch: WG2158837-2 WG2158837-3								
C9-C18 Aliphatics	40		49		40-140	20		25
C19-C36 Aliphatics	65		67		40-140	3		25
C11-C22 Aromatics	55		64		40-140	15		25
Naphthalene	43		52		40-140	19		25
2-Methylnaphthalene	44		56		40-140	24		25
Acenaphthylene	43		58		40-140	**30**	Q	25
Acenaphthene	47		61		40-140	**26**	Q	25
Fluorene	52		63		40-140	19		25
Phenanthrene	56		63		40-140	12		25
Anthracene	70		79		40-140	12		25
Fluoranthene	58		64		40-140	10		25
Pyrene	59		65		40-140	10		25
Benzo(a)anthracene	57		66		40-140	15		25
Chrysene	47		59		40-140	23		25
Benzo(b)fluoranthene	59		64		40-140	8		25
Benzo(k)fluoranthene	48		59		40-140	21		25
Benzo(a)pyrene	65		74		40-140	13		25
Indeno(1,2,3-cd)Pyrene	57		63		40-140	10		25
Dibenzo(a,h)anthracene	46		58		40-140	23		25

Lab Control Sample Analysis
Batch Quality Control

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Extractable Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01 Batch: WG2158837-2 WG2158837-3								
Benzo(ghi)perylene	45		55		40-140	20		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Chloro-Octadecane	52		55		40-140
o-Terphenyl	56		61		40-140
2-Fluorobiphenyl	73		74		40-140
2-Bromonaphthalene	73		75		40-140
% Naphthalene Breakthrough	0		0		
% 2-Methylnaphthalene Breakthrough	0		0		

METALS

Project Name: MWTP **Lab Number:** L2579644

Project Number: US004105.1397 **Report Date:** 12/30/25

SAMPLE RESULTS

Lab ID: L2579644-01 Date Collected: 12/15/25 11:30

Client ID: MA401WQ Date Received: 12/15/25

Sample Location: CHARLES RIVER AT 161 HIGHLAND AVE, NEEDHAM, MA Field Prep: Not Specified

Sample Depth:

Matrix: Sediment

Percent Solids: 84%

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab											
Arsenic, Total	2.04		mg/kg	0.572	--	10	12/27/25 17:28	12/29/25 19:14	EPA 3050B	97,6020B	DHL
Cadmium, Total	ND		mg/kg	0.2290	--	10	12/27/25 17:28	12/29/25 19:14	EPA 3050B	97,6020B	DHL
Chromium, Total	10.9		mg/kg	2.29	--	10	12/27/25 17:28	12/29/25 19:14	EPA 3050B	97,6020B	DHL
Copper, Total	12.6		mg/kg	2.29	--	10	12/27/25 17:28	12/29/25 19:14	EPA 3050B	97,6020B	DHL
Lead, Total	2.89		mg/kg	0.687	--	10	12/27/25 17:28	12/29/25 19:14	EPA 3050B	97,6020B	DHL
Mercury, Total	ND		mg/kg	0.083	--	1	12/27/25 19:31	12/28/25 13:36	EPA 7471B	97,7471B	CME
Nickel, Total	7.04		mg/kg	1.14	--	10	12/27/25 17:28	12/29/25 19:14	EPA 3050B	97,6020B	DHL
Zinc, Total	19.7		mg/kg	11.4	--	10	12/27/25 17:28	12/29/25 19:14	EPA 3050B	97,6020B	DHL

Project Name: MWTP **Lab Number:** L2579644

Project Number: US004105.1397 **Report Date:** 12/30/25

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01 Batch: WG2159189-1										
Arsenic, Total	ND		mg/kg	0.500	--	10	12/27/25 17:28	12/29/25 19:08	97,6020B	DHL
Cadmium, Total	ND		mg/kg	0.2000	--	10	12/27/25 17:28	12/29/25 19:08	97,6020B	DHL
Chromium, Total	ND		mg/kg	2.00	--	10	12/27/25 17:28	12/29/25 19:08	97,6020B	DHL
Copper, Total	ND		mg/kg	2.00	--	10	12/27/25 17:28	12/29/25 19:08	97,6020B	DHL
Lead, Total	ND		mg/kg	0.600	--	10	12/27/25 17:28	12/29/25 19:08	97,6020B	DHL
Nickel, Total	ND		mg/kg	1.00	--	10	12/27/25 17:28	12/29/25 19:08	97,6020B	DHL
Zinc, Total	ND		mg/kg	10.0	--	10	12/27/25 17:28	12/29/25 19:08	97,6020B	DHL

Prep Information

Digestion Method: EPA 3050B

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Mansfield Lab for sample(s): 01 Batch: WG2159190-1										
Mercury, Total	ND		mg/kg	0.083	--	1	12/27/25 19:31	12/28/25 13:19	97,7471B	CME

Prep Information

Digestion Method: EPA 7471B

Lab Control Sample Analysis
Batch Quality Control

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG2159189-2 WG2159189-3 SRM Lot Number: D125-540								
Arsenic, Total	90		97		81-120	7		30
Cadmium, Total	88		102		82-118	15		30
Chromium, Total	86		97		81-119	12		30
Copper, Total	85		96		83-118	12		30
Lead, Total	88		93		82-118	6		30
Nickel, Total	87		100		82-118	14		30
Zinc, Total	85		93		79-121	9		30
MCP Total Metals - Mansfield Lab Associated sample(s): 01 Batch: WG2159190-2 WG2159190-3 SRM Lot Number: D125-540								
Mercury, Total	102		94		68-133	8		30

INORGANICS
&
MISCELLANEOUS

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

SAMPLE RESULTS

Lab ID: L2579644-01
Client ID: MA401WQ
Sample Location: CHARLES RIVER AT 161 HIGHLAND AVE, NEEDHAM, MA

Date Collected: 12/15/25 11:30
Date Received: 12/15/25
Field Prep: Not Specified

Sample Depth:
Matrix: Sediment

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Grain Size Analysis - East Longmeadow Lab										
Cobbles	ND		%	0.100	NA	1	-	12/17/25 10:09	12,D6913/D7928	JLC
% Coarse Gravel	15.9		%	0.100	NA	1	-	12/17/25 10:09	12,D6913/D7928	JLC
% Fine Gravel	18.5		%	0.100	NA	1	-	12/17/25 10:09	12,D6913/D7928	JLC
% Total Gravel	34.4		%	0.100	NA	1	-	12/17/25 10:09	12,D6913/D7928	JLC
% Coarse Sand	17.5		%	0.100	NA	1	-	12/17/25 10:09	12,D6913/D7928	JLC
% Medium Sand	32.5		%	0.100	NA	1	-	12/17/25 10:09	12,D6913/D7928	JLC
% Fine Sand	12.1		%	0.100	NA	1	-	12/17/25 10:09	12,D6913/D7928	JLC
% Total Sand	62.1		%	0.100	NA	1	-	12/17/25 10:09	12,D6913/D7928	JLC
% Total Fines	3.50		%	0.100	NA	1	-	12/17/25 10:09	12,D6913/D7928	JLC
General Chemistry - Westborough Lab										
Solids, Total	83.9		%	0.100	NA	1	-	12/17/25 15:05	121,2540G	ROI

Lab Duplicate Analysis

Batch Quality Control

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
Grain Size Analysis - East Longmeadow Lab Associated sample(s): 01 QC Batch ID: WG2155116-1 QC Sample: L2579644-01 Client ID: MA401WQ						
Cobbles	ND	ND	%	NC		20
% Coarse Gravel	15.9	11.7	%	**30**	Q	20
% Fine Gravel	18.5	15.9	%	15		20
% Total Gravel	34.4	27.6	%	**22**	Q	20
% Coarse Sand	17.5	19.0	%	8		20
% Medium Sand	32.5	35.5	%	9		20
% Fine Sand	12.1	14.0	%	15		20
% Total Sand	62.1	68.5	%	10		20
% Total Fines	3.50	3.90	%	11		20

Project Name: MWTP
Project Number: US004105.1397

Lab Number: L2579644
Report Date: 12/30/25

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	Initial pH	Final pH	Temp deg C	Pres	Seal	Frozen Date/Time	Analysis(*)
L2579644-01A	Vial MeOH preserved	NA	NA			Y	Absent		MCP-8260HLW-21(14),MCP-8260H-21(14)
L2579644-01B	Vial water preserved	NA	NA			Y	Absent	16-DEC-25 16:46	MCP-8260HLW-21(14),MCP-8260H-21(14)
L2579644-01C	Vial water preserved	NA	NA			Y	Absent	16-DEC-25 16:46	MCP-8260HLW-21(14),MCP-8260H-21(14)
L2579644-01D	Plastic 2oz unpreserved for TS	NA	NA			Y	Absent		TS(7)
L2579644-01E	Glass 60mL/2oz unpreserved	NA	NA			Y	Absent		A2-CR-MCP6020T-10(180),A2-AS-MCP6020T-10(180),A2-CD-MCP6020T-10(180),A2-ZN-MCP6020T-10(180),A2-HG-MCP7471T-10(28),A2-CU-MCP6020T-10(180),A2-NI-MCP6020T-10(180),A2-HGPREP-AF(28),A2-PB-MCP6020T-10(180),A2-PREP-3050:2T(180),A2-PAH/PCBCONG(14)
L2579644-01F	TOC Only-Glass 60mL/2oz unpreserved	NA	NA			Y	Absent		A3-GEO-9060-2REPS(28)
L2579644-01G	Glass 500ml/16oz unpreserved	NA	NA			Y	Absent		EPH-20(14)
L2579644-01H	Glass 500ml/16oz unpreserved	NA	NA			Y	Absent		EPH-20(14)
L2579644-01I	Plastic 8oz unpreserved for Grain Size	NA	NA			Y	Absent		A3-SIEVE-TSAND(),A3-SIEVE-CGRAVEL(),A3-SIEVE-TFINE(),A3-SIEVE-CSAND(),A3-SIEVE-FSAND(),A3-SIEVE-MSAND(),A3-SIEVE-TGRAVEL(),A3-SIEVE-COBBLES(),A3-SIEVE-FGRAVEL()
L2579644-01J	Vial Large Septa unpreserved (4oz)	NA	NA			Y	Absent		MCP-8260HLW-21(14),MCP-8260H-21(14)
L2579644-01Y	Vial Water preserved split	NA	NA			Y	Absent		MCP-8260HLW-21(14),MCP-8260H-21(14)

*Values in parentheses indicate holding time in days

Project Name:	MWTP	**Lab Number:**	L2579644
Project Number:	US004105.1397	**Report Date:**	12/30/25

GLOSSARY

Acronyms

DL	- Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the limit of quantitation (LOQ). The DL includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EMPC	- Estimated Maximum Possible Concentration: The concentration that results from the signal present at the retention time of an analyte when the ions meet all of the identification criteria except the ion abundance ratio criteria. An EMPC is a worst-case estimate of the concentration.
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LOD	- Limit of Detection: This value represents the level to which a target analyte can reliably be detected for a specific analyte in a specific matrix by a specific method. The LOD includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
LOQ	- Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.) Limit of Quantitation: The value at which an instrument can accurately measure an analyte at a specific concentration. The LOQ includes any adjustments from dilutions, concentrations or moisture content, where applicable. (DoD report formats only.)
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available. For Method 332.0, the spike recovery is calculated using the native concentration, including estimated values.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
NR	- No Results: Term is utilized when 'No Target Compounds Requested' is reported for the analysis of Volatile or Semivolatile Organic TIC only requests.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TEF	- Toxic Equivalency Factors: The values assigned to each dioxin and furan to evaluate their toxicity relative to 2,3,7,8-TCDD.
TEQ	- Toxic Equivalent: The measure of a sample's toxicity derived by multiplying each dioxin and furan by its corresponding TEF and then summing the resulting values.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Report Format: Data Usability Report

Project Name:	MWTP	**Lab Number:**	L2579644
Project Number:	US004105.1397	**Report Date:**	12/30/25

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Chlordane: The target compound Chlordane (CAS No. 57-74-9) is reported for GC ECD analyses. Per EPA,this compound "refers to a mixture of chlordane isomers, other chlorinated hydrocarbons and numerous other components." (Reference: USEPA Toxicological Review of Chlordane, In Support of Summary Information on the Integrated Risk Information System (IRIS), December 1997.)

Difference: With respect to Total Oxidizable Precursor (TOP) Assay analysis, the difference is defined as the Post-Treatment value minus the Pre-Treatment value.

Final pH: As it pertains to Sample Receipt & Container Information section of the report, Final pH reflects pH of container determined after adjustment at the laboratory, if applicable. If no adjustment required, value reflects Initial pH.

Frozen Date/Time: With respect to Volatile Organics in soil, Frozen Date/Time reflects the date/time at which associated Reagent Water-preserved vials were initially frozen. Note: If frozen date/time is beyond 48 hours from sample collection, value will be reflected in 'bold'.

Gasoline Range Organics (GRO): Gasoline Range Organics (GRO) results include all chromatographic peaks eluting from Methyl tert butyl ether through Naphthalene, with the exception of GRO analysis in support of State of Ohio programs, which includes all chromatographic peaks eluting from Hexane through Dodecane.

Initial pH: As it pertains to Sample Receipt & Container Information section of the report, Initial pH reflects pH of container determined upon receipt, if applicable.

PAH Total: With respect to Alkylated PAH analyses, the 'PAHs, Total' result is defined as the summation of results for all or a subset of the following compounds: Naphthalene, C1-C4 Naphthalenes, 2-Methylnaphthalene, 1-Methylnaphthalene, Biphenyl, Acenaphthylene, Acenaphthene, Fluorene, C1-C3 Fluorenes, Phenanthrene, C1-C4 Phenanthrenes/Anthracenes, Anthracene, Fluoranthene, Pyrene, C1-C4 Fluoranthenes/Pyrenes, Benz(a)anthracene, Chrysene, C1-C4 Chrysenes, Benzo(b)fluoranthene, Benzo(j)+(k)fluoranthene, Benzo(e)pyrene, Benzo(a)pyrene, Perylene, Indeno(1,2,3-cd)pyrene, Dibenz(ah)+(ac)anthracene, Benzo(g,h,i)perylene. If a 'Total' result is requested, the results of its individual components will also be reported.

PFAS Total: With respect to PFAS analyses, the 'PFAS, Total (5)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA and PFOS. In addition, the 'PFAS, Total (6)' result is defined as the summation of results for: PFHpA, PFHxS, PFOA, PFNA, PFDA and PFOS. For MassDEP DW compliance analysis only, the 'PFAS, Total (6)' result is defined as the summation of results at or above the RL. Note: If a 'Total' result is requested, the results of its individual components will also be reported.

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Data Qualifiers

A - Spectra identified as "Aldol Condensates" are byproducts of the extraction/concentration procedures when acetone is introduced in the process.

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

F - The ratio of quantifier ion response to qualifier ion response falls outside of the laboratory criteria. Results are considered to be an estimated maximum concentration.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

Report Format: Data Usability Report

Project Name:	MWTP	**Lab Number:**	L2579644
Project Number:	US004105.1397	**Report Date:**	12/30/25

Data Qualifiers

ND - Not detected at the reporting limit (RL) for the sample.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

V - The surrogate associated with this target analyte has a recovery outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Z - The batch matrix spike and/or duplicate associated with this target analyte has a recovery/RPD outside the QC acceptance limits. (Applicable to MassDEP DW Compliance samples only.)

Project Name: MWTP **Lab Number:** L2579644

Project Number: US004105.1397 **Report Date:** 12/30/25

REFERENCES

12 Annual Book of ASTM Standards. (American Society for Testing and Materials) ASTM International.

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSCCAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010; WSC-CAM-IIIA and IIID, January 2024; WSC-CAM-IIIB and VA, February 2024; WSC-CAM-VB and VC, April 2024; and WSC-CAM-VIA, VIB, IXA, and IXB, October 2024.

121 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WEF. Standard Methods Online.

135 Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MassDEP, December 2019, Revision 2.1 with QC Requirements & Performance Standards for the Analysis of EPH under the Massachusetts Contingency Plan, WSC-CAM-IVB, March 1, 2020.

141 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA and IIB, November 2021.

LIMITATION OF LIABILITIES

Pace Analytical Services performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Pace Analytical Services shall be to re-perform the work at it's own expense. In no event shall Pace Analytical Services be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Pace Analytical Services.

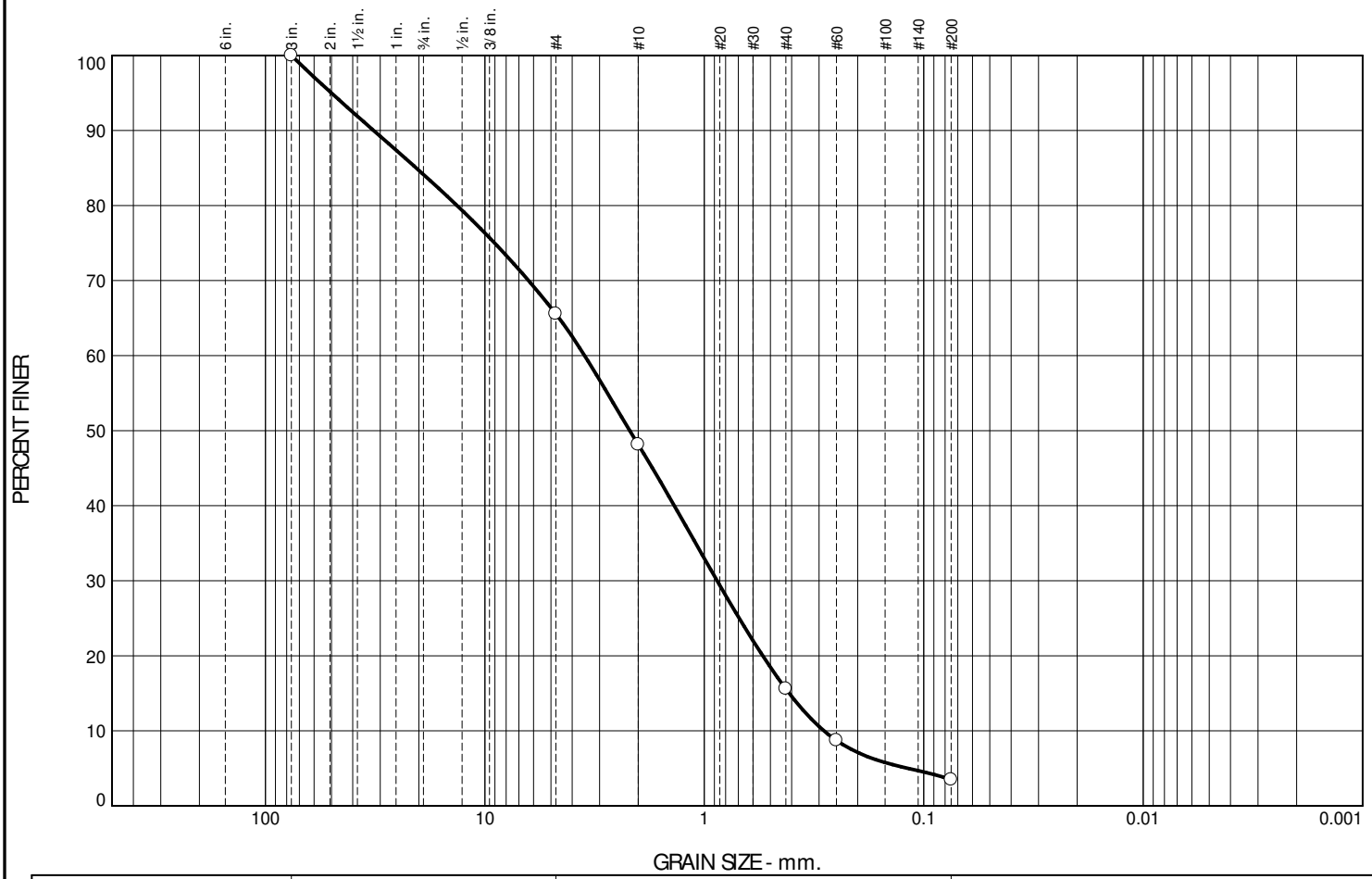
We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

ASTM D6913/D7928

GRAIN SIZE ANALYSIS

Particle Size Distribution Report

ASTM D422



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	15.9	18.5	17.5	32.5	12.1	3.5	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			20.5502	3.5116	2.1870	0.8746	0.4104	0.2851	0.76	12.32

	Material Description	Test Date	USCS	NM
○			SP	

Project No. Client:

Project:

○ Source of Sample: MA401WQ Sample Number: L2579644-01

Pace Analytical®

Remarks:

Figure

GRAIN SIZE DISTRIBUTION TEST DATA 12/19/2025

Location: MA401WQ
Sample Number: L2579644-01

Sieve Test Data (ASTM D422)

Specimen Weights
Dry specimen+tare (gms.) = 132.23
Tare (gms.) = 0.00

Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Passing
3	0.00	0.00	100.0
#4	45.54	0.00	65.6
#10	23.04	0.00	48.1
#40	43.04	0.00	15.6
#60	9.08	0.00	8.7
#200	6.92	0.00	3.5

Results

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	15.9	18.5	34.4	17.5	32.5	12.1	62.1			3.5

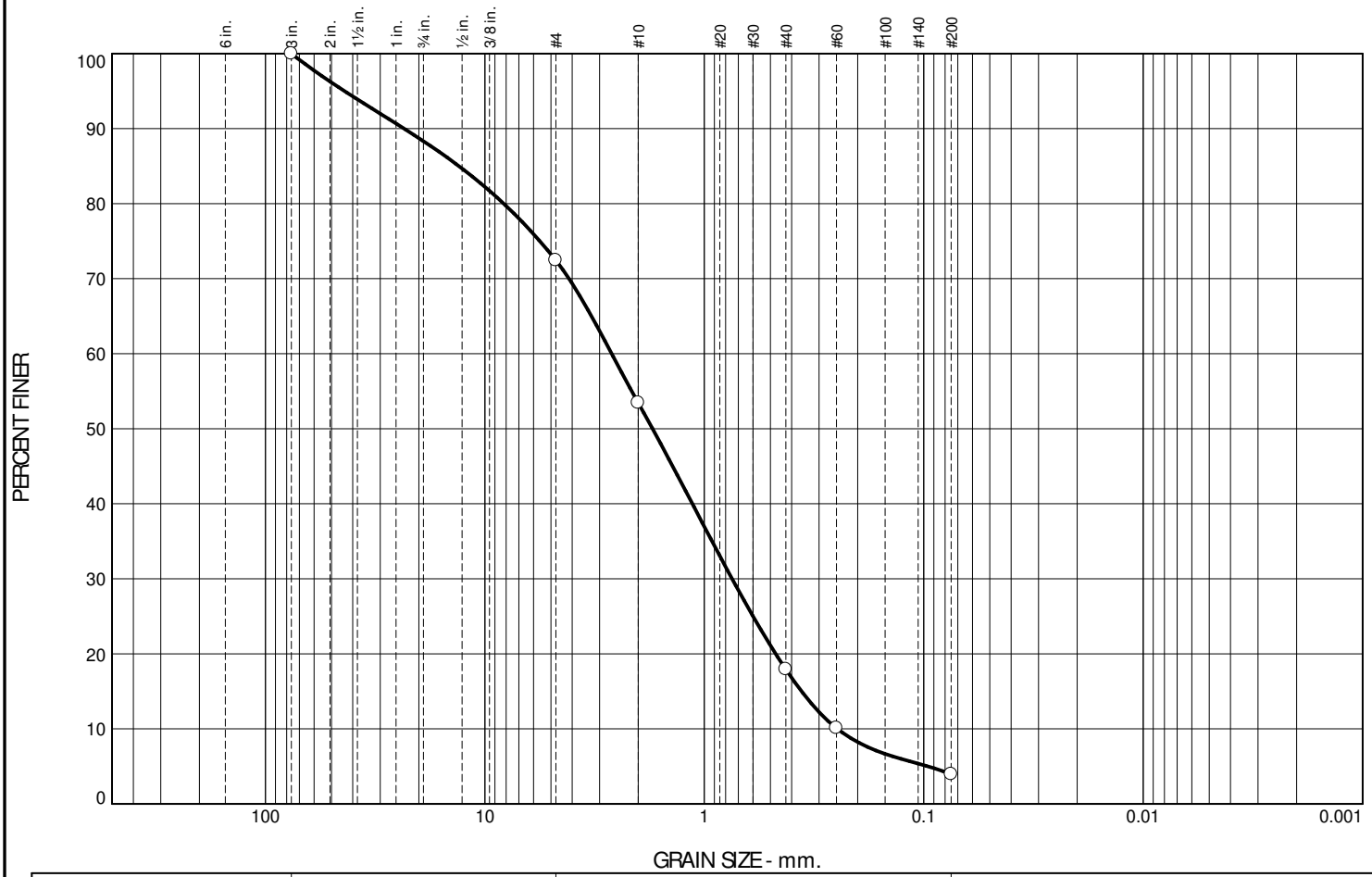
D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.1180	0.2851	0.4104	0.5416	0.8746	1.3702	2.1870	3.5116	13.3962	20.5502	32.1329	50.0824

Coefficient of Uniformity (C_u)
12.32

Coefficient of Concavity (C_c)
0.76

Particle Size Distribution Report

ASTM D422



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	11.7	15.9	19.0	35.5	14.0	3.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			13.1292	2.6436	1.7209	0.7473	0.3604	0.2477	0.85	10.67

	Material Description	Test Date	USCS	NM
○			SP	

Project No. Client:

Project:

○ Source of Sample: MA401WQ Sample Number: WG2155116-1

Pace Analytical®

Remarks:

Figure

GRAIN SIZE DISTRIBUTION TEST DATA 12/19/2025

Location: MA401WQ
Sample Number: WG2155116-1

Sieve Test Data (ASTM D422)

Specimen Weights
Dry specimen+tare (gms.) = 126.85
Tare (gms.) = 0.00

Sieve Opening Size	Weight Retained (grams)	Sieve Weight (grams)	Percent Passing
3	0.00	0.00	100.0
#4	34.95	0.00	72.4
#10	24.11	0.00	53.4
#40	45.05	0.00	17.9
#60	9.94	0.00	10.1
#200	7.80	0.00	3.9

Results

Cobbles	Gravel			Sand				Fines		
	Coarse	Fine	Total	Coarse	Medium	Fine	Total	Silt	Clay	Total
0.0	11.7	15.9	27.6	19.0	35.5	14.0	68.5			3.9

D_5	D_{10}	D_{15}	D_{20}	D_{30}	D_{40}	D_{50}	D_{60}	D_{80}	D_{85}	D_{90}	D_{95}
0.0958	0.2477	0.3604	0.4729	0.7473	1.1339	1.7209	2.6436	8.2069	13.1292	23.3512	43.6131

Coefficient of Uniformity (C_u)
10.67

Coefficient of Concavity (C_c)
0.85

ENV-FORM-WES2-0065 v01 Certificate/Approval Program Summary

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581
EPA 624.1: m/p-xylene, o-xylene, Naphthalene
EPA 625.1: alpha-Terpineol
EPA 8260D: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene; SCM: Iodomethane (methyl iodide), 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
EPA 8270E: NPW: Dimethylnaphthalene,1,4-Diphenylhydrazine, alpha-Terpineol, Azobenzene; SCM: Dimethylnaphthalene,1,4-Diphenylhydrazine.
SM4500: NPW: Amenable Cyanide; SCM: Total Phosphorus, TKN, NO2, NO3.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048
SM 2540D: TSS.
Biological Tissue Matrix: EPA 3050B

Mansfield Facility – 120 Forbes Blvd. Mansfield, MA 02048
EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
MADEP-APH.
Nonpotable Water: EPA RSK-175 Dissolved Gases

The following test method is not included in our New Jersey Secondary NELAP Scope of Accreditation:

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048
Determination of Selected Perfluorinated Alkyl Substances by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry Isotope Dilution (via Alpha SOP 23528)

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581

Drinking Water
EPA 300.0: Chloride, Nitrate-N, Fluoride, Sulfate; **EPA 353.2**: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C, SM4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, SM2320B, SM2540C, SM4500H-B, SM4500NO2-B**
EPA 524.2: THMs and VOCs; **EPA 504.1:** EDB, DBCP.
Microbiology: **SM9215B; SM9223-P/A, SM9223B-Colilert-QT,SM9222D**.

Non-Potable Water
SM4500H,B, EPA 120.1, SM2510B, SM2540C, SM2320B, SM4500CL-E, SM4500F-BC, SM4500NH3-BH: Ammonia-N and Kjeldahl-N, **EPA 350.1**: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **EPA 351.1, SM4500NO3-F, EPA 353.2**: Nitrate-N, **SM4500P-E, SM4500P-B, E, SM4500SO4-E, SM5220D, EPA 410.4, SM5210B, SM5310C, SM4500CL-G, EPA 1664, EPA 420.1, SM4500-CN-CE, SM2540D, EPA 300: Chloride, Sulfate, Nitrate.**
EPA 624.1: Volatile Halocarbons & Aromatics,
EPA 608.3: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
EPA 625.1: SVOC (Acid/Base/Neutral Extractables).
Microbiology: **SM9223B-Colilert-QT; Enterolert-QT.**

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048

Drinking Water
EPA 200.7: Al, Ba, Cd, Cr, Cu, Fe, Mn, Ni, Na, Ag, Ca, Zn. **EPA 200.8:** Al, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn. **EPA 245.1** Hg.
EPA 522, EPA 537.1.

Non-Potable Water
EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
EPA 200.8: Al, Sb, As, Be, Cd, Ca, Cr, Cu, Fe, Pb, Mg, Mn, Ni, K, Se, Ag, Na, TL, Zn.
EPA 245.1: Hg. **EPA 245.7:** Hg.
SM2340B

ENV-FORM-WES2-0065 v01 Certificate/Approval Program Summary

Certification IDs:

Westborough Facility – 8 Walkup Dr. Westborough, MA 01581
CT PH-0826, IL 200077, IN C-MA-03, KY kY98045, ME MA00086, MD 348, MA M-MA086, NH 2064, NJ MA935, NY 11148, NC (DW) 25700, NC (NPW/SCM) 666, OR MA-1316, PA 68-03671, RI LAO00065, TX T104704476, VT VT-0935, VA 460195.

Mansfield Facility – 320 Forbes Blvd. Mansfield, MA 02048
ANAB/DoD L2474, CA 3117, CO MA00030, CT PH-0825, IL 200081, IN C-MA-04, KY KY98046, LA 85084, ME MA00030, MD 350, MA M-MA00030, MI 9110, MN 025-999-495, NH 2062, NJ MA015, NY 11627, NC (NPW/SCM) 685, OR MA-0262, PA 68-02089, RI LAO00299, TX T-104704419, UT MA00030, VT VT-0015, VA 460194, WA C954.

Mansfield Air Lab Facility – 120 Forbes Blvd. Mansfield, MA 02048
ANAB/DoD L2474, LA 245052, ME MA01156, MN 025-999-498, NH 2249, NJ MA025, NY 12191, OR 4203, TX T104704583, VA 460311, WA C1104.

For a complete listing of analytes and methods, please contact your Project Manager.

CHAIN OF CUSTODY

PAGE _____ OF _____

Pace ANALYTICAL SERVICES

WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
MANSFIELD, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 12/15/25

PACE Job #: 25791644

Client Information

Client: Dan Martin (WSP)
Address: 100 Summer St, 13th Floor
Phone: 973-868-6611
Fax: Dan.Martin@WSP.com
Email:
☐ These samples have been previously analyzed by Pace

Project Information

Project Name: MWTP
Project Location: Charles River at 161 Highland Ave, Needham, MA
Project #: 00084405.1397
Project Manager: Dan Martin
PACE Quote #: 548812

Turn-Around Time

☑ Standard ☑ RUSH (only confirmed if pre-approved) (only for grain size)
Date Due: Time:

Report Information - Data Deliverables

☐ FAX ☑ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☑ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program | Criteria

MA MCP PRESUMPTIVE CERTAINTY --- CT REASONABLE CONFIDENCE PROTO

☑ Yes ☐ No Are MCP Analytical Methods Required?
☑ Yes ☑ No Is Matrix Spike (MS) Required on this SDG? (If yes see note in Comments)
☐ Yes ☑ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:

If MS is required , indicate in Sample Specific Comments which samples and what tests MS to be performed.
(Note: All ***CAM*** methods for inorganic analyses require MS every 20 soil samples)

PACE Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	ANALYSIS: Grain Size	AS-GEO-9060-1REP	TCLP-VOA-TCLP-EXT-2ME	EPH-10-TCLP Metals 4REP6	TS	Total Hg Total Metals 8260 HLW (High)	8260 HLW (Low)	8260 HLW (Low)	SAMPLE HANDLING: Filtration ☐ Done ☐ Not needed ☐ Lab to do Preservation ☐ Lab to do (Please specify below)	Sample Specific Comments	TOTAL # BOTTLES
791401	MA401 WQ	12/15/25	1130	S	STC	X									RUSH	
	MA401 WQ	12/15/25	1130	S	STC		X									
	MA401 WQ	12/15/25	1130	S	STC			X								
	MA401 WQ	12/15/25	1130	S	STC				X							
	MA401 WQ	12/15/25	1130	S	STC					X						
	MA401 WQ	12/15/25	1130	S	STC						X					
												X				
													X			
														X		

Container Type	P	A	A	A	P	A	A	G	G			
Preservative	A	A	A	A	A	A		O	O			

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP or CT RCP?

Relinquished By:	Date/Time	Received By:	Date/Time
Samuel Consolvo (WSP)	12/15/25 1335		12/15/25 1335
	12/15/25 1700		12/15/25 1700

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Pace's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 29-Jan-2025)

Method Blank Summary
Form 4
Volatiles

Client	: WSP USA Inc.	**Lab Number**	: L2579644
Project Name	: MWTP	**Project Number**	: US004105.1397
Lab Sample ID	: WG2159702-5	**Lab File ID**	: V17251229A05
Instrument ID	: VOA117		
Matrix	: SOIL	**Analysis Date**	: 12/29/25 07:02

Client Sample No.	Lab Sample ID	Analysis Date
WG2159702-3LCS	WG2159702-3	12/29/25 05:18
WG2159702-4LCSD	WG2159702-4	12/29/25 05:44
MA401WQ	L2579644-01	12/29/25 09:51

Method Blank Summary
Form 4
Volatiles

Client	: WSP USA Inc.	**Lab Number**	: L2579644
Project Name	: MWTP	**Project Number**	: US004105.1397
Lab Sample ID	: WG2159709-5	**Lab File ID**	: V17251229A05
Instrument ID	: VOA117		
Matrix	: SOIL	**Analysis Date**	: 12/29/25 07:02

Client Sample No.	Lab Sample ID	Analysis Date
WG2159709-3LCS	WG2159709-3	12/29/25 05:18
WG2159709-4LCSD	WG2159709-4	12/29/25 05:44
MA401WQ	L2579644-01	12/29/25 10:17

Calibration Verification Summary
Form 7
Volatiles

Client	: WSP USA Inc.	**Lab Number**	: L2579644
Project Name	: MWTP	**Project Number**	: US004105.1397
Instrument ID	: VOA117	**Calibration Date**	: 12/29/25 05:18
Lab File ID	: V17251229A01	**Init. Calib. Date(s)**	: 12/04/25 12/04/25
Sample No	: WG2159702-2	**Init. Calib. Times**	: 17:50 22:35
Channel	:		

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	63	0
Dichlorodifluoromethane	0.224	0.176	-	21.4*	20	47	0
Chloromethane	0.277	0.245	-	11.6	20	57	0
Vinyl chloride	0.268	0.282	-	-5.2	20	64	0
Bromomethane	0.191	0.199	-	-4.2	20	75	0
Chloroethane	0.165	0.187	-	-13.3	20	71	0
Trichlorofluoromethane	0.301	0.337	-	-12	20	66	0
Ethyl ether	0.102	0.106	-	-3.9	20	65	0
1,1-Dichloroethene	0.212	0.216	-	-1.9	20	63	0
Carbon disulfide	0.741	0.699	-	5.7	20	61	0
Freon-113	0.2	0.219	-	-9.5	20	63	0
Acrolein	0.022	0.011	-	50*	20	29	0
Methylene chloride	0.235	0.217	-	7.7	20	62	0
Acetone	0.053	0.055	-	-3.8	20	68	0
trans-1,2-Dichloroethene	0.237	0.232	-	2.1	20	60	0
Methyl acetate	0.083	0.076	-	8.4	20	56	0
Methyl tert-butyl ether	0.52	0.452	-	13.1	20	51	0
tert-Butyl alcohol	0.018	0.011	-	38.9*	20	36	0
Diisopropyl ether	0.659	0.626	-	5	20	55	0
1,1-Dichloroethane	0.425	0.416	-	2.1	20	59	0
Halothane	0.184	0.182	-	1.1	20	56	0
Acrylonitrile	0.046	0.042	-	8.7	20	54	0
Ethyl tert-butyl ether	0.653	0.603	-	7.7	20	52	0
Vinyl acetate	0.374	0.344	-	8	20	51	0
cis-1,2-Dichloroethene	0.249	0.247	-	0.8	20	59	0
2,2-Dichloropropane	0.342	0.312	-	8.8	20	54	0
Bromochloromethane	0.111	0.114	-	-2.7	20	60	0
Cyclohexane	0.39	0.401	-	-2.8	20	59	0
Chloroform	0.429	0.402	-	6.3	20	57	0
Ethyl acetate	0.135	0.109	-	19.3	20	49	0
Carbon tetrachloride	0.325	0.303	-	6.8	20	54	0
Tetrahydrofuran	0.042	0.034	-	19	20	48	0
Dibromofluoromethane	0.246	0.244	-	0.8	20	62	0
1,1,1-Trichloroethane	0.347	0.341	-	1.7	20	57	0
2-Butanone	0.055	0.045	-	18.2	20	50	0
1,1-Dichloropropene	0.279	0.29	-	-3.9	20	58	0
Benzene	0.836	0.853	-	-2	20	60	0
tert-Amyl methyl ether	0.515	0.449	-	12.8	20	49	0
1,2-Dichloroethane-d4	0.23	0.211	-	8.3	20	58	0
1,2-Dichloroethane	0.257	0.245	-	4.7	20	55	0
Methyl cyclohexane	0.367	0.388	-	-5.7	20	59	0
Trichloroethene	0.238	0.244	-	-2.5	20	58	0
Dibromomethane	0.113	0.11	-	2.7	20	55	0

* Value outside of QC limits.

Calibration Verification Summary
Form 7
Volatiles

Client	: WSP USA Inc.	**Lab Number**	: L2579644
Project Name	: MWTP	**Project Number**	: US004105.1397
Instrument ID	: VOA117	**Calibration Date**	: 12/29/25 05:18
Lab File ID	: V17251229A01	**Init. Calib. Date(s)**	: 12/04/25 12/04/25
Sample No	: WG2159702-2	**Init. Calib. Times**	: 17:50 22:35
Channel	:		

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,2-Dichloropropane	0.228	0.225	-	1.3	20	56	0
Bromodichloromethane	0.287	0.275*	-	4.2	20	52	0
1,4-Dioxane	0.00119	0.00115*	-	3.4	20	55	0
cis-1,3-Dichloropropene	0.32	0.311	-	2.8	20	52	0
Chlorobenzene-d5	1	1	-	0	20	66	0
Toluene-d8	1.276	1.231	-	3.5	20	63	0
Toluene	0.738	0.712	-	3.5	20	58	0
4-Methyl-2-pentanone	0.069	0.056	-	18.8	20	43	0
Tetrachloroethene	0.327	0.337	-	-3.1	20	58	0
trans-1,3-Dichloropropene	0.355	0.317	-	10.7	20	49	0
Ethyl methacrylate	0.266	0.213	-	19.9	20	45	0
1,1,2-Trichloroethane	0.175	0.167*	-	4.6	20	54	0
Chlorodibromomethane	0.286	0.266	-	7	20	51	0
1,3-Dichloropropane	0.35	0.329	-	6	20	53	0
1,2-Dibromoethane	0.205	0.196*	-	4.4	20	52	0
2-Hexanone	0.12	0.081	-	32.5*	20	39	0
Chlorobenzene	0.844	0.835	-	1.1	20	57	0
Ethylbenzene	1.422	1.39	-	2.3	20	58	0
1,1,1,2-Tetrachloroethane	0.303	0.293	-	3.3	20	54	0
p/m Xylene	0.548	0.561	-	-2.4	20	59	0
o Xylene	0.537	0.541	-	-0.7	20	58	0
Styrene	0.871	0.884	-	-1.5	20	57	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	68	0
Bromoform	0.317	0.266	-	16.1	20	48	0
Isopropylbenzene	2.775	2.681	-	3.4	20	59	0
4-Bromofluorobenzene	0.861	0.834	-	3.1	20	66	0
Bromobenzene	0.691	0.643	-	6.9	20	56	0
n-Propylbenzene	3.162	3.149	-	0.4	20	60	0
1,4-Dichlorobutane	0.761	0.641	-	15.8	20	53	0
1,1,2,2-Tetrachloroethane	0.492	0.438	-	11	20	52	0
4-Ethyltoluene	2.729	2.683	-	1.7	20	60	0
2-Chlorotoluene	1.836	1.761	-	4.1	20	58	0
1,3,5-Trimethylbenzene	2.336	2.244	-	3.9	20	59	0
1,2,3-Trichloropropane	0.36	0.31	-	13.9	20	51	0
trans-1,4-Dichloro-2-buten	0.134	0.109	-	18.7	20	47	0
4-Chlorotoluene	1.932	1.832	-	5.2	20	58	0
tert-Butylbenzene	2.084	1.997	-	4.2	20	59	0
1,2,4-Trimethylbenzene	2.29	2.191	-	4.3	20	59	0
sec-Butylbenzene	2.998	2.999	-	-0	20	61	0
p-Isopropyltoluene	2.655	2.642	-	0.5	20	60	0
1,3-Dichlorobenzene	1.339	1.326	-	1	20	61	0
1,4-Dichlorobenzene	1.353	1.323	-	2.2	20	61	0
p-Diethylbenzene	1.612	1.589	-	1.4	20	60	0

* Value outside of QC limits.

Calibration Verification Summary
Form 7
Volatiles

Client	: WSP USA Inc.	**Lab Number**	: L2579644
Project Name	: MWTP	**Project Number**	: US004105.1397
Instrument ID	: VOA117	**Calibration Date**	: 12/29/25 05:18
Lab File ID	: V17251229A01	**Init. Calib. Date(s)**	: 12/04/25 12/04/25
Sample No	: WG2159702-2	**Init. Calib. Times**	: 17:50 22:35
Channel	:		

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
n-Butylbenzene	2.299	2.35	-	-2.2	20	62	0
1,2-Dichlorobenzene	1.215	1.173	-	3.5	20	59	0
1,2,4,5-Tetramethylbenzene	2.462	2.367	-	3.9	20	59	0
1,2-Dibromo-3-chloropropan	0.081	0.06	-	25.9*	20	44	0
1,3,5-Trichlorobenzene	0.987	0.989	-	-0.2	20	62	0
Hexachlorobutadiene	0.484	0.444	-	8.3	20	57	0
1,2,4-Trichlorobenzene	0.833	0.817	-	1.9	20	59	0
Naphthalene	1.684	1.47	-	12.7	20	54	0
1,2,3-Trichlorobenzene	0.733	0.695	-	5.2	20	58	0

* Value outside of QC limits.

Calibration Verification Summary
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Volatiles

Client	: WSP USA Inc.	**Lab Number**	: L2579644
Project Name	: MWTP	**Project Number**	: US004105.1397
Instrument ID	: VOA117	**Calibration Date**	: 12/29/25 05:18
Lab File ID	: V17251229A01	**Init. Calib. Date(s)**	: 12/04/25 12/04/25
Sample No	: WG2159709-2	**Init. Calib. Times**	: 17:50 22:35
Channel	:		

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
Fluorobenzene	1	1	-	0	20	63	0
Dichlorodifluoromethane	0.224	0.176	-	21.4*	20	47	0
Chloromethane	0.277	0.245	-	11.6	20	57	0
Vinyl chloride	0.268	0.282	-	-5.2	20	64	0
Bromomethane	0.191	0.199	-	-4.2	20	75	0
Chloroethane	0.165	0.187	-	-13.3	20	71	0
Trichlorofluoromethane	0.301	0.337	-	-12	20	66	0
Ethyl ether	0.102	0.106	-	-3.9	20	65	0
1,1-Dichloroethene	0.212	0.216	-	-1.9	20	63	0
Carbon disulfide	0.741	0.699	-	5.7	20	61	0
Freon-113	0.2	0.219	-	-9.5	20	63	0
Acrolein	0.022	0.011	-	50*	20	29	0
Methylene chloride	0.235	0.217	-	7.7	20	62	0
Acetone	0.053	0.055	-	-3.8	20	68	0
trans-1,2-Dichloroethene	0.237	0.232	-	2.1	20	60	0
Methyl acetate	0.083	0.076	-	8.4	20	56	0
Methyl tert-butyl ether	0.52	0.452	-	13.1	20	51	0
tert-Butyl alcohol	0.018	0.011	-	38.9*	20	36	0
Diisopropyl ether	0.659	0.626	-	5	20	55	0
1,1-Dichloroethane	0.425	0.416	-	2.1	20	59	0
Halothane	0.184	0.182	-	1.1	20	56	0
Acrylonitrile	0.046	0.042	-	8.7	20	54	0
Ethyl tert-butyl ether	0.653	0.603	-	7.7	20	52	0
Vinyl acetate	0.374	0.344	-	8	20	51	0
cis-1,2-Dichloroethene	0.249	0.247	-	0.8	20	59	0
2,2-Dichloropropane	0.342	0.312	-	8.8	20	54	0
Bromochloromethane	0.111	0.114	-	-2.7	20	60	0
Cyclohexane	0.39	0.401	-	-2.8	20	59	0
Chloroform	0.429	0.402	-	6.3	20	57	0
Ethyl acetate	0.135	0.109	-	19.3	20	49	0
Carbon tetrachloride	0.325	0.303	-	6.8	20	54	0
Tetrahydrofuran	0.042	0.034	-	19	20	48	0
Dibromofluoromethane	0.246	0.244	-	0.8	20	62	0
1,1,1-Trichloroethane	0.347	0.341	-	1.7	20	57	0
2-Butanone	0.055	0.045	-	18.2	20	50	0
1,1-Dichloropropene	0.279	0.29	-	-3.9	20	58	0
Benzene	0.836	0.853	-	-2	20	60	0
tert-Amyl methyl ether	0.515	0.449	-	12.8	20	49	0
1,2-Dichloroethane-d4	0.23	0.211	-	8.3	20	58	0
1,2-Dichloroethane	0.257	0.245	-	4.7	20	55	0
Methyl cyclohexane	0.367	0.388	-	-5.7	20	59	0
Trichloroethene	0.238	0.244	-	-2.5	20	58	0
Dibromomethane	0.113	0.11	-	2.7	20	55	0

* Value outside of QC limits.

Calibration Verification Summary
Form 7
Volatiles

Client	: WSP USA Inc.	**Lab Number**	: L2579644
Project Name	: MWTP	**Project Number**	: US004105.1397
Instrument ID	: VOA117	**Calibration Date**	: 12/29/25 05:18
Lab File ID	: V17251229A01	**Init. Calib. Date(s)**	: 12/04/25 12/04/25
Sample No	: WG2159709-2	**Init. Calib. Times**	: 17:50 22:35
Channel	:		

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
1,2-Dichloropropane	0.228	0.225	-	1.3	20	56	0
Bromodichloromethane	0.287	0.275*	-	4.2	20	52	0
1,4-Dioxane	0.00119	0.00115*	-	3.4	20	55	0
cis-1,3-Dichloropropene	0.32	0.311	-	2.8	20	52	0
Chlorobenzene-d5	1	1	-	0	20	66	0
Toluene-d8	1.276	1.231	-	3.5	20	63	0
Toluene	0.738	0.712	-	3.5	20	58	0
4-Methyl-2-pentanone	0.069	0.056	-	18.8	20	43	0
Tetrachloroethene	0.327	0.337	-	-3.1	20	58	0
trans-1,3-Dichloropropene	0.355	0.317	-	10.7	20	49	0
Ethyl methacrylate	0.266	0.213	-	19.9	20	45	0
1,1,2-Trichloroethane	0.175	0.167*	-	4.6	20	54	0
Chlorodibromomethane	0.286	0.266	-	7	20	51	0
1,3-Dichloropropane	0.35	0.329	-	6	20	53	0
1,2-Dibromoethane	0.205	0.196*	-	4.4	20	52	0
2-Hexanone	0.12	0.081	-	32.5*	20	39	0
Chlorobenzene	0.844	0.835	-	1.1	20	57	0
Ethylbenzene	1.422	1.39	-	2.3	20	58	0
1,1,1,2-Tetrachloroethane	0.303	0.293	-	3.3	20	54	0
p/m Xylene	0.548	0.561	-	-2.4	20	59	0
o Xylene	0.537	0.541	-	-0.7	20	58	0
Styrene	0.871	0.884	-	-1.5	20	57	0
1,4-Dichlorobenzene-d4	1	1	-	0	20	68	0
Bromoform	0.317	0.266	-	16.1	20	48	0
Isopropylbenzene	2.775	2.681	-	3.4	20	59	0
4-Bromofluorobenzene	0.861	0.834	-	3.1	20	66	0
Bromobenzene	0.691	0.643	-	6.9	20	56	0
n-Propylbenzene	3.162	3.149	-	0.4	20	60	0
1,4-Dichlorobutane	0.761	0.641	-	15.8	20	53	0
1,1,2,2-Tetrachloroethane	0.492	0.438	-	11	20	52	0
4-Ethyltoluene	2.729	2.683	-	1.7	20	60	0
2-Chlorotoluene	1.836	1.761	-	4.1	20	58	0
1,3,5-Trimethylbenzene	2.336	2.244	-	3.9	20	59	0
1,2,3-Trichloropropane	0.36	0.31	-	13.9	20	51	0
trans-1,4-Dichloro-2-buten	0.134	0.109	-	18.7	20	47	0
4-Chlorotoluene	1.932	1.832	-	5.2	20	58	0
tert-Butylbenzene	2.084	1.997	-	4.2	20	59	0
1,2,4-Trimethylbenzene	2.29	2.191	-	4.3	20	59	0
sec-Butylbenzene	2.998	2.999	-	-0	20	61	0
p-Isopropyltoluene	2.655	2.642	-	0.5	20	60	0
1,3-Dichlorobenzene	1.339	1.326	-	1	20	61	0
1,4-Dichlorobenzene	1.353	1.323	-	2.2	20	61	0
p-Diethylbenzene	1.612	1.589	-	1.4	20	60	0

* Value outside of QC limits.

Calibration Verification Summary
Form 7
Volatiles

Client	: WSP USA Inc.	**Lab Number**	: L2579644
Project Name	: MWTP	**Project Number**	: US004105.1397
Instrument ID	: VOA117	**Calibration Date**	: 12/29/25 05:18
Lab File ID	: V17251229A01	**Init. Calib. Date(s)**	: 12/04/25 12/04/25
Sample No	: WG2159709-2	**Init. Calib. Times**	: 17:50 22:35
Channel	:		

Compound	Ave. RRF	RRF	Min RRF	%D	Max %D	Area%	Dev(min)
n-Butylbenzene	2.299	2.35	-	-2.2	20	62	0
1,2-Dichlorobenzene	1.215	1.173	-	3.5	20	59	0
1,2,4,5-Tetramethylbenzene	2.462	2.367	-	3.9	20	59	0
1,2-Dibromo-3-chloropropan	0.081	0.06	-	25.9*	20	44	0
1,3,5-Trichlorobenzene	0.987	0.989	-	-0.2	20	62	0
Hexachlorobutadiene	0.484	0.444	-	8.3	20	57	0
1,2,4-Trichlorobenzene	0.833	0.817	-	1.9	20	59	0
Naphthalene	1.684	1.47	-	12.7	20	54	0
1,2,3-Trichlorobenzene	0.733	0.695	-	5.2	20	58	0

* Value outside of QC limits.

Sample Delivery Group Summary

Pace Job Number : **L2579644**

Received : **15-DEC-2025**
Reviewer : **Julie Convery**

Account Name : **WSP USA Inc.**
Project Number : **US004105.1397**
Project Name : **MWTP**

Delivery Information

Samples Delivered By : **Pace Courier**

Chain of Custody : **Present**

Cooler Information

Cooler	Seal/Seal#	Preservation	Temperature(°C)	Additional Information
A	Absent/	Ice	4.8	

Condition Information

1) All samples on COC received?	**YES**
2) Extra samples received?	**NO**
3) Are there any sample container discrepancies?	**NO**
4) Are there any discrepancies between COC & sample labels?	**NO**
5) Are samples in appropriate containers for requested analysis?	**YES**
6) Are samples properly preserved for requested analysis?	**YES**
7) Are samples within holding time for requested analysis?	**YES**
8) All sampling equipment returned?	**NA**

Volatile Organics/VPH

1) Reagent Water Vials Frozen by Client?	**NO**